



# SWIM-TI Blue Profile Technical Specification

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## Task contributors

LEONARDO-FINMECCANICA, THALES, INDRA, FREQUENTIS, AIRBUS, HONEYWELL, EUROCONTROL

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## **Abstract**

This document is the final SESAR 1 SWIM-TI Technical Specification including functional, non-functional and interfaces requirements applicable to the Blue Profile.



Name & Company	Position & Title	Date

Rational for rejection
None.

## Document History

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## Executive summary

The purpose of this deliverable is to provide the final SESAR 1 SWIM-TI Technical Specification for the SWIM Blue Profile. SWIM-TI TS 3.1 requirements (14.01.04.D43-005 [12]) have been analyzed and improved according to maintenance activities agreed by P14.01.03 and P14.01.04 in collaboration with SJU.



## 1 Introduction

This document is the TS (Technical Specification) covering functional, non-functional and interface requirements identified for SWIM Technical Infrastructure (SWIM-TI) and applicable for the SWIM Blue Profile. This specification is based on the SWIM-TI functional, technical and deployment views described in the SWIM-TI TAD [13].

### 1.1 Purpose of the document

This specification provides functional, non-functional, applicable standards and interface requirements applicable to the SWIM-TI Blue Profile. The SWIM-TI functional, technical and deployment views described in the SWIM-TI TAD [13] have been analysed against the Blue Profile SPA (§2.4) and applicable requirements have been specified.

### 1.2 Intended readership

The intended audience of this document is:

- SJU/IS in order to manage the SWIM Technical Infrastructure TS.
- SWP14.2 projects in order to review this TS and to implement and verify the requirements.
- B.4.3 in order to review this TS according to its relationship with architectural aspects.
- 08.03.10 in order to review this TS according to its relationship with service instances provisioning and consumption.
- Any other SESAR projects interested in the SWIM Technical Infrastructure TS.

### 1.3 Inputs from other projects

This document is based on the following inputs:

- SWIM-TI TAD [13].
- SWIM Profiles [14].
- SWIM-TI Verification Reports [7][8].
- ISRM 2.0 [10].

### 1.4 Structure of the document

This document is organized as follows:

Chapter 1: Purpose and scope, requirements guidelines, SWIM Technical Infrastructure high level overview.

Chapter 2: General SWIM Technical Infrastructure description including context description, applicable SWIM-TI functional blocks analysis.

Chapter 3: SWIM-TI Blue Profile functional, non-functional, applicable standards and interface requirements.

Chapter 4: Assumptions.

Chapter 5: Referenced documents;

Appendix A: This appendix includes Interface Evolution analysis applicable to ATM services using interface bindings part of this Technical Specification.

## 1.5 Requirements Definitions – General Guidance

14.01.04 requirements guidelines include programme level guidelines [2] which have been extended with project level guidelines [15] concerning requirement identifiers coding schema, requirements writing rules, project specific requirements attributes and links.

In particular, a number of P14.01.04 specific requirements attributes have been defined and specified. Each of the attributes can be considered as a dimension on which filtering can be applied. Combined filtering on multiple distinct attributes is meant to be meaningful. Conformance statements provided in this technical specification are possible examples of filtering criteria.

Requirements provided in this specification have been exported to a spreadsheet allowing specification "user" to apply simple and more complex/structured filtering criteria. References to this file are included in the P14.01.04 Technical Specifications Catalogue [15].

Due to tools used to manage this Technical Specification, it could happen that text and/or requirements tables are formatted as hidden text. Please make sure that Microsoft Word is configured

to show hidden text (  ).

## 1.6 Functional block Purpose

SWIM-TI is the enabler for the SWIM concept realization: *to increase the common situational awareness improving the ability to deliver the right information to the right people at the right time.* SWIM-TI contributes to the services' solution aspects providing means supporting an effective and secure ATM-specific services provisioning and consumption among SWIM Enabled ATM systems.

SWIM-TI is built by specific technical elements identified and implemented in accordance with the needs of each ATM system and service. These technical elements consist of functionalities or functional blocks (FB) which are specified providing requirements, proper architectural items, interfacing layers and standard technologies.

For further details about SWIM-TI architecture, refer to the SWIM-TI TAD [13].

The purpose of the SWIM Blue Profile, as profiling of the SWIM-TI as introduced above, is detailed in §2.4.

## 1.7 Functional block Overview

Blue Profile detailed overview is provided in §2. Blue Profile SWIM Profile Assertion is provided in §2.4.

## 1.8 Glossary of terms

Term	Definition
<b>Access Control</b>	ITU-T IdM X.1252 defines this term as a procedure used to determine if an entity should be granted access to resources, facilities, services, or information based on pre-established rules and specific rights or authority associated with the requesting party
<b>Address</b>	ITU-T IdM X.1252 defines this term as an identifier for a specific termination point that is used for routing
<b>Agent</b>	ITU-T IdM X.1252 defines this term as an entity that acts on behalf of another entity.

Term	Definition
<b>Alarm</b>	An indication of an error or an abnormal and/or undesirable condition for a resource. An example of an alarm would be for a “connection down” in a data communications channel, or a non-booting processor in a hardware platform. Alarms originate with the hardware, software, and data communications infrastructure, and the infrastructure provides an indication to the Supervision when an alarm is raised or cleared. The Supervision notifies the local owner or authorized requester when an alarm is raised or cleared for a monitored resource.
<b>Alliance</b>	ITU-T IdM X.1252 defines this term as an agreement between two or more independent entities that defines how they relate to each other and how they jointly conduct activities.
<b>Archive</b>	Information storage that is used for by the automation for long-term retention of information produced and/or used at the local SWIM Node. An archive may be offline with respect to the SWIM Node, meaning that it is not directly accessible to processes and services running on the SWIM Node; or it may be online with respect to the SWIM Node, meaning that the archive is directly accessible to processes and services running on the SWIM Node. Information that is logged by the SWIM Supervision is retained online for a configurable time period, after which it is archived and is then no longer guaranteed to be available in the same manner as information that has not reached its retention time limit. Each SWIM Node will have local processes and procedures for storing, maintaining, and accessing archived information. Archived information will be available to the reporting capability; however, the response time for accessing archived information will vary according to the storage approach used by the node.
<b>Assertion</b>	ITU-T IdM X.1252 defines this term as a statement made by an entity without accompanying evidence of its validity.
<b>ATM Service or SWIM ATM Service</b>	A service representing the exchange of well-defined ATM information.
<b>Attribute</b>	ITU-T IdM X.1252 defines this term as information bound to an entity that specifies a characteristic of the entity.
<b>Attribute Based Access Control (ABAC)</b>	In attribute-based access control (ABAC), access is based on attributes of the user. The user has to prove these attributes to the access control engine. An attribute-based access control policy specifies which attributes need to be satisfied in order to grant access to an object.
<b>Attribute Value</b>	ITU-T IdM X.1252 defines this term as a particular instance of the class of information indicated by an attribute type.
<b>(Entity) Authentication</b>	ITU-T IdM X.1252 defines this term as a process used to achieve sufficient confidence in the binding between the entity and the presented identity.
<b>Authorization</b>	ITU-T IdM X.1252 defines this term as the granting of rights and, based on these rights, the granting of access.
<b>Authorized requester</b>	A human user or automated process, at the local SWIM Node or at a remote SWIM Node, that has been authenticated and is authorized per security requirements to make a service request.

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Term	Definition
<b>Binding</b>	ITU-T IdM X.1252 defines this term as an explicit established association, bonding, or tie.
<b>Bridge Certificate Authority (BCA)</b>	The Bridge Certification Authority (BCA) architecture addresses the shortcomings of the two basic PKI architectures, and to link PKIs that implement different architectures. The BCA does not issue certificates directly to users. The BCA is not intended to be used as a trust point by the users of the PKI, unlike the "root" CA in a hierarchy. The BCA establishes peer-to-peer trust relationships with the different user communities, which allows the users to keep their natural trust points. These relationships are combined to form a "bridge of trust" enabling users from the different user communities to interact with each other through the BCA with a specified level of trust.
<b>Certificate</b>	ITU-T IdM X.1252 defines this term as a set of security-relevant data issued by a security authority or a trusted third party, that, together with security information, is used to provide the integrity and data origin authentication services for the data.
<b>Certificate Service Provider (CSP)</b>	It is anticipated that security of the European SWIM-TI neither be handled by a single certification authority nor even by a single hierarchy of certification authorities. The main reason is that a few organizations (e.g. CFMU and some Airlines) have already deployed a PKI with an associated third party CA (or Certificate Service Provider (CSP)). The objective is not to replace the existing CAs by a single new one but rather to build a SWIM-TI capable of federating existing CAs and the SWIM-TI dedicated CA
<b>Channel Protection</b>	Channel Protection or transport level security, provides point-to-point protection of the communication. The protection will not go beyond intermediaries. This may be acceptable or not depending on the context. The Transport Layer Security TLS (cryptographic protocol) is a well-known and widely used protocol to provide transport level security. TLS encrypts the data using asymmetric cryptography for key exchange, symmetric encryption for confidentiality and Message Authentication Codes for message integrity.
<b>Claim</b>	ITU-T IdM X.1252 defines this term as to state as being the case, without being able to give proof.
<b>Confidentiality Ensuring</b>	Confidentiality Ensuring aims at providing the ability to ensure "non-disclosure" of information. This service relies on the policy enforcement features and to the cryptographic mechanisms provided by the Cryptography security enabler to ensure information confidentiality at message level.
<b>Credential</b>	ITU-T IdM X.1252 defines this term as a set of data presented as evidence of a claimed identity and/or entitlements.
<b>Data Origin Authentication</b>	Equivalent expression for Information Origin Authentication
<b>Data Validation</b>	Data validation allows checking for conformance to message/data type descriptions. The conformance conditions are expressed in form of well-defined policy assertions assigned to the SWIM service definition.
<b>Dead letter queue</b>	In message queuing, in the dead letter queue are stored messages that meet one or more of the following criteria : message that is sent to a queue that does not exist.; queue length limit exceeded; message length limit exceed;

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Term	Definition
	message is rejected by another queue exchange.
<b>Delegation</b>	ITU-T IdM X.1252 defines this term as an action that assigns authority, responsibility, or a function to another entity.
<b>Digital Identity</b>	ITU-T IdM X.1252 defines this term as a digital representation of the information known about a specific individual, group or organization.
<b>Digital Signature (algorithm)</b>	Digital Signature is a mathematical scheme for demonstrating the authenticity of a digital message or document. A valid digital signature gives a recipient reason to believe that a known sender created the message, and that it was not altered in transit. Unlike a Message Authentication Code, a Digital Signature also provides support for non-repudiation.
<b>Enabling Service</b>	A service provided by the SWIM-TI.
<b>Entity</b>	ITU-T IdM X.1252 defines this term as something that has separate and distinct existence and that can be identified in context. An entity can be a physical person, an animal, a juridical person, an organization, an active or passive thing, a device, a software application, a service, etc., or a group of these entities. In the context of telecommunications, examples of entities include access points, subscribers, users, network elements, networks, software applications, services and devices, interfaces, etc.
<b>European Network of Excellence in Cryptology (ECRYPT)</b>	ECRYPT (European Network of Excellence for Cryptology) is a 4-year European research initiative launched on 1 February 2004. The stated objective is to, "intensify the collaboration of European researchers in information security and more in particular in cryptology and digital watermarking".
<b>Failure Transparency</b>	Failure transparency masks from an object the failure and possible recovery of other objects (or itself) to enable fault tolerance. When this transparency is provided, the designer can work in an idealized world in which the corresponding class of failures does not occur.
<b>Federation</b>	ITU-T IdM X.1252 defines this term as an association of users, service providers, and identity service providers.
<b>Functional Status</b>	Indicates the ability of the SWIM Node or an element of the SWIM Node to provide the services.
<b>Identification</b>	ITU-T IdM X.1252 defines this term as the process of recognizing an entity by contextual characteristics.
<b>Identifier</b>	ITU-T IdM X.1252 defines this term as one or more attributes used to identify an entity within a context.
<b>Identity</b>	ITU-T IdM X.1252 defines this term as a representation of an entity in the form of one or more attributes that allow the entity or entities to be sufficiently distinguished within context. For identity management (IdM) purposes, the term identity is understood as contextual identity (subset of attributes), i.e., the variety of attributes is limited by a framework with defined boundary conditions (the context) in which the entity exists and interacts. Each entity is represented by one holistic identity that comprises all possible information elements characterizing such entity (the attributes). However, this holistic

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Term	Definition
	identity is a theoretical issue and eludes any description and practical usage because the number of all possible attributes is indefinite.
<b>Identity Management (IdM)</b>	ITU-T IdM X.1252 defines this term as a set of functions and capabilities (e.g., administration, management and maintenance, discovery, communication exchanges, correlation and binding, policy enforcement, authentication and assertions) used for assurance of identity information (e.g., identifiers, credentials, attributes); assurance of the identity of an entity and supporting business and security applications.
<b>Identity Provider (IdP)</b>	ITU-T IdM X.1252 defines this term as an entity that verifies, maintains, manages, and may create and assign identity information of other entities. Depending on the type of digital identity, an Identity Provider may be Public Key Infrastructure (PKI) or Security Token Infrastructure (STI). IdP is also named Identity Service Provider (IdSP).
<b>Information Origin Authentication</b>	SWIM-TI service to authenticate the originator entity of a message by several techniques at message level and transport level.
<b>Interface Control Document (ICD)</b>	An interface control document (ICD) in systems engineering and software engineering, describes the interface or interfaces between subsystems or to a system or subsystem.
<b>IOP Status</b>	Indicates the ability of the SWIM Node to provide Shared Object services.
<b>IOP Recovery Status</b>	Indicates that the SWIM Node is performing or has completed the recovery process.
<b>Messaging FB or SWIM-TI Messaging FB</b>	Messaging Functional Block provides a decoupled, interoperable and effective communications between information producer and the information consumers. It supports different message exchange patterns (e.g. publish/subscribe, request/response, push, etc.), different subscription styles (e.g. durable, non-durable) and different set of QoS (e.g. best-effort and reliable delivery).
<b>Mutual Authentication</b>	ITU-T IdM X.1252 defines this term as a process by which two entities (e.g., a client and a server) authenticate each other such that each is assured of the other's identity.
<b>Non-Repudiation</b>	ITU-T IdM X.1252 defines this term as the ability to protect against denial by one of the entities involved in an action of having participated in all or part of the action.
<b>Pan-European Network Service (PENS)</b>	A joint EUROCONTROL-ANSPs led initiative to provide a common IP based network service across the European region covering voice and data communication and providing efficient support to existing services and new requirements that are emerging from future Air Traffic Management (ATM) concepts.
<b>Persistent</b>	ITU-T IdM X.1252 defines this term as existing and able to be used in services outside the direct control of the issuing assigner, without a stated time-limit.
<b>Policy (Security)</b>	An agreement upon which entities (e.g. Systems) can collaborate. A typical example of this is Authorization Policy and Audit Policy.

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Term	Definition
<b>Policy Life Cycle Management (Security)</b>	The Policies lifecycle management is a key concept enabling (security) policies management and proper (security) policies enforcement.
<b>Public Key Cryptography</b>	Public Key Cryptography refers to a cryptographic technique in which one key is secret private and a corresponding key one is public. Information are is encrypted using the public key and can only be decrypted by the corresponding secret/private key or vice-versa, information is encrypted using the private key and can only be decrypted by the corresponding public key.. Public Key Cryptography can also be used for Digital Signatures; in this case the private key is used for signing, and the corresponding public key for verifying.
<b>Public Key Infrastructure</b>	A Public Key Infrastructure (PKI) is a system, which may include hardware, software, human in the loop, policies and procedures, needed to create, manage, distribute, use, store and revoke digital identities in X.509 certificates based IdM. PKIs represent the instantiation of the ITU-T X.1252 IdP when the X.509 certificates based security is adopted.
<b>Recording Functional Block or SWIM-TI Recording FB</b>	Recording FB includes the ability to collect, store and to retrieve on demand of information related to communication being performed via the SWIM Interfaces and supervision actions and events.
<b>Registry Functional Block or SWIM-TI Registry FB</b>	Registry FB includes two main groups of functions: - Information Management enabling the management several kinds of ATM-specific service meta-data allowing to discover, to subscribe and to publish/update these information. - Policy Management enabling the definition, validation and distribution of several kinds of policies including security. It covers policy administration (including creation, maintenance, change and deletion) and policy distribution and transformation and policy auditing.
<b>Replication Transparency</b>	Replication transparency masks the use of a group of mutually behaviorally compatible objects to support an interface. Replication is often used to enhance performance and availability.
<b>Revocation</b>	ITU-T IdM X.1252 defines this term as the annulment by someone having the authority, of something previously done.
<b>SAML Token</b>	Security Assertion Markup Language (Token)
<b>Schematron</b>	In markup languages, Schematron is a rule-based validation language for making assertions about the presence or absence of patterns in XML trees. It is a structural schema language expressed in XML using a small number of elements and XPath.
<b>Security Attribute</b>	An abstraction representing the basic properties or characteristics of an entity with respect to safeguarding information; typically associated with internal data structures (e.g., records, buffers, files) within the information system and used to enable the implementation of access control and flow control policies, reflect special dissemination, handling or distribution instructions, or support other aspects of the information security policy.

Term	Definition
<b>Security Domain</b>	ITU-T IdM X.1252 defines this term as a set of elements, a security policy, a security authority, and a set of security-relevant activities in which the elements are managed in accordance with the security policy.
<b>Security Functional Block or SWIM-TI Security FB</b>	Security Functional Block provides confidentiality, integrity, access control, accountability and non-repudiation functionalities, allowing data exchanged through the SWIM-TI to be protected
<b>Security Token</b>	Security tokens are used to prove one's identity electronically. The token acts like an electronic key to access something. Besides the information needed to authenticate an identity, a token can provide additional information (identity attributes) that are used for (e.g.) authorization purposes. Security tokens imply trust of a third party that issues the security tokens.
<b>Security Token Infrastructure (STI)</b>	A Security Tokens Infrastructure (STI) is a system, which may include hardware, software, human in the loop, policies and procedures, needed to create, manage, distribute, use, store and revoke digital identities in security token based IdM. STIs represent the instantiation of the ITU-T X.1252 IdP when the security tokens based security is adopted.
<b>Security Token Service (STS)</b>	A Security Token Service (STS) is a software based identity provider responsible for issuing and verifying security tokens as part of a claims-based identity management.
<b>Service</b>	When used without further qualification, Service indicates either a SWIM Service or a SWIM Enabling Service that is to be managed by SWIM Supervision at the local SWIM Node.
<b>Service Agent SOA Design Pattern</b>	Service agents can be designed to automatically respond to predefined conditions without invocation via a published contract. Refer to SOA Patterns <a href="http://www.soapatterns.org/service_agent.php">http://www.soapatterns.org/service_agent.php</a>
<b>Service Virtualization (Through Service Agent SOA design pattern)</b>	Service Virtualization helps insulate service infrastructure details such as service endpoint location, service inter-connectivity, policy enforcement, service versioning and dynamic service management information from service consumers. Refer to: <a href="http://www.soapatterns.org/service_virtualization.php">http://www.soapatterns.org/service_virtualization.php</a>
<b>Shared Object Functional Block or SWIM-TI Shared Object FB</b>	Shared Object FB is a special category that holds a pattern used to share data across multiple SWIM Nodes according to specific roles and rules.
<b>Supervision Functional Block or SWIM-TI Supervision FB</b>	Monitoring and Control FB includes control, fault management and performance monitoring at SWIM Node level (local supervision).
<b>SWIM Enabled System/Application</b>	A SWIM Enabled System/Application is a system/application exchanging information with other ATM actors according to the SWIM ATM Services and the appropriate SWIM-TI.
<b>SWIM Message Exchange Pattern</b>	SWIM Exchange Pattern is a definition to provide data exchanges of a SWIM profile. The message exchange patterns can be defined in terms of a set of technical attributes including interaction pattern, security, quality of service,

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Term	Definition
<b>(MEP)</b>	network infrastructure, middleware functional needs and mandated standards.
<b>SWIM Node Application</b>	A SWIM Node Application represents an application or a software system that supports a particular business function and that can be managed as an independent unit. A SWIM Node Application can be local to a SWIM Node Computer or distributed over multiple SWIM Node Computers. A SWIM Node Application can be composed of other application elements (processes, software components) and other SWIM Node Applications (sub-applications).
<b>SWIM Node Computer</b>	SWIM Node Computer is a special collection of SWIM TI managed entities that provides computing capabilities (such as processor, memory and file systems) for running SWIM TI applications and software components. A SWIM Node Computer is uniquely named and independently managed in a SWM Node.
<b>SWIM Node or SWIM-TI Node</b>	A SWIM-TI Node is an autonomous point of presence in the Distributed System (of Systems) that interacts with other SWIM-TI Nodes in the Distributed System (of Systems).
<b>SWIM Profile Assertion (SPA)</b>	Declaration of the existence of a SWIM Profile combined with precisions on scope and motivation and with design considerations.
<b>SWIM Service</b>	A service that is managed by the SWIM Supervision capability at a local SWIM Node. SWIM Supervision is responsible for the data, process control, event-reporting, and statistics for these services.
<b>SWIM Supervision Service</b>	A service whose functionality is part of the SWIM Supervision capability. SWIM Supervision Services are a subset of SWIM Services.
<b>SWIM Technical Infrastructure (SWIM-TI)</b>	The SWIM Technical Infrastructure (SWIM-TI) contributes to the services' solution, aspects providing means supporting effective and secure ATM-specific service provision and consumption among SWIM-enabled ATM systems.
<b>SWIM-TI Administrative Console</b>	Any application allowing authorized users to manage or control one or more SWIM Functions. Technical details of such consoles depend on implementation choices (e.g. CLI or graphical interfaces) but each console shall guarantee a certain level of security and compliance with current regulations.
<b>SWIM-TI Solution</b>	Software and Hardware representing the implementation of (applicable) SWIM-TI Technical Specifications.
<b>Symmetric Key Cryptography (algorithms)</b>	A Symmetric Key algorithm uses the same cryptographic key (shared secret key) for both encryption of plaintext and decryption of cipher text.
<b>System Instance</b>	A System Instance (SI) is a stakeholder system in the SoS which provides and consumes data in an ATC context e.g. CFMU, Airports.
<b>System of systems (SoS)</b>	System of systems (SoS) is the viewing of multiple, dispersed, independent systems in context as part of a larger, more complex system. A system is a group of interacting, interrelated and interdependent components that form a complex and unified whole.

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Term	Definition
<b>Technical Status</b>	Indicates whether the SWIM Node or an element of the SWIM Node is working.
<b>X.509 certificates</b>	In cryptography, X.509 is an ITU-T standard for a public key infrastructure (PKI) and Privilege Management Infrastructure (PMI). X.509 specifies, amongst other things, standard formats for public key certificates, certificate revocation lists, attribute certificates, and a certification path validation algorithm.
<b>XML Encryption</b>	XML Encryption is a specification (by W3C recommendation) that defines how to encrypt the contents of an XML element. Note: W3C (World Wide Web Consortium) is the main standards organization for the world wide web.
<b>XML Signature</b>	XML Signature is the XML syntax for digital signatures.

## 1.9 Acronyms and Terminology

Term	Definition
<b>A/C</b>	Aircraft
<b>A/G</b>	Air/Ground
<b>ABAC</b>	Attribute Based Access Control
<b>ACC</b>	Air Traffic Control Centre
<b>ACCS</b>	Air Command and Control System (NATO terminology)
<b>ADD</b>	Architecture Description Document
<b>AFF-MEP</b>	Asynchronous Fire & Forget Message Exchange Pattern
<b>AIM</b>	Aeronautical Information Management
<b>AIRM</b>	Aeronautical Information Reference Model
<b>AIS</b>	Aeronautical Information Services
<b>AIXM</b>	Aeronautical Information eXchange Model
<b>AMHS</b>	Aeronautical Message Handling System
<b>AMQP</b>	Advanced Message Queuing Protocol
<b>AOC</b>	Airline Operations Centre
<b>ARR-MEP</b>	Asynchronous Request/Reply Message Exchange Pattern

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Term	Definition
<b>ASM</b>	Any-Source Multicast
<b>ATC</b>	Air Traffic Control
<b>ATFCM</b>	Air Traffic Flow and Capacity Management
<b>ATM</b>	Air Traffic Management
<b>ATN</b>	Aeronautical Telecommunication Network
<b>ATN/IPS</b>	ATN using Internet Protocol Suite technologies
<b>B2B</b>	Business to Business
<b>BCA</b>	Bridge Certification Authority
<b>BP</b>	Blue Profile
<b>BPMN</b>	Business Process Model and Notation
<b>CA</b>	Certification Authority (in the context of PKI)
<b>CBA</b>	Cost Benefit Analysis
<b>CC</b>	Capability Configuration
<b>CDM</b>	Collaborative Decision Making
<b>CDP</b>	CRLs Distribution Point
<b>CONOPS</b>	Concept of Operations
<b>COTS</b>	Commercial Off The Shelf
<b>CRL</b>	(X.509) Certificate Revocation List
<b>CRUD</b>	Create, Read, Update and Delete (operations)
<b>CSP</b>	Certificate Service Provider
<b>DDS</b>	Data Distribution Service
<b>DM</b>	Dense Mode
<b>DSP</b>	Data-link Service Provider
<b>EAD</b>	European AIS Database
<b>ECRYPT</b>	European Network of Excellence in Cryptology
<b>EFB</b>	Electronic Flight Bag
<b>EN</b>	Enabler

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Term	Definition
<b>ESB</b>	Enterprise Service Bus
<b>FAA</b>	Federal Aviation Administration
<b>FB</b>	Functional Block
<b>FDRR-MEP</b>	Fully Decoupled Request/Reply Message Exchange Pattern
<b>FHA</b>	Fault Hazard Analysis
<b>FMS</b>	Flight Management System
<b>FO</b>	Flight Object
<b>FR</b>	Functional Requirement
<b>G/G</b>	Ground/Ground
<b>GAT</b>	General Air Traffic
<b>HA</b>	High Availability
<b>HMI</b>	Human-machine interface
<b>HTTP(S)</b>	HyperText Transfer Protocol (Secure)
<b>IATA</b>	International Air Transport Association
<b>ICD</b>	Interface Control Document
<b>ICOG</b>	Interoperability Consultancy Group
<b>IdM</b>	Identity Management
<b>IdP</b>	Identity Provider
<b>IdSP</b>	Identity Service Provider
<b>IFE</b>	In-Flight Entertainment
<b>IGMP</b>	Internet Group Management Protocol
<b>IM</b>	Information Management
<b>INTEROP</b>	Interoperability Requirements
<b>IP</b>	Internet Protocol
<b>IPR</b>	Intellectual Property Rights
<b>IS</b>	Industrial Support
<b>ISRM</b>	Information Service Reference Model

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Term	Definition
<b>iSWIM</b>	Initial SWIM (AF5 in the context of PCP)
<b>IT</b>	Information Technology
<b>LAN</b>	Local Area Network
<b>LDAP</b>	Lightweight Directory Access Protocol
<b>MEP</b>	Message Exchange Pattern
<b>MET</b>	Meteo or Meteorological
<b>MEX</b>	Metadata EXchange
<b>MLD</b>	Multicast Listener Discovery
<b>MSG or MSG FB</b>	SWIM-TI Messaging FB or briefly Messaging FB
<b>MQbRR</b>	Message Queuing based Request-Response
<b>MQbPS</b>	Message Queuing based Publish-Subscribe
<b>NAF</b>	NATO Architecture Framework
<b>NATO</b>	North Atlantic Treaty Organization
<b>NFR</b>	Non-Functional Requirement
<b>NM</b>	Network Management (CFMU)
<b>NOP</b>	Network OPERations or Network Operations Portal
<b>NOTAM</b>	NOTice To AirMen
<b>NOV</b>	NAF Operational View
<b>NSOV</b>	NAF Service-Oriented View
<b>NSV</b>	NAF System View
<b>NTV</b>	NAF Technical View
<b>OASIS</b>	Organization for the Advancement of Structured Information Standards
<b>OCSP</b>	Online Certificate Status Protocol
<b>OFA</b>	Operational Focus Area
<b>OMG</b>	Object Management Group
<b>OPULL-MEP</b>	Observer Pull Message Exchange Pattern
<b>OPUSH-MEP</b>	Observer Push Message Exchange Pattern

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Term	Definition
<b>OS</b>	Operating System
<b>OSED</b>	Operational Service and Environment Definition
<b>OSI</b>	Open Systems Interconnection
<b>OTS</b>	Off The Shelf
<b>PAP</b>	Policy Administration Point
<b>PCP</b>	EUR Pilot Common Project.
<b>PDP</b>	Policy Decision Point
<b>PDR</b>	Preliminary Design Review
<b>PENS</b>	Pan-European Network Service
<b>PEP</b>	Policy Enforcement Point
<b>PIM</b>	Protocol Independent Multicast
<b>PIM-SM</b>	PIM Sparse Mode
<b>PIM-SSM</b>	PIM Source-Specific Multicast
<b>PIP</b>	Policy Information Point
<b>PIR</b>	Project Initiation Report
<b>PKI</b>	Public Key Infrastructure
<b>PP</b>	Purple Profile
<b>PSM</b>	Platform Specific Model
<b>PSPULL-MEP</b>	Publish/Subscribe Pull Message Exchange Pattern
<b>PSPUSH-MEP</b>	Publish/Subscribe Push Message Exchange Pattern
<b>QoS</b>	Quality of Service
<b>RA</b>	Registration Authority (in the context of PKI)
<b>RBAC</b>	Role Based Access Control
<b>RCP</b>	Required Telecommunication Performance
<b>REC or REC FB</b>	Recording Functional Block or SWIM-TI Recording FB
<b>REG or REG FB</b>	Registry Functional Block or SWIM-TI Registry FB
<b>REST</b>	REpresentation State Transfer

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Term	Definition
<b>RFC</b>	Request For Comments (Internet Engineering Task Force terminology)
<b>RPO</b>	Recovery Point Objective
<b>RSA</b>	Rivest Shamir Adleman
<b>RST</b>	Request Security Token
<b>RSTR</b>	Request Security Token Response
<b>RTD</b>	Research and Technological Development
<b>SAML</b>	Security Assertion Markup Language
<b>SAR</b>	System Acceptance Review
<b>SCVP</b>	Server-Based Certificate Validation Protocol
<b>SEC FB or SEC</b>	Security Functional Block or SWIM-TI Security Functional Block
<b>SEMP</b>	System Engineering Management Plan
<b>SESAR</b>	Single European Sky ATM Research Programme
<b>SESAR Programme</b>	The programme which defines the Research and Development activities and Projects for the SJU.
<b>SI</b>	System Instance
<b>SJU</b>	SESAR Joint Undertaking (Agency of the European Commission)
<b>SJU Work Programme</b>	The programme which addresses all activities of the SESAR Joint Undertaking Agency
<b>SLA</b>	Service Level Agreement
<b>SM</b>	Sparse Mode
<b>SMTP</b>	Simple Mail Transfer Protocol
<b>SO</b>	Shared Object
<b>SO or SO FB</b>	Shared Object Functional Block or SWIM-TI Shared Object FB
<b>SOA</b>	Service Oriented Architecture
<b>SOAP</b>	Simple Object Access Protocol
<b>SoS</b>	System of Systems
<b>SPA</b>	SWIM Profile Assertion
<b>SPD</b>	SWIM Profile Descriptor

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Term	Definition
<b>SPI</b>	SWIM Profile Instantiation
<b>SPR</b>	Safety, Performance Requirements
<b>SPV</b>	SuPerVision
<b>SPV or SPV FB</b>	Supervision Functional Block or SWIM-TI Supervision FB
<b>SRR-MEP</b>	Synchronous Request/Reply Message Exchange Pattern
<b>SSDD</b>	System/Segment Design Document
<b>SSL</b>	Secure Socket Layer
<b>SSM</b>	Source-Specific Multicast
<b>SSO</b>	Single Sign-On
<b>STI</b>	Security Token Infrastructure
<b>STS</b>	Secure Token Service
<b>SW</b>	SoftWare
<b>SWIM</b>	System Wide Information Management
<b>SWIM-TI</b>	SWIM Technical Infrastructure
<b>TAD</b>	Technical Architecture Description
<b>TCP</b>	Transmission Control Protocol
<b>TLS</b>	Transport Layer Security
<b>TRR</b>	Test Readiness Review
<b>TS</b>	Technical Specification
<b>UDDI</b>	Universal Description Discovery and Integration
<b>UDP</b>	User Datagram Protocol
<b>UML</b>	Unified Modeling Language TM
<b>UTC</b>	Coordinated Universal Time [International Telecommunication Union (ITU)]
<b>VA</b>	Validation Authority (in the context of PKI)
<b>VoIP</b>	Voice over IP
<b>VPN</b>	Virtual Private Network
<b>WAN</b>	Wide Area Network

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Term	Definition
<b>WIMP</b>	What-if Manager Publisher (in the context of Flight Object concept/Blue Profile FDD Profile Part)
<b>WP</b>	Work Package
<b>WS</b>	Web Services
<b>WSDL</b>	Web Services Description Language
<b>WSS</b>	Web Services Security
<b>XACML</b>	eXtensible Access Control Markup Language
<b>YP</b>	Yellow Profile

## 2 General Functional block Description

Even if the title of this chapter refers to a single FB, it concerns all the SWIM-TI functional, non-functional, standards and interface requirements applicable to the Blue Profile. In both §2 and §3 the name of the chapters have not been updated in order to be compliant with SJU/IS Technical Specification (TS) template.

### 2.1 Context

A brief SWIM-TI overview is provided in §1.6. Refer to SWIM-TI TAD [13] for further details. In §2.3, §2.4 and §2.5 sections below introduction of key elements of the Blue Profiles is provided.

SWIM-TI Technical Specifications deal with the “how” aspect of the SWIM-TI. More precisely, the Technical Specifications provide normative requirements concerning the SWIM-TI technical view [13].

As described in the SWIM-TI TAD [13], *the key component that can provide/realize/deploy the functions of the Functional decomposition view of the SWIM-TI is the SWIM-TI Node. A SWIM-TI Node is an autonomous point of presence in the Distributed System (of Systems) that interacts with other SWIM-TI Nodes in the Distributed System (of Systems).*

*The point of presence makes a set of functionality via one SWIM-TI Node available to any SWIM-TI Node or allows use of the functionality that is made available by a SWIM-TI Node via one or more SWIM-TI Nodes.*

The SWIM-TI Node is a generic element that could be specialised in categories. At the time of writing, there are two categories of specifications:

- The first category of specifications that are captured and grouped under the notions of SWIM Profile, Profile Part, Role and Self-standing set.
- The second category of specifications consists of those captured and grouped under the notions of shareable functions.

This Technical Specification applies to the first category restricting the scope according to the Blue Profile SPA (§2.4). When applicable, the second category is also covered by specifications with “consumer” role of Self-standing set concerning shareable functions (e.g. PKI).

### 2.2 Functional block Modes and States

N/A.

### 2.3 Major Functional block Capabilities

In this section the SWIM-TI functional view applicable to the Blue Profile is provided. The table below provided those SWIM-TI Functional Blocks, representing the SWIM-TI functional decomposition, applicable to the Blue Profile.

Functional Block Name	Functional Block Code	Applicable SWIM Profiles	References
<i>Messaging</i>	<b>MSG</b>	Blue Profile Yellow Profile Purple Profile	<b>MSG Requirements applicable to the Blue Profile are provided in §3.3.</b>
<i>Security</i>	<b>SEC</b>	Blue Profile Yellow Profile Purple Profile	<b>SEC Requirements applicable to the Blue Profile are provided in §3.4.</b>
<i>Supervision</i>	<b>SPV</b>	Blue Profile Yellow Profile	<b>SPV Requirements applicable to the Blue Profile are provided in §3.5.</b>
<i>Recording</i>	<b>REC</b>	Blue Profile Yellow Profile	<b>REC Requirements applicable to the Blue Profile are provided in §3.6.</b>

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Functional Block Name	Functional Block Code	Applicable SWIM Profiles	References
<i>Shared Object</i>	<b>SO</b>	<b>Blue Profile</b>	<b>SO Requirements applicable to the Blue Profile are provided in §3.2.</b>

**Table 2-1: SWIM-TI Functional Blocks Applicable To Blue Profiles**

## 2.4 User Characteristics

The technical specification of this SWIM profile has been produced according to the SWIM Profile concept, guidelines and design [14]. In this section the SWIM Profile Assertion for the Blue Profile is provided [14] in accordance with SWIM Profile design [14].

### 2.4.1 Blue Profile SWIM Profile Assertion

#### 2.4.1.1 Scope

Certain types of information sharing in ATM take place under a high safety critical context and hence, the requested infrastructure needs to be ready to support demanding requirements. These types of information share demand to be reliable and to deliver the required performance. This set of supported demands is usually identified as “Rock Solid” QoS, meaning that is trustable and non easy breakable.

The Blue Profile (BP) is explicitly targeted at:

- real-time or near real-time uses,
- extremely high availability,
- secured interactions,
- severe constraints with respect to the available resources,
- the technology must be as much as possible supported out-of-the-box, however, and having in mind the demanding requirements, some customization would be applied (and proposed for the technology to evolve and be standardized).

However and depending on the concrete interactions the Blue Profile also targets:

- support for a wide variety of interactions in a flexible manner and that is affordable for the service consumer.
- the interaction must be able to run over an untrusted network infrastructure and must be sufficiently secured.

This ambiguity is due to the initial approach followed for the profile, which implies that different technologies would be used under the same Blue Profile scope for different interactions.

The BP favours primarily availability and provides as much consistency as possible.

#### 2.4.1.2 Rationale

The Blue Profile was conceived as the successor and the continuation of the Step 1 ATC-ATC Profile resulting in a usable specification for iSWIM.

The rationale for rearranging the Step 1 ATC-ATC Profile in order to build the new Blue Profile is mainly the fact that:

- In the current BP, there are two technology stacks (OMG DDS and WS-\* stack based on SOAP/HTTPS).
- BP needs to be described in a similar way as Yellow and Purple profiles.

#### 2.4.1.3 Structure

##### 2.4.1.3.1 Considerations

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#### 2.4.1.3.1.1 Interoperability

The technology interoperability for the BP is first of all based on the use of the DDS stack of standards including bindings to lower layer protocols and on the use of the Web Services stack of standards including bindings to lower layer protocols (as described, BP uses two well differentiated technology stacks depending on the exchange pattern). The Web Services standards are limited by a WS-Interoperability profile defined by the OASIS consortium.

The security solutions are another cornerstone element of technology interoperability of the BP.

Many aspects of the distributed security needs (confidentiality, integrity, authentication and non-repudiation) are targeted to be dealt with using technology based on PKI. Not all security technology and sophistication is needed in all cases.

Specific aspects of the distributed security needs (e.g. authentication) can be dealt with in a federated and/or centralized manner and abstract the client from the PKI technology. Whereas this provides potential added value to the client (e.g. single sign on), it also puts a burden on the client that may not be worth the investment.

#### 2.4.1.3.1.2 Reuse and size

Rearranging Step 1 ATC-ATC to build the BP will bring a better clarity on how to use the concrete set of technologies that BP represents, increasing the ability to reuse it.

#### 2.4.1.3.1.3 Constraints, competing requirements and risks

According to the future regulatory framework, distinct forms of regulation and/or certification will be imposed on technical infrastructure supporting BP.

Even though this would be agreed and established during the definition phase among the participants in this definition, it's foreseen that for those stakeholders only involved in the use of the BP (hence, not involved in the definition phase), some of these regulations/certifications would be imposed to enable their access to the use of the BP.

#### 2.4.1.3.1.4 Modular structure

Technologies, FRs and NFRs included in the BP may be properly reused in several ATM information exchanges and not just for Flight Objects control and sharing services. These opportunity and needs have been inventoried in several service design activities. According to this, the BP structure has been properly designed.

#### 2.4.1.3.1.5 Lifecycle of the SWIM Profile

The BP relies on two stacks of standards: DDS and Web Services.

- The DDS stack of standards is mature on its version 1.2 and standardized by the OMG. DDS stack is being extended with standard security features. In particular, at the time of writing (May 2016), OMG DDS Security Specification (V1.0, June 2014) is available and under standardization process. Mature PKI related technologies are used for that purpose. Particular attention is paid to ensure compatibility between DDS security features and Web Services security features.
- The Web Services stack of standards is very mature. According to Gartner, IBM and Microsoft are satisfied with the status of the Web Services stack and they have finalized their contributions around 2009. No major gaps have been identified in the technology either. The probability of major changes or a high frequency of changes in future is thus very low. There is a ubiquitous support in development frameworks and execution frameworks for the common aspects of the Web Services stack of standards and there are no signs/announcements of major players quitting the technology or parts of the technology. The PKI related technology is very mature. Little or no change is to be expected from this side.

From a FR and NFR point of view, many specifications have been issued in a Bottom-Up manner and have not yet been confirmed by Top-Down specifications. There is a high probability that FR and/or NFR of the BP will be improved.

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The lifecycle for each of the stacks of standards is intended to progress independently to each other.

#### 2.4.1.3.1.6 Design rules

There is no conflict of the scope of the BP with the design rules described in SWIM Profile definition §5.2.4 [14].

#### 2.4.1.3.1.7 Design criteria

The inventoried needs clearly indicate that the BP should support Synchronous Request/Reply and, Publish/Subscribe Push and/or Publish/Subscribe Pull MEPs.

The inventoried needs clearly indicate that business context has strict and/or higher requirements on availability and response time than other business contexts.

The inventoried needs clearly indicate that some business contexts have security requirement that are absent from other business contexts.

#### 2.4.1.3.2 Recommended structure

Considering that such BP technologies may be used also in less demanding ATM information exchanges the BP has been designed in two parts: one mandatory, the Core, and one optional, the FDD (flight data domain). The latter is built on top of the core one adding added-values capabilities and specific NFRs.

The two parts are characterized as follows:

"Core" BP:

- Synchronous Request/Reply MEP relying on WS Stack.
- Publish/Subscribe Push or Publish/Subscribe Pull MEPs relying on DDS Stack
- FR without sophistication
- NFR based on what is commonly available today in a more or less out-of-the-box manner.
- Transport level security for Synchronous Request/Reply MEP
- Message level security for both Publish/Subscribe MEPs
- PKI based security solutions

"FDD" Profile Part for the BP:

- Composed according to "Stacked" method with the core part.
- Added-value FR concerning the Shared Object and in particular concerning its technical instantiation: Flight Object.
- Specific NFR needed for supporting Flight Object sharing and coordination.
- Flight Object specific technical interfaces (both WS and DDS stacks)
- Strictness on SSL/TLS
- Strictness on symmetrical/asymmetrical Keys
- Strictness on security patching policy

#### 2.4.1.4 Conformance Statements

As documented in the requirements guidelines [15], even if grouping of requirements in Profiles, Profile Parts, Roles and Selfstanding Sets reduces the amount of variability, there typically still remains a certain amount of variability within such groups. This variability can be interpreted differently by different involved parties. Different interpretations can lead to situations whereby interoperability is impeded. In order to avoid possibly distinct interpretations and resulting implementations of the technical specification of a SWIM Profile that do not interoperate, clarification is provided through a special kind of requirements that contain criteria to claim conformance for any of

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the groupings (Profiles, Profile Parts, Roles and Selfstanding Sets). In this section conformance requirements (or statements) applicable to this technical specification are provided.

Furthermore, in §3.1.8 additional design constraints concerning identified Profile Parts are provided.

[REQ]

Identifier	REQ-14.01.04-TS-1011.0130
Requirement	A conforming implementation for any role in the Blue Profile shall only make use of requirements expressed in the applicable Blue Profile Profile Parts.
Title	Conformance: all Roles
Status	<In Progress>
Rationale	Clarification on Blue Profile conformance for all Roles.
Category	<MetaData>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP Core><BP FDD>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<Yes>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-1011.0020
Requirement	A conforming implementation for a <Service provider> role shall select one or more Selfstanding Sets of the type <Service Binding> and one or more Selfstanding Sets of the type <Network Binding>
Title	Conformance Service Provider
Status	<In Progress>
Rationale	Clarification on <Service provider> conformance.  Selfstanding Sets of the type <Network Binding> applicable to a given Selfstanding Set of the type <Service Binding> are provided in its REQ Trace table.  A service provider can select what is needed to provide the service
Category	<MetaData>
Validation Method	

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Verification Method	<Review of Design>
Profile Part	<YP Core><YP Security+><YP Advanced><YP Messaging+><BP Core><BP FDD><PP Core><PP Messaging Bridging>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>
Conformance	<Yes>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-1011.0040
Requirement	A conforming implementation for a <Publisher> role shall support one or more Selfstanding Sets of the type <Service Binding> that include the value <Publisher> in the attribute Role and one or more Selfstanding Sets of the type <Network Binding>
Title	Conformance Publisher
Status	<In Progress>
Rationale	Clarification on <Publisher> conformance.  Selfstanding Sets of the type <Network Binding> applicable to a given Selfstanding Set of the type <Service Binding> are provided in its REQ Trace table.  A Publisher can select what is needed to publish.
Category	<MetaData>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><YP Security+><YP Advanced><YP Messaging+><BP Core><BP FDD><PP Core><PP Messaging Bridging>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Publisher>

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Selfstanding set	<Not applicable>
Conformance	<Yes>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-1011.0050
Requirement	A conforming implementation for a <Subscription handler> role shall support one or more Selfstanding Sets of the type <Service Binding> that include the value <Subscription handler> in the attribute Role and one or more Selfstanding Sets of the type <Network Binding>
Title	Conformance Subscription Handler
Status	<In Progress>
Rationale	Clarification on <Subscription handler> conformance.  Selfstanding Sets of the type <Network Binding> applicable to a given Selfstanding Set of the type <Service Binding> are provided in its REQ Trace table.  A subscription handler can select what is needed to handle to subscriptions
Category	<MetaData>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><YP Security+><YP Advanced><YP Messaging+><BP Core><BP FDD><PP Core><PP Messaging Bridging>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<Yes>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

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Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	A/C-57	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-1011.0080
Requirement	A conforming implementation for a <Publication mediator> role shall support one or more Selfstanding Sets of the type <Service Binding> that include the value <Publication mediator> in the attribute Role and all Selfstanding Sets of the type <Network Binding>.
Title	Conformance Publication mediator
Status	<In Progress>
Rationale	Clarification on <Publication mediator> conformance.  Selfstanding Sets of the type <Network Binding> applicable to a given Selfstanding Set of the type <Service Binding> are provided in its REQ Trace table.  A publication mediator can select what is needed to make the publications available
Category	<MetaData>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><YP Security+><YP Advanced><YP Messaging+><BP Core><BP FDD><PP Core><PP Messaging Bridging>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<Yes>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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## 2.5 Operational Scenarios

P14.01.04 Technical Specifications are driven by user and technical Use Cases detailed in collaboration with 14.01.03.

Furthermore, in the table here below the SESAR Enablers relevant for the Blue Profile are provided. The current analysis is based on the latest Data Set available in the SESAR Programme (<https://www.atmmasterplan.eu/data/enablers>), namely version "Data Set 15".

Enablers (Data Set 15) belonging to the SWIM Operational Focus Area (ENB02.01.01) have been analysed to evaluate their relationships (if any) with the SWIM-TI and especially with the SWIM-TI Technical Specifications. In accordance with this analysis, all the requirements have been linked to one or more applicable Enablers. The semantic of this relationship is that the realization of the traced enabler includes the implementation of the concerning SWIM-TI requirements. It has to be noted that in many cases, the scope of the enabler is not fully covered by the SWIM-TI layer. In such cases, the full scope of the enable is covered by both the application and infrastructure layers.

**Table 2-2: SESAR Enablers Relevant for SWIM-TI Blue Profile TS**

Enabler Code	Brief Description	Applicable SWIM Profiles
<b>GGSWIM-10c</b>	Evolution to manage the SWIM infrastructure, including such aspects as access control, information security, quality of service monitoring etc.  This technical enabler considers not only the local supervision but also the supervision of different nodes in the SWIM network.	<b>Blue Profile (BP), SWIM-TI Information Security, SWIM-TI Identity Management, SWIM-TI Supervision (only local supervision)</b>
<b>SWIM-SUPT-06b</b>	Evolution to manage the SWIM infrastructure, including such aspects as access control, information security, quality of service monitoring etc.  This technical enabler considers not only the local supervision but also the supervision of remote technical infrastructure in the SWIM network.	<b>Blue Profile (BP), SWIM-TI Information Security, SWIM-TI Identity Management, SWIM-TI Supervision (only local supervision)</b>
<b>GGSWIM-51c</b>	Ground-ground messaging services that support exchange of messages between any centres (ATCC, Airport ATC, Military, etc).	<b>Blue Profile (BP), SWIM-TI Messaging</b>
<b>GGSWIM-59c</b>	SWIM Technical infrastructure to support transport and message level security, identity management (local and federated) to provide authentication and authorization. Also includes use of public key cryptography (PKI). (Step 3)	<b>Blue Profile (BP), SWIM-TI Information Security, SWIM-TI Identity Management</b>
<b>SWIM-SUPT-03b</b>	SWIM Technical infrastructure to support transport and message level security, identity management (local and federated) to provide authentication and authorization. Also includes use of public key cryptography (PKI). (Step 2)	<b>Blue Profile (BP), SWIM-TI Information Security, SWIM-TI Identity Management</b>
<b>SWIM-APS-05a</b>	Provision and Consumption of Flight Object Sharing services (In line with AIRM and ISRM) covering:  - Flight Object Creation, Distribution, Cancellation, Update and Reception  - Airport DPI contribution to the FO  Stakeholders involved in FO Sharing - ANSPs Civil and Military, Network Manager, Airport	<b>Blue Profile FDD Profile part</b>

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	Operators Civil and Military, Airspace Users (FOC and WOC) (Step 1)	
<b>SWIM-APS-05b</b>	Ground systems evolve to use SWIM enabled services for flight data exchange based. In particular, it relates to integration of the CFMU with the flight object concept and potentially additional systems like TWR.	<b>Blue Profile FDD Profile part</b>
<b>SWIM-INFR-01a</b>	Provision of the additional functionality needed by the individual Stakeholder to support their SWIM applications in the provision/consumption of High Criticality SWIM Service.  This enabler addresses the need for each stakeholder to provide the necessary additional functionality to address the messaging protocol, security, resilience, and other SWIM Profile related aspects for the provision/consumption/exchanging of these High Criticality types of SWIM Services with other stakeholders, by means of Internet Protocol (IP) connectivity via in-common IP network(s). (Step 1)	<b>Blue Profile</b>
<b>SWIM-INFR-01b</b>	Provision of the additional functionality needed by the individual Stakeholder to support their SWIM applications in the provision/consumption of High Criticality SWIM Service.  This enabler addresses the need for each stakeholder to provide the necessary additional functionality to address the messaging protocol, security, resilience, and other SWIM Profile related aspects for the provision/consumption/exchanging of these High Criticality types of SWIM Services with other stakeholders, by means of Internet Protocol (IP) connectivity via in-common IP network(s). (Step 2)	<b>Blue Profile</b>
<b>SWIM-INFR-05a</b>	Provision of the additional functionality needed by the individual Stakeholder to support their SWIM applications provision/consumption of General SWIM Service.  This enabler addresses the need for each stakeholder to provide the necessary additional functionality to address the messaging protocol, security, resilience, and other SWIM Profile related aspects for the provision/consumption/exchange of these general (i.e. not High Criticality) types of SWIM Services with other stakeholders, by means of Internet Protocol (IP) connectivity via in-common IP network(s). (Step 1)	<b>Blue Profile</b>
<b>SWIM-INFR-05b</b>	Provision of the additional functionality needed by the individual Stakeholder to support their SWIM applications provision/consumption of General SWIM Service.  This enabler addresses the need for each stakeholder to provide the necessary additional functionality to address the messaging protocol, security, resilience, and other SWIM Profile related aspects for the provision/consumption/exchange of these general (i.e. not High Criticality) types of SWIM Services with other stakeholders, by means of	<b>Blue Profile</b>

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	Internet Protocol (IP) connectivity via in-common IP network(s). (Step 2)	
<b>ER APP ATC 160</b>	Implement ground-ground flight data exchange between ATC units through the use of Flight Object services as defined by the Flight Object in EUROCAE Ed.133.	<b>Blue Profile FDD Profile part</b>

## 2.6 Functional

### 2.6.1 Functional decomposition

Refer to SWIM-TI TAD §2.1.1 [13].

### 2.6.2 Functional analysis

The functional view of the Blue Profile is provided in Table 2-1. In the table below the sharable functions [13] applicable to this SWIM-TI profile are provided.

Sharable Function	Code	Brief Description
<i>Identity Management</i>	<b>PKI</b>	<b>The SWIM-TI PKI is responsible for signing, emitting and maintaining certificates and revocation lists after verification of requester identity for the benefit of SWIM stakeholders that have not this facility.</b>

**Table 2-3: Brief Description of SWIM-TI Sharable Functions Applicable To Blue Profiles**

Functional, non-functional, applicable standards and interface requirements applicable to the SWIM-TI Blue Profile for the for the Messaging, Security, Supervision, Recording and Sharable Object are provided in §3. The Technical specifications concerning SWIM-TI Identity Management is provided in 14.01.04.D44-002 [15].

## 2.7 Service View

N/A

### 3 SWIM Blue Profile Functional and non-Functional Requirements

In this chapter functional, non-functional and interface requirements are provided. The chapter is organized in several sub-chapters. The first level of decomposition is between requirements that apply to all the technical functions (§3.1) – or in general to the SWIM Node at a whole - and those that are specific to a given technical function (§3.2, §3.3, etc.). The technical functions are from functional and technical views detailed in the SWIM-TI TAD [13].

The second level of decomposition is between functional, non-functional and interface requirements. In particular, each sub-chapter §3.X is structured as follows:

- Functional requirements (§3.X.1).
- Non-functional requirements, which include the following NFRs:
  - Adaptability (§3.X.2), which contains requirements related to growth and expandability.
  - Performance Characteristics (§3.X.3), which contains requirements concerning capacity, accuracy, timing performances, software resource usage, etc..
  - Safety and Security (§3.X.4), which contains security and privacy requirements, including access limitations, data protection and recovery methods; it also includes safety requirements(according to the safety analysis based on respective standards – when available).
  - Maintainability (§3.X.5), which contains quantitative maintainability requirements.
  - Reliability (§3.X.6) which contains requirements concerning the robustness to abnormal operating conditions.
  - Internal Data Requirements (§3.X.7).
  - Design and Construction Constraints (§3.X.8).
  - Interface requirements (§3.X.9), which contains the specification of the interfaces (including external, internal and network bindings).

If in one or more sub-sections of §3.2, §3.3, etc., no requirements concerning a given category (e.g. Design and Construction Constraints) are provided, all those (if any) included in the concerning §3.1 section (e.g. §3.1.8) are applicable. This approach has been adopted to avoid the duplication of (similar) requirements.

The third level of decomposition concerns the NFRs: all the sections have been organized according to NFR characteristics and sub-characteristics defined in the ISO/IEC 25010:2011. For instance, §3.X.3 (Performance Characteristics) has been traced to ISO/IEC 25010:2011 “Performance efficiency” NFR characteristic. According to that, §3.X.3 has been decomposed by providing a section for each ISO/IEC 25010:2011 “Performance efficiency” sub-characteristics (i.e. time behaviour, resource utilization and capacity requirements). The adoption of ISO/IEC 25010:2011 as reference is coherent and consistent with the SWIM Profiles definition [14].

In the TAD [13], the SWIM-TI Security functional and technical views are described. This specification includes all the identified requirements representing the “what” and the “how” concerning those views. This specification is then complemented by the SWIM-TI Identity Management Technical Specification [15]. In accordance with ISO/IEC 25010:2011, for each §3.X sub-chapters, a specific section concerning the security has been provided. Requirements included in those sections are security requirements applicable to the SWIM Node or/and to the specific technical function (e.g. Messaging). The same applies to the SWIM-TI Security for which security requirements have been identified. For instance, the access to SWIM-TI Security function configurations shall be restricted to authorized users only: this is an example of “security requirement” applicable to the SWIM-TI Security technical functions.

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For additional details about SWIM-TI TSs requirements guidelines and the mapping between ISO/IEC 25010:2011 characteristics and TS table of content, refer to [15].

The interface requirements sections section (§3.X.9) has been decomposed according to interface binding kinds described in the TAD [13]. In particular, when applicable, following decomposition is adopted:

- Service Interface bindings, which contains the specifications concerning the “Service Binding”. This kind of binding is external to the SWIM-TI and related to an ATM specific service only.
- Internal Service Interface bindings, which contains the specifications concerning the “Internal Service Binding”. This kind of binding is internal to the SWIM-TI only and related to any such internal service (e.g. PKI services).
- Network Interface bindings, which contains the specifications concerning the “Network Binding”. This kind of binding is external to the SWIM-TI and related to the Network only.
- External Service Interface bindings, which contains the specifications concerning the “External Service Binding”. This kind of binding is external to the SWIM-TI and not a <Service binding> or a <Network binding> (e.g. Time Service).

A given binding of type “Service Binding” or “Internal Service Binding” or “External Service Binding” relies on one specific “Network Binding” (traced in the concerning REQ Trace table). Blue Profile “Service Binding” specifications are provided in §3.3.9.1. “Network Binding” specifications applicable to the Blue Profile “Service Binding” and “Internal Service Binding” are provided in §3.1.9.1.

In the figure below an overview of technical functions and interfaces concerning this technical specification are provided. More precisely the figure and the text provided, concern both the Blue Profile FDD and core profile parts (§2.4.1): SO functions, some advanced supervision functions and Flight Object interfaces are only part of the FDD profile part.

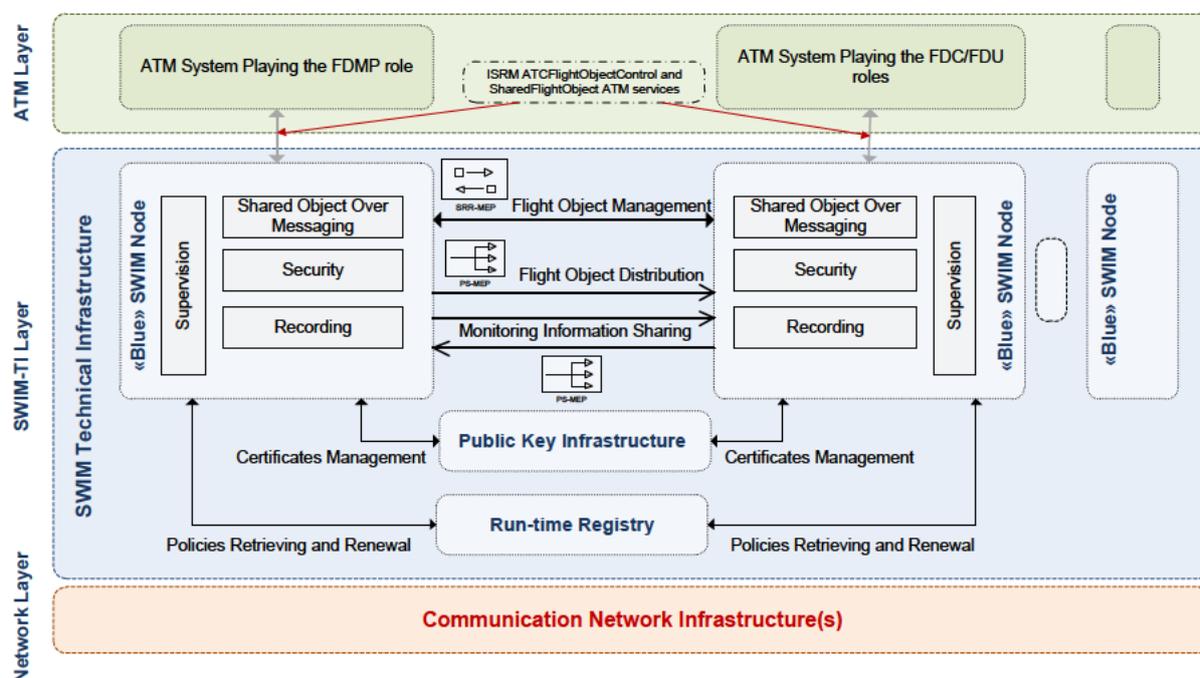


Figure 3-1: Blue Profile Layered Architecture and Interfaces

Currently the SO (and in general the Blue Profile FDD Profile part) is used to enable the consumption and the provisioning of two ATM Specific Services [10]: *ATCFlightObjectControl* and *SharedFlightObject*. The provisioning and consumption architecture specified in the ED-133 and

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adopted in the BP is based on the Service Virtualization Design Pattern and described in §3.3.9. The two SWIM-TI layer interfaces associated to those ATM Specific services are *FlightObjectManagement* and *FlightObjectDistribution*. These interfaces are detailed in §3.3.9 and their relationship with SO is described in §3.2.

Internal Service Interface bindings identified for the Blue Profile are:

- X.509 certificates management, which includes interfaces at SWIM-TI layer provided by SWIM-TI PKIs to allow Information Security related functions to retrieve, renewal, verify, etc. X.509 certificates used by security controls at transport (e.g. TLS/SSL) or message levels. This interface bindings – consumer role - are provided in §3.4.9.1. The source of these bindings is the 14.01.04.D44-002 (SWIM-TI Identity Management Technical Specification).
- Policies Retrieving / Renewal, which is an interface at SWIM-TI layer provided by the SWIM-TI Run-Time Registry(ies) to allow the retrieving/renewal of several kind of policies (messaging policies, security policies, etc.). The source of these bindings is the 14.01.04.D44-003 (SWIM-TI Run-Time Registry Technical Specification).
- Monitoring Information Sharing, which is an interface at SWIM-TI layer aiming at sharing monitoring information between distributed instances of Supervision related functions. This interface is detailed in §3.5.

Furthermore, Communication Network Infrastructure(s) requirements (including interface requirements concerning the interface the Network provides to the SWIM-TI layer) are detailed in §3.1.

It is anticipated that even if the Blue Profile is currently bound to those ATM Specific Services, the technologies (e.g. OMG DDS) and also the patterns (Service Virtualization) could be adopted for other ATM Specific Service instances.

## 3.1 Overall Functional and non-Functional requirements

### 3.1.1 Capabilities

This section includes functional requirements applicable to the SWIM Node at a whole.

[IREQ]

Identifier	REQ-14.01.04-TS-0011.0020
Requirement	The SWIM-TI shall provide a consumer access to services on an access threshold policy basis for overload prevention.
Title	SWIM-TI Performance Overload Protection
Status	<Validated>
Rationale	This requirement prevents a single consumer from using all available resources, allowing other consumers requests to be processed. For instance, the total number of requests for each Service Consumer by a maximum value or a maximum ratio (number of requests within a time window) will be restricted. This requirement covers NIST security controls SC-5 (1) and AC-23.
Category	<Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscriber><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0211.0050
Requirement	The SWIM-TI shall provide policy based resources performance management including: <ul style="list-style-type: none"> <li>- Resource computation policy.</li> <li>- Resource communication policy.</li> <li>- Resource memory utilization policy.</li> <li>- Scheduling policies.</li> </ul>
Title	SWIM-TI performance and scalability

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Status	<Validated>
Rationale	The SWIM-TI resources provide the end-to-end communications for SWIM-TI users. It is possible to provide where necessary to support performance, the policies for resource utilisation and scheduling (Ref: OMG performance QoS characteristics). Each technical infrastructure resource effecting performance can have policy based management to define computation, communication and memory resource utilisation and scheduling. This requirement covers NIST security controls SC-5
Category	<Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscriber><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0011.0040
Requirement	The Service SLA agreements established between service providers and consumers shall be stored in the Registry.
Title	SWIM SLA Policy Management
Status	<In Progress>
Rationale	The ability to store and update service SLAs (e.g. service performance level, availability)
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<SLA><Governance>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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### 3.1.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.1.3.1) time behaviour, (§3.1.3.2) resource utilization and (§3.1.3.3) capacity.

#### *SWIM-TI Performance & Scalability*

The SWIM-TI (SWIM node) performance will be based on measurements and constraints. The basis of the performances is Operational Work Packages, the ISRM, ICOG study, ED-133 OMG QoS Performance patterns and the NFR assessments for the Step 1 EAD B2B Profile and the Step 1 NOP B2B Profile.

- The information from these sources is a set of measurable entities including Latency, Throughput, Efficiency and Demand.
- Some of the available measurements apply to overall performances covering the ATM specific service, the SWIM-TI and the Communication Network e.g. Latency. It will be possible to transpose the SWIM-TI performance from the data.

The SWIM-TI QoS will provide network signalling priority (e.g. best-effort) and payload quality of service identifier (e.g. payload QoS).

SWIM-TI scalability is supporting the growth of demand on services e.g. the number of service consumers and volume of information exchange.

The set of requirements should include only SWIM-TI specific performance/scalability.

#### *Policies*

The SWIM-TI performance and scalability requirements use policies to manage performances. The use of policies is in the use-cases to apply efficiency measures to messages such as the use of compression and message priority. The measures are related to specific rules of the policy and may have a relationship with a particular stakeholder and the context/importance of the message

Further and more specialised performance policies related to efficiency characteristics will be defined later. These later specializations relate for resource-utilization and describe the utilization of computation, communication, and memory resources for network elements.

As a significant contributor to the performance QoS characteristic, the policies will be supporting the performance objectives (functional & non-functional) defined for the SWIM-TI and support the end-users' expectations (often formalized within Service Level Agreements, SLA).

#### 3.1.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.1.3.2 Resource utilization Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

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### 3.1.3.3 Capacity Requirements

In this section capacity requirements are provided.

[REQ]

Identifier	REQ-14.01.04-TS-0211.0020
Requirement	The SWIM-TI shall allow connection of up to 50 System Instances without degrading quality of service.
Title	SWIM-TI Scalability Capacity
Status	<In Progress>
Rationale	No quality of service impacts should be seen nor design changes needed for support of up to 50 SI's usage of the SWIM-TI. A system instance is a stakeholder system in the SoS which provides and consumes data in an ATC context.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0211.0040
Requirement	The maximum number of concurrent consumers per service end point which the SWIM-TI shall support without performance degradation is 50.
Title	SWIM-TI Scalability Capacity
Status	<In Progress>
Rationale	The concurrent consumer maximum per service end-point capacity is based on ICOG study estimates (to exchange FO between ATC centres).
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[IREQ]

Identifier	REQ-14.01.04-TS-0211.0030
Requirement	The SWIM-TI shall support a minimum bandwidth of 100Mbps for data throughput rate.

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Title	SWIM-TI Scalability Capacity
Status	<In Progress>
Rationale	This is based only an on estimate minimum required throughput rate proposed by ICOG study for the Blue Profile. If such throughput rate is required, then the SWIM-TI must be capable to support it. If the Network allows for such rate then, the SWIM-TI should also be able to support this rate.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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### 3.1.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.1.4.1) confidentiality, (§3.1.4.2) integrity, (§3.1.4.3) non-repudiation, (§3.1.4.4) accountability and (§3.1.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.1.4.6) is provided for safety requirements.

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0030
Requirement	The SWIM-TI Administrative Console shall notify user of: + Privacy and security notices consistent with applicable national and international laws, + Date and time of the last log-on.
Title	SWIM-TI administration console notifications
Status	<In Progress>
Rationale	SWIM-TI offers different functions that need to be managed and tuned by human users. For this reason administrative console can be attached to SWIM-TI to control one or more SWIM Functions. Technical details of such consoles depend on implementation choices (e.g. shell or graphical interfaces) but each console shall guarantee a certain level of security and compliance with current regulations. This requirement ensures that SWIM-TI Administration Console offers some necessary notification to the user logging-in into the system. This requirement covers NIST Security Control 800.53 AC-8, AC-9.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Advanced><BP FDD>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0411.0040
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Requirement	The SWIM-TI Administrative Consoles remote connections shall be established using only encrypted VPN connections.
Title	Remote connection for administration console
Status	<In Progress>
Rationale	SWIM-TI provides different functions that need to be managed and tuned by human users. For this reason administrative console can be attached to SWIM-TI to control one or more SWIM Functions. Technical details of such consoles depend on implementation choices (e.g. shell or graphical interfaces) but each console shall guarantee a certain level of security and compliance with current regulations. This requirement ensures that SWIM-TI Administration Console communicating through external networks (e.g. the Internet) enhances confidentiality and integrity over remote connections using encrypted virtual private networks (VPNs). This requirement covers NIST Security Control 800.53, AC-17 and SC-11.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP FDD>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0050
Requirement	The SWIM-TI Administration Console shall obscure typing feedback on screen for authentication password.
Title	SWIM-TI administration console authentication feedback
Status	<Validated>
Rationale	SWIM-TI provides different functions that need to be managed and tuned by human users. For this reason administrative console can be attached to SWIM-TI to control one or more SWIM Functions. Technical details of such consoles depend on implementation choices (e.g. shell or graphical interfaces) but each console shall guarantee a certain level of security and compliance with current regulations.

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	This requirement ensures that SWIM-TI Administration Console hide sensitive authentication information, i.e. password, when it is typed during log-in, preventing password stealing from unauthorized personnel. This requirement covers NIST Security Control 800.53 AC-8, IA-6.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP FDD>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
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<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0060
Requirement	Adopted deployment shall comply with the current national security regulations each of the Countries where it is subjected to those regulations.
Title	SWIM Node compliance with national security regulations
Status	<In Progress>
Rationale	The requirement assures that national security regulation has to be complied with when implementing a SWIM node for a given country. This requirement covers NIST Security Control 800.53 IA-8.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0070
Requirement	The SWIM-TI shall be able to operate at least in two modes of operation: - normal, allowing all functionalities. - safe mode, allowing only mission critical functionalities.
Title	SWIM-TI Operational Modes
Status	<In Progress>
Rationale	Due to the mission critical environment in which SWIM-TI is implied, it is necessary to restrict the types of activities that shall be carried out when certain adverse conditions are met, e.g. reduced communication bandwidth or limited computational resources. In such conditions it is fundamental to guarantee that mission critical functionalities provided by SWIM-TI are kept on by entering in a safe mode of operation for SWIM-TI. This requirement ensures that if a functionality is deemed mission critical it is privileged when shortages of resources occur. This requirement covers the following NIST security controls: CP-12.
Category	<Security><Reliability>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0411.0080
Requirement	The SWIM-TI shall allow to specify mission critical functionalities in order to define a safe mode of operation.
Title	SWIM-TI Safe Mode Definition
Status	<In Progress>
Rationale	Due to the mission critical environment in which SWIM-TI is implied, it is necessary to restrict the types of activities that shall be carried out when certain adverse conditions are met, e.g. reduced communication bandwidth or limited computational resources. In such conditions it is fundamental to guarantee that mission critical functionalities provided by SWIM-TI are kept on by entering in a safe mode of operation for SWIM-TI. This requirement covers the following NIST security controls: CP-12.
Category	<Functional><Security><Reliability>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0411.0090
Requirement	Access control to SWIM-TI management functionalities shall be granted leveraging on RBAC mechanisms.

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Title	Partitioning of functionalities
Status	<In Progress>
Rationale	Management functionalities include, for example, functions necessary to administer databases, network components, workstations, or servers typically require privileged user access. In order to allow access only to authorized users, SWIM-TI shall use an RBAC model to gain access to management functionalities. This requirement covers NIST security control SC-2
Category	<Security><Design>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0100
Requirement	Access control to SWIM-TI security functionalities shall be implemented according to least privilege principle and leveraging on RBAC mechanisms.
Title	Security function isolation
Status	<In Progress>
Rationale	This requirement is necessary to protect the integrity of security related functionalities of SWIM-TI. Security functionalities include, for example, functions necessary to configure PKI services, administer Identity Store and define and enforce Security Policies. These functionalities typically require privileged user access. This requirement covers NIST Security Control SC-3.
Category	<Security><Design>

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Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0411.0110
Requirement	Network connections associated with a communications session shall be terminated at the end of the session or after a policy defined amount of time, to prevent unauthorized access to the system.
Title	Network connection Shutdown
Status	<In Progress>
Rationale	Unneeded network connections are potential security breaches as they may be used by unauthorized bystanders. Termination of such connections minimizes this risk, e.g. when maintenance operations are on-going. This requirement covers NIST security control SC-1.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0115
Requirement	Any software component/OTS used to implement SWIM-TI Technical Specifications shall be accompanied by certificate of authenticity issued by entitled stakeholder.
Title	SWIM-TI software integrity and authenticity
Status	<In Progress>
Rationale	This construction requirement guarantees integrity and authenticity of software implementing SWIM-TI components. This requirement covers the following NIST security controls: SI-7.
Category	<Security><Design>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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### 3.1.4.1 Confidentiality Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.4.2 Integrity Requirements

[IREQ]

Identifier	REQ-14.01.04-TS-0411.0120
Requirement	Application level messages integrity shall not be violated during any processing at SWIM-TI level.
Title	SWIM Security Application Message Integrity Ensuring
Status	<In Progress>
Rationale	The SWIM-TI Security shall maintain the integrity of the user messages when performing security enforcement.
Category	<Security><Design>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.1.4.3 Non-repudiation Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.1.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.1.5.1) modularity, (§3.1.5.2) reusability, (§3.1.5.3) analysability, (§3.1.5.4) modifiability and (§3.1.5.5) testability.

### 3.1.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.1.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.1.6.1) maturity, (§3.1.6.2) availability, (§3.1.6.3) fault tolerance and (§3.1.6.4) recoverability.

### 3.1.6.1 Maturity Requirements

[IREQ]

Identifier	REQ-14.01.04-TS-0611.0010
Requirement	The service provider shall perform a yearly vulnerability assessment consisting of penetration tests. These tests can be performed through a self-assessment. The infrastructure shall provide the necessary tools to perform this self-assessment.
Title	Tools for self-assessment of vulnerability
Status	<In Progress>
Rationale	Service provision in a potentially hostile environment such as Internet, needs a regular check for unprotected vulnerabilities. Note: this requirement covers the Maturity sub-characteristic of Reliability. This requirement covers the following NIST security controls: RA-5.
Category	<Reliability><Security>
Validation Method	
Verification Method	<Analysis><Test>
Profile Part	<YP Core><PP Core><BP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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### 3.1.6.2 Availability Requirements

Availability applies to SWIM-TI node as it is a part of a ATM system. The COTS products used will support High Availability configurations that permit the technical infrastructure (and the ATM services it enables) to maintain an appropriate level of operation.

Furthermore, the technical infrastructure should include capabilities that permit it to scale well, ensuring it can meet growing demand (e.g. increasing number of subscribers, service consumers, messages, message sizes).

### 3.1.6.3 Fault tolerance Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0006.0020
Requirement	The SWIM-TI Fault Tolerance shall provide failure detection and failure isolation to the offending SWIM node when a failure occurs.
Title	SWIM Fault Tolerance assuring of failures detection and isolation
Status	<Validated>
Rationale	The high availability requirement applies to SWIM-TI; and in order to prevent fault propagation, the SWIM-TI fault tolerance capability provides the failure isolation management to an offending SWIM node. It is a consideration for the possible products used to support High Availability configurations. This requirement covers the following NIST security controls: SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0006.0030
Requirement	The SWIM Fault Tolerance shall contain any failure within the SWIM node and shall ensure the failure is not propagated to other SWIM nodes.
Title	SWIM Fault Tolerance assuring of failures isolation and failures propagation avoidance

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Status	<Validated>
Rationale	The high availability requirement applies to SWIM-TI; and in order to prevent fault propagation, the SWIM fault tolerance provides the failure isolation management to an offending SWIM node. It is a consideration for the possible products used to support High Availability configurations. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0006.0040
Requirement	The SWIM High Availability of a SWIM node shall ensure that its SWIM node won't be affected by the recovery or insertion of another SWIM node.
Title	SWIM High Availability assuring isolation of nodes recovery or node insertion.
Status	<Validated>
Rationale	The high availability requirement applies to SWIM-TI; the SWIM high availability ensures that a SWIM node is not affected by recovery or insertion of another. It is a consideration for possible products used to support High Availability configurations
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0006.0001
Requirement	The SWIM Fault Tolerance of a SWIM node should provide replication transparency.
Title	SWIM Fault Tolerance supporting of node replication transparency
Status	<Validated>
Rationale	The high availability requirement applies to SWIM-TI; and in order to provide support for replication transparency, the SWIM fault tolerance is needed. It is a consideration for possible products used to support High Availability configurations. Replication transparency masks the use of a group of mutually behaviourally compatible objects to support an interface. Replication is often used to enhance performance and availability. This requirement covers NIST security controls SI-13 (4)
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0006.0010
Requirement	The SWIM Fault Tolerance of a SWIM node should provide failure transparency by masking to a service consumer the failure and possible

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	recovery.
Title	SWIM Fault Tolerance assuring of failures transparency.
Status	<Validated>
Rationale	The high availability requirement applies to SWIM-TI; and in order to provide support for replication transparency (by masking to a service consumer the failure and possible recovery), the SWIM fault tolerance is provided. It is a consideration for possible products used to support High Availability configurations. Failure transparency masks from an object the failure and possible recovery of other objects (or itself) to enable fault tolerance. When this transparency is provided, the designer can work in an idealized world in which the corresponding class of failures does not occur.  This requirement covers NIST security controls SI-13 (4)
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.1.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

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### 3.1.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



## 3.1.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.1.8.1) co-existence and (§3.1.8.2) interoperability compatibility NFR sub-characteristics, (§3.1.8.3) installability and (§3.1.8.4) replaceability portability NFR sub-characteristics.

[REQ]

Identifier	REQ-14.01.04-TS-0811.0215
Requirement	The Blue Profile shall contain a FDD Profile Part that is composed with Blue Profile Core Profile Part in a Stacked manner.
Title	FDD Profile Part
Status	<In Progress>
Rationale	Clarification on how the Profile Parts can be composed
Category	<Design>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.1.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.8.2 Interoperability Requirements

#### 3.1.8.2.1 Common Time

The Time Service for ATM systems and ATM actors is an enabler for time information related to some of the SWIM-TI operations described in this specification.

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The Time Service information may be absolute time information (e.g. for message processing / propagation time) or may be relative to other time information regardless of the exact time: what matters is the difference of time between two time stamps. Requirements for time can be categorised according to the system needs, e.g.

- **Measurement Time Interval:** Computation of time intervals or distance based on time of signal propagation. Here the required accuracies and precision are more stringent than positional reference time.
- **Communication Signal Synchronization:** Data communication links require measurement of intervals and synchronisation to maintain signal clock. In telecommunications, timing is used to refer to the frequency of the signals or bit rate. Timing requirements are defined for the signal waveforms, bandwidths, types and rates of modulation.
- **Data Processing:** Timing requirements for calculation of processing delays, determining performance delays and metrics

The time reference for aviation is defined to be the Coordinated Universal Time. This time is based on International Atomic Time (TAI) with leap seconds added from time to time as needed to compensate for the Earth's slowing rotation (currently one leap second approximately every 18 months). The leap seconds issue can be an issue if UTC is used for relative time information.

The requirements about the precision on these time information depend on the kind of "ATM application" where it is used. For example, time information for the purpose of ATM application dealing with surveillance data management will need a higher precision than for ATM application dealing with ATS message processing. It is important to remember that an accuracy of 10-3 second on surveillance time information may translate into an accuracy of 34cm for flight at Mach 1 at standard sea level. While the precision of the time information of ATS messages is 30 seconds as the information is stamped as hour and minute.

For the SWIM environment, each SWIM-TI function, all contributing systems and all contributing users must be synchronised to a time reference that satisfies precision requirements.

From this point forward, this can be referred to as the common time reference (CTR).

[IREQ]

Identifier	REQ-14.01.04-TS-0811.0010
Requirement	The SWIM-TI shall use a Common Time Reference (CTR) for non-functional (e.g. Time performances) and functional characteristics where a common time reference is needed locally by SWIM-TI and by federated Security Domains.
Title	SWIM-TI Time Service
Status	<Validated>
Rationale	<p>For the SWIM environment, each SWIM-TI function that uses time information must be synchronised to a time reference that satisfies precision requirements.</p> <p>For instance, security and identity tokens are checked for freshness in order to ensure that they are still within their valid lifetimes. This requires time synchronization between federated security domains. Another security related example where time synchronization is needed is exchanging of audit information.</p> <p>The time synchronization is important across a distributed environment and not only for security purpose. In fact this is also required for the information gathered and exchanged by the SWIM-TI Recording. According to this, Time Service can be seen as a SWIM-TI service used by several Functions and not only by Security. The time synchronization also plays an important role in WS-ReliableMessaging and in DDS.</p> <p>This requirement covers NIST security control AU-8.</p>
Category	<Design><Interoperability><Security>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Service provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.1.8.2.2 Standards

This section introduces, in the scope of the Blue Profile, the standards that are applicable to Interfaces through which interoperability is provided or required with and for participants that are external to the SWIM-TI as well as participants that are internal to the SWIM-TI.

Each technical configuration at the level of such Interfaces that requires adherence to one or more standards, in order to support and promote interoperability, includes these standards by referencing the standards in this section.

[REQ]

Identifier	REQ-14.01.04-TS-0811.0106
Requirement	IETF RFC 2236 Internet Group Management Protocol, Version 2 November 1997 <a href="http://tools.ietf.org/html/rfc2236">http://tools.ietf.org/html/rfc2236</a> shall be supported.
Title	Interoperability standard. IGMPv2
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc2236">http://tools.ietf.org/html/rfc2236</a>
Category	<Interface><Interoperability>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0107
Requirement	IETF RFC 3376 Internet Group Management Protocol, Version 3 October 2002 <a href="http://tools.ietf.org/html/rfc3376">http://tools.ietf.org/html/rfc3376</a> shall be supported.
Title	Interoperability standard. IGMPv3
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc3376">http://tools.ietf.org/html/rfc3376</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>

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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0811.0168
Requirement	IETF RFC 1122 Internet Standard, Requirements for Internet Hosts -- Communication Layers, October 1989 <a href="http://tools.ietf.org/html/rfc1122">http://tools.ietf.org/html/rfc1122</a> shall be supported.
Title	Interoperability standard. Requirements for Internet Hosts -- Communication Layers
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0108
Requirement	IETF RFC 2710 Multicast Listener Discovery (MLD) for IPv6, October 1999 <a href="http://tools.ietf.org/html/rfc2710">http://tools.ietf.org/html/rfc2710</a> shall be supported.

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Title	Interoperability standard. MLDv1
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc2710">http://tools.ietf.org/html/rfc2710</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0109
Requirement	IETF RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6, June 2004 <a href="http://tools.ietf.org/html/rfc3810">http://tools.ietf.org/html/rfc3810</a> shall be supported.
Title	Interoperability standard. MLDv2
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc3810">http://tools.ietf.org/html/rfc3810</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0117
Requirement	OMG The Real-time Publish-Subscribe Wire Protocol DDS Interoperability Wire Protocol Specification January 2009 <a href="http://www.omg.org/spec/ DDSI/2.1/">http://www.omg.org/spec/ DDSI/2.1/</a> shall be supported.
Title	Interoperability standard. DDSI 2.1
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://www.omg.org/spec/ DDSI/2.1/">http://www.omg.org/spec/ DDSI/2.1/</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0164
Requirement	OMG Data Distribution Services, v1.2, January 2007 <a href="http://www.omg.org/spec/ DDS/1.2/">http://www.omg.org/spec/ DDS/1.2/</a> shall be supported.
Title	Interoperability standard. DDS v1.2
Status	<Validated>

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Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://www.omg.org/spec/DDS/1.2/">http://www.omg.org/spec/DDS/1.2/</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0189
Requirement	OMG-IDL: Interface Definition Language (IDL) version 3.5 <a href="http://www.omg.org/spec/IDL35/">http://www.omg.org/spec/IDL35/</a> shall be supported.
Title	Interoperability standard. OMG IDL
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://www.omg.org/spec/IDL35/">http://www.omg.org/spec/IDL35/</a> shall be supported
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A

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<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0191
Requirement	OMG DDS Security Specification V1.0 June 2014 <a href="http://www.omg.org/spec/DDS-SECURITY/1.0/Beta1">http://www.omg.org/spec/DDS-SECURITY/1.0/Beta1</a> shall be supported.
Title	Interoperability standard DDS Security
Status	<In Progress>
Rationale	Compliance with security interoperable protocol for DDS. At the time of writing this TS (May 2016), OMG DDS Security is an adopted OMG BETA specification. That specification is being standardized. BP TS just identifies which DDS Security plugins have to be used and how. Further evolutions of DDS Security BETA, until it will be considered standard, are only expected to fix specification issues that may be raised during the one-year finalization task force.. This limits the impact on the BP TS.
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0183
Requirement	IETF Proposed Standard Source-Specific Multicast for IP August 2006 <a href="http://tools.ietf.org/html/rfc4607">http://tools.ietf.org/html/rfc4607</a> shall be supported.
Title	Interoperability standard. SSM for IP
Status	<Validated>

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Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc4607">http://tools.ietf.org/html/rfc4607</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0184
Requirement	IETF Draft Standard IP Version 6 Addressing Architecture February 2006 <a href="http://tools.ietf.org/html/rfc4291">http://tools.ietf.org/html/rfc4291</a> shall be supported.
Title	Interoperability standard. IPv6 Addressing Architecture
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc4291">http://tools.ietf.org/html/rfc4291</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0811.0185
Requirement	IETF Proposed Standard Unicast-Prefix-based IPv6 Multicast Addresses August 2002 <a href="http://tools.ietf.org/html/rfc3306">http://tools.ietf.org/html/rfc3306</a> shall be supported.
Title	Interoperability standard. IPv6 Addressing Architecture
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. Reference: <a href="http://tools.ietf.org/html/rfc3306">http://tools.ietf.org/html/rfc3306</a>
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0811.0114
Requirement	IETF RFC 6176 Prohibiting Secure Sockets Layer (SSL) Version 2.0 March 2011 <a href="http://tools.ietf.org/html/rfc6176">http://tools.ietf.org/html/rfc6176</a> shall be supported.
Title	Interoperability standard. Prohibit SSL V2.0 RFC 6176
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.

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	This requirement covers NIST security controls SC-13.
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><PP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0811.0275
Requirement	IETF RFC 7568 Deprecating Secure Sockets Layer (SSL) Version 3.0 June 2015 <a href="https://tools.ietf.org/html/rfc7568">https://tools.ietf.org/html/rfc7568</a> shall be supported.
Title	Interoperability standard. Prohibit SSL V3.0 RFC 7568
Status	<Validated>
Rationale	The SSLv3 protocol has been subject to a long series of attacks, both on its key exchange mechanism and on the encryption schemes. In SWIM-TI support of its predecessor is already prohibited according to RFC6176 (see REQ-14.01.04-TS-0811.0114). After the discovery of the Poodle Attack ( <a href="https://www.openssl.org/~bodo/ssl-poodle.pdf">https://www.openssl.org/~bodo/ssl-poodle.pdf</a> ) the use of SSL v3.0 shall be considered deprecated. At the time of writing (June 2016) the IETF RFC 7568 is a PROPOSED STANDARD.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>

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Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0811.0123
Requirement	W3C Recommendation SOAP Message Transmission Optimization Mechanism 25 January 2005 <a href="http://www.w3.org/TR/2005/REC-soap12-mtom-20050125/">http://www.w3.org/TR/2005/REC-soap12-mtom-20050125/</a> shall be supported.
Title	Interoperability standard. MTOM
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><PP Messaging Bridging><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A

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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0101
Requirement	IETF RFC 793 Transmission Control Protocol September 1981 <a href="http://tools.ietf.org/html/rfc793">http://tools.ietf.org/html/rfc793</a> shall be supported.
Title	Interoperability standard TCP RFC 793
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0102
Requirement	IETF RFC 768 User Datagram Protocol 28 August 1980 <a href="http://tools.ietf.org/html/rfc768">http://tools.ietf.org/html/rfc768</a> shall be supported.
Title	Interoperability standard. UDP RFC 768
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0103
Requirement	IETF RFC 791 Internet Protocol September 1981 <a href="http://tools.ietf.org/html/rfc791">http://tools.ietf.org/html/rfc791</a> shall be supported.
Title	Interoperability standard. IPv4 RFC 791
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>

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Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0104
Requirement	IETF RFC 2460 Internet Protocol, Version 6 (IPv6) Specification December 1998 <a href="http://tools.ietf.org/html/rfc2460">http://tools.ietf.org/html/rfc2460</a> shall be supported.
Title	Interoperability standard. IPv6 RFC 2460
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0111
Requirement	IETF RFC 2246 The TLS Protocol Version 1.0 January 1999 <a href="http://tools.ietf.org/html/rfc2246">http://tools.ietf.org/html/rfc2246</a> shall be supported.
Title	Interoperability standard. TLS1.0 RFC 2246
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0115
Requirement	IETF 2616 Hypertext Transfer Protocol -- HTTP/1.1 June 1999 <a href="http://tools.ietf.org/html/rfc2616">http://tools.ietf.org/html/rfc2616</a> shall be supported.
Title	Interoperability standard. HTTP 1.1 RFC 2616
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0116
Requirement	IETF informational RFC 2818 HTTP Over TLS May 2000 <a href="http://tools.ietf.org/html/rfc2818">http://tools.ietf.org/html/rfc2818</a> shall be supported.
Title	Interoperability standard. HTTP over TLS
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.

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Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0121
Requirement	W3C Note, Simple Object Access Protocol (SOAP) 1.1 08 May 2000 <a href="http://www.w3.org/TR/2000/NOTE-SOAP-20000508/">http://www.w3.org/TR/2000/NOTE-SOAP-20000508/</a> shall be supported.
Title	Interoperability standard. SOAP 1.1
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

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[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0124
Requirement	W3C Member Submission SOAP 1.1 Binding for MTOM 1.0 05 April 2006 <a href="http://www.w3.org/Submission/soap11mtom10/">http://www.w3.org/Submission/soap11mtom10/</a> shall be supported.
Title	Interoperability standard. SOAP 1.1 Binding for MTOM
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0122
Requirement	W3C Recommendation SOAP Version 1.2 Part 1: Messaging Framework (Second Edition) 27 April 2007 <a href="http://www.w3.org/TR/soap12-part1/">http://www.w3.org/TR/soap12-part1/</a> shall be supported.  W3C Recommendation SOAP Version 1.2 Part 2: Adjuncts (Second Edition) 27 April 2007 <a href="http://www.w3.org/TR/2007/REC-soap12-part2-20070427/">http://www.w3.org/TR/2007/REC-soap12-part2-20070427/</a> shall be supported.
Title	Interoperability standard. SOAP 1.2
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0125
Requirement	W3C Note Web Services Description Language (WSDL) 1.1 15 March 2001

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	http://www.w3.org/TR/wsd1 shall be supported.
Title	Interoperability standard. WSDL 1.1
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0129
Requirement	OASIS WSI Basic Profile Version 1.2, Final Material, 2010-11-09 <a href="http://ws-i.org/profiles/basicprofile-1.2-2010-11-09.html">http://ws-i.org/profiles/basicprofile-1.2-2010-11-09.html</a> shall be supported in the following manner:  A requirement with a reference to this WSI standard does not imply inclusion of all the standards referenced in this WSI standard. The content of this WSI standard overrides all the standards referenced in this WSI standard in so far these standards are referenced at peer level in the same requirement.
Title	Interoperability standard. WSI BP 1.2
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	

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Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0146
Requirement	W3C Recommendation Extensible Markup Language (XML) 1.0 (Fifth Edition) 26 November 2008 <a href="http://www.w3.org/TR/xml/">http://www.w3.org/TR/xml/</a> shall be supported.
Title	Interoperability standard. XML 1.0
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0147
Requirement	W3C Recommendation Extensible Markup Language (XML) 1.0 (Fourth Edition) 16 August 2006, edited in place 29 September 2006 <a href="http://www.w3.org/TR/2006/REC-xml-20060816/">http://www.w3.org/TR/2006/REC-xml-20060816/</a> shall be supported.
Title	Interoperability standard. XML 1.0
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0153
Requirement	W3C Recommendation XML Schema Part 1: Structures Second Edition 28 October 2004 <a href="http://www.w3.org/TR/xmlschema-1/">http://www.w3.org/TR/xmlschema-1/</a> shall be supported.  W3C Recommendation XML Schema Part 2: Datatypes Second Edition 28 October 2004 <a href="http://www.w3.org/TR/xmlschema-2/">http://www.w3.org/TR/xmlschema-2/</a> shall be supported.
Title	Interoperability standard. XML Schema 1.0
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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Identifier	REQ-14.01.04-TS-0811.0155
Requirement	IETF RFC 6960 X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP June 2013 <a href="http://tools.ietf.org/html/rfc6960">http://tools.ietf.org/html/rfc6960</a> shall be supported.
Title	Interoperability standard. OCSP
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-5 (2.a).
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0156
Requirement	IETF RFC 4510 Proposed Standard, Lightweight Directory Access Protocol (LDAP): Technical Specification Road Map, June 2006 <a href="http://www.rfc-editor.org/rfc/rfc4510.txt">http://www.rfc-editor.org/rfc/rfc4510.txt</a> shall be supported.
Title	Interoperability standard. LDAPv3
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-4 (6).

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Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0157
Requirement	IETF RFC 5280 Proposed Standard, Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile, May 2008 <a href="http://www.rfc-editor.org/rfc/rfc5280.txt">http://www.rfc-editor.org/rfc/rfc5280.txt</a> shall be supported.
Title	Interoperability standard. Internet PKI Certificate and CRL Profile
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-5 (2.a).
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0158
Requirement	IETF RFC 4523 Proposed Standard, Lightweight Directory Access Protocol (LDAP) Schema Definitions for X.509 Certificates, June 2006 <a href="http://www.rfc-editor.org/rfc/rfc4523.txt">http://www.rfc-editor.org/rfc/rfc4523.txt</a> shall be supported.
Title	Interoperability standard. LDAP Schema Definitions for X.509 Certificates
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-4 (6).
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0159
Requirement	IETF RFC 4158 Internet X.509 Public Key Infrastructure: Certification Path Building September 2005 <a href="http://tools.ietf.org/html/rfc4158">http://tools.ietf.org/html/rfc4158</a> shall be supported.
Title	Interoperability standard. Public Key Infrastructure: Certification Path Building
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-5 (2.a).
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0160
Requirement	IETF RFC 5055 Proposed Standard, Server-Based Certificate Validation Protocol (SCVP), December 2007 <a href="http://www.rfc-editor.org/rfc/rfc5055.txt">http://www.rfc-editor.org/rfc/rfc5055.txt</a> shall be supported.
Title	Interoperability standard. SCVP
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control IA-5 (2.a).
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0166
Requirement	IETF RFC 6434, Memo, IPv6 Node Requirements, December 2011 <a href="http://tools.ietf.org/html/rfc6434">http://tools.ietf.org/html/rfc6434</a> shall be supported in the following manner:

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	Reference to this specification is equivalent to inclusion of all protocol functions described in this document.
Title	Interoperability standard. IPv6 Node Requirements
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0169
Requirement	IETF RFC 792 Internet Standard, INTERNET CONTROL MESSAGE PROTOCOL, September 1981 <a href="http://tools.ietf.org/html/rfc792">http://tools.ietf.org/html/rfc792</a> shall be supported.
Title	Interoperability standard. ICMP
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>

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Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0170
Requirement	IETF RFC 950, Internet Standard, Internet Standard Subnetting Procedure, August 1985 <a href="http://tools.ietf.org/html/rfc950">http://tools.ietf.org/html/rfc950</a> shall be supported.
Title	Interoperability standard. Internet Standard Subnetting Procedure
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A

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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0171
Requirement	IETF RFC 6918 Proposed Standard, Formally Deprecating Some ICMPv4 Message Types, April 2013 <a href="http://tools.ietf.org/html/rfc6918">http://tools.ietf.org/html/rfc6918</a> shall be supported.
Title	Interoperability standard. Formally Deprecating Some ICMPv4 Message Types
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0180
Requirement	IETF 5905 Proposed Standard, Network Time Protocol Version 4: Protocol and Algorithms Specification <a href="https://tools.ietf.org/html/rfc5905">https://tools.ietf.org/html/rfc5905</a> shall be supported.
Title	Interoperability standard. NTP
Status	<Validated>
Rationale	Compliance with well-known and widely used standard promotes interoperability.  This requirement covers NIST security control AU-8.
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0230
Requirement	IETF RFC 4033 Domain Name System Security Extensions (DNSSEC) March 2005 <a href="https://tools.ietf.org/html/rfc4033">https://tools.ietf.org/html/rfc4033</a> shall be supported.
Title	Interoperability standard DNSSec
Status	<In Progress>
Rationale	DNSSec is a well-known and widely used standard allowing to perform data origin authentication and data integrity verification on the name/address resolution responses the system receives from authoritative sources. Support for this standard promotes interoperability. This requirement complies with REQ-14.02.02-TS-ACCO.0061 in 14.2.2.D26. This requirement covers NIST security control SC-21.
Category	<Interoperability><Security>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0250
Requirement	Security Requirements for Cryptographic Modules US Federal Information Processing Standard (FIPS 140-2) May 2001 <a href="http://csrc.nist.gov/publications/fips/fips140-2/fips1402.pdf">http://csrc.nist.gov/publications/fips/fips140-2/fips1402.pdf</a> shall be supported.
Title	Interoperability standard. FIPS 140-2
Status	<In Progress>
Rationale	Compliance with well-known and widely used standard promotes interoperability. FIPS 140-2 provides four increasing, qualitative levels of security intended to cover a wide range of potential applications and environments. The security requirements cover areas related to the secure design and implementation of cryptographic modules.
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0811.0260
Requirement	OMG Standard Extensible and Dynamic Topic Types for DDS (DDS-XTypes) V1.1 November 2014 <a href="http://www.omg.org/spec/DDS-XTypes/1.1">http://www.omg.org/spec/DDS-XTypes/1.1</a> shall be supported.
Title	Interoperability standard DDS-Xtypes
Status	<In Progress>
Rationale	Compliance with standard promotes interoperability. This standard allows managing backward and forward compatibility for OMG DDS based information exchange (IDL).
Category	<Interface><Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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[IREQ]

Identifier	REQ-14.01.04-TS-0811.0270
Requirement	Efficient XML Interchange (EXI) Format 1.0 (Second Edition), Recommendation, 11 February 2014. <a href="http://www.w3.org/TR/2014/REC-exi-20140211/">http://www.w3.org/TR/2014/REC-exi-20140211/</a> shall be supported.
Title	Interoperability standard. Efficient XML Interchange (EXI) Format 1.0
Status	<In Progress>
Rationale	Efficient alternative to compression techniques for XML document.
Category	<Interoperability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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### 3.1.8.3 Installability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.1.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.1.9 Interface Requirements

### 3.1.9.1 Network Interface Bindings

This paragraph provides Network Technical interface requirements.

[IREQ]

Identifier	REQ-14.01.04-TS-0910.0201
Requirement	Network Technical Interface shall be instantiated according to the following binding  + IP Unicast IPv4  + Mapping IP to IP  + Security: - Confidentiality: none - Integrity: none - Authenticity: none - Authorization: none - Non-repudiation: none  + Contract: none  + Interoperability: none
Title	IP Unicast IPv4
Status	<Validated>
Rationale	Basic Unicast IPv4 binding
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Network binding>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0910.0010	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0910.0202
Requirement	<p>Network Technical Interface shall be instantiated according to the following binding:</p> <ul style="list-style-type: none"> <li>+ IP Unicast IPv6</li> <li>+ Mapping IP to IP</li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: none</li> <li>- Integrity: none</li> <li>- Authenticity: none</li> <li>- Authorization: none</li> <li>- Non-repudiation: none</li> </ul> </li> </ul>

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	+ Contract: none
	+ Interoperability: none
Title	IP Unicast IPv6
Status	<In Progress>
Rationale	Basic Unicast IPv6 binding
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Network binding>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0914.0020	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0910.0203
Requirement	Network Technical Interface shall be instantiate according to the following binding: + IP Multicast IPv4 + Addressing: a locally unique IP Multicast address + Mapping IP to IP + Security: - Confidentiality: none - Integrity: none - Authenticity: none - Authorization: none - Non-repudiation: none + Contract: none + Interoperability: none
Title	IP Multicast IPv4
Status	<Validated>
Rationale	Basic Multicast IPv4 binding.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Network binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0106	N/A

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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0107	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0910.0204
Requirement	Network Technical Interface shall be instantiate according to the following binding: + PENS IP Multicast IPv6 + Addressing: - The receiving SWIM Node shall use a unique multicast IPv6 address from the range: FF3E::8000:0/97 except FF3E::8000:0 - The transmitting source SWIM Node shall use a unique unicast IPv6 address + Mapping IP to IP + Security: - Confidentiality: none - Integrity: none - Authenticity: none - Authorization: none - Non-repudiation: none + Contract: none + Interoperability: none
Title	PENS IP Multicast IPv6
Status	<In Progress>
Rationale	Basic Multicast IPv6 binding.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Network binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	SWIM-TI	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0108	N/A
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### 3.1.9.2 Network Requirements

In this section network requirements concerning applicable to the Blue Profile are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0910.0001
Requirement	The Communication Network Infrastructure shall provide IPv6 support.
Title	Communication Network Infrastructure IPv6 support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN).  Taking into account the overall context, the large number of interconnected systems, performance and Quality of Service (QoS) the adoption of IPv6 at network level is needed.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>

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<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0910.0040
Requirement	The Communication Network Infrastructure shall provide IPv4 support.
Title	Communication Network Infrastructure IPv4 support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN).  Taking into account the overall context, the large number of interconnected systems generally belonging to several different networks adoption of IPv4 at network level is needed.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0910.0010
Requirement	The Communication Network Infrastructure shall provide IP routing.
Title	Communication Network Infrastructure IP routing support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN). Taking into account the overall context and the large number of interconnected systems generally belonging to several different IP networks the support of IP routing at network level is needed.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0910.0020
Requirement	The Communication Network Infrastructure shall allow to use Transfer Control Protocol (TCP).
Title	Communication Network Infrastructure TCP support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of

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	several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN). Taking into account the overall context and the large number of interconnected systems which need to exchange information in efficient and reliable manner, the support of TCP protocol at network level is needed.
Category	<Interface><Reliability>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0910.0060
Requirement	The Communication Network Infrastructure shall allow to use User Datagram Protocol (UDP).
Title	Communication Network Infrastructure UDP delivery support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN).  Taking into account the overall context, the large number of interconnected systems and the need in some cases (e.g. DDS technology) of transmitting information in time-sensitive manner and also to support the NTP protocol the adoption of UDP protocol is needed.
Category	<Interface><Reliability>
Validation Method	

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Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-6	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0910.0030
Requirement	The Communication Network Infrastructure shall provide encryption capabilities (network level security).
Title	Communication Network Infrastructure encryption support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN). Taking into account the overall context and the sensitivity of the exchanged data for security reasons encryption and decryption techniques support at network level is needed.  This requirement covers NIST security controls SC-8 (1) and SC-11.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-12	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0910.0160
Requirement	The Communication Network Infrastructure shall support unicast over TCP/IP.
Title	Communication Network Infrastructure TCP/IP Unicast support
Status	<In Progress>
Rationale	All the profiles currently defined use the unicast communication between two stakeholders.
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0910.0170
Requirement	The Communication Network Infrastructure shall support unicast through UDP/IP.
Title	Communication Network Infrastructure unicast support through UDP/IP
Status	<In Progress>
Rationale	The Blue Profile uses UDP/IP in OMG DDS multicast distribution as well as unicast communication. The Yellow Profile uses the unicast communication between two participants in a communication. UDP is used for instance with the NTP time protocol.
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0050
Requirement	The Communication Network Infrastructure shall allow to use Internet Group Management Protocol (IGMP).
Title	Communication Network Infrastructure IGMP support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed

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	systems interconnected at network level using a Wide Area Network (WAN) such as PENS (Pan European Network Service). Taking into account the overall context, the large number of interconnected systems generally belonging to several different networks and the need in some cases of the multicast support, the adoption of IGMP protocol is needed.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler<Publisher><Publication
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0070
Requirement	The Communication Network Infrastructure shall provide a bandwidth of 10 Mb/s.
Title	Communication Network Infrastructure bandwidth
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN) such as PENS (Pan European Network Service). Taking into account the overall context, the large number of interconnected systems and the need in some cases (e.g. mission critical application) of transmitting information in time-sensitive manner a bandwidth of at least 10 Mb/s at network level is needed.
Category	<Interface><Performance>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler<Publisher><Publication

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0080
Requirement	The Communication Network Infrastructure shall have less than 100ms of latency.
Title	Communication Network Infrastructure maximum latency
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using a Wide Area Network (WAN) such as PENS (Pan European Network Service). Taking into account the overall context, the large number of interconnected systems and the need in some cases (e.g. mission critical application) of transmitting information in time-sensitive manner a maximum latency of 100 ms at network level has to be ensured. This requirement covers NIST security controls SC-5.
Category	<Interface><Performance><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-8	<Full>
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>

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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0110
Requirement	The Communication Network Infrastructure shall provide a “low” network latency jitter (i.e. Jitter of the maximum network latency 100ms for RR and PS SWIM message exchange patterns).
Title	Communication Network Infrastructure latency jitter
Status	<In Progress>
Rationale	This kind of jitter is deterministic jitter, which includes Data Dependant Jitter. This kind of jitter can be due to characteristics of the transport and topology. ITU-T G.810 classifies jitter frequencies below 10Hz as wander and frequencies at or above 10Hz as jitter. This requirement covers NIST security controls SC-5.
Category	<Interface><Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0115
Requirement	The Communication Network Infrastructure shall support Differentiated Services (DiffServ) with at least six classes of services.
Title	Network Classes of Service (CoS)
Status	<In Progress>
Rationale	ED-133 and then Blue Profile TS define three categories for Request/Response (RR-1, RR-2 and RR-3), and 3 categories for FO Distribution (D-1, D-2 and D-3).
Category	<Interface><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0120
Requirement	The Communication Network Infrastructure latency categories for Request/Response (RR-1, RR-2 and RR-3), and Distribution (D-1, D-2 and D-3) shall be mapped to the specific cases by ICD.
Title	Communication Network Infrastructure Performance Latency
Status	<In Progress>
Rationale	The network latencies only consider the end to end time for messages and data distribution upon the SWIM network (Application + SWIM-TI + network). The mapping of the specific cases to the corresponding categories will be defined in the ICD. An example of possible mapping of categories to specific requests could be: + Requests for co-ordination (RR-1) + Requests for updating a constraint affecting to a downstream system instance (RR-2) + Requests for distribution “for information” to a distant system instance (RR-3) An example of possible mapping of the categories to specific distributions could be: + FO containing co-ordination data with the next downstream system instance (D-1) + FO for updating a constraint affecting to a downstream system instance (D-2) + FO sent only “for information” to a distant system instance (D-3) (Source ED-133).
Category	<Interface><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0130
Requirement	The latency allowed between the request from an IOP stakeholder and the reception of the corresponding response for RR-1 category requests shall be: - 0,4s at 95% full load SWIM network capacity, and - 1,0s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for RR-1 category
Status	<In Progress>
Rationale	Requests are divided into three categories (RR-1, RR-2, and RR-3) regarding the time required between the request from an IOP stakeholder on the network and the reception of the corresponding reply. These latency times are an estimate only and express an order of magnitude of the required Quality of Service. The network latency provided by ED-133 (A.2.3.3) includes the times.
Category	<Performance>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0131
Requirement	The latency allowed between the request from an IOP stakeholder and the reception of the corresponding response for RR-2 category requests shall be: - 1,0s at 95% full load SWIM network capacity, and - 2,5s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for RR-2 category
Status	<In Progress>
Rationale	Requests are divided into three categories (RR-1, RR-2, and RR-3) regarding the time required between the request from an IOP stakeholder on the network and the reception of the corresponding reply. These latency times are an estimate only and express an order of magnitude of the required Quality of Service. The network latency provided by ED-133 (A.2.3.3) includes the times.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0132
Requirement	The latency allowed between the request from an IOP stakeholder and the reception of the corresponding response for RR-3 category requests shall be: - 3,0s at 95% full load SWIM network capacity, and - 6,0s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for RR-3 category
Status	<In Progress>
Rationale	Requests are divided into three categories (RR-1, RR-2, and RR-3) regarding the time required between the request from an IOP stakeholder on the network and the reception of the corresponding reply. These latency times are an estimate only and express an order of magnitude of the required Quality of Service.

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	The network latency provided by ED-133 (A.2.3.3) includes the times.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0140
Requirement	The latency allowed between the publish request from an IOP stakeholder and the reception of a consistent copy in each of the distributed stakeholders for D-1 category requests shall be: - 1,0s at 95% full load SWIM network capacity, and - 2,0s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for D-1 category
Status	<In Progress>
Rationale	Requests are divided into three categories (D-1, D-2, and D-3) regarding the time required between the publishing time from an IOP stakeholder on the network and the reception of a consistent copy in each of the distributed stakeholders. These latency times are an estimate only and express an order of magnitude of the required Quality of Service. Refer to ED-133 A.2.3.3.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0141
Requirement	The latency allowed between the publish request from an IOP stakeholder and the reception of a consistent copy in each of the distributed stakeholders for D-2 category requests shall be: - 2,0s at 95% full load SWIM network capacity, and - 4,0s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for D-2 category.
Status	<In Progress>
Rationale	Requests are divided into three categories (D-1, D-2, and D-3) regarding the time required between the publishing time from an IOP stakeholder on the

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	network and the reception of a consistent copy in each of the distributed stakeholders. These latency times are an estimate only and express an order of magnitude of the required Quality of Service. Refer to ED-133 A.2.3.3.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0810.0142
Requirement	The latency allowed between the publish request from an IOP stakeholder and the reception of a consistent copy in each of the distributed stakeholders for D-3 category requests shall be: - 5,0s at 95% full load SWIM network capacity, and - 8,0s at 99,8% full load SWIM network capacity.
Title	Communication Network Infrastructure Performance Latency for D-3 category
Status	<In Progress>
Rationale	Requests are divided into three categories (D-1, D-2, and D-3) regarding the time required between the publishing time from an IOP stakeholder on the network and the reception of a consistent copy in each of the distributed stakeholders. These latency times are an estimate only and express an order of magnitude of the required Quality of Service. Refer to ED-133 A.2.3.3.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Governance>
Point of view	<ATM service><SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0130
Requirement	The Communication Network Infrastructure shall support Multicast.
Title	Communication Network Infrastructure Multicast support
Status	<In Progress>
Rationale	Every time the information changes in the SWIM-TI it must be published to all the stakeholders. Because the amount of stakeholders and the frequency of the changes, the

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	multicast feature must be used to avoid performance issues. The term "Multicast" is intended as IP multicast.
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0140
Requirement	The Communication Network Infrastructure shall support ASM multicast with IGMPv2.
Title	Communication Network Infrastructure ASM Multicast support
Status	<In Progress>
Rationale	Every time the information changes in the SWIM-TI it must be published to all the stakeholders. Because these stakeholders can change in each moment in time, the Network Infrastructure must be able to reach all the network nodes so ASM is recommended.
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0910.0150
Requirement	The Communication Network Infrastructure should support SSM multicast with IGMPv3.
Title	Communication Network Infrastructure SSM Multicast support
Status	<In Progress>
Rationale	The amount of stakeholders will be increasing over the time due to the new stakeholders added to the SWIM network in the future. The delegates approach suggests the need of using SSM within the Areas to improve the performance. The Dillon's approach derives the need of SSM for the publication of the actual (flight) objects.
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

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Identifier	REQ-14.01.04-TS-0910.0161
Requirement	The WAN network provider shall provide a global addressing scheme for inter-FO Router communication.
Title	Global addressing scheme for inter-FO Router communication.
Status	<In Progress>
Rationale	FO Routers require global addresses within the WAN.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).
Category	<Functional><Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider><Network provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-PENS-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Project>	15.02.10	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

## 3.2 Shared Object Functional and non-Functional Requirements

Shared Object (SO) concept is a generalisation of the Flight Object concept, described in ED-133 [6], which aims at enabling European ATM object sharing between multiple participants based on the Flight Object IOP infrastructure [6].

The SWIM-TI SO enables sharing objects between Participants within the SWIM Technical Infrastructure. Participants collaborate to maintain a global view of the Shared Objects. Every Participant is linked to a SWIM Node, SWIM Nodes are linked to each other. The term “local” refers to the SWIM Node a Participant is linked to. A SO instance can be created, modified (updated), searched, restored and deleted.

The Participants are the applications that share Shared Objects and each Participant has assigned a role per Shared Object instance. The Participant role within the collaboration can be:

- **Manager:** This role reflects the capability of a Participant to update and delete the Shared Object. The Participant who creates the Shared Object instance becomes the first Manager of the Shared Object instance.
- **Contributor:** This role reflects the capability of a Participant to request the Manager to update, search and restore the Shared Object.
- **User:** This role reflects the intention of a Participant to consult (search or restore) shared object data.

A Shared Data Space is the logical space where a Shared Object exists, it includes the Shared Object and the Participants. The SWIM Technical Infrastructure is the physical facility that allows instantiate the different Shared Data Spaces.

The Shared Objects information is distributed within the Shared Data Space. At a specific instant in time, a Participant manages a set of Shared Objects (it is fulfilling the Manager role for those Shared Object) and/or contributes to another set of Shared Objects (it is fulfilling the Contributor role for those Shared Objects).

The SWIM Node of a Manager Participant has to maintain only the Shared Objects managed by its corresponding Participant. A Shared Object may have multiple Managers during its life cycle, but only one Manager at a given time (which is the one that currently stores that Shared Objects). In case a Contributor wants a Shared Object (restore), it has to request that information to the Manager of the Shared Object. Once the SWIM Node on the Manager side receives that request, it is able to publish the information without ask to its Participant. This situation is possible because the SWIM Node has stored locally the Shared Objects.

The list of Contributors and list of Users of a Shared Object may vary in time and constitutes a Distribution List. The Distribution List is provided by the Participant to its SWIM Node. The SWIM Node uses this distribution list to enrout the shared objects publications.

Besides, each SWIM Node within a Shared Data Space knows which Participant is the Manager for each Shared Object, and uses this information to redirect the requests to the Manager. In the ED-133 this is solved thanks to the periodic publication of a summary performed by the SWIM Node of the Manager

As anticipated before, it is assumed the shared object creator is the first manager. Shared Objects Participants coordinate to transfer the Manager responsibility for a Shared Object.

A key uniquely designates a Shared Object instance within the Shared Objects Data Space and the Distribution List is attached to the Shared Object. This key is included as part of the Shared Object and is its unique identifier. When a Shared Object is created by a Participant (its first Manager), the Participant assignes a Key to the Shared Object, that has to be unique, if not an error is arisen. The SWIM Technical Infrastructure uses the key to identify each Shared Object, its Manager and its clusters. The Keys are also included in the summaries.

Two or more participants may agree on changes on a Shared Object by exchanging What-if Shared Object (or What-if Flight Object (WIFO) referring to concrete SO instantiation). A WIFO is an alternative Flight Object that is generated from a real Flight Object and contains the modifications needed to propose an alternative to the real one. The roles introduced above apply also to WIFOs. With the respect to a real FO, a WIFO may contain only a sub-set of FO information (e.g. just those

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proposed to be changed). The identifier distinguishes between a real and a what-if flight object. Requirements provided in this Technical Specification and referring in general to SO or FO apply to both real and what-if flight object. Requirements provided in this Technical Specification and referring explicitly to real or what-if SO/FO apply to real or to what-if flight object respectively.

The Shared Object type is defined by an object model. This model is defined by Shared Object attributes which can be shared, if they are public, or local, if they are private. The shared attributes are included within the Shared Object distribution while the local attributes, as they are private, do not participate in the distribution process.

Currently the SO is used to enable the consumption and the provisioning of two ATM Specific Services [10]: *ATCFlightObjectControl* and *SharedFlightObject*.

According to the TAD the SO uses the MSG functions and communication protocols to enable SO peer-to-peer interactions at SWIM-TI layer according to the two ATM specific services bound to it.

The above is summarized in the figure below showing the three different layers of the architecture and the relationships between SO and MSG. Please consider that for simplicity other FBs (Security, Data Validation, etc.) and components (e.g. PKI) are not depicted in the figure.

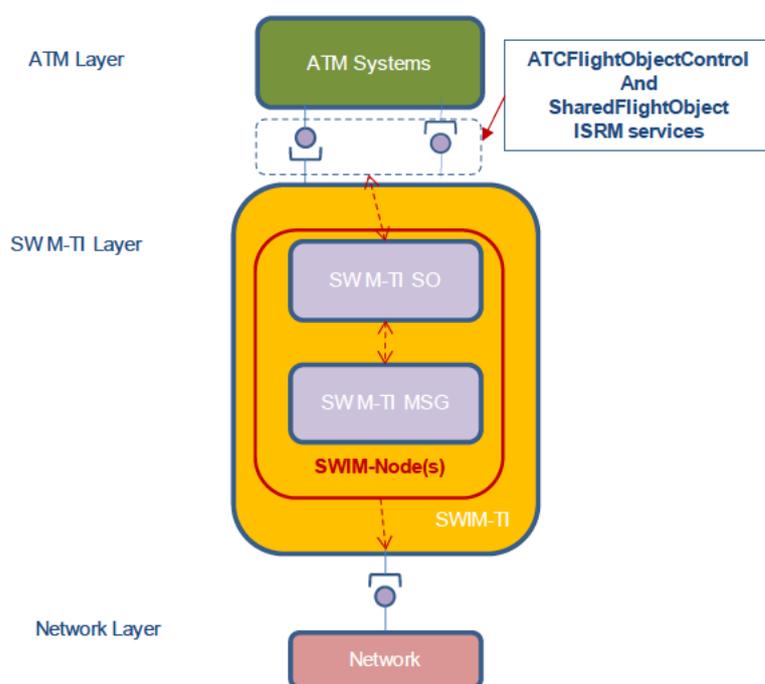


Figure 3-2: SWIM-TI SO in the layered Architecture

In this section functional and non-functional requirements concerning the SO are provided. Messaging specific requirements are provided in §3.3. In particular interface requirements concerning the SO instantiation (the Flight Object) are provided in §3.3.9.

### 3.2.1 Capabilities

This section provides the functional requirements of the SWIM-TI Shared Object derived from TAD functional and technical views.

[REQ]

Identifier	REQ-14.01.04-TS-0009.0005
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Requirement	The Shared Object capability shall allow to assign all participants with a role (Manager , Contributor or User)
Title	Shared Object Participants Roles
Status	<Validated>
Rationale	Assigning participants with roles enables the shared object management and in particular the identification of the manager.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-1	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0020
Requirement	The Shared Object capability shall uniquely identify a Shared Object with a key.
Title	Shared Objects provide a unique identifier
Status	<Validated>
Rationale	Note: The key will be used to create, update, search and delete a shared object.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-3	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0030
Requirement	The Shared Object capability shall define a distribution list for each Shared Object.
Title	Shared Object Distribution List
Status	<Validated>
Rationale	The Shared Objects information is distributed within the Shared Data Space. At a specific instant in time, a Participant manages a set of Shared Objects (it is fulfilling the Manager role for those Shared Object) and/or contributes to another set of Shared Objects (it is fulfilling the Contributor role for those Shared Objects). The list of Contributors and list of Users of a Shared Object may vary in time and constitutes a Distribution List. The Participant provides the Distribution List to its SWIM Node. The SWIM Node uses this distribution list to enrout the shared objects publications.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-4	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0050
Requirement	The Shared Object capability shall define a Manager for each Shared Object.
Title	Shared Object Manager Definition
Status	<Validated>
Rationale	In the Shared Object Capability, the manager role reflects the capability to update and delete the Shared Object. A Participant who creates the Shared Object instance becomes the first Manager of the Shared Object instance. The SWIM Node of a Manager has to maintain only the Shared Objects managed by its corresponding Participant. A Shared Object may have multiple Managers during its life cycle, but only one Manager at a given time (which is the one that currently stores that Shared Objects).
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-16	<Full>
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<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0065
Requirement	The Shared Object capability shall only allow current Manager to update and delete a Shared Object.
Title	Shared Object Manager Eligibility
Status	<Validated>
Rationale	In the Shared Object Capability, the Manager role reflects the capability to update and delete the Shared Object. These capabilities are provided exclusively to the manager of a shared object.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>

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Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-17	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0070
Requirement	The Shared Object capability shall allow the Manager to verify the existence of a Shared Object by its key before updating it.
Title	Shared Object Update
Status	<Validated>
Rationale	A key uniquely designates a Shared Object instance within the Shared Objects Data Space. This key is included as part of the Shared Object and is its unique identifier. Upon creation of a Shared Object by a Participant (its first Manager), the Participant assigns a unique Key to the Shared Object. The SWIM Technical Infrastructure uses the key to identify each Shared Object, its Manager and its clusters. The Keys are also included in the summaries. A shared object Manager identifies a shared object by its key before performing an operation on it such as to update it.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-18	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0071
Requirement	The Shared Object capability shall allow the Manager to verify the existence of a Shared Object by its key before deleting it.
Title	Shared Object Deletion
Status	<Validated>
Rationale	A key uniquely designates a Shared Object instance within the Shared Objects Data Space. This key is included as part of the Shared Object and is its unique identifier. Upon creation of a Shared Object by a Participant (its first Manager), the Participant assigns a unique Key to the Shared Object. The SWIM Technical Infrastructure uses the key to identify each Shared Object, its Manager and its clusters. The Keys are also included in the summaries. A shared object manager identifies a shared object by its key before performing an operation on it such as to delete it.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-24	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0080
Requirement	The Shared Object capability shall allow only the Manager to provide the Shared Object to the rest of the Participants.
Title	Shared Object Distribution to Participants
Status	<Validated>

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Rationale	In the Shared Object Capability, the SWIM Node of a Manager has to maintain only the Shared Objects managed by its corresponding Participant. A Shared Object may have multiple Managers during its life cycle, but only one Manager at a given time (which is the one that currently stores that Shared Objects). In case a Contributor wants a Shared Object (by the SO restore), the participant has to request that information to the Manager of the Shared Object.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-20	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0100
Requirement	The Shared Object capability shall allow any participant to create a new Shared Object.
Title	Shared Object Creation
Status	<Validated>
Rationale	In the Shared Object Capability, it is possible for any participant to create a new shared object. The Participant who creates the Shared Object instance becomes the first Manager of the Shared Object instance
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

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[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-6	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0101
Requirement	The Shared Object capability shall allow a Participant requesting to create a Shared Object to verify that it does not exist by the key.
Title	Shared Object Uniqueness Check for Creation
Status	<Validated>
Rationale	A key uniquely designates a Shared Object instance within the Shared Objects Data Space. This key is included as part of the Shared Object and is its unique identifier. Upon creation of a Shared Object by a Participant (its first Manager), the Participant assigns a unique Key to the Shared Object. The SWIM Technical Infrastructure uses the key to identify each Shared Object, its Manager and its clusters. The Keys are also included in the summaries. A shared object manager checks shared objects for identical key before performing the creation.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-25	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0009.0110
Requirement	The Shared Object capability shall declare as Manager of the Shared Object the Participant that creates it.
Title	Shared Object Manager Creates the Shared Object
Status	<Validated>
Rationale	In the Shared Object Capability, the Participant who creates the Shared Object instance becomes the first Manager of the Shared Object instance.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-21	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0125
Requirement	The Shared Object capability shall make available a Shared Object to all participants within its distribution list (Contributors and Users).
Title	Shared Object Availability
Status	<Validated>
Rationale	The Shared Objects information is distributed within the Shared Data Space. At a specific instant in time, a Participant manages a set of Shared Objects (it is fulfilling the Manager role for those Shared Object) and/or contributes to another set of Shared Objects (it is fulfilling the Contributor role for those Shared Objects). The list of Contributors and list of Users of a Shared Object may vary in time and constitutes a Distribution List. The Participant provides the Distribution List to its SWIM Node. The SWIM Node uses this distribution list to enroute the shared objects publications.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>

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Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-7	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0130
Requirement	The Shared Object capability shall allow a Participant to search for a Shared Object identifier using the Shared Object key.
Title	Shared Object Search
Status	<Validated>
Rationale	The Shared Object Capability includes a key as part of the Shared Object and is its unique identifier. When a Shared Object is created by a Participant (its first Manager), the Participant assigns a Key to the Shared Object, that has to be unique, if not an error is arisen. The SWIM Technical Infrastructure uses the key to identify each Shared Object, its Manager and its clusters A Participant can use the search service to obtain the shared object identifier. By this identifier the Participant is able to retrieve the Shared Object by using the restoreSO service.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-10	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0140
Requirement	The Shared Object capability shall allow Contributors to a Shared Object to request a service on it.
Title	Shared Object Request
Status	<Validated>
Rationale	In the Shared Object Capability the contributor role reflects the capability of a Participant to request the Manager to update, search and restore the Shared Object
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-11	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0150
Requirement	The Shared Object capability shall relay a request for service of Shared Object to its Manager.
Title	Communications to the Shared Object Manager
Status	<Validated>
Rationale	The Shared Object Management Manager role reflects the capability of a Participant to update and delete the Shared Object. A contributor participant shall be allowed to request to a given Manager to

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	perform an action (e.g. Update, Search and Restore) on a share object. The same is also applicable to user participants which shall be allowed to request actions such as Search and Restore.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-12	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0160
Requirement	The Shared Object capability shall allow a Contributor to a Shared Object to request to restore it.
Title	Shared Object Contributor Request
Status	<Validated>
Rationale	The Shared Object Management Contributor role reflects the capability of a Participant to request the Manager to update, search and restore the Shared Object.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-13	<Full>

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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0170
Requirement	The Shared Object capability shall relay a request to restore a Shared Object to the SWIM Node of the Shared Object Manager.
Title	Communications to the Shared Object SWIM Node
Status	<Validated>
Rationale	The Shared Object Management Manager role reflects the capability of a Participant to update and delete the Shared Object. A contributor participant shall be allowed to request to a given Manager to perform an action (e.g. Update, Search and Restore) on a share object. The same is also applicable to user participants which shall be allowed to request actions such as Search and Restore.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-14	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0180
Requirement	The Shared Object capability shall allow the Manager of a Shared Object to

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	publish it after a request for restore.
Title	Shared Object Publishing
Status	<Validated>
Rationale	When a Contributor requests a Shared Object (restore), it has to request the information to the Manager of the Shared Object. Once the SWIM Node on the Manager side receives that request, the manager publishes the information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-15	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0190
Requirement	The Shared Object capability shall ensure that all Participants' SWIM nodes have the same release for a Shared Object.
Title	Shared Object Releases
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is to ensure the same Shared Object releases on Participants SWIM Nodes so that all of the Participants have consistent Shared Object information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

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[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-22	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0200
Requirement	The Shared Object capability shall be able to identify the manager of a Shared Object.
Title	Shared Object Manager Identification
Status	<Validated>
Rationale	In the SWIM Technical Infrastructure, each SWIM Node within a Shared Data Space knows which Participant is the Manager for each Shared Object, and uses this information to redirect the requests to the Manager.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SO-23	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0230
Requirement	A SWIM-TI shared object request priority shall be managed on a policy

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	basis.
Title	SWIM SO Service request Managed by QoS Priority Policy
Status	<Validated>
Rationale	A policy will be used to manage the network signalling priority (QoS) of shared object requests. This requirement covers NIST security controls SC-6. When two or more requests are received <b>with the same flight identifier</b> within a similar timeframe by a FDMP <b>in an overload situation caused by a request on still the same flight identifier</b> , the order that the services are received is dependent on the priority. The priority is an identifier set in the QoS field of the SO request.
Category	<Functional><Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Governance>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0370
Requirement	The Shared Object capability shall ensure the WIMP of a What-If Flight Object stays constant during the lifetime of the WIFO.
Title	WIMP role changes are not permitted
Status	<Validated>
Rationale	The Manager role of a What-If Flight Object cannot change during the lifetime of a WIFO.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

The following set of requirements has been identified in the context of the "Flight Object Overlay" described in the SWIM-TI TAD [13]. It aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).

[REQ]

Identifier	REQ-14.01.04-TS-0009.0300
Requirement	The SWIM-TI shall provide a decentralised and secured overlay network for Flight Objects.

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Title	Decentralized and Secured FO Overlay
Status	<In Progress>
Rationale	This is to meet safety and security requirements for the exchange of FO within the European ATM. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD. This requirement covers NIST security controls CP-7 b and SC-5.
Category	<Functional><Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0305
Requirement	The FO Router shall route FO publications according to the FO Distribution list.
Title	FO routing according to Distribution List
Status	<In Progress>
Rationale	Efficient routing requires knowledge of the distribution list.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0310
Requirement	The SWIM-TI shall setup communication paths between publisher and subscriber FO Nodes according to the FO the distribution list.
Title	Communication Path according to FO Distribution List
Status	<In Progress>
Rationale	Efficient routing requires knowledge of the distribution list.

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	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0315
Requirement	When no ASM is available, one or more FO Brokers shall publish FO Summaries to nodes that are not in the FO distribution list.
Title	FO Broker FO Summary publication
Status	<In Progress>
Rationale	When no ASM is available, nodes not in the distribution list will get the FO Summaries through some designated brokers and will not have to register to each FO node/router. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0320
Requirement	When no ASM is available, one or more FO Brokers shall publish IOP Status of FO nodes to nodes that are not in the FO distribution list.
Title	FO Broker IOP Status publication
Status	<In Progress>
Rationale	When no ASM is available, nodes not in the distribution list will get the FO Status through some designated brokers and will not have to register to each FO node/router.

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	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0325
Requirement	Each FO Router shall relay external FO summary publications to internal FO Nodes.
Title	Routing of FO summaries to internal nodes
Status	<In Progress>
Rationale	FO Summary publications from other FO Nodes/Brokers will go through the FO Router. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0330
Requirement	FO Brokers shall provide a capability for the discovery of FO Routers.
Title	Discovery of FO Routers
Status	<In Progress>
Rationale	FO Brokers are responsible for the global discovery of FO Routers. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide

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	Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0335
Requirement	FO Router shall register supported communication protocols at one or more FO Brokers.
Title	Registration of supported communication protocols
Status	<In Progress>
Rationale	Supported means for inter-FO Router communication will be exchanged via FO Brokers. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0340
Requirement	FO Broker shall be able to match offered with requested inter-domain DDS QoS.
Title	Brokering of DDS QoS
Status	<In Progress>
Rationale	Since FO-Nodes behind FO Routers cannot see each other, the FO Broker will provide the necessary DDS brokering for matching publishers with subscribers. Requirement identified in the context of the "Flight Object Overlay" that aims

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	at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0345
Requirement	To ease bootstrapping, a FO Broker shall enable discovery of other Brokers and DDS participants.
Title	FO Broker Bootstrapping
Status	<In Progress>
Rationale	Discovering at least one FO Broker will help in discovering all the other FO Brokers. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0350
Requirement	The FO Router shall prevent direct visibility between FO Nodes behind different FO routers.
Title	Isolating FO Nodes behind different FO Routers
Status	<In Progress>
Rationale	For scalability, a hierarchical architecture is preferable in order to decrease the exchange of discovery or heartbeat messages between all (DDS) participants.

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	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0009.0360
Requirement	The SWIM-TI recovery shall allow the recovery of all the Shared Objects of interest to a particular participant.
Title	SWIM-TI Recovery
Status	<Validated>
Rationale	The SWIM-TI needs to ensure that Shared Objects can be recovered in case of system restart. This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

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## 3.2.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.2.3.1) time behaviour, (§3.2.3.2) resource utilization and (§3.2.3.3) capacity.

#### 3.2.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.2.3.2 Resource utilization Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.2.3.3 Capacity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.2.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.2.4.1) confidentiality, (§3.2.4.2) integrity, (§3.2.4.3) non-repudiation, (§3.2.4.4) accountability and (§3.2.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.2.4.6) is provided for safety requirements.

### 3.2.4.1 Confidentiality Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.4.2 Integrity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.4.3 Non-repudiation Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.2.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.2.5.1) modularity, (§3.2.5.2) reusability, (§3.2.5.3) analysability, (§3.2.5.4) modifiability and (§3.2.5.5) testability.

### 3.2.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.2.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.2.6.1) maturity, (§3.2.6.2) availability, (§3.2.6.3) fault tolerance and (§3.2.6.4) recoverability.

### 3.2.6.1 Maturity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.6.2 Availability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.6.3 Fault tolerance Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0609.0010
Requirement	Availability of a SWIM-TI Shared Object capability should not be lower than 99.998%
Title	Minimum availability for Shared Object capability
Status	<In Progress>
Rationale	Minimum availability <i>SP-IOP-Minimum_FO_Availability</i> for IOP capability as in ED-133 IOP-REL-20
Category	<Reliability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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### 3.2.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



### 3.2.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



### 3.2.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.2.8.1) co-existence and (§3.2.8.2) interoperability compatibility NFR sub-characteristics, (§3.2.8.3) installability and (§3.2.8.4) replaceability portability NFR sub-characteristics.

[REQ]

Identifier	REQ-14.01.04-TS-0809.0001
Requirement	There shall be no Single Point Of Failure of FO Brokers and FO Routers.
Title	No Single Point of Failure in the FO Overlay
Status	<In Progress>
Rationale	This is to comply with the requirement of a decentralised and secured overall architecture. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). This requirement covers NIST security controls CP-7 b and SC-5. For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler<Publisher><Publication
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0809.0005
Requirement	FO Router communication shall rely on unicast communication when no PIM-SM multicasting is available.
Title	FO Router unicast support
Status	<In Progress>
Rationale	When no multicast is available, inter-FO router communication shall rely on unicast communication. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler<Publisher><Publication
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0809.0010
Requirement	There shall be no direct communication between FO Nodes behind different FO Routers.
Title	No direct communication between FO Nodes behind different FO Routers
Status	<In Progress>
Rationale	All communications (publication/subscription) with external FO Nodes go through the FO Router. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For further details, architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

### 3.2.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.8.2 Interoperability Requirements

Refer to interoperability requirements in §3.1.8.

### 3.2.8.3 Installability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.2.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

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### 3.2.9 Interface Requirements

As already anticipated above, the SO uses the Messaging functions and communication protocols to enable SO peer-to-peer interactions at SWIM-TI layer. According to that, the interface between the SO and the MSG are in local scope of the SWIM Node and not impacting interoperability: therefore they are not specified.

All the details concerning the interoperability at interface level are provided in the Messaging interfaces requirements §3.3.9.

## 3.3 Messaging Functional and non-Functional Requirements

In this chapter functional and non-functional requirements concerning the SWIM-TI Messaging are provided. These requirements have been specified according to SWIM-TI Technical Use Case and latest TAD.

### 3.3.1 Capabilities

This section provides the functional requirements of the SWIM-TI Messaging derived from TAD functional and technical views.

#### 3.3.1.1 Distribution

In this section messages/data distribution functional requirements applicable to the Blue Profile are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0350
Requirement	The SWIM-TI Messaging shall provide the Synchronous Request/Reply Message Exchange Pattern (SRR-MEP).
Title	Support of Synchronous Request/Reply Message Exchange Pattern
Status	<Validated>
Rationale	Distribution function is the core function of the SWIM-TI Messaging. The Distribution function is realized via the support to specific Message Exchange Patterns (MEPs). The Synchronous Request/Reply or Request/Response is one of the identified MEPs enabling the exchanging of information between ATM participants. An unique identifier of this MEP has been identified: SRR-MEP. The SRR-MEP is characterized as follows: <ul style="list-style-type: none"> <li>- Conversation direction: 2 way (Consumer -&gt; Provider -&gt; Consumer)</li> <li>- Cardinality: 1-1</li> <li>- Decoupling: No Time decoupling; No Space decoupling, No Synchronization decoupling for consumer.</li> </ul>
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0400
Requirement	The SWIM-TI Messaging shall provide the Push style Publish/Subscribe Message Exchange Pattern (PSPUSH-MEP).
Title	Support of Publish/Subscribe Push Message Exchange Pattern
Status	<Validated>
Rationale	Distribution function is the core function of the SWIM-TI Messaging. The Distribution function is realized via the support to specific Message Exchange Patterns (MEPs). The Publish/Subscribe Push is one of the identified MEPs needed to enable the exchanging of information between ATM participants. An unique identifier of this MEP has been identified: PSPUSH-MEP. The PSPUSH-MEP is characterized as follows: - Conversation direction: 1 way (Publisher -> Consumer) - Cardinality: many-many - Decoupling: Time decoupling; Space decoupling, Synchronization decoupling The main difference with respect to the other MEPs is the support of full time, space and synchronization decoupling.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0410
Requirement	The SWIM-TI Messaging shall provide the Pull style Publish/Subscribe Message Exchange Pattern (PSPULL-MEP).
Title	Support of Publish/Subscribe Pull Message Exchange Pattern
Status	<Validated>
Rationale	<p>Distribution function is the core function of the SWIM-TI Messaging. The Distribution function is realized via the support to specific Message Exchange Patterns (MEPs).</p> <p>The Publish/Subscribe Pull is one of the identified MEPs needed to enable the exchanging of information between ATM participants.</p> <p>An unique identifier of this MEP has been identified: PSPULL-MEP.</p> <p>The PSPULL-MEP is characterized as follows:</p> <ul style="list-style-type: none"> <li>- Conversation direction: a composition of 1 way (Publisher -&gt; Consumer) and SRR-MEP; the latter is used by the consumer to retrieve the information/message. This is the difference with respect to the PSPUSH-MEP.</li> <li>- Cardinality: many-many</li> <li>- Decoupling: Time decoupling; Space decoupling, Synchronization decoupling</li> </ul> <p>The main difference with respect to the other MEPs is the support of full time, space and synchronization decoupling.</p> <p>For what concerns the OPULL-MEP, it is important to note that in this case the subscriber retrieves (by SRR-MEP) the messages from an intermediary and not directly from the message source as happens for OPULL-MEP.</p>
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0420
Requirement	The SWIM-TI Messaging shall provide the Topic based Push style Publish/Subscribe Message Exchange Pattern (TPSPUSH-MEP).
Title	Support of Topic Based Publish/Subscribe Push Message Exchange Pattern
Status	<Validated>
Rationale	Distribution function is the core function of the SWIM-TI Messaging. The Distribution function is realized via the support to specific Message Exchange Patterns (MEPs). Push/Pull Publish/Subscribe MEPs can be further specialized as follows: - Topic based P/S, - Type based P/S, - Content based P/S, - Channel based P/S. The Topic based Publish/Subscribe Push is one of the identified MEPs needed to enable the exchanging of information between ATM participants. An unique identifier of this MEP has been identified: TPSPUSH-MEP.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0430
Requirement	The SWIM-TI Messaging shall provide the Topic Based Pull style Publish/Subscribe Message Exchange Pattern (TPSPULL-MEP).
Title	Support of Topic Based Publish/Subscribe Pull Message Exchange Pattern
Status	<Validated>
Rationale	Distribution function is the core function of the SWIM-TI Messaging. The Distribution function is realized via the support to specific Message Exchange Patterns (MEPs). Push/Pull Publish/Subscribe MEPs can be further specialized as follows: - Topic based P/S, - Type based P/S, - Content based P/S, - Channel based P/S. The Topic Based Publish/Subscribe Pull is one of the identified MEPs needed to enable the exchanging of information between ATM participants. An unique identifier of this MEP has been identified: TPSPULL-MEP.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<ATMS Requirement>	REQ-14.01.04-TS-0001.0410	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0621
Requirement	The SWIM-TI Messaging TPSPULL-MEP shall allow subscribers to unsubscribe a subscription.
Title	Unsubscribe for TPSPULL-MEP
Status	<Validated>
Rationale	When messages are no longer needed, it must be possible to stop all activity related to a subscription and remove the subscription.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0631
Requirement	The SWIM-TI Messaging TPSPUSH-MEP shall allow subscribers to unsubscribe a subscription.
Title	Unsubscribe for TPSPUSH-MEP
Status	<Validated>
Rationale	When messages are no longer needed, it must be possible to stop all activity related to a subscription and remove the subscription.
Category	<Functional>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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### 3.3.1.2 Filtering

In this section message filtering functional requirements applicable to the Blue Profile are provided.

[REQ]

Identifier	REQ-14.01.04-TS-0001.0500
Requirement	The SWIM-TI Messaging Push style Topic based Publish/Subscribe Message Exchange Pattern MEP(TPSPUSH-MEP) shall provide topic-based filtering.
Title	Support of Topic-based filtering in Push style Topic Based Publish/Subscribe Message Exchange Pattern
Status	<In Progress>
Rationale	Filtering for TPSPUSH-MEP
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0510
Requirement	The SWIM-TI Messaging Push style Topic based Publish/Subscribe Message Exchange Pattern MEP(TPSPUSH-MEP) shall provide content-based filtering.
Title	Support of Content-based filtering in Push style Topic Based Publish/Subscribe Message Exchange Pattern
Status	<In Progress>
Rationale	Filtering for TPSPUSH-MEP

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Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0520
Requirement	The SWIM-TI Messaging Pull style Topic Based Publish/Subscribe Message Exchange Pattern MEP(TPSPULL-MEP) shall provide topic-based filtering.
Title	Support of Topic-based filtering in Pull style Topic Based Publish/Subscribe Message Exchange Pattern
Status	<In Progress>
Rationale	Filtering for TPSPULL-MEP
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0530
Requirement	The SWIM-TI Messaging Pull style Topic Based Publish/Subscribe Message Exchange Pattern MEP(TPSPULL-MEP) shall provide content-based filtering.
Title	Support of Content-based filtering in Pull style Topic Based Publish/Subscribe Message Exchange Pattern
Status	<In Progress>
Rationale	Filtering for TPSPULL-MEP
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0001.0620
Requirement	The SWIM-TI Messaging TPSPULL-MEP shall allow subscribers to remove active filtering criteria.
Title	Filtering Criteria Removal after subscription for TPSPULL-MEP
Status	<In Progress>
Rationale	Removal consists in deactivating any filtering criteria activated at subscription time or after.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0001.0630
Requirement	The SWIM-TI Messaging TPSPUSH-MEP shall allow subscribers to remove active filtering criteria.
Title	Filtering Criteria Removal after subscription for TPSPUSH-MEP
Status	<In Progress>

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Rationale	Removal consists in deactivating any filtering criteria activated at subscription time or after.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0505
Requirement	The SWIM-TI Messaging shall favour filtering at source level.
Title	Filtering at source level
Status	<In Progress>
Rationale	It is more efficient to compress a data sample then fragment it for transfer on the network. The reverse may generate too many small packets on the network. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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### 3.3.1.3 Data Management

In this section Data Management functional requirements applicable to the Blue Profile are provided.

[REQ]

Identifier	REQ-14.01.04-TS-0001.0670
Requirement	The SWIM-TI Messaging shall provide data encapsulation mechanism to adapt the data format while keeping the original data format.
Title	SWIM-TI Messaging support of data encapsulation
Status	<In Progress>
Rationale	<p>The SWIM-TI Messaging may need to change the data format for various reasons such as a reduction of the footprint in low bandwidth environments or technical incompatibility between the data format in use and the limitations of the messaging protocol.</p> <p>In case the SWIM-TI Messaging cannot or is not allowed to perform a transformation of the data format, the existing data format can be encapsulated into another data format that is suitable.</p> <p>Such encapsulation can be performed multiple times in succession.</p> <p>The original data format will remain present in the payload and can be accessed through a decapsulation.</p> <p>This is in particular the case for Purple Profile where both datalink and aircraft technological constraints apply.</p> <p>In case of Blue Profile this mechanism is used to in combination with data enrichment.</p>
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0312
Requirement	The SWIM-TI Messaging shall enable information exchange represented according to the Flight Object Information model.
Title	SWIM-TI Messaging support of Flight Object Structured Information Models
Status	<Validated>
Rationale	SWIM-TI Messaging enables the ATM information/services sharing between ATM systems including ground systems and the aircraft. For specific kinds of ATM data structured information models and those models will be also used by the SWIM-TI Messaging to share concerning ATM data/services. Further details concerning how these information models are related to SWIM-TI layer are provided in SWIM-TI Technical Specification §3.2. This requirement specifies the support of the Flight Object Information Model being detailed in SESAR starting from EUROCAE document “ED-133 Flight Object Interoperability Specification”.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0302
Requirement	The SWIM-TI Messaging shall permit exchanging of message content that uses XML format.
Title	SWIM-TI Messaging Supported Data Representation
Status	<Validated>
Rationale	For universality: to be able to support “any” service, SWIM-TI MSG shall permit exchange of data of any type, including textual (e.g. ASCII, XML, or Unicode)

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	and binary (e.g. graphical information, or arbitrary binary data). Further details concerning how these data representations are related to SWIM-TI messaging layer are provided in SWIM-TI Technical Specification §3.2.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	09.19-D03-150	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0303
Requirement	The SWIM-TI Messaging shall permit exchanging of message content that uses Binary format.
Title	SWIM-TI Messaging Supported Data Representation
Status	<In Progress>
Rationale	For universality: to be able to support “any” service, SWIM-TI MSG shall permit exchange of data of any type, including textual (e.g. ASCII, XML, or Unicode) and binary (e.g. graphical information, or arbitrary binary data). Further details concerning how these data representations are related to SWIM-TI messaging layer are provided in SWIM-TI Technical Specification §3.2.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>

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Profile Part	<YP Core><PP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	09.19-D03-150	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0304
Requirement	The SWIM-TI Messaging shall permit exchanging of message content that uses Base64 format.
Title	SWIM-TI Messaging Supported Data Representation
Status	<Validated>
Rationale	For universality: to be able to support “any” service, SWIM-TI MSG shall permit exchange of data of any type, including textual (e.g. ASCII, XML, or Unicode) and binary (e.g. graphical information, or arbitrary binary data). Further details concerning how these data representations are related to SWIM-TI messaging layer are provided in SWIM-TI Technical Specification §3.2.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	09.19-D03-150	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0021
Requirement	The SWIM-TI Messaging shall allow data compression.
Title	Support of Data Compression Techniques
Status	<Validated>
Rationale	<p>The SWIM-TI Messaging is used to enable data exchanges among geographically distributed entities (wide area deployment). Taking into account this deployment view, performance bottlenecks due to sizing aspects (e.g. number of entities, exchange rate, data size, etc.) could impact the overall messaging performance thus it is required to allow data compression techniques.</p> <p>Data compression can be realised in more than 1 one way and at distinct levels. For example, the ATM application layer can provide a compressed payload to the SWIM-TI. The SWIM-TI itself can also provide data compression. The SWIM-TI shall not prevent the use of data compression inside the SWIM-TI nor compression performed at the ATM application layer. Efficient XML Interchange (EXI) is also to be considered for XML-based messages.</p>
Category	<Functional><Performance>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0855
Requirement	The SWIM-TI Messaging Data Validation shall be configurable at both service and message type levels.
Title	Configurability of SWIM-TI Messaging Data Validation at both service and message type levels.
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>

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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0860
Requirement	The SWIM-TI Messaging Data Validation configuration shall be policy based.
Title	Policy based configuration of SWIM-TI Messaging Data Validation
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>

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<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0865
Requirement	The SWIM-TI Messaging Data Validation shall be able to verify the validity of messages against the interoperability standards of the applicable binding.
Title	Interoperability standards validity checks
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0875
Requirement	The SWIM-TI Messaging Data Validation shall reject incoming messages non-compliant with protocol standards defined in the supported bindings.
Title	Interoperability standards validity checks
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information in the SWIM-TI. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0880
Requirement	The SWIM-TI Messaging Data Validation shall check the incoming message payload according to the messaging policy.
Title	Messaging policy enforcement
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance

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	of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0885
Requirement	The SWIM-TI Messaging Data Validation shall be able to verify the validity of XML messages against associated XML Schema (XSD).
Title	XML Schema aware operations
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement provides the list of interoperability standards for which the validity checks are enforced.

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Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0001.0890
Requirement	The SWIM-TI Messaging Data Validation shall be able to verify the validity of IDL messages against related IDL type definition.
Title	IDL aware operations
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement provides the list of interoperability standards for which the validity checks are enforced.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication

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	consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0895
Requirement	The SWIM-TI Messaging Data Validation shall be able to access XML messages application data elements and attributes.
Title	XML Schema aware operation
Status	<In Progress>
Rationale	Data Validation function aims at providing the ability to check for conformance of information being passed through the SWIM-TI. The conformance conditions are expressed in form of well-defined policy assertions assigned to the basic service interface specification. The policies can be defined (configured) at service or message type levels. Possible policies are those aiming at checking the conformance of message structures with relevant interoperability standards. This requirement aims at allowing, when needed and possible (when one or more XML parts are not encrypted), the Messaging to access XML application data for validation purposes.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0901
Requirement	The SWIM-TI Messaging Data Management shall be able to transform XML messages to another format.
Title	XML Schema aware operations
Status	<In Progress>
Rationale	Generic functional requirement concerning messages transformation (when required, possible and allowed).
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0905
Requirement	The SWIM-TI Messaging policy shall include URLs of supported service WSDLs.
Title	WSDL-related policy assertion
Status	<In Progress>
Rationale	Data Validation part of SWIM-TI messaging policy is made of assertions. WSDL policy assertions are applicable to BP, YP and PP Web Services. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Messaging Bridging>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0910
Requirement	The SWIM-TI Messaging policy shall include URLs of application-level-messages schematron rules.
Title	XML-related policy assertion
Status	<In Progress>
Rationale	Data Validation part of SWIM-TI messaging policy is made of assertions. Schematron-rule policy assertions are applicable to BP FDD, YP and PP application messages expressed in XML.

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	This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0920
Requirement	The SWIM-TI Messaging policy shall include URLs of the application-level-messages XSDs.
Title	XSD-related policy assertion
Status	<In Progress>
Rationale	Data Validation part of SWIM-TI messaging policy is made of assertions. XSD policy assertions are applicable to BP for XML-based attributes of DDS Topics, YP and PP XML-based message content. This requirement covers NIST security controls SI-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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### 3.3.1.4 Messages Routing

In this section Message Routing functional requirements applicable to the Blue Profile are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0211
Requirement	The SWIM-TI Messaging shall provide, in the case of Request/Response interaction, the capability to perform a predefined number of automatic request retries in case no response is received within predefined time duration.
Title	Enable request retries in Request/Response when no response within a time period
Status	<Validated>
Rationale	To handle network failures and to provide some transparency during failover; it is necessary to support automatic request retries. This requirement contributes to support ED-133 IOP-FSM-142-MDW.  This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0220
Requirement	When supported by underlying transport protocol, the SWIM-TI Messaging shall support request identification and include in all the retries the same

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	request identification.
Title	Reuse same request identification during a request retry in a Request/Response interaction.
Status	<In Progress>
Rationale	When it is needed to enforce at most once semantics, request issuers should be able to provide some identification to the request.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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Identifier	REQ-14.01.04-TS-0001.0242		
Requirement	SWIM-TI Message Routing shall allow routing by enforcing Routing Policy.		
	Policy Based SWIM-TI Message Routing		
	<In Progress>		
	Not all the information exchanged through the SWIM-TI may need the same handling by the SWIM-TI Message Routing.		
	<Design><Functional>		
	<Review of Design><Test>		
	<YP Security+><BP Core><PP Core>		
	<Governance>		
	<SWIM-TI provider>		
	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>		
	<Not applicable>		
	<No>		
	<No>		
	<Conformance testable><Interoperability testable>		
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A

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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0001.0241
Requirement	When for a given interaction based on SRR-MEP alternative endpoints are defined, the SWIM-TI Messaging shall reroute consumption request to one of the alternative endpoint upon timeout expiration.
Title	Retry request on an alternative endpoint in a SRR-MEP based interaction.
Status	<In Progress>
Rationale	When transport protocols allow definition of multiple service endpoints, automatic retry on another endpoint following a failure to send request to an endpoint provides failure transparency. This requirement covers NIST security controls CP-7 b and SC-5.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0001.0251
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Requirement	When for a given interaction based on SRR-MEP the routing to alternative endpoints upon timeout expiration is required, the SWIM-TI Messaging shall try all the endpoints before abandoning consumption request sending.
Title	Retry request on all alternative endpoints in a SRR-MEP based interaction
Status	<In Progress>
Rationale	When transport protocols allow definition of multiple service endpoints, automatic retries on all the service endpoints should be tried before giving up in order to provide failure transparency. This requirement requires that all the available endpoints have to be tried before returning an error message to the consuming system. This requirement covers NIST security controls CP-7 b and SC-5.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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### 3.3.1.5 Protocol Bridge

There are not requirements applicable to the Blue Profile.



### 3.3.1.6 Other Functional Requirements

In this section additional functional requirements are provided.

Identifier	REQ-14.01.04-TS-0013.0560
Requirement	The SWIM-TI Messaging shall be able to enforce the following messaging policies: + Compression Policy; + Quality of Service Policy.

[IREQ]

Identifier	REQ-14.01.04-TS-0001.0033
Requirement	The SWIM-TI Messaging shall allow to configure data compression on a Compression Policy basis.
Title	Support of Policy based Compression Configurability
Status	<Validated>
Rationale	SWIM-TI Messaging should support data compression techniques. Taking into account that this capability is used in different contexts and scenarios having different requirements, it is needed that, when supported, the data compression is policy based. Compression algorithm may or may not only be used for bulk data distributions (e.g. Push messaging or Pub/Sub) to reduce the impact on performance. A message size multiplies by encryption security measures. This triggers in turn the need for a compression algorithm for message exchange even for non-bulk data. It will be needed to compress SOAP messages that are larger than a threshold (by a configurable parameter with a default value); for smaller messages the overhead by compression (i.e. CPU time spent) would be too large. (Refer to Eurocontrol 14.01.02 D04 Ground/Ground Technology & Service Option Survey Step2 for some examples). EXI is also an alternative for XML documents whatever their size. EXI is mutually exclusive with the use of ASN.1 in Purple Profile. In particular in the Purple Profile ITU XER (ITU-T X.694   ISO/IEC 8825-5) is used as reference to map XSD and ASN.1.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A

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<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0041
Requirement	The SWIM-TI Messaging shall support reliable transport layers.
Title	Support of Reliable Transport Layers
Status	<Validated>
Rationale	<p>The SWIM-TI Messaging is used to enable data exchanges among geographical distributed entities (wide area deployment). Taking into account this and also that in this deployment data loss at transport layer may occur, it is required to support reliable technologies at transport layer.</p> <p>Supported reliable transports include TCP (Transmission Control Protocol) and DDSI (DDS Interoperability Wire Protocol). The DDSI transport is used only in the Blue Profile.</p>
Category	<Functional><Performance>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0052
Requirement	The SWIM-TI Messaging shall allow to configure Quality of Service on a Quality of Services Policy basis.
Title	Support of Policy based QoS Configurability
Status	<Validated>
Rationale	The SWIM-TI Messaging is used to enable the exchanging of different types of data with different QoS requirements. For instance, for some data could be required a reliable delivery whereas the best-effort delivery could be enough for other types of data. Other examples: . The type of keys to use (shared secret key or public key) , the strength of the keys to use (number of bits), and the algorithms to use to sign may need to be configured differently depending on the type of service . Retries may have to be performed in case of timeout in which case the number of retries, the timeout values, etc need to be configured differently depending on the type service Taking into account these considerations, it is required that the SWIM-TI Messaging shall allow to configure properly such QoSs.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Publication consumer><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0091
Requirement	The SWIM-TI Messaging shall allow durable subscriptions.
Title	Support of Durable Subscription functionality
Status	<Validated>
Rationale	<p>The Messaging provides durable subscription mechanisms. A durable subscription mechanism saves messages for an inactive subscriber and after the disconnected period, it delivers these saved messages when the subscriber is reconnected. In this way, a subscriber will not lose any messages which are published while it was disconnected. Note that it has no effect on the behaviour of the subscriber or the messaging system while the subscriber is connected. A connected subscriber acts the same whether its subscription is durable or non-durable. The difference is in how the messaging behaves when the subscriber is disconnected.</p> <p>Some typical use cases for durable subscriptions include</p> <ul style="list-style-type: none"> <li>- restart of publisher without requiring subscribers to re-subscribe;</li> <li>- restart of a subscriber without re-subscription to avoid multiple subscriptions.</li> </ul> <p>Subscriptions and messages have typically lifetime duration. In that case, the durable subscriptions mechanisms should take into account those QoS.</p>
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscriber><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0141
Requirement	The SWIM-TI Messaging shall provide the following metrics for the Publish/Subscribe pattern: + Number of data publications. + Time of the last data publication. + Number of failed data publications. + Number of received data publications. + Time of the last received data publication. + Number of missing data publications.
Title	Statistic Metrics provided for Publish-Subscribe pattern.
Status	<In Progress>
Rationale	The SWIM-TI Messaging supports several MEPs (Message Exchange Patterns) including Publish-Subscribe. It represents one of the most important capabilities and, in order to support monitoring activities, it is needed that it supports the reporting of such metrics. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0151
Requirement	The SWIM-TI Messaging shall provide the following metrics for the Request/Response pattern: + Number of Requests. + Time of the Last Request. + Number of Failed Requests. + Number of Successful Requests. + Maximum Response Time. + Last Response Time.
Title	Statistic Metrics provided for the Request-Response pattern
Status	<In Progress>
Rationale	The SWIM-TI Messaging supports several MEPs (Message Exchange Patterns) including Request-Response. It represents one of the most important capabilities and, in order to support monitoring activities, it is needed that it supports the reporting of such metrics. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0231
Requirement	The SWIM-TI Messaging shall allow a service provider to retrieve any request

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	identification attached to the request.
Title	Retrieve request identification, if any.
Status	<Validated>
Rationale	When a service provider is willing to detect request retries, it shall be capable of retrieving any request identification that is attached to the incoming request.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0680
Requirement	The SWIM-TI Messaging PSPULL-MEP shall provide subscription persistency across reboot and crash of the entity managing the subscriptions.
Title	PSPULL-MEP Subscription persistency support
Status	<Validated>
Rationale	It is much more efficient and reliable to make the entity managing the subscriptions responsible for the persistence, than to have every subscriber maintain a complex infrastructure to ensure its subscription on any topic anywhere is not lost.  This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publication consumer><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>

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Testability	<Conformance testable><Interoperability testable>
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[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>		N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0690
Requirement	The SWIM-TI Messaging PSPUSH-MEP shall provide subscription persistency across reboot and crash of the entity managing the subscriptions.
Title	PSPUSH-MEP Subscription persistency support
Status	<Validated>
Rationale	It is much more efficient and reliable to make the entity managing the subscriptions responsible for the persistence, than to have every subscriber maintain a complex infrastructure to ensure its subscription on any topic anywhere is not lost.  This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publication consumer><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0701
Requirement	The SWIM-TI Messaging PSPULL-MEP shall provide message persistency across reboot and crash of the entity managing the messages.
Title	PSPULL-MEP Message persistency support
Status	<Validated>
Rationale	It is much more efficient and reliable to make the entity managing the push or the entity managing the pullpoint responsible for the message persistence, than to have both subscriber and publisher maintain a complex infrastructure to detect message loss and to allow for recuperation.  This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0001.0711
Requirement	The SWIM-TI Messaging PSPUSH-MEP shall provide message persistency across reboot and crash of the entity managing the messages.
Title	PSPUSH-MEP Message persistency support
Status	<Validated>
Rationale	It is much more efficient and reliable to make the entity managing the push or the entity managing the pullpoint responsible for the message persistence, than to have both subscriber and publisher maintain a complex infrastructure to detect message loss and to allow for recuperation.  This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.3.3.1) time behaviour, (§3.3.3.2) resource utilization and (§3.3.3.3) capacity.

#### 3.3.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.3.3.2 Resource utilization Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.3.3.3 Capacity Requirements

This section provides capacity requirements concerning SWIM-TI Messaging applicable to Blue Profile.

[REQ]

Identifier	REQ-14.01.04-TS-0201.0061
Requirement	The SWIM-TI Messaging shall support a minimum of 50 concurrent publishers and subscribers per service endpoint with no significant performances degradation.
Title	SWIM-TI Messaging Scalability Capacity
Status	<In Progress>
Rationale	The concurrent publisher/subscriber maximum per service end-point capacity will be based on ICOG Study and ISO 250101. The percentage of admissible performance degradation shall be provided and it is anticipated that it will be per service endpoint and depending of specific scenarios. It will be evaluate on a case basis and formalized according prototyping, verification and validation activities.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0201.0081
Requirement	The SWIM-TI Messaging shall support minimum of 10 messages per second per service endpoint with no significant performances degradation.
Title	SWIM-TI Messaging Scalability Capacity

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Status	<In Progress>
Rationale	The maximum number of messages per second per service end point capacity for Blue Profile. The Messaging is used to enable data exchanges among geographical distributed entities (wide area deployment). Taking into account this deployment view, performance bottlenecks due to sizing aspects (e.g. number of entities, exchange rate, data size, etc.) may be avoided or reduced by using compression techniques in order to impact the overall messaging performance. The percentage of admissible performance degradation shall be provided and it is anticipated that it will be per service endpoint and depending of specific scenarios. It will be evaluate on a case basis and formalized according prototyping, verification and validation activities.
Category	<Performance>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ]

Identifier	REQ-14.01.04-TS-0201.0090
Requirement	The SWIM-TI Messaging shall allow the distribution of messages with maximum message size of 512KB.
Title	SWIM-TI Scalability Capacity
Status	<In Progress>
Rationale	The Messaging is used to enable data exchanges among geographical distributed entities (wide area deployment). Taking into account this deployment view, performance bottlenecks due to sizing aspects (e.g. number of entities, exchange rate, data size, etc.) may be avoided or reduced by using compression techniques in order to impact the overall messaging performance. The maximum message size provided concerns a single applicative publication message that at distribution technology layer (e.g. DDS) may trigger the distribution of smaller pieces of data resulting from the clustering/fragmentation of the applicative message. Furthermore, at network level further fragmentation may occur. This requirement covers NIST security controls SC-5
Category	<Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

### 3.3.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.3.4.1) confidentiality, (§3.3.4.2) integrity, (§3.3.4.3) non-repudiation, (§3.3.4.4) accountability and (§3.3.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.3.4.6) is provided for safety requirements.

#### 3.3.4.1 Confidentiality Requirements

This section provides confidentiality requirements concerning SWIM-TI Messaging applicable to Blue Profile.

[IREQ]

Identifier	REQ-14.01.04-TS-0401.0020
Requirement	Confidentiality shall be provided through encryption at message level.
Title	Confidentiality through message level encryption
Status	<Validated>
Rationale	Encryption at message level serves as a tool supporting confidentiality.. Note: this is a requirement concerning Confidentiality sub-characteristic of Security. The SWIM-TI Messaging will use the SWIM-TI Security to realise the encryption and decryption. This requirement covers NIST security controls SC-8 (1) and SC-11.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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### 3.3.4.2 Integrity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.4.3 Non-repudiation Requirements

This section provides non-repudiation requirements concerning SWIM-TI Messaging applicable to Blue Profile.

[IREQ]

Identifier	REQ-14.01.04-TS-0401.0010
Requirement	Non-repudiation and authenticity shall be supported through electronic signing at message level.
Title	Non-repudiation and authenticity through electronic signing
Status	<Validated>
Rationale	Electronic message signing serves as a tool supporting non-repudiation. The electronic signature can be used to authenticate the originator. Note: this is a requirement concerning Non-repudiation sub-characteristic of Security. The SWIM-TI Messaging will use the SWIM-TI Security to realise the digital signature creation and verification.  This requirement covers NIST security controls SC-8 (1)
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
<SATISFIES>	<Enabler>	AGSWIM-44	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	AGSWIM-41	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.3.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.3.5.1) modularity, (§3.3.5.2) reusability, (§3.3.5.3) analysability, (§3.3.5.4) modifiability and (§3.3.5.5) testability.

### 3.3.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.3.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.3.6.1) maturity, (§3.3.6.2) availability, (§3.3.6.3) fault tolerance and (§3.3.6.4) recoverability.

### 3.3.6.1 Maturity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.6.2 Availability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.6.3 Fault tolerance Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



### 3.3.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.3.8.1) co-existence and (§3.3.8.2) interoperability compatibility NFR sub-characteristics, (§3.3.8.3) installability and (§3.3.8.4) replaceability portability NFR sub-characteristics.

[REQ]

Identifier	REQ-14.01.04-TS-0801.0090
Requirement	The SWIM-TI Messaging shall provide mechanisms to uniquely identify publisher and consumer applications.
Title	Messaging user unique identification
Status	<Validated>
Rationale	Application using the Messaging can be reached regardless of how they are connected. It is a sort of data enrichment used for addressing purpose. It is referring to SWIM-TI layer addresses. This requirement covers NIST security control IA-9.
Category	<Design><Security>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<BP FDD><PP Core>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	09.19-D03-070	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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Identifier	REQ-14.01.04-TS-0801.0105
Requirement	The SWIM-TI Messaging Data Validation shall be implemented relying on OTS/COTS products.
Title	OTS/COTS Libraries based Data Validation Implementation
Status	<In Progress>
Rationale	SWIM Technical Infrastructure shall be based upon well-recognized or emerging IT standard that are supported by mainstream IT OTS/COTS product in the market, that only require little or no further development/customisation.
Category	<Design>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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### 3.3.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.8.2 Interoperability Requirements

Refer to interoperability requirements in §3.1.8.

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### 3.3.8.3 Installability Requirements

SWIM-TI Messaging Installability requirements applicable to Blue Profile are provided in this section.

[REQ]

Identifier	REQ-14.01.04-TS-0801.0060
Requirement	The SWIM-TI Messaging design shall enable flexible deployment options allowing to cover the most appropriate scheme for the stakeholders.
Title	SWIM-TI Messaging Flexible Deployment
Status	<In Progress>
Rationale	Depending on the operational scheme, the Aircraft may initiate SWIM information exchange with Airline, other operators, with ATC and Weather data provider participating in the SWIM A/G operations.
Category	<Design>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0801.0080
Requirement	The SWIM-TI Messaging design shall allow the interconnection with aeronautical infrastructures and technologies currently deployed or under deployment.
Title	SWIM-TI Messaging and existing or under deployment aeronautical infrastructures and technologies.

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Status	<In Progress>
Rationale	SWIM infrastructure will have to cope with information systems already existing, either in Aircraft or on Ground (Air Traffic Management, Airlines, meteorological services, etc.).
Category	<Design>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><PP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	09.19-D03-350	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.01	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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### 3.3.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

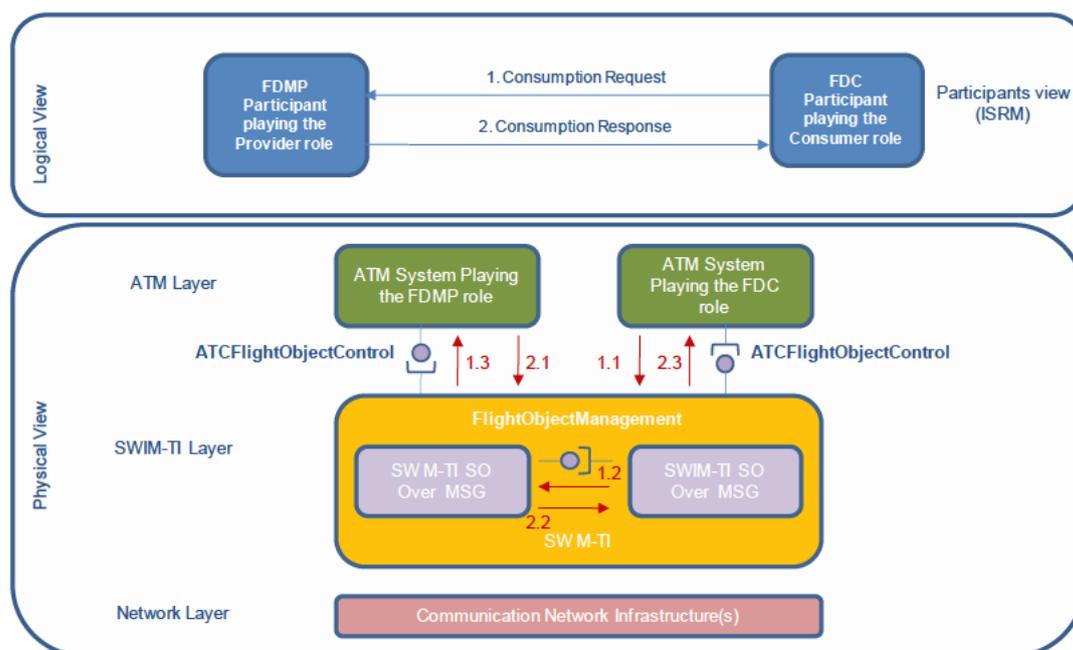
### 3.3.9 Interface Requirements

In this chapter, Messaging Interface requirements identified for the Blue Profile are provided.

Blue Profile includes both generic and *ATCFlightObjectControl* and *SharedFlightObject* specific bindings. In particular <BP Core> includes requirements and bindings (refer to §3.3.9.1.1) enabling ATM information exchanges in SRR-MEP and PS-MEP modes based respectively on WS and DDS technologies.

The core part is then complemented but the <BP FDD> requirements and bindings (refer to §3.3.9.2) required to enable the consumption and the provisioning of two ATM Specific Services [10]: *ATCFlightObjectControl* and *SharedFlightObject*. The provisioning and consumption architecture specified in the ED-133 and adopted in the BP is depicted in the two figures above and based on the Service Virtualization Design Pattern.

In the figure below both logical and physical view concerning the *ATCFlightObjectControl* service are provided. The design pattern adopted consists of providing locally to ATM systems virtualized instances of the service (the ones between the SWIM-TI and ATM layers in the figure) demanding to the SWIM-TI layer the routing of the requests and responses to the right participants. At SWIM-TI layer the exchanges concerning this service are managed by the SO functionalities which uses the Messaging *FlightObjectManagement* SWIM-TI layer interface to properly interact with distributed peers.



**Figure 3-3: ATCFlightObjectControl Request/Response ATM Service Physical Provisioning and Consumption Schema**

Summarizing two interfaces have been identified for the ISRMs *ATCFlightObjectControl* logical service:

- *ATCFlightObjectControl* Service Technical interface.
- *FlightObjectManagement* Internal SWIM Technical interface

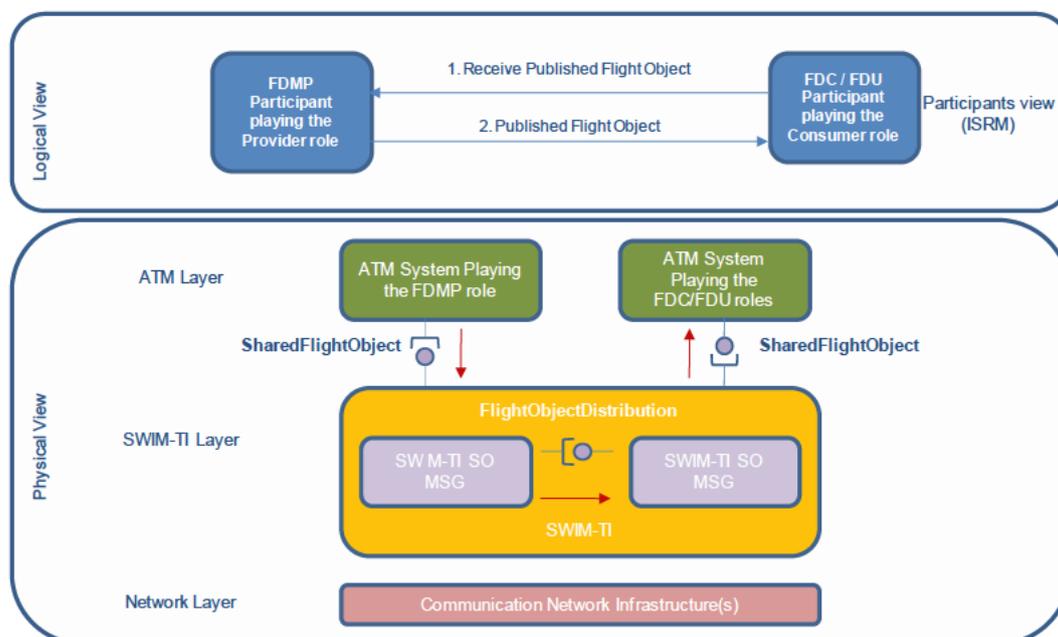
The same design pattern has been adopted for the *SharedFlightObject* logical service. In the figure below both logical and physical views concerning the service are provided. The design pattern adopted consists of providing locally to ATM systems virtualized instances of the service (the ones between the SWIM-TI and ATM layers in the figure) demanding to the SWIM-TI layer all the

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complexity to properly distribute the information. At SWIM-TI layer the exchanges concerning this service are managed by the SO functionalities which uses the Messaging *FlightObjectDistribution* SWIM-TI layer interface to properly interact with distributed peers.



**Figure 3-4: SharedFlightObject Publish/Subscribe ATM Service Physical Provisioning and Consumption Schema**

Summarizing two interfaces have been identified for the ISRM *SharedFlightObject* logical service:

- *SharedFlightObject* Service Technical interface.
- *FlightObjectDistribution* Internal SWIM Technical interface

Apart of the two ATM specific services allocated to service technical interface layer, it is recommended that this layer also includes additional operations/interfaces specified in the ED-133 API ICD.

As the ED-133 lacks a mature recovery process definition, an alternative recovery process has been designed and validated. Both *FlightObjectManagement* and *FlightObjectDistribution* internal SWIM Technical interfaces have been updated in order to implement the designed recovery mechanism.

The following assumptions have been considered while specifying the Blue Profile FDD profile part Recovery:

- Recovery process can be triggered by different ways:
  - On demand by IOP Application,
  - Automatically by the SWIM-TI layer if the automatic recovery is enabled/provided (it is an optional capability) and if certain criteria are met (e.g. at start-up or upon reconnection after temporarily isolation from the IOP network). A local “automatic recovery policy” will define the rules to drive the recovery process, with no input (configuration file) or limited input from the IOP Application. The Policy shall be defined by the application layer and SWIM-TI is supposed to enforce this policy (this profile already provides the enforcement for different kinds of policy).

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- Recovery process aims at recuperating:
  - The most up-to-date version of the Flight Objects for which the SWIM Node is part of its Distribution List,
  - Summaries of all the Flight Objects in the SWIM Network.
- Efficiency issues are taken into account:
  - Minimize the possibility of a “storm of updates”,
  - Updates to ED-133 Flight Object Data Model and Services will be considered if necessary but kept to a minimum.
- The Recovery process for Blue Profile does not constitute an ATM Information Exchange as it doesn't support the provision of any new ATM information that was not already available. Instead it should be seen as a technical feature of the SWIM-TI that allows its autonomous recovery in case a sub-set of the SWIM-TI Network falls down.

An overview of the designed recovery mechanism is provided hereafter.

The approach is based on “Recovery Tiers” (i.e. Recovery Tier 1, Recovery Tier 2 up to Recovery Tier n). Each SWIM Node in the Distribution List of a Flight Object is associated with a Tier.

This tiered approach allows to:

- perform the recovery process in sequential steps in order to prevent storm of updates on the recovering SWIM Node side,
- ensure that the most critical Flight Objects are recovered first.

Each Flight Object has an enriched Distribution List in which every stakeholder is assigned with a Tier according to its priority in the recovery process. It is important to note that a Tier is associated to each SWIM Node in the Distribution List for each Flight Object. Hence, a SWIM Node can be associated with different Tiers for different Flight Objects (since it might be further downstream for some Flight Objects than others).

The number of Tiers can be configured to the optimal value that ensures, the most critical Flight Objects are received soon enough while mitigating a “storm of updates” on the receiving SWIM Node.

An example of assignment logic for the Tiers is provided below for a given Flight Object:

- Tier 0 is associated to the SWIM Node whose ATSU holds responsibility of the Flight.
- Tier 1 is associated to the SWIM Nodes whose ATSU are crossed next downstream.
- Tier 2 is associated to all the other SWIM Nodes in the Distribution List.

It is important to notice that the Tier approach is quite generic concept and does not depend on the particular definition of Tiers. It consists on a sequential recovery process together with a particular criterion to determine the sequence of recovery. The specific definition of Tiers is out of scope of the SWIM-TI, for which a Tier is only a priority of recovery associated to a FO. This specification doesn't intend to define the business logic to map stakeholders and Flight Objects to Tiers; the definition provided above should serve simply as an example providing guidance.

Two different options were analyzed to implement the tier approach: one pure SRR-MEP and one pure PS-MEP.

The adopted recovery mechanism takes the strengths of PS-MEP Recovery (*FlightObjectDistribution* interface) with the added flow control of SRR-MEP Recovery (*FlightObjectManagement* interface) as a back-up mechanism. This allows for an efficient approach while ensuring that the recovering SWIM Node can rely on a Request/Response mechanism in case any of the expected Flight Objects are not recovered during the process for unexpected reasons.

The Blue Profile FDD profile part Recovery mechanism is based on the following steps:

STEP.0: The recovery process is initiated either:

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- a. triggered by the IOP Application (application driven mode), or
- b. automatically by the SWIM-TI layer if the automatic recovery is enabled/provided (it is an optional capability) and when certain conditions are met (e.g. reconnection after an isolation from the IOP network). In this mode the rules to operate the recovery are described in the 'automatic recovery policy'.

STEP.1: The recovering SWIM Node receives a Summary periodical publication from all the SWIM Nodes in the network. This allows the recovering SWIM Node to identify which Flight Objects it needs to recover.

STEP.2: The recovering SWIM Node sets its IOP Recovery Status to "TRUE" and the recovering Tier(s) to the level(s) of the Flight Objects to recover first (let's say "Tier T(s)" in this example) as specified by the IOP Application (application driven mode) or specified in the local automatic recovery policy (automatic mode). This is notified to the other SWIM Nodes through the periodic publication of an "IOP\_RECOVERY" topic. Note: the IOP Status is updated by the IOP Application independently.

STEP.3: Every SWIM Node on the Network checks the Tier(s) associated to the recovering SWIM Node for each Flight Object it acts as FDMP. It is thus aware at which point of the recovering process it needs to publish each Flight Object.

STEP.4: SWIM Nodes that act as FDMP for Flight Objects identified as "Tier T(s)" for the recovering SWIM Node in the Distribution List proceed to publish them using the "FO\_CLUSTER" Topic and by using the partition QoS in order to ensure that only the respective recovering nodes receive the FO clusters. In order to avoid the unnecessary re-publication of flight objects, the recovering node includes a 'Recovery Context ID' in the periodically published IOP\_RECOVERY topic. The SWIM Node will re-publish the Flight Objects only upon receipt of the first IOP\_RECOVERY containing the same context id.

STEP.5: The recovering SWIM Node receives all the Flight Objects for which it appeared as "Tier T(s)" in the Distribution List.

Since the IOP Application (application driven mode) or the SWIM Node (automatic mode) is aware (in STEP 1) of the entire list of Flight Objects and which ones it expects to receive during "Tier T(s)", it checks the completion of the "Tier T(s)" Recovery process and optionally react if any expected Flight Objects is missing.

- a. **CONDITIONAL STEP:** a Request/Response mechanism is used to recover the missing Flight Object(s). The request sent to the appropriate SWIM Node identifies the missing Flight Object Identifiers. The receiving Node will return first a Response (Boolean indicating the result of the process and a reason in case of failure) and then publish the requested Flight Object(s).

STEP.6: Upon completion of the "Tier T(s)" recovery, the recovering SWIM Node updates its RECOVERY\_STATUS topic with the next Tier(s) to recover, as indicated by the IOP Application (application driven mode) or by the local automatic recovery policy (automatic mode). Steps 3 to 5 are re-iterated.

STEP.7: The process continues iteratively until the IOP Application (application driven mode) or the local automatic recovery policy (automatic mode) considers the recovery process completed. This can be either because all missing Flight Objects have been recovered or the still missing Flight Objects are considered not in interest.

STEP.8: Upon reception of the indication from the IOP Application (application driven mode) or the local automatic recovery policy (automatic mode) that the recovery is completed, the recovering SWIM Node changes its IOP Recovery Status to "FALSE". Note: the IOP status is updated by the IOP application independently.

All these interfaces (generic and Flight Object specific) are detailed hereafter.

The following requirement applies to all external service interfaces.

[IREQ]

Identifier	REQ-14.01.04-TS-0901.0840
Requirement	The interface binding contract shall reference the authoritative procedure that describes the versioning mechanisms, which are applicable to the contract and any of its constituents.
Title	The contract itself shall be versioned.
Status	<In Progress>
Rationale	<p>A study on versioning of the service interface has revealed that there is not one size that fits all.</p> <p>The effective organisation of versioning is decided at service instantiation.</p> <p>This requirement ensures that whatever option is taken, that the option is known to all impacted Stakeholders.</p> <p>In the SWIM Profiles Technical Specifications “Interface Evolution Analysis” several rules and recommendations that ATM Service architects may adopt and/or complement are provided. Interface evolution analysis focus on evolution of only STDD (Service Technical Design Description) “Service Technical Interfaces” part because its relationship with SWIM-TI interface bindings specifications. Some of the rules/recommendations are SWIM-TI Profiles Interface Bindings independent whereas other are binding specific due to particular standards adopted in that binding. For instance rules on XSD modelling techniques to achieve minor version compatibility are only applicable to interface bindings using XML/XSD. Furthermore, ATM service implementations versioning is not addressed. In particular for a given version of the STDD, a stakeholder may plan different versions of the service implementation. According to the “Contract first” (STDD) approach, changes on service implementations are not expected to impact technical interoperability (the STDD version is the same) if what specified in the STDD is properly used as reference by both provider and consumer.</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><YP Security+><YP Messaging+><BP Core><BP FDD><PP Core><PP Messaging Bridging>
Domain of interest	<ICD><Governance><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

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### 3.3.9.1 Service Interface Bindings

This paragraph provides all the needed details concerning the identified Service Technical interfaces as introduced before. In particular interface bindings for both generic and <BP FDD> Profile Part specific are specified.

In Appendix C Interface Evolution analysis, applicable to ATM services using interface bindings part of this Technical Specification, is provided.

### 3.3.9.1.1 Generic Interface Bindings

#### 3.3.9.1.1.1 Synchronous Request-Response Bindings

In this section generic SRR-MEP bindings SOAP based WebServices (SOAP 1.1 and SOAP 1.2) are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0901.0845
Requirement	In order to enable HTTP/1.1 Content Compression the following headers shall be supported.  - from the server to the client: Content-Encoding: {deflate   gzip   x-exi} - from the client to the server: Accept-Encoding: {gzip   deflate  x-exi}.  A Consumer shall be able to deal with a Provider that does not recognize the request to apply compression.
Title	HTTP/1.1 Content Compression
Status	<In Progress>
Rationale	HTTP compression performs on the fly compression.  The compression can only be requested by the client. The server can ignore the request by the client and return non-compressed data.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

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[IREQ]

Identifier	REQ-14.01.04-TS-0901.0790
Requirement	Generic service instantiation shall be supported on the following interface

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	<p>binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- SOAP 1.1 over HTTPS POST over TCP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- SRR-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- the service shall be able to determine the content of the HTTP status code and HTTP reason phrase</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- Text encoding</li> <li>- Binary encoding: MTOM</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: transport</li> <li>- Integrity: transport</li> <li>- Authenticity: transport mutual</li> <li>- Authorization: transport</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: WSDL (1.1 and optionally 2.0) and XSD</li> <li>- minimum: WSDL</li> <li>- reference: ISRM</li> </ul> </li> <li>+ Interoperability: WS-I Basic Profile 1.2</li> </ul>
Title	Generic SRR-MEP interface binding. SOAP 1.1 over HTTPS POST over TCP.
Status	<Validated>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue and Yellow Profiles.</p> <p>All the security controls are provided at the transport level establishing a design and run-time dependency with PKIs. Authenticity (or Authentication) at transport level has not to be confused with HTTP Basic and Digest Access Authentication that are not supported by this binding.</p> <p>This requirement covers NIST security controls SC-8 (1)</p>
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

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[IREQ]

Identifier	REQ-14.01.04-TS-0901.0795
Requirement	<p>Generic service instantiation shall be supported on the following interface binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- SOAP 1.2 over HTTPS POST over TCP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- SRR-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- the service shall be able to determine the content of the HTTP status code and HTTP reason phrase</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- Text encoding</li> <li>- Binary encoding: MTOM</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: transport</li> <li>- Integrity: transport</li> <li>- Authenticity: transport mutual</li> <li>- Authorization: transport</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: WSDL (1.1 or 2.0) and XSD</li> <li>- minimum: WSDL</li> <li>- reference: ISRM</li> </ul> </li> <li>+ Interoperability: WS-I Basic Profile 2.0</li> </ul>
Title	Generic SRR-MEP interface binding. SOAP 1.2 over HTTPS POST over TCP.
Status	<Validated>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue and Yellow Profiles.</p> <p>All the security controls are provided at the transport level establishing a design and run-time dependency with PKIs. Authenticity (or Authentication) at</p>

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	transport level has not to be confused with HTTP Basic and Digest Access Authentication that are not supported by this binding. This requirement covers NIST security controls SC-8 (1)
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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### 3.3.9.1.1.2 Publish-Subscribe Bindings

In this section generic DDS Publish-Subscribe bindings are provided.

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0705
Requirement	<p>Generic service instantiation shall be supported on the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- DDS 1.2 over DDSI 2.1 over UDP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- PSPUSH-MEP, PSPULL-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: none</li> <li>- Integrity: none</li> <li>- Authenticity: none</li> <li>- Authorization: none</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: OMG IDL, QoS Configuration</li> <li>- minimum: not applicable</li> <li>- reference: ISRM</li> </ul> </li> <li>+ Interoperability: as for OMG DDSI 2.1</li> </ul>
Title	Generic interface Binding. DDSI 2.1 over UDP
Status	<Validated>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue Profile.</p> <p>When required all the security controls may be provided at network level or Service architects may specify application/message level controls such as encryption, digital signature, etc.</p> <p>This contract of this binding is based on IDL and QoS. Messages definitions are specified using OMG IDLs. It could happen (ATM service design) that one or more elements in the IDL represent string and byte serialization of MIME types. In particular it could happen that XML messages are serialized. When it is necessary due to the size of the messages exchanged over this binding, it is possible to use compression techniques including GZIP (application/gzip MIME type) and EXI (application/exi MIME type).</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

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[REQ Trace]

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0710
Requirement	<p>Generic service instantiation shall be supported on the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- DDS 1.2 over DDSI 2.1 over TCP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- PSPUSH-MEP, PSPULL-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Security:</li> </ul>

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	<ul style="list-style-type: none"> <li>- Confidentiality: none</li> <li>- Integrity: none</li> <li>- Authenticity: none</li> <li>- Authorization: none</li> <li>- Non-repudiation: none</li> </ul> <ul style="list-style-type: none"> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: OMG IDL, QoS Configuration</li> <li>- minimum: not applicable</li> <li>- reference: ISRM</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>+ Interoperability: as for OMG DDSI 2.1</li> </ul>
Title	Generic interface Binding. DDSI 2.1 over TCP.
Status	<Validated>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue Profile.</p> <p>When required all the security controls may be provided at network level or Service architects may specify application/message level controls such as encryption, digital signature, etc.</p> <p>This contract of this binding is based on IDL and QoS. Messages definitions are specified using OMG IDLs. It could happen (ATM service design) that one or more elements in the IDL represent string and byte serialization of MIME types. In particular it could happen that XML messages are serialized. When it is necessary due to the size of the messages exchanged over this binding, it is possible to use compression techniques including GZIP (application/gzip MIME type) and EXI (application/exi MIME type).</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0715
Requirement	<p>Generic service instantiation shall be supported on the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- DDS 1.2 over DDS Security 1.0, DDSI 2.1 over UDP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- PSPUSH-MEP, PSPULL-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: message level as defined per DDS Security</li> <li>- Integrity: message level as defined per DDS Security</li> <li>- Authenticity: mutual, message level as defined per DDS Security</li> <li>- Authorization: message level as defined per DDS Security</li> <li>- Non-repudiation: message level as defined per DDS Security</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: OMG IDL, QoS Configuration, DDS Security Configuration</li> <li>- minimum: not applicable</li> <li>- reference: ISRM</li> </ul> </li> <li>+ Interoperability: as for OMG DDSI 2.1 and DDS Security 1.0</li> </ul>
Title	Generic interface Binding. DDS Security 1.0 over DDSI 2.1 over UDP
Status	<In Progress>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue Profile.</p> <p>Security controls are provided at message level through DDS Security plugins configurations. Depending on the security attributes to meet the controls and the related plugins have to be properly configured. For instance it could happen that Non-repudiation is not required and in this case the DDS Security configuration shall reflect that design decision.</p> <p>At the time of writing this TS (May 2016), OMG DDS Security is an adopted</p>

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	<p>OMG BETA specification being standardized. BP TS just identifies which DDS Security plugins have to be used and how. Further evolutions of DDS Security BETA, until it will be considered standard, are only expected to fix specification issues that may be raised during the one-year finalization task force. This limits the impact on the BP TS.</p> <p>Verification of this requirement has as precondition the verification of requirements REQ-14.01.04-TS-0901.0500 and REQ-14.01.04-TS-0901.0515.</p> <p>This requirement can be fully verified only by interoperable DDS Security implementations. If not available, network level or message level (application) mechanisms may be used to fill the gap.</p> <p>This contract of this binding is based on IDL and QoS. Messages definitions are specified using OMG IDLs. It could happen (ATM service design) that one or more elements in the IDL represent string and byte serialization of MIME types. In particular it could happen that XML messages are serialized. When it is necessary due to the size of the messages exchanged over this binding, it is possible to use compression techniques including GZIP (application/gzip MIME type) and EXI (application/exi MIME type).</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0720
Requirement	<p>Generic service instantiation shall be supported on the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- DDS 1.2 over DDS Security 1.0, DDSI 2.1 over TCP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- PSPUSH-MEP, PSPULL-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: message level as defined per DDS Security</li> <li>- Integrity: message level as defined per DDS Security</li> <li>- Authenticity: mutual, message level as defined per DDS Security</li> <li>- Authorization: message level as defined per DDS Security</li> <li>- Non-repudiation: message level as defined per DDS Security</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: OMG IDL, QoS Configuration, DDS Security Configuration</li> <li>- minimum: not applicable</li> <li>- reference: ISRM</li> </ul> </li> <li>+ Interoperability: as for OMG DDSI 2.1 and DDS Security 1.0</li> </ul>
Title	Generic interface Binding. DDS Security 1.0 over DDSI 2.1 over TCP
Status	<In Progress>
Rationale	<p>Generic binding to be used to instantiate specific ATM specific services using SWIM-TI Blue Profile.</p> <p>Security controls are provided at message level through DDS Security plugins configurations. Depending on the security attributes to meet the controls and the related plugins have to be properly configured. For instance it could happen that Non-repudiation is not required and in this case the DDS Security configuration shall reflect that design decision.</p> <p>At the time of writing this TS (May 2016), OMG DDS Security is an adopted OMG BETA specification being standardized. BP TS just identifies which DDS Security plugins have to be used and how. Further evolutions of DDS</p>

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	<p>Security BETA, until it will be considered standard, are only expected to fix specification issues that may be raised during the one-year finalization task force.. This limits the impact on the BP TS.</p> <p>Verification of this requirement has as precondition the verification of requirements REQ-14.01.04-TS-0901.0500 and REQ-14.01.04-TS-0901.0515,</p> <p>This requirement can be fully verified only by interoperable DDS Security implementations. If not available, network level or message level (application) mechanisms may be used to fill the gap.</p> <p>This contract of this binding is based on IDL and QoS. Messages definitions are specified using OMG IDLs. It could happen (ATM service design) that one or more elements in the IDL represent string and byte serialization of MIME types. In particular it could happen that XML messages are serialized. When it is necessary due to the size of the messages exchanged over this binding, it is possible to use compression techniques including GZIP (application/gzip MIME type) and EXI (application/exi MIME type).</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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### 3.3.9.1.2 ATCFlightObjectControl Interface Requirements

ATCFlightObjectControl endpoints are provided on top of SWIM-TI SO and MSG and in particular on top of the Internal Interface FlightObjectManagement which provides several operations used to serve properly ATCFlightObjectControl consumption/provisioning.

According to the design pattern adopted, this interface has been identified but it is not subject to further details because there are not interoperability needs. The *FlightObjectManagement* interface is impacting the interoperability whereas the way locally the SWIM-TI layer interacts with the ATM layer is kept flexible and open.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0315
Requirement	ATCFlightObjectControl Interface shall be instantiated using the following binding: + Protocol stack: not standardised + MEPs: not standardised + Fault handling: not standardised + Encoding: not standardised + Security: - Confidentiality: not standardised - Integrity: not standardised - Authenticity: not standardised - Authorization: not standardised - Non-repudiation: not standardised + Contract: - formalism of contract description: UML - minimum: not applicable - reference: ISRM + Interoperability: not standardised
Title	ATCFlightObjectControl Interface binding
Status	<Validated>
Rationale	This binding is not subjected to standardisation and is implementation specific. ATCFlightObjectControl endpoints are provided on top of SWIM-TI SO and MSG and in particular on top of the Internal Interface FlightObjectManagement which provides several operations used to serve properly ATCFlightObjectControl consumption/provisioning. According to the design pattern adopted, this interface has been identified but it is not subject to further details because there are not interoperability needs. The FlightObjectManagement interface is impacting the interoperability whereas the way locally the SWIM-TI layer interacts with the ATM layer is kept flexible and open.
Category	<Interface>
Validation Method	
Verification Method	<Analysis>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

In the figure below, ATCFlightObjectControl service contract as specified in ISRM 2.0 is provided.

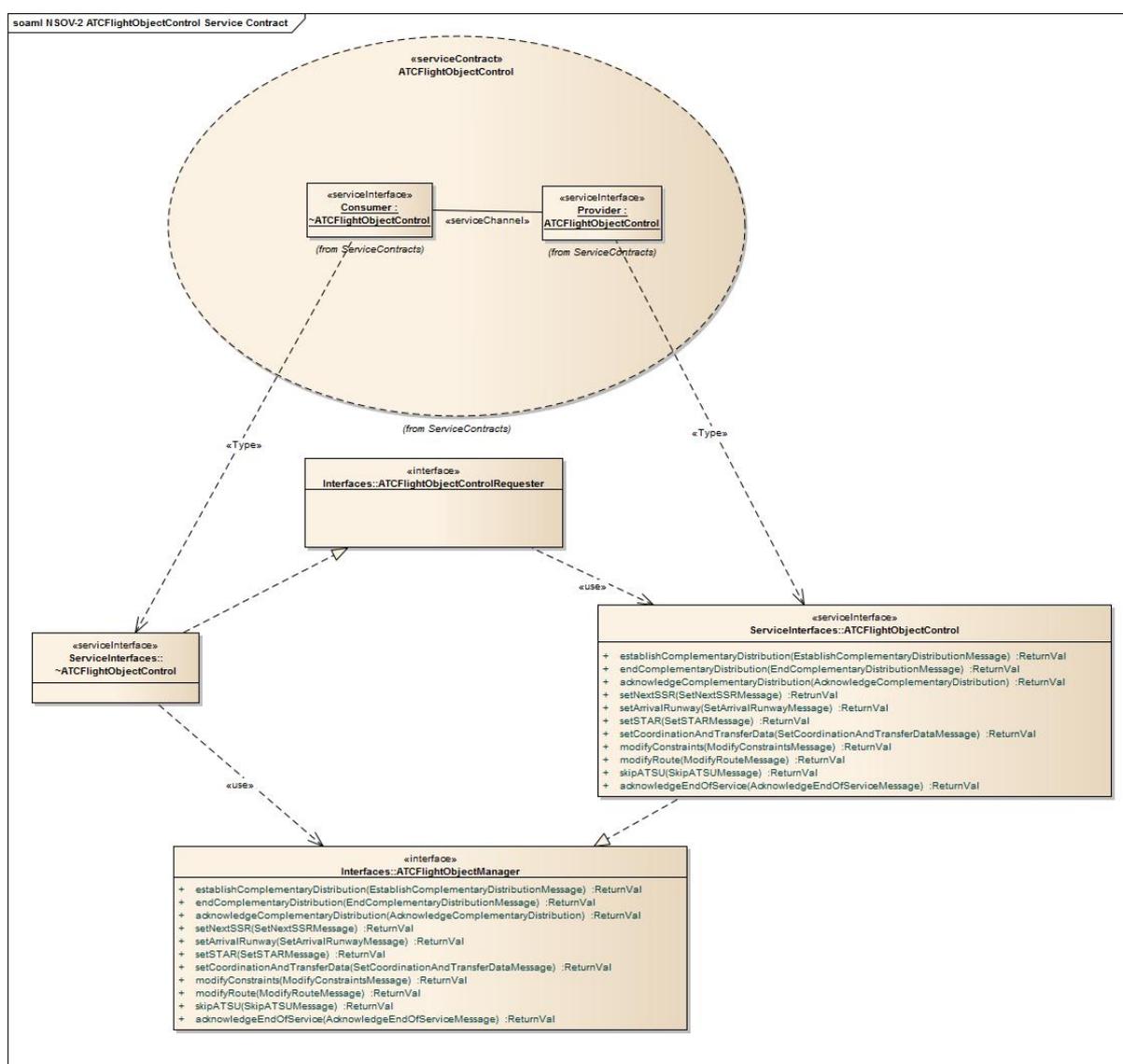


Figure 3-5: ISRM ATCFlightObjectControl service contract

All the operations provided by the service (e.g. *establishComplementaryDistribution*, *setNextSSR*, etc.) aim at submitting control messages that have been properly defined as message type (e.g. *establishComplementaryDistributionMessage*, *setNextSSRMessage*, etc.). At SWIM-TI layer each one of these operations is mapped to the *FlightObjectManagement* interface *RequestFOService* operation enveloping the corresponding control message type. *FlightObjectManagement* interface and concerning data types are specified in §3.3.9.2.1.

### 3.3.9.1.3 SharedFlightObject Interface Requirements

SharedFlightObject endpoints are provided on top of SWIM-TI SO and MSG and in particular on top of the Internal Interface FlightObjectDistribution which provides several operations used to serve properly the distribution of Flight Object data.

According to the design pattern adopted, this interface has been identified but it is not subject to further details because there are not interoperability needs. The *FlightObjectDistribution* interface is impacting the interoperability whereas the way locally the SWIM-TI layer interacts with the ATM layer is kept flexible and open.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0316
Requirement	SharedFlightObject Interface shall be instantiated using the following binding: + Protocol stack: not standardised + MEPs: not standardised + Fault handling: not standardised + Encoding: not standardised + Security: - Confidentiality: not standardised - Integrity: not standardised - Authenticity: not standardised - Authorization: not standardised - Non-repudiation: not standardised + Contract: - formalism of contract description: UML - minimum: not applicable - reference: ISRM + Interoperability: not standardised
Title	SharedFlightObject Interface binding
Status	<Validated>
Rationale	This binding is not subjected to standardisation and is implementation specific. SharedFlightObject endpoints are provided on top of SWIM-TI SO and MSG and in particular on top of the Internal Interface FlightObjectDistribution which provides several operations used to serve properly the distribution of Flight Object data. According to the design pattern adopted, this interface has been identified but it is not subject to further details because there are not interoperability needs. The FlightObjectDistribution interface is impacting the interoperability whereas the way locally the SWIM-TI layer interacts with the ATM layer is kept flexible and open.
Category	<Interface>
Validation Method	
Verification Method	<Analysis>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>

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Roles	<Subscriber><Publisher>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

In the figure below, SharedFlightObject service message types as specified in ISRM 2.0 are provided.

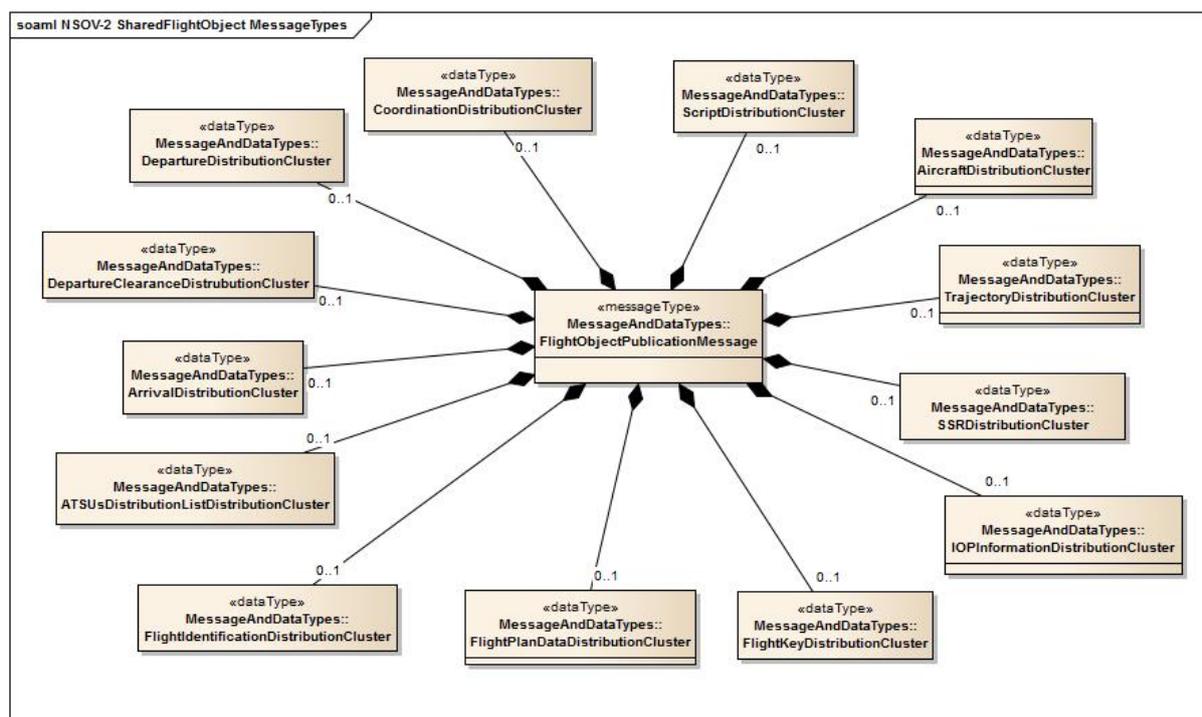


Figure 3-6: ISRM SharedFlightObject service message types

All the message types (e.g. FlightPlanDataDistributionCluster, TrajectoryDistributionCluster, etc.) represent clustered information concerning the Flight Object. At SWIM-TI layer each one of these message types are distributed via the *FlightObjectDistribution* interface using the same data type which envelops such ATM information into the Flight Object Cluster. FlightObjectDistribution interface and concerning data types are specified in §3.3.9.2.2. This specification supports the what-if concept introduced in Shared Object requirements chapter. In order to agree on flight object changes, two or

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more participants exchange What-if Flight Object (WIFO). A WIFO is an alternative Flight Object that is generated from a real Flight Object and contains the modifications needed to propose an alternative to the real one. A WIFO may include less clusters with respect to the real FO (e.g. just clusters the what-if proposal applies to).



### 3.3.9.2 Internal Service Interface Bindings

This paragraph provides all the needed details concerning the identified Internal SWIM Technical interfaces as introduced before.

#### 3.3.9.2.1 *FlightObjectManagement* Interface Requirements

The FlightObjectManagement interface, as part of the ATCFlightObjectControl service physical architecture (refer to Figure 3-3) provides the following operations:

- *RequestFOService*, Flight Object Request operation (SRR-MEP),
- *RejectFO*, Flight Object Rejection operation (SRR-MEP),
- *RestoreFO*, Flight Object Restoring operation (SRR-MEP),
- *RequestFORecovery*, Flight Objects Recovery operation (SRR-MEP);

These operations are outlined here below and then specified in detail in the remaining part of this chapter. In the following sections, the business model will be specified using SoaML diagrams, mainly capturing the Business Architecture Model level of definition.

The *ATCFlightObjectControl* services physical architecture provides a high level view about how the participants collaborate by providing and using the service. This is the EAEA Services Definition view (SOV-2) of the modelling.

Depicted in the services architecture are:

- Flight Object Management interface that provides RequestFOService, RestoreFO and RejectFO operations,
- Participants that are stakeholders in the service interface described

The participants have the common purpose to establish the information services to support information exchange depicted in the BPMN.

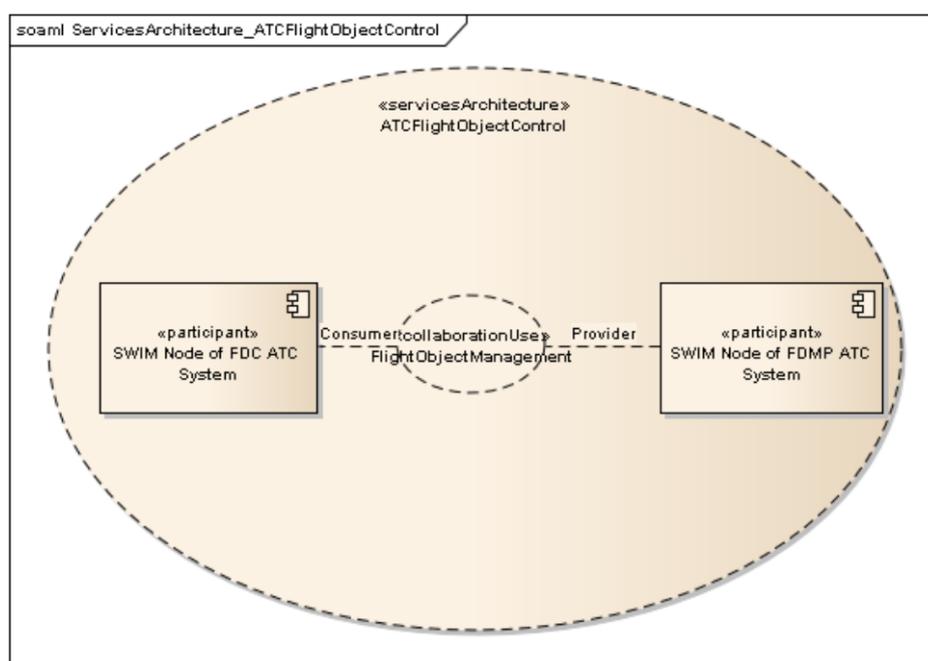


Figure 3-7: Flight Object Management Architecture

The participants represent a logical or real organizational units taking part in the information exchange. The SoaML Flight Object Management participants include:

- SWIM Node of Flight Data Contributor System on the consumer side of the SWIM-TI which may call the particular service on another SWIM Node of Flight Data Manager/Publisher System;
- SWIM Node of Flight Data FO Manager/Publisher is a participant on the provider side of the SWIM-TI.

The information exchange between, the SWIM nodes is performed by the service operations exchange description indicated below. The service input and output parameters are described in the dedicate Message Types section (refer to §3.3.9.2.1.5).

The behaviour of the RequestFOService operation is depicted in the diagram below.

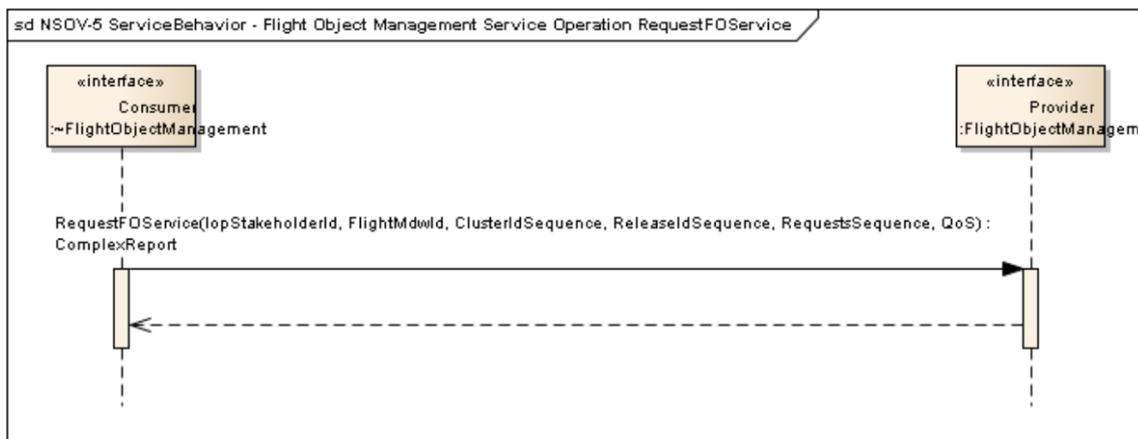


Figure 3-8: Flight Object Management Interface: RequestFOService operation Behaviour

The information exchange between, the SWIM nodes is performed by the service exchange indicated below. The service input and output parameters are described in the dedicate Message Types section (refer to §3.3.9.2.1.5)

The behaviour of the RejectFO operation is depicted in the diagram below.



Figure 3-9: Flight Object Management Interface: RejectFO operation Behaviour

The information exchange between, the SWIM nodes is performed by the service exchange indicated below. The service input and output parameters are described in the dedicated Message Types section (refer to §3.3.9.2.1.5).

The behaviour of the RestoreFO operation is depicted in the diagram below.

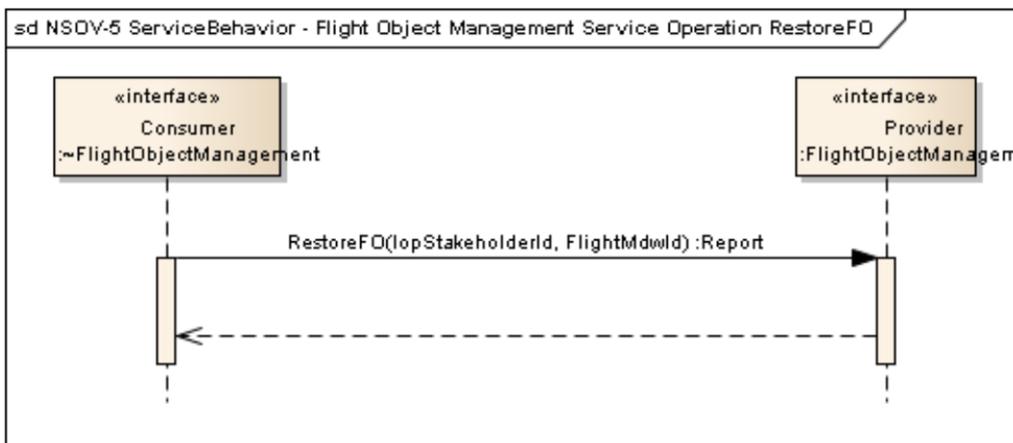


Figure 3-10: Flight Object Management Interface: RejectFO operation Behaviour

The information exchange between, the SWIM nodes is performed by the service exchange indicated below. The service input and output parameters are described in the dedicated Message Types section (refer to §3.3.9.2.1.5).

The behaviour of the RequestFORRecovery operation is depicted in the diagram below.

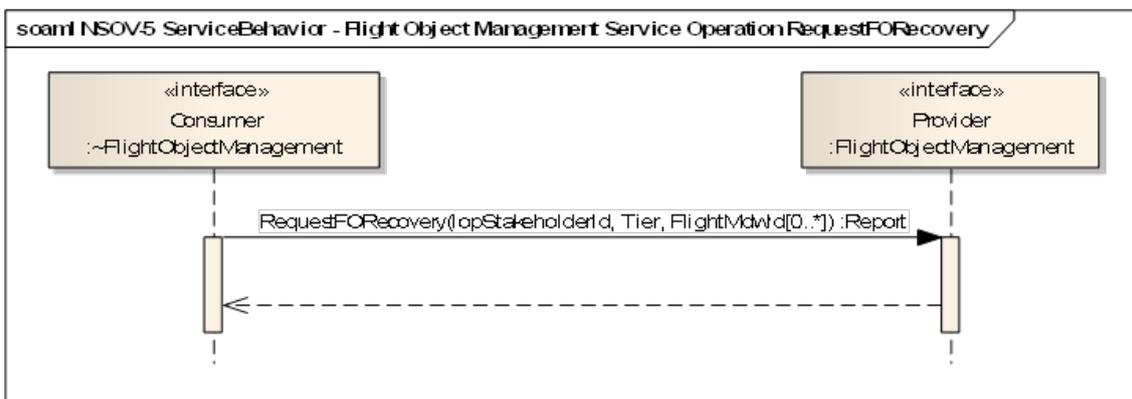


Figure 3-11: Flight Object Management Interface: RequestFORRecovery operation Behaviour

These operations are detailed in the next paragraphs and the technology specific instantiation of the interface is provided in §3.3.9.2.1.7.

### 3.3.9.2.1.1 Operations

The operations included in the Flight Object Management Interface are the following:

- Flight Object Services Request
- Flight Object Data Rejection

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- Flight Object Data Restoring
- Flight Objects Recovery Request

The service contract for the FlightObjectManagement interface is depicted in the SoAML diagram below. The participants from the services architecture are shown in their consumer and provider roles.

Based on the role interface specification it is proposed that the FlightObjectManagement service operations will be synchronous and with a response that does not require interface implementation on the consumer side. The service contract shall only include the provider interface specification. The interface for the provider is named FlightObjectManagement. The service contract is identified in the following SoAML diagram.

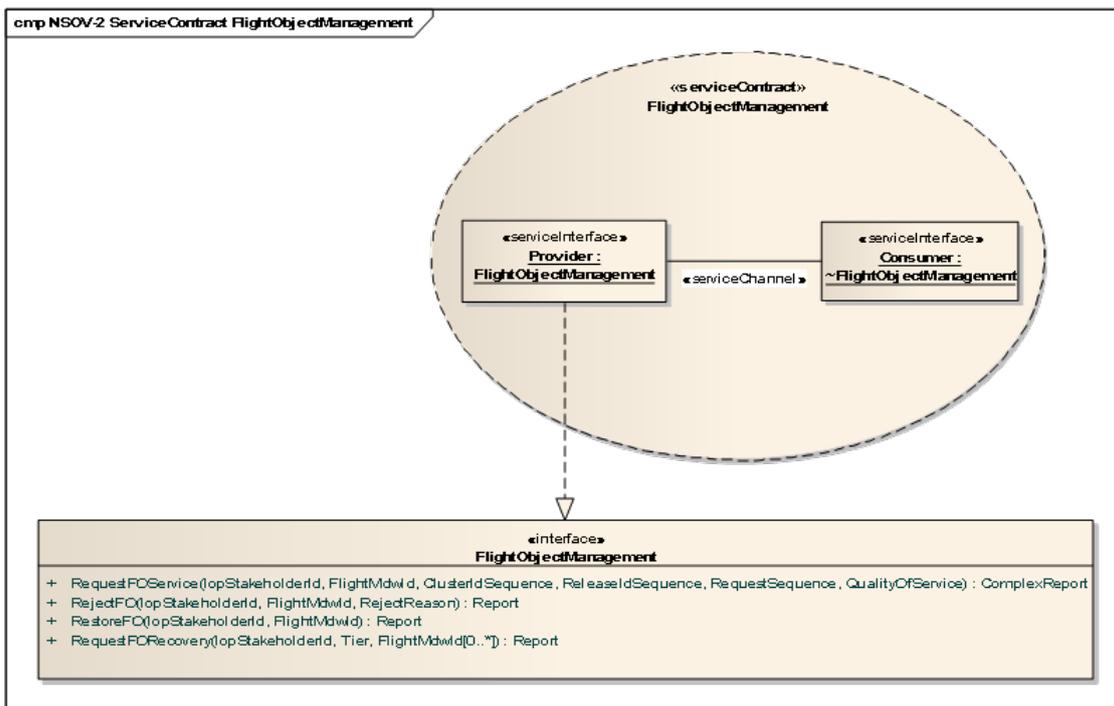


Figure 3-12: FlightObjectManagement Interface UML Contract

The FlightObjectManagement service point is a port for providing a service on the provider side, the port provides the provider interface and requires the consumer interface. The FlightObjectManagement request point is a port for consuming the FlightObjectManagement service on the SWIM Node FO Contributor side, the port requires the provider interface and provides the consumer interface.

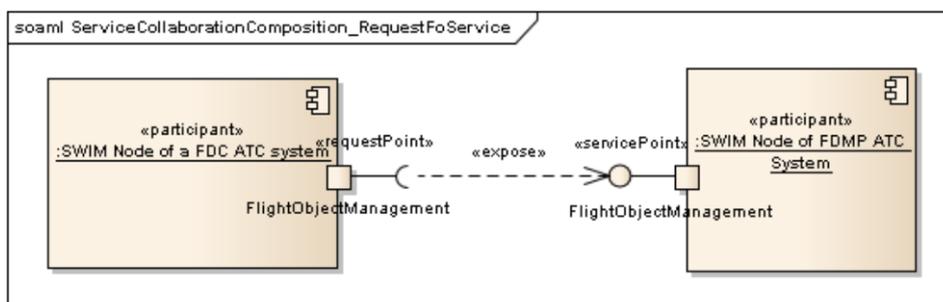


Figure 3-13: FlightObjectManagement Collaboration Composition

The Flight Object Services Request operation shall enable the mechanism specified in ED-133 [6] used to allow an ATC application to request one or more Flight Object operations to another ATC application. This operation represents a generic channel allowing the routing of the applicative requests concerning the execution of one or more Flight Object applicative operations.

The interaction scenario starts when the ATC application on consumer side identifies the need to require the execution of one or more Flight Object applicative operations according to operational needs (e.g. to add a new flight constraint). This logically consists to require to the ATC application on provider side (assuming that it is the current Flight Data Manager (FDMP) – refer to IOP roles defined in ED-133) to update accordingly the flight data. This logical interaction is implemented via the mediation of the two SWIM Nodes acting respectively as service consumer (SWIM Node consumer) and provider (SWIM Node provider) using the Flight Object Management Interface.

When the SWIM Node on the ATC application consumer side receives the request from the latter, it discovers the SWIM Node on the current FDMP ATC application side according to the provided target flight identifier. The discovered node represents the service provider for that specific “Flight Object Services Request” operation. In case it is not possible to discover the FDMP the request cannot be served.

On the SWIM Node provider side, to serve that request consists mainly in to forward it to the ATC application that can accept or not the request. The request status (accepted or not accepted) is then returned by the SWIM Node provider, as service return value, to the requesting SWIM Node. The latter notifies the “Flight Object Services Request” operation invocation results to the requesting ATC application.

The FlightObjectManagement request point is a port for consuming the FlightObjectManagement service on the SWIM Node FO Contributor side, the port requires the provider interface and provides the consumer interface.

The Flight Object Data Rejection operation shall enable the mechanism specified in ED-133 used to allow an ATC application to request the rejection of a given Flight Object has been previously published by the corresponding FDMP ATC application. The requesting ATC application provides the reason for the rejection that is routed through “Flight Object Data Rejection” operation to the current FDMP ATC application.

The interaction scenario starts when the ATC application on consumer side receives a Flight Object data that, following an appropriate processing, is marked as to be rejected due to a specific reason. This event has to be notified to the current FDMP that published those flight object data. This logical interaction is implemented via the mediation of the two SWIM Nodes acting respectively as service consumer (SWIM Node consumer) and provider (SWIM Node provider) using the Flight Object Management interface.

When the SWIM Node on the ATC application consumer side receives the rejection request from the latter, it discovers the SWIM Node on the current FDMP ATC application side according to the provided target flight identifier. The discovered node represents the service provider for that specific “Flight Object Data Rejection” operation. In case it is not possible to discover the FDMP the request cannot be served. On the SWIM Node provider side, to serve that request consists mainly in to forward it to the ATC application and then in to return to the SWIM Node consumer the operation return value. Finally, this value is notified to the requesting ATC application.

The Flight Object Data Restoring operation shall enable the mechanism specified in ED-133 used to allow an ATC application to request the restoring of a given Flight Object data. This logically consists in to require to the current FDMP ATC application to distribute again the current version of the target Flight Object.

This logical interaction is implemented via the mediation of the two SWIM Nodes acting respectively as service consumer (SWIM Node consumer) and provider (SWIM Node provider) using the Flight Object Management Interface. When the SWIM Node on the ATC application consumer side receives the restoring request from the latter, it discovers the SWIM Node on the current FDMP ATC application side according to the provided target flight identifier.

The discovered node represents the service provider for that specific “Flight Object Data Restoring” operation. In case it is not possible to discover the FDMP the request cannot be served. On the SWIM Node provider side, to serve that request consists mainly in to forward it to the ATC application and then in to return to the SWIM Node consumer the operation return value. Finally, this value is notified to the requesting ATC application.

Flight Objects Recovery Request shall enable the mechanism used to allow to request the recovery (re-publications) of one or more or all Flight Object in a given Tier. The requester of this operation is a recovering SWIM Node whereas the provider (properly discovered - see above) is the SWIM Node of the current FDMP of target Flight Objects.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0725
Requirement	The FlightObjectManagement Interface contract shall include the following operations: <ul style="list-style-type: none"> <li>- Flight Object Services Request.</li> <li>- Flight Object Data Rejection.</li> <li>- Flight Object Data Restoring.</li> <li>- Flight Objects Recovery Request.</li> </ul>
Title	FlightObjectManagement Interface contract operations
Status	<Validated>
Rationale	To ensure that the FlightObjectManagement Interface contract provides the needed and only the identified operations.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0405
Requirement	The FlightObjectManagement Interface contract shall be specified according to the SRR-MEP.
Title	FlightObjectManagement Interface contract Message Exchange Pattern

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Status	<Validated>
Rationale	To ensure that the FlightObjectManagement Interface contract is specified according to the expected Message Exchange Pattern identified for that interface.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.9.2.1.2 Functional Requirements

This section provides specific functional requirements identified for the FlightObjectManagement Interface.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0410
Requirement	For a given FlightObject, the physical endpoint to be consumed by a SWIM Node acting as consumer for FlightObjectManagement interface shall be the one provided by the SWIM Node on the current FDMP side.
Title	FlightObjectManagement provider endpoint
Status	<Validated>
Rationale	Only the SWIM Node fulfilling the role of manager owns the responsibility to accept the request of a service coming from another node involved in the collaborative scenario. The flight object operation is executed by the ATC application in order to fulfil the role of FDMP for the target flight; on the same flight, the ATC requestor application fulfils the role of FDC.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>

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Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0415
Requirement	A SWIM Node acting as consumer for FlightObjectManagement interface shall be able to discover the current FlightObjectManagement provider endpoint for the target FlightObject.
Title	FlightObjectManagement provider endpoint discovery
Status	<Validated>
Rationale	Only the SWIM Node fulfilling the role of manager owns the responsibility to accept the request of a service coming from another node involved in the collaborative scenario. The flight object operation is executed by the ATC application in order to fulfil the role of FDMP for the target flight; on the same flight, the ATC requestor application fulfils the role of FDC. Requestor SWIM Node (service consumer) has to discover the manager (service provider), in order to forward to it the requested service(s).
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0420
Requirement	FlightObjectManagement provider endpoint for the target FlightObject shall be discovered using the following metadata: - FlightObject Unique identifier. - ATC System Unique Identifier. - Available FlightObjectManagement physical endpoints for each uniquely identified ATM System expected to play the FDMP role.
Title	FlightObjectManagement provider endpoint discovery metadata
Status	<Validated>
Rationale	Only the SWIM Node fulfilling the role of manager owns the responsibility to accept the request of a service coming from another node involved in the collaborative scenario. The flight object operation is executed by the ATC application in order to fulfil the role of FDMP for the target flight; on the same flight, the ATC requestor application fulfils the role of FDC. Requestor SWIM Node (service consumer) has to discover the manager (service provider), in order to forward to it the requested service(s). The right physical endpoint is looked up knowing which ATC system is currently owning the target FlightObject and therefore retrieving the corresponding physical endpoint.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

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Identifier	REQ-14.01.04-TS-0901.0425
Requirement	Metadata enabling FlightObjectManagement provider endpoint discovery shall be managed at configuration phase providing for each uniquely identified ATM systems its corresponding physical endpoint.
Title	FlightObjectManagement provider endpoint discovery metadata configuration
Status	<Validated>
Rationale	<p>Only the SWIM Node fulfilling the role of manager owns the responsibility to accept the request of a service coming from another node involved in the collaborative scenario. The flight object operation is executed by the ATC application in order to fulfil the role of FDMP for the target flight; on the same flight, the ATC requestor application fulfils the role of FDC. Requestor SWIM Node (service consumer) has to discover the manager (service provider), in order to forward to it the requested service(s). The right physical endpoint is looked up knowing which ATC system is currently owning the target FlightObject and therefore retrieving the corresponding physical endpoint.</p> <p>Even if all the needed metadata could be dynamically discovered and exchanged at SWIM-TI layer, currently is required to manage that information as configuration artefact.</p> <p>This configuration may include two columns: in the first one is provided the ATC System identifier (the key) and in the second column the physical endpoint concerning that specific ATC system.</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0815
Requirement	The SWIM Node acting as FDMP and accepting a RequestFORRecovery request should publish all locally-managed Flight Objects for which the requesting node ('iop_stakeholder_id') is in Tier 'recovery_tier' within a

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	maximum time of 'SP-IOP-FOsRePublication_Recovery_Time'.
Title	Tiered Recovery of Flight Objects: re-publication maximum time
Status	<Validated>
Rationale	In order to allow Flight Objects to be recovered sequentially and mitigate a storm of updates, a Tier approach is used to recover Flight Objects. Flight Objects are received by the recovering SWIM Node according to a defined priority given by the Tier information. This recommendation aims at limiting as much as possible the time by when, the receiving SWIM Node at FDMP side, has to republish requested Flight Objects. Note that the Node might be in a situation that it prefers to allocate resources to its normal operation rather than to the recovering activities. This may cause missing timing restriction. In that case it is the application layer on the receiver side responsible to handle the event (timeout expired).
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.9.2.1.3 Performance Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.9.2.1.4 Security and Integrity Requirements

This section provides specific security and integrity requirements identified for the FlightObjectManagement Interface.

Currently the information exchanged through this interface is protected and the participants authorized and authenticated adopting transport level security solutions.

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0430
Requirement	Transport Level Security shall be applied for the FlightObjectManagement interface endpoint.
Title	Transport Level Security for FlightObjectManagement provider endpoint
Status	<Validated>
Rationale	Transport level security applied to protect data exchanged through this interface and to properly authenticate and authorize interfacing entities. This requirement covers NIST security controls IA-2 and IA-8.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.9.2.1.5 Data Transfer

This paragraph provides requirements about message structure, type and size concerning the FlightObjectManagement interface.

The message types for the RequestFOService operation is a description of information exchanged between the service consumer and provider.

The Messages Types are described in the following table, also refer to the SoaML diagram.

**Table 3-1: FlightObjectManagement Interface RequestFOService Operation Message Types**

Message Type	Brief Description
IopStakeholderId	It contains a complex data type representing the stakeholder identifier (defined

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	as string)
<b>FlightMdwId</b>	It contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).
<b>ClusterIdSequence</b>	It defines a container for array of complex data type representing cluster identifier (each one indicates which type of distribution cluster is interested by the request)
<b>ReleaseIdSequence</b>	It defines a container for array of complex data type representing release identifier (each one indicates which release number of a certain distribution cluster is interested by the request)
<b>RequestsSequence</b>	It represents a container for an array of strings each one of them contains the XML representation of the operation requested to the stakeholder: array of the real operative intentions
<b>QoS</b>	It simply contains a complex data type value representing the quality of service expected
<b>ComplexReport</b>	It defines a container for <ul style="list-style-type: none"> <li>• an array of strings (defining the invocation result for every service request),</li> <li>• a complex data type (defining the report as two main attributes, (i) report code and (ii) report value),</li> </ul> representing error information whether the request is correctly checked and executed

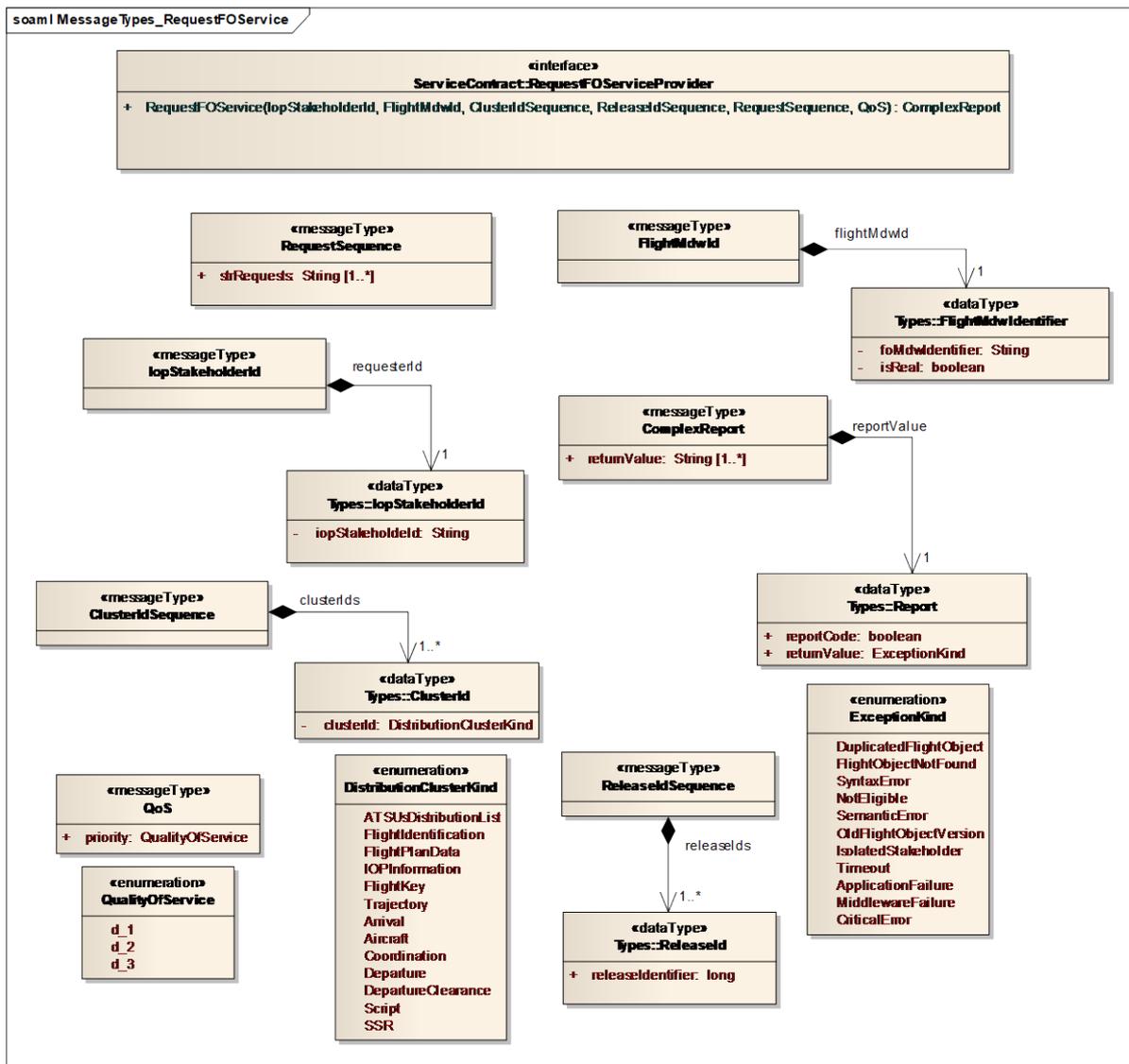


Figure 3-14: FlightObjectManagement Interface RequestFOService Operation Message Type

[REQ]

Identifier	REQ-14.01.04-TS-0901.0435
Requirement	<p>FlightObjectManagement RequestFOService operation signature shall be:</p> <p>+ Input Message:</p> <ul style="list-style-type: none"> <li>- topStakeholderId</li> <li>- FlightMdwld</li> <li>- ClusterIdSequence</li> <li>- ReleaseIdSequence</li> <li>- RequestsSequence</li> <li>- QoS</li> </ul> <p>+ Output Message:</p> <ul style="list-style-type: none"> <li>- ComplexReport</li> </ul> <p>+ Fault Message:</p> <ul style="list-style-type: none"> <li>- : non specified</li> </ul>
Title	FlightObjectManagement RequestFOService operation signature

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Status	<Validated>
Rationale	<p>FlightObjectManagement RequestFOService operation signature consists of:</p> <p>Input Message:</p> <ul style="list-style-type: none"> <li>- IopStakeholderId, which contains a complex data type representing the stakeholder identifier (defined as string)</li> <li>- FlightMdwld, which contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).</li> <li>- ClusterIdSequence, which defines a container for array of complex data type representing cluster identifier (each one indicates which type of distribution cluster is interested by the request)</li> <li>- ReleaseIdSequence, which defines a container for array of complex data type representing release identifier (each one indicates which release number of a certain distribution cluster is interested by the request)</li> <li>- RequestsSequence, which represents a container for an array of strings each one of them contains the XML representation of the operation requested to the stakeholder: array of the real operative intentions</li> <li>- QoS, which simply contains a complex data type value representing the quality of service expected</li> </ul> <p>Output Message:</p> <p>ComplexReport, which defines a container for</p> <ul style="list-style-type: none"> <li>- an array of strings (defining the invocation result for every service request),</li> <li>- a complex data type (defining the report as two main attributes, (i) report code and (ii) report value) representing error information whether the request is correctly checked and executed</li> </ul>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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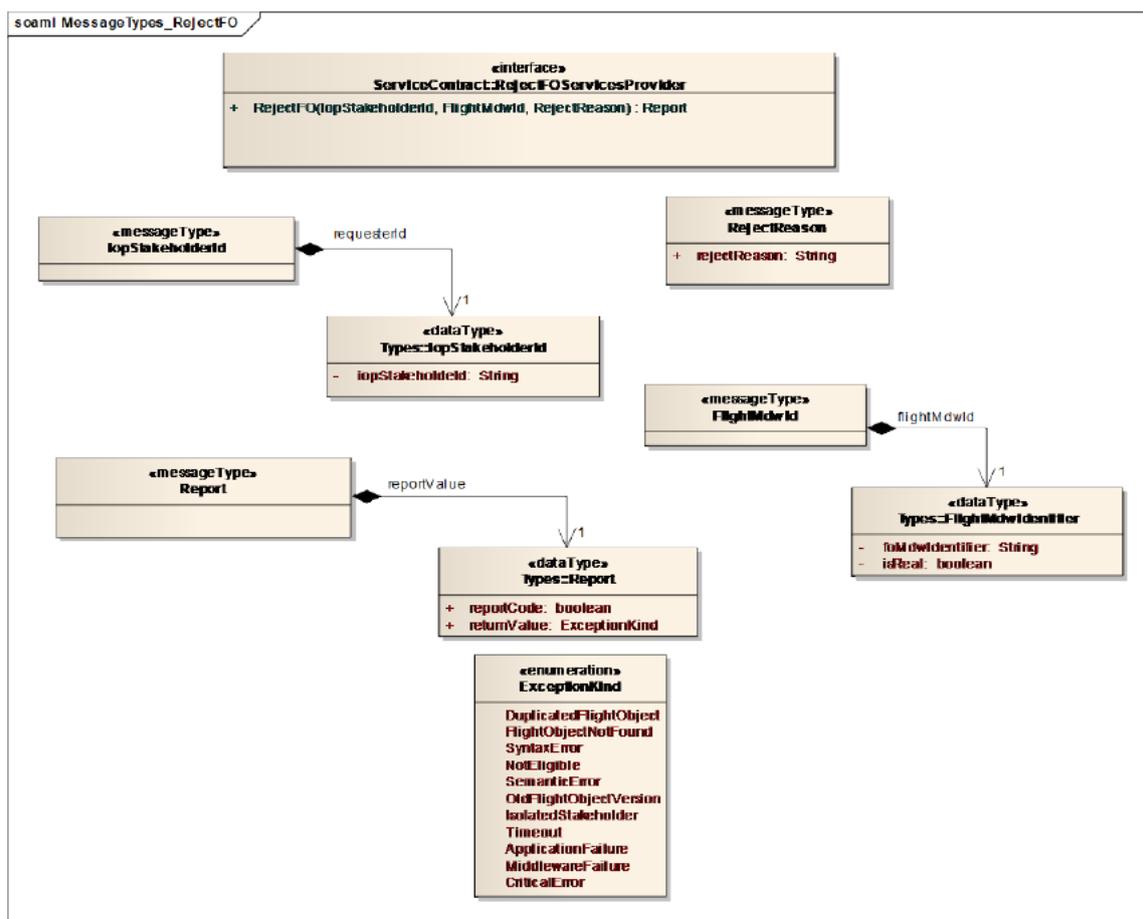
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The message types for the RejectFO operation is a description of information exchanged between the service consumer and provider.

The Messages Types are described in the following table, also refer to the SoaML diagram.

**Table 3-2: FlightObjectManagement Interface RejectFO Operation Message Types**

Message Type	Brief Description
<b>TopStakeholderId</b>	It contains a complex data type representing the stakeholder identifier (defined as string)
<b>FlightMdwId</b>	It contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).
<b>RejectReason</b>	It contains a simple string representing the reject reason(s)
<b>Report</b>	It contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request)



**Figure 3-15: FlightObjectManagement Interface RejectFO Operation Message Types**

[REQ]

Identifier	REQ-14.01.04-TS-0901.0440
Requirement	FlightObjectManagement RejectFO operation signature shall be: + Input Message: - lopStakeholderId - FlightMdwld - RejectReason  + Output Message: - Report  + Fault Message: - : non specified
Title	FlightObjectManagement RejectFO operation signature
Status	<Validated>
Rationale	FlightObjectManagement RejectFO operation signature consists of: Input Message: - lopStakeholderId, which contains a complex data type representing the stakeholder identifier (defined as string) - FlightMdwld, which contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO). - RejectReason, which contains a simple string representing the reject reason(s).  Output Message: Report, which contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request).
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>

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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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The message types for the RestoreFO operation is a description of information exchanged between the service consumer and provider.

The messages types are described in the following table, also refer to the SoaML diagram.

Table 3-3: FlightObjectManagement Interface RestoreFO Operation Message Types

Message Type	Brief Description
IopStakeholderId	It contains a complex data type representing the stakeholder identifier (defined as string)
FlightMdwId	It contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).
Report	It contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request)

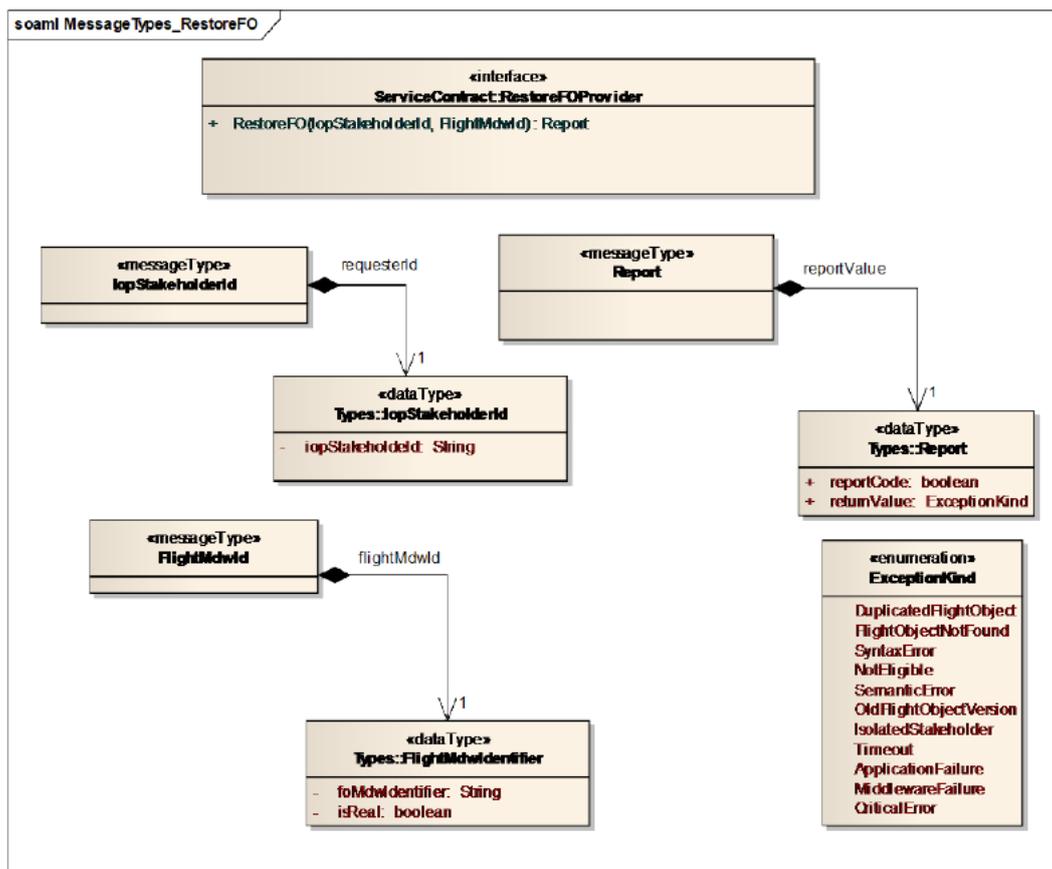


Figure 3-16: FlightObjectManagement RestoreFO Operation Message Types

[REQ]

Identifier	REQ-14.01.04-TS-0901.0445
Requirement	FlightObjectManagement RestoreFO operation signature shall be: + Input Message: - IopStakeholderId - FlightMdwld  + Output Message: - Report  + Fault Message: - : non specified
Title	FlightObjectManagement RestoreFO operation signature
Status	<Validated>
Rationale	FlightObjectManagement RestoreFO operation signature consists of: Input Message: - IopStakeholderId, which contains a complex data type representing the stakeholder identifier (defined as string) - FlightMdwld, which contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).  Output Message: Report, which contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request).
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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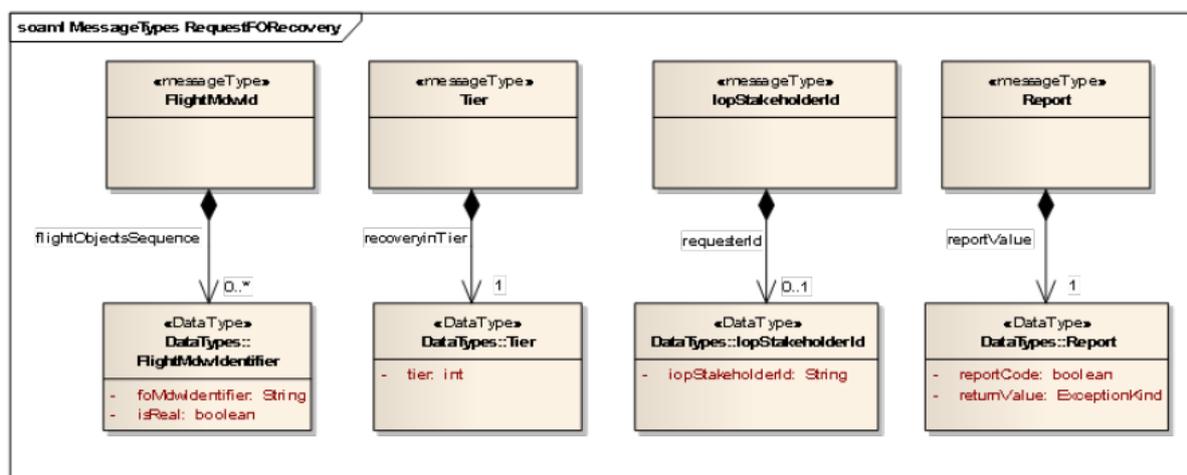
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The message types for the RequestFORRecovery operation is a description of information exchanged between the service consumer and provider.

The Messages Types are described in the following table, also refer to the SoaML diagram.

**Table 3-4: FlightObjectManagement Interface RequestFORRecovery Operation Message Types**

Message Type	Brief Description
IopStakeholderId	It contains a complex data type representing the stakeholder identifier (defined as string)
FlightMdwId	It contains a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). It allows also to distinguish between a real and a what-if flight object (isReal attribute has to be TRUE for real FO and FALSE for WIFO).
Tier	It contains a complex data type representing the recovery Tier (defined as and Integer)
Report	It contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request)



**Figure 3-17: FlightObjectManagement RequestFORRecovery Operation Message Types**

[REQ]

Identifier	REQ-14.01.04-TS-0901.0796
Requirement	FlightObjectManagement RequestFORRecovery operation signature shall be: + Input Message: - IopStakeholderId - Tier - FlightMdwId [0..*]  + Output Message: - Report  + Fault Message: - : unspecified

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Title	FlightObjectManagement RequestFORRecovery operation signature
Status	<Validated>
Rationale	<p>FlightObjectManagement RequestFORRecovery operation signature is:</p> <p>Input Message:</p> <ul style="list-style-type: none"> <li>- IopStakeholderId, which contains a complex data type representing the stakeholder identifier (defined as string) the Recovering SWIM Node is serving.</li> <li>- Tier, an Integer providing the Recovery Tier of the Recovering SWIM Node.</li> <li>- A sequence of FlightMdwId, a list of a complex data type representing the flight middleware identifier (which denotes a unique identification for flight object at middleware level). Provides the Flight Objects that need to be recovered. When the attribute is left empty, it is to be understood as the entire list of Flight Objects pertaining to the specified Tier.</li> </ul> <p>Output Message:</p> <p>Report, which contains a complex data type representing the report and exception codes (return values indicating the acceptance or the rejection of the request).</p> <p>This requirement covers the following NIST security controls: CP-7 a, CP-10.</p>
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

FlightMdwIdentifier information is not directly managed by the SWIM-TI layer because it is generated and mainly used at ATM layer. It is recommended to establish and to share clear rules to be applied for the FlightMdwIdentifier coding schema (e.g. a possible schema could be based on the composition of FlightKey information).

### 3.3.9.2.1.6 Transactions

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Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.9.2.1.7 Interface Instantiation

In this section the SOAP Web-Service specific model or instantiation of the FlightObjectManagement interface is provided. The binding and the contract have been defined according to requirements, UML model and interface descriptions provided in the previous sections. In particular the binding includes HTTPs to enable transport level security mechanisms.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0325
Requirement	<p>FlightObjectManagement interface shall be instantiated using the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- SOAP 1.1 over HTTPS POST over TCP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- SRR-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- the service shall be able to determine the content of the HTTP status code and HTTP reason phrase</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- Text encoding</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: transport</li> <li>- Integrity: transport</li> <li>- Authenticity: transport mutual</li> <li>- Authorization: transport</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: WSDL 1.1</li> <li>- minimum: not applicable</li> <li>- reference: Blue Profile Technical Specification, ISRM</li> </ul> </li> <li>+ Interoperability: WS-I Basic Profile 1.2</li> </ul>
Title	FlightObjectManagement Interface binding
Status	<Validated>
Rationale	Flight Object Management requires a specific Interface configuration. Security controls are all at transport (HTTP over TLS) level. Authenticity (or Authentication) at transport level has not to be confused with HTTP Basic and Digest Access Authentication that are not supported by this binding.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Service binding>

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Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0101	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0010	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0114	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0275	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0123	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0111	N/A
<SATISFIES>	<ATMS Requirement>	REQ-14.01.04-TS-0001.0350	<Full>
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0006.0010	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0845	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0002.0600	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0002.0031	N/A
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<SATISFIES>	<ATMS Requirement>	REQ-14.01.04-TS-0001.0302	<Full>
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

Latest version of WSDL for the FlightObjectManagement interface contract is provided here after (using WSDL standard version 1.1).



BPFDD-FlightObjectManagement.zip

[REQ]

Identifier	REQ-14.01.04-TS-0901.0450
Requirement	The FlightObjectManagement interface shall be instantiated according to the WSDL contract available in the latest 14.01.04 Blue Profile Technical specification.
Title	FlightObjectManagement Interface Binging Contract

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Status	<Validated>
Rationale	The WSDL is available in the 14.01.04 Technical Specification.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0325	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.3.9.2.2 FlightObjectDistribution Interface Requirements

The FlightObjectDistribution interface, as part of the within the SharedFlightObject service physical architecture (refer to Figure 3-4) aims at allowing Flight Object distribution.

This interface enables the mechanism specified in ED-133 and adopted in the Blue Profile to allow the Flight Object data sharing between ATC applications. This logically consists in to allow to FDMP ATC application to distribute Flight Object data and on the other hand, to allow to the other relevant ATC application instance to receive the published data. This logical communication between ATC applications is implemented via the mediation of the SWIM Nodes acting as Flight Object data publishers (on FDMP ATC application side) and/or subscribers (on FDC/FDU ATC Application side). The FlightObjectDistribution specification consists of a set of well-defined OMG DDS (Data Distribution Service) topics, data types and QoS. The data samples of each topic are distributed across SWIM Nodes using the OMG DDS capabilities and according to defined QoS.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0455
Requirement	The FlightObjectDistribution Interface contract shall be specified according to the PSPULL-MEP and PSPUSH-MEP.
Title	FlightObjectDistribution Interface contract Message Exchange Patterns
Status	<Validated>
Rationale	To ensure that the FlightObjectDistribution Interface contract is specified according to the expected Message Exchange Patterns identified for that interface.
Category	<Interface>

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Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

In the following sections the requirements concerning this interface are provided.

### 3.3.9.2.2.1 Operations

The FlightObjectDistribution interface provides all the typical operations needed to enable entities (publishers and subscribers) to exchange information according to the PSPUSH-MEP and PSPULL-MEP message exchanges patterns.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.9.2.2.2 Functional Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0901.0826
Requirement	When requested by the IOP Application to start recovery for a given Tier(s) or when the automatic recovery is provided (optional capability) and local triggering conditions apply, the recovering SWIM Node shall publish a RECOVERY_STATUS item at least every 30 seconds with: <ul style="list-style-type: none"> <li>- the IOP Recovery Status set to TRUE,</li> <li>- a new Recovery Context ID generated for the SWIM Node,</li> <li>- the Tier(s) set as provided by the IOP Application or specified in the local automatic recovery policy,</li> </ul> and store the Recovery context Id for the current recovery iteration.
Title	Tiered Recovery of Flight Objects: Recovery Process initiation and retries (recovering node)

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Status	<Validated>
Rationale	<p>Upon reception a request from the IOP Application or automatically triggered, the IOP Recovery Status information is periodically distributed by any recovering entities to trigger relevant FOs re-publication for a given Tier(s).</p> <p>This requirement covers both the case of the first iteration of the recovery process as well as any subsequent re-try.</p> <p>Triggered periodic RECOVERY_STATUS publication, is interrupted according to the conditions in REQ-14.01.04-TS-0901.0792.</p> <p>If the Recoverer (node publishing FOs in response of processing of received RECOVERY_STATUS) receives a RECOVERY_STATUS with status FALSE and context id 'ctxid', the recoverer shall instantly stop any further publications belonging to 'ctxid'. and any internal resources associated with 'ctxid' can be released.</p> <p>It is a local decision to either stop the publication of the RECOVERY_STATUS item or to continue to publish it with the status set to FALSE.</p> <p>This requirement covers the following NIST security controls: CP-7 a, CP-10.</p>
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0777
Requirement	<p>A SWIM Node with IOP Status "ENABLED" receiving a RECOVERY_STATUS from a SWIM Node with a Recovery Status set to "TRUE" for a specified Tier(s) and containing a Recovery Context ID not locally stored for the recovering SWIM Node, shall:</p> <ul style="list-style-type: none"> <li>- publish all locally-managed Flight Objects for which the recovering Node ('iop_stakeholder_id') is in Tier(s) 'TierSequence', and</li> </ul>

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	- store the Recovery Context ID for the recovering SWIM Node.
Title	Tiered Recovery of Flight Objects: Initial Detection of a Recovering Node
Status	<Validated>
Rationale	This requirement triggers the publication of the relevant Flight Objects by a SWIM Node when it detects that a remote SWIM Node is entering a specific Recovering tier(s). The check on the Recovery Context ID allows to trigger the publication of the Flight Objects only once (see next requirement).  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0778
Requirement	Upon reception of a RECOVERY_STATUS from a SWIM Node with a Recovery Status set to "TRUE" and containing an already locally stored Recovery Context ID for the recovering SWIM Node, the receiving SWIM Node shall ignore the message.
Title	Tiered Recovery of Flight Objects: Subsequent Detection of a Recovering Node (same iteration).
Status	<Validated>
Rationale	In order to allow Flight Objects to be recovered sequentially and mitigate a storm of updates, a Tier approach is used for Recovery where Flight Objects are received by the recovering SWIM Node according to a defined priority given by the Tier information.  This requirement allows to detect situations where the recovering is in progress but a new periodic RECOVERY_STATUS is received from the recovering Node for the same recovering iteration. In that case, the RECOVERY STATUS is ignored, thus avoiding multiple publications of the

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	same flight objects.  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0779
Requirement	Upon reception of a RECOVERY_STATUS from a SWIM Node with a Recovery Status set to "TRUE" and containing a different Recovery Context ID than the already locally stored Recovery Context ID for the recovering SWIM Node, the receiving SWIM Node shall: <ul style="list-style-type: none"> <li>- cancel the current recovering activities with the SWIM Node,</li> <li>- publish all locally-managed Flight Objects for which the recovering Node ('iop_stakeholder_id') is in Tier(s) 'TierSequence', and</li> <li>- store the new received Recovery Context ID for the recovering SWIM Node.</li> </ul>
Title	Tiered Recovery of Flight Objects: Subsequent Detection of a Recovering Node (new iteration).
Status	<Validated>
Rationale	This requirement allows to detect situations where the recovering is in progress but a new periodic RECOVERY_STATUS is received from the recovering Node indicating a re-start of the recovering process. This might occur for instance when the recovering node fails again during the recovery. The current recovering activities are cancelled and a new recovery process is re-started.  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	

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Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0831
Requirement	Upon reception of a RECOVERY_STATUS from a SWIM Node with a Recovery Status set to "FALSE", the receiving SWIM Node shall delete the Recovery Context ID stored for the recovering SWIM Node and considers the recovery completed for the SWIM Node.
Title	Tiered Recovery of Flight Objects: Recovery Completion Indication
Status	<Validated>
Rationale	This requirement allows to free the resources set for the recovery of a remote Node when that recovering SWIM Node indicates that it has completed its recovery process. The Recovery Context ID that was stored previously and associated with the recovering Node is freed.  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0811
Requirement	Upon request of the IOP Application or when the automatic recovery is provided (optional capability) and local triggering conditions apply, the recovering SWIM Node shall request (RequestFORRecovery operation) Flight Objects re-publication to the concerning FDMP(s).
Title	Tiered Recovery of Flight Objects: RequestFORRecovery operation (recovering node)
Status	<Validated>
Rationale	It could happen that not all the tiers or/and not all the Flight Object within a given tier have been successfully completed. In that case, the Application IOP (or the SWIM Node in automatic mode) can request the recovering SWIM Node to request missing FOs re-publication.  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

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Identifier	REQ-14.01.04-TS-0901.0792
Requirement	Upon reception of a request from the IOP Application to stop recovery or when the automatic recovery is provided (optional capability) and local stopping conditions apply, the SWIM Node shall: - publish a RECOVERY_STATUS with the IOPRecoveryStatus set to FALSE with the RecoveryContextId associated with the current recovery iteration, - either stop or continue publishing periodically the RECOVERY_STATUS.
Title	Tiered Recovery of Flight Objects: Recovery Process Completion (recovering node)
Status	<Validated>
Rationale	On request of the IOP Application or automatically triggered (conditions are specified in the automatic recovery policy), the IOP Recovery Status information is sent once to inform other SWIM Nodes that the Recovery process is completed. It is a local decision to stop or continue sending periodically the RECOVERY_STATUS.  The IOP Status is managed independently by the IOP Application. The SWIM Node can be declared ENABLED while the recovery process is still on-going.  This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><Function/Behaviour>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

#### [REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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### 3.3.9.2.2.3 Performance Requirements

Technology specific performance requirements have been captured as OMG DDS QoSs and specified in §3.3.9.2.2.7.

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### 3.3.9.2.2.4 Security and Integrity Requirements

In this section security requirements concerning the FlightObjectDistribution interface are provided.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0505
Requirement	For all Data distributed through the FlightObjectDistribution interface confidentiality, integrity and authenticity shall be ensured.
Title	Flight Object Data confidentiality, integrity and authenticity.
Status	<In Progress>
Rationale	The SWIM infrastructure providing / consuming Flight Object data requires trust between all participant nodes. It is important to protect the SWIM infrastructure and Data from compromised SWIM nodes and malicious eavesdroppers.  Security solution adopted to cover that needs shall be based of interoperable COTS.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0510
Requirement	All the entities exchanging Flight Object data through the Flight Object Distribution interface shall be authenticated and Authorized.
Title	Flight Object Data consumers and providers entities Authentication and Authorization

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Status	<In Progress>
Rationale	The SWIM infrastructure providing / consuming Flight Object data requires trust between all participant nodes. It is important to protect the SWIM infrastructure and Data from compromised SWIM nodes and malicious eavesdroppers. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD. This requirement covers NIST security control IA-8.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0525
Requirement	For safety reasons maximum sample size shall be properly specified, documented and configured.
Title	Protection against Overload Maximum Sample Size
Status	<In Progress>
Rationale	To protect SWIM-TI from large samples that may corrupt and/or break DDS applications, it is important to define a maximum size for data samples for a safe deployment of DDS-based applications. This will also improve security of the SWIM nodes as buffer overflow techniques may be used to get privileged access to remote nodes. This requirement covers NIST security controls SC-5.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><ICD><Governance>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription

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	handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
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<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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### 3.3.9.2.2.5 Data Transfer

This paragraph provides requirements about message structure, type and size concerning the FlightObjectDistribution interface.

The message types describe here below represent the message exchanged between entities interaction through the FlightObjectDistribution interface. These message types are then used to specify OMG DDS data types concerning OMG DDS topics identified for this interface (refer to §3.3.9.2.2.7). The messages types (as many events to be transferred on this interface) are described in the table and SoaML diagram here below.

**Table 3-5: FlightObjectDistribution Interface Message Types**

Message Type	Message Type Description
<b>FOCluster</b>	It acts as a container of complex data and it is used as a single unit of information transferred between involved participants. Its main objective consists in transferring clustered data representing FlightObject data information. Any updated cluster is identified by the attribute 'cluster_id' and its value is stored as an XML string in the attribute 'payload'.  FOCluster message type is detailed in Figure 3-19.
<b>FOSummary</b>	It acts as a container of complex data and it is used as a single unit of information transferred between involved participants. Its main objective consists in transferring data representing the description of a specific flight defined by its flight key.  FOSummary message type is detailed in Figure 3-18.
<b>IOPStatus</b>	It acts as a container of complex data and it is used as a single unit of information transferred between involved participants. Its main objective consists in transferring data representing the status of both ATC application and SWIM Node.  IOPStatus message type is detailed in Figure 3-20.
<b>IOPRecoveryStatus</b>	It acts as a container of complex data and is used as a single unit of

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	<p>information transferred between involved participants. Its main objective consists in transferring data representing the status of the recovering process and the current level(s) of recovering.</p> <p>IOPRecoveryStatus message type is detailed in Figure 3-20.</p>
--	--

**Table 3-6: FlightObjectDistribution Interface Message Types data elements**

Message Components	Description
<b>DistributionClusterKind</b>	It defines an enumerative data type describing all the possible types of transferred clusters
<b>DistributionList</b>	Is a collection of the information related to the rules of distribution defined for the flight and in particular it defines the list of the stakeholders to which the flight object has to be distributed. For each stakeholder the following information are included: - IopStakeholderId, - an integer identifying the Recovery Tier associated to the stakeholder for that specific Flight Object.
<b>FlightMdwIdentifier</b>	It defines an IOP-wide unique identification for flight object at the SWIM-TI layer. It is composed by: -foMdwIdentifier: A string specifying the unique middleware identifier of a Flight Object. -isReal: A boolean specifying if it is a real FO (TRUE) or a WIFO (FALSE).
<b>ClusterPayload</b>	It defines a data type representing the unparsed XML content of the cluster which is transferred between the involved participants
<b>IopStatus</b>	It defines an Enumeration data type representing a status as with the following options:  DISABLED  ENABLED
<b>IopRecoveryStatus</b>	It defines an Enumeration data type representing a recovery status as with the following options:  TRUE: recovering in progress.  FALSE: recovery is completed.
<b>Time</b>	It defines a data type representing a time instant (using a specific representation)
<b>ReleaseId</b>	It defines a data type identifying a release version of a distributed object
<b>FlightKey</b>	It defines a structured representation of the operational key uniquely identifying a flight object. It is composed by: -adep: A string (4 characters) specifying the departure airport of the flight. -ades: A string (4 characters) specifying the arrival airport of the flight. -arcid: A string (7 characters) specifying the identification of the aircraft (registration marking or ICAO designator followed by flight identifier). -eobd: A Date specifying the date of the flight. -eobt: A string (4 characters) specifying the hours and minutes of the estimated of block time. -what-if_context: A string (20 characters) that logically groups a series of FOs and WIFOs by their what-if context. This attribute is relevant and has to be used only when referring to a WIFO.
<b>IopStakeholderId</b>	It defines a data type representing the unique identifier of an ATC application.
<b>ClusterReleaseIdSequence</b>	It defines a complex data type representing a sequence of data identifying the particular flight object release: the composition is defined as a sequence of release identification of each cluster
<b>Tier</b>	It defines a complex data type representing the Recovery Tier.

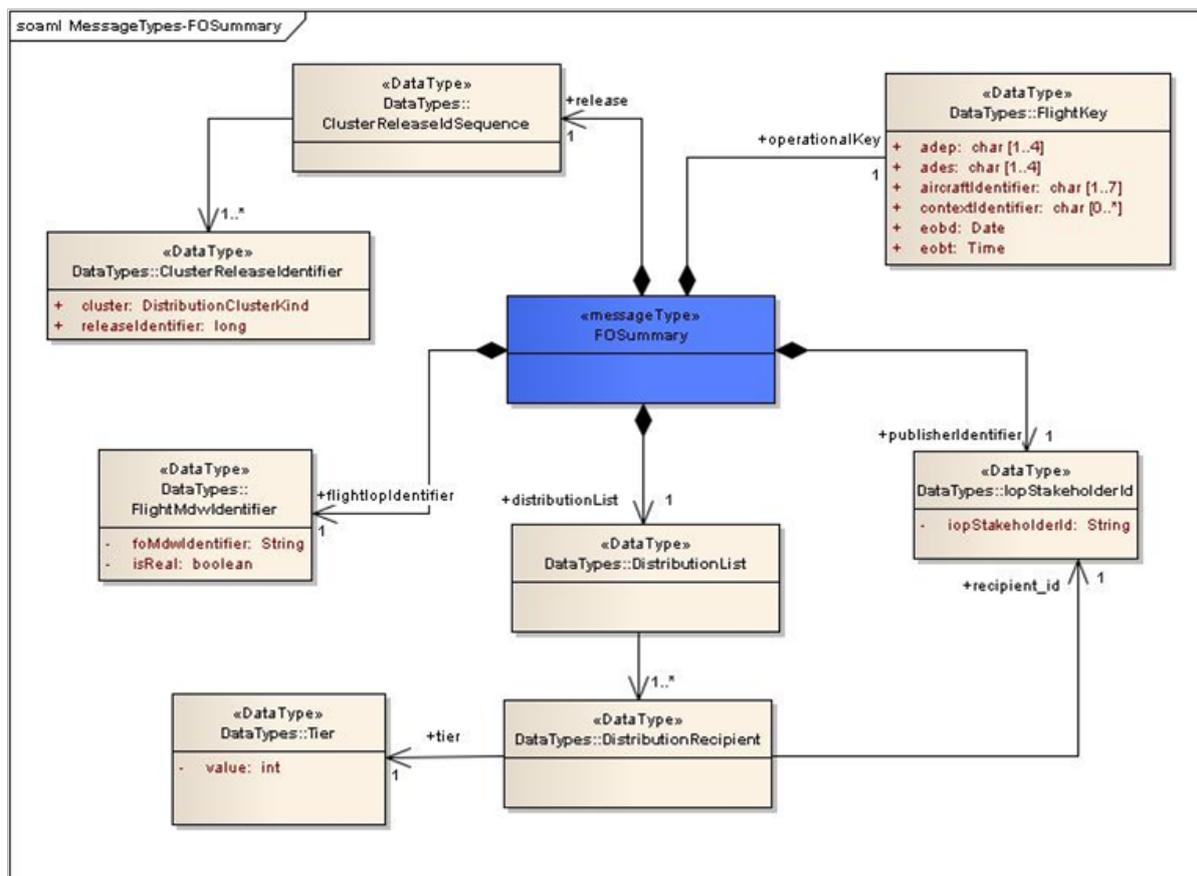


Figure 3-18: FlightObjectDistribution Interface FOSummary Message Type

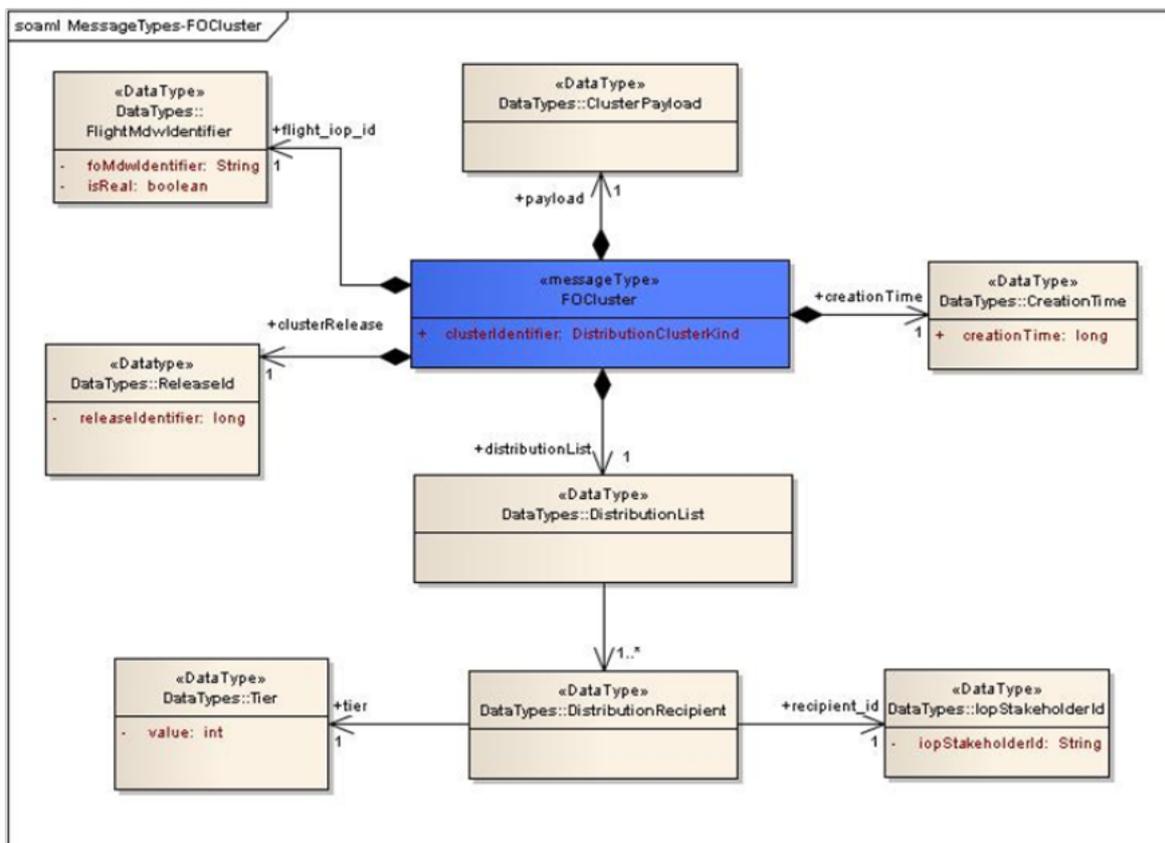


Figure 3-19: FlightObjectDistribution Interface FOCluster Message Type

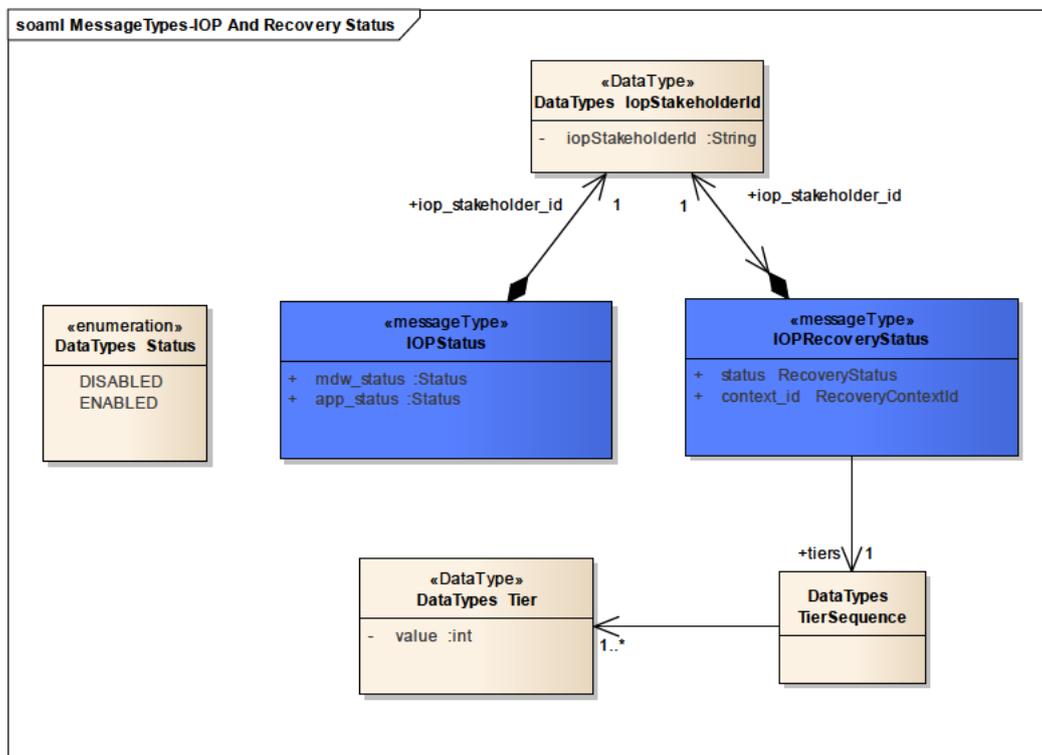


Figure 3-20: FlightObjectDistribution Interface IOPStatus and IOP Recovery Status Message Types

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0460
Requirement	The FOSummary message type shall contain the following information: <ul style="list-style-type: none"> <li>- FlightMdwIdentifier.</li> <li>- DistributionList.</li> <li>- ClusterReleaseldSequence.</li> <li>- lopStakeholderId.</li> <li>- FlightKey.</li> </ul>
Title	FlightObjectDistribution Interface FOSummary Message Type Structure
Status	<Validated>
Rationale	FOSummary message type structure consists of: <ul style="list-style-type: none"> <li>- FlightMdwIdentifier, which is the unique identifier of the FlightObject data at SWIM-TI layer.</li> <li>- DistributionList, which is the list of unique identifiers of ATC applications interested to that FlightObject and the associated Tier of the Flight Object for that ATC application.</li> <li>- ClusterReleaseldSequence, which contains the current releases of each cluster- lopStakeholderId, which is the unique identifier of the ATC application currently managing that FlightObject.</li> <li>- FlightKey, which includes key information such departure airport, arrival airport, off block time, etc. This requirement covers the following NIST security controls: CP-7 a, CP-10.</li> </ul>
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0465
Requirement	The FOCluster message type shall contain the following information: <ul style="list-style-type: none"> <li>- FlightMdwIdentifier.</li> <li>- DistributionClusterKind.</li> <li>- ClusterRelease.</li> </ul>

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	<ul style="list-style-type: none"> <li>- ClusterPayload.</li> <li>- DistributionList.</li> <li>- CreationTime.</li> </ul>
Title	FlightObjectDistribution Interface FOCluster Message Type Structure
Status	<Validated>
Rationale	<p>FOCluster message type structure consists of:</p> <ul style="list-style-type: none"> <li>- FlightMdwIdentifier, which is the unique identifier of the FlightObject data at SWIM-TI layer</li> <li>- DistributionClusterKind, which is the name/kind of the cluster</li> <li>- ClusterRelease, which is the release of the cluster</li> <li>- ClusterPayload, which encapsulates the cluster content</li> <li>- DistributionList, which is the list of unique identifiers of ATC applications interested to that FlightObject.</li> <li>- CreationTime, which is the creation time of the FlightObject</li> </ul>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0472
Requirement	<p>The IOPStatus message type shall contain the following information:</p> <ul style="list-style-type: none"> <li>- IopStakeholderId.</li> <li>- SWIM Node status.</li> <li>- ATC application status.</li> </ul>
Title	FlightObjectDistribution Interface IOPStatus Message Type Structure
Status	<Validated>
Rationale	<p>IOPStatus message type structure consists of:</p> <ul style="list-style-type: none"> <li>- IopStakeholderId, which is the unique identifier of the ATC application sharing that status</li> <li>- SWIM Node status, which is the status of the SWIM Node serving that ATC application</li> <li>- ATC application status, which is the status of that ATC application.</li> </ul>

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	This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0473
Requirement	The IOPRecoveryStatus message type shall contain the following information: <ul style="list-style-type: none"> <li>- IopStakeholderId.</li> <li>- SWIM Node recovery status.</li> <li>- Recovery ContextId.</li> <li>- Tier sequence.</li> </ul>
Title	FlightObjectDistribution Interface IOPRecoveryStatus Message Type Structure
Status	<Validated>
Rationale	IOPRecoveryStatus message type structure consists of: <ul style="list-style-type: none"> <li>- IopStakeholderId, which is the unique identifier of the ATC application sharing that status</li> <li>- SWIM Node recovery status which indicates that the SWIM node is currently performing a recovery or that the recovery process is completed.</li> <li>- Tier sequence, which specifies the current recovery Tier(s) (the tiers are provided as ordered sequence starting from highest priority tier) of that SWIM Node when the SWIM Node recovery status is true. This attribute only needs to be fulfilled when the SWIM Node is performing a recovery.</li> </ul> <p>This requirement covers the following NIST security controls: CP-7 a, CP-10.</p>
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design>

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Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0475
Requirement	FOSummary shall be published every 60 seconds.
Title	FlightObjectDistribution Interface FOSummary publication frequency
Status	<Validated>
Rationale	FOSummary is periodically published (even if the FlightObject has not been updated) to provide all the involved entities with latest key information concerning the FlightObject. This requirement applies to FO Summaries for both real and what-if (WI) Flight Objects. For WIFO the distribution of the summaries is limited only to the specific Flight Object distribution list (see REQ-14.01.04-TS-0901.0370 and REQ-14.01.04-TS-0901.0375).
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0370
Requirement	FOSummary for real Flight Objects shall be published to all the partitions of the IOP Area Stakeholders.
Title	FlightObjectDistribution Interface - Expected recipients of FOSummary publication for real Flight Objects
Status	<Validated>
Rationale	FOSummary is periodically published (even if the FlightObject has not been updated) to provide all the involved entities with latest key information concerning the FlightObject. For real Flight Objects all the IOP Area stakeholders have to receive this information. For further details refer to Flight Object Summary Distribution QoS, Topic name and structure table.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0375
Requirement	FOSummary for what-if Flight Objects shall be published to all the partitions of the IOP Area Stakeholders part of the Flight Object distribution list.
Title	FlightObjectDistribution Interface - Expected recipients of FOSummary publication for what-if Flight Objects
Status	<Validated>
Rationale	FOSummary is periodically published (even if the FlightObject has not been

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	updated) to provide all the involved entities with latest key information concerning the FlightObject. For what-if Flight Objects ONLY the IOP Area stakeholders part of the distribution list have to receive this information.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0480
Requirement	IOPStatus shall be published every 30 seconds.
Title	FlightObjectDistribution Interface IOPStatus publication frequency
Status	<Validated>
Rationale	IOPStatus information are periodically distributed by all participating entities to share their status with all the others.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0490
Requirement	The FOCluster message type ClusterPayload shall be compressed using GZIP.
Title	FlightObjectDistribution Interface FOCluster ClusterPayload attribute compression.
Status	<Validated>
Rationale	<p>To reduce ClusterPayload size. Taking into account that ClusterPayload is a String, its content will be Base64 String built from bytes arrays as resulting from the GZIP compression.</p> <p>It is a local decision to always apply compression or only if the FO Cluster data exceeds a given threshold. The receiver can check if the FO Cluster being received is Base64 encoded (compressed data) or not. There could be additional mechanisms (e.g. DDS User Data QoS) to enrich published data with metadata such as compression applied or not. Currently, the mechanism has not been specified.</p> <p>Furthermore, a detailed analysis and testing it is recommended in order to evaluate the possibility to use as data type for the FO Cluster payload (see IDL) a sequence of bytes instead of a string.</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0495
Requirement	The FOCluster message type CreationTime shall be expressed in milliseconds since the epoch time 00.00 hours, January, 1st, 1970 UTC.
Title	FlightObjectDistribution Interface FOCluster CreationTime attribute format.
Status	<Validated>
Rationale	To ensure interoperability.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

FlightMdwIdentifier information is not directly managed by the SWIM-TI layer because it is generated and mainly used at ATM layer. It is recommended to establish and to share clear rules to be applied for the FlightMdwIdentifier coding schema (e.g. a possible schema could be based on the composition of FlightKey information).

### 3.3.9.2.2.6 Transactions

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.3.9.2.2.7 Interface Instantiation

In this section the OMG DDS specific model or instantiation of the FlightObjectDistribution interface is provided. The binding and the contract have been defined according to requirements, UML model and interface descriptions provided in the previous sections. In particular the contract consists of OMG DDS IDL, OMG DDS Topics and QoS as described here below.

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As anticipated above, this interface allows to share also IOP-Status information. The latter is a data shared for supervision purposes and it is provided here and not in the SPV requirements chapter just because its contract is strongly related to Flight Object distribution.

[REQ]

Identifier	REQ-14.01.04-TS-0901.0700
Requirement	<p>FlightObjectDistribution interface shall be instantiated using the following binding:</p> <ul style="list-style-type: none"> <li>+ Protocol stack: <ul style="list-style-type: none"> <li>- DDS 1.2 over DDS Security 1.0, DDSI 2.1 over UDP</li> </ul> </li> <li>+ MEPs: <ul style="list-style-type: none"> <li>- PSPUSH-MEP, PSPULL-MEP</li> </ul> </li> <li>+ Fault handling: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Encoding: <ul style="list-style-type: none"> <li>- As defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: message level as defined per DDS Security</li> <li>- Integrity: message level as defined per DDS Security</li> <li>- Authenticity: mutual, message level as defined per DDS Security</li> <li>- Authorization: message level as defined per DDS Security</li> <li>- Non-repudiation: message level as defined per DDS Security</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: OMG IDL, QoS Configuration, DDS Security Configuration</li> <li>- minimum: not applicable</li> <li>- reference: Blue Profile Technical Specification, ISRM</li> </ul> </li> <li>+ Interoperability: as for OMG DDSI 2.1 and DDS Security 1.0</li> </ul>
Title	FlightObjectDistribution Interface binding
Status	<In Progress>
Rationale	<p>FlightObjectDistribution requires a specific Interface configuration.</p> <p>At the time of writing this TS (May 2016), OMG DDS Security is an adopted OMG BETA specification being standardized. BP TS just identifies which DDS Security plugins have to be used and how. Further evolutions of DDS Security BETA, until it will be considered standard, are only expected to fix specification issues that may be raised during the one-year finalization task force.. This limits the impact on the BP TS.</p> <p>Verification of this requirement has as precondition the verification of requirements REQ-14.01.04-TS-0901.0500 and REQ-14.01.04-TS-0901.0515,</p> <p>This requirement can be fully verified only by interoperable DDS Security implementations. If not available, network level or message level (application) mechanisms may be used to fill the gap.</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication

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	mediator><Subscription handler>
Selfstanding set	<Service binding>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0191	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0102	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0117	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0146	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0147	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0153	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0184	N/A
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<SATISFIES>	<ATMS Requirement>	REQ-14.01.04-TS-0001.0410	<Full>
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0106	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0107	N/A
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0185	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

For each one of the three message types introduced before a corresponding OMG DDS topic has been identified providing topic name, topic structure and QoS. In the following tables the DDS QoS are reported pointing out the values for each policy and referring to the specific entity.

Table 3-7: Flight Object Summary Distribution QoS, Topic name and structure

Flight Object Summary Distribution QoS			
OMG DDS Topic Name	FO_SUMMARY	OMG DDS Data Type	IOP::FO::FOSummary
OMG DDS Topic QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
DEADLINE	period	SP-IOP-Checksum_Interval x factor	SP-IOP-Checksum_Interval determines how often each summary instance is sent - a multiplication factor must be applied to it to determine the deadline interval
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
OMG DDS Subscriber QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	Name of the partition/s the local system instance belongs to	
OMG DDS Data Reader QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	> total_flight_objects	
RESOURCE_LIMITS	max_samples	> total_flight_objects	
RESOURCE_LIMITS	max_samples_per_instance	1	

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DEADLINE	period	SP-IOP-Checksum_Interval x factor	SP-IOP-Checksum_Interval determines how often each summary instance is sent - a multiplication factor must be applied to it to determine the deadline interval
OMG DDS Publisher QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	All the partitions of the IOP Area Stakeholders	
OMG DDS Data Writer QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	>(SP-IOP- Max_FO_Managed) x (total_number_of_publishers)	
RESOURCE_LIMITS	max_samples	>(SP-IOP- Max_FO_Managed) x (total_number_of_publishers)	
RESOURCE_LIMITS	max_samples_per_instance	1	
WRITER_DATA_LIFECYCLE	autodispose_unregistered_instances	FALSE	
DEADLINE	period	SP-IOP-Checksum_Interval x factor	SP-IOP-Checksum_Interval determines how often each summary instance is sent - a multiplication factor must be applied to it to determine the deadline interval

Table 3-8: Flight Object Cluster Distribution QoS, Topic name and structure

Flight Object Cluster Distribution QoS			
OMG DDS Topic Name	FO_CLUSTER	OMG DDS Data Type	IOP::FO::FOCluster
OMG DDS Topic QoS			

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QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
OMG DDS Subscriber QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	Name of the partition/s the local system instance belongs to	
PRESENTATION	coherent_access	FALSE	
OMG DDS Data Reader QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	> SP-IOP-Max_FO_Stored x number_of_clusters	
RESOURCE_LIMITS	max_samples	> SP-IOP-Max_FO_Stored x number_of_clusters	
RESOURCE_LIMITS	max_samples_per_instance	1	
OMG DDS Publisher QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	All and only those partitions of the IOP area stakeholders part of the distribution list of the Flight Object being published.  <u>Recovery phase publications:</u>	

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		All and only those partitions of the IOP area stakeholders part of the distribution list AND recovering the Flight Object being published.	
PRESENTATION	coherent_access	FALSE	
OMG DDS Data Writer QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	> SP-IOP-Max_FO_Stored x number_of_clusters	
RESOURCE_LIMITS	max_samples	> SP-IOP-Max_FO_Stored x number_of_clusters	
RESOURCE_LIMITS	max_samples_per_instance	1	
WRITER_DATA_LIFECYCLE	autodispose_unregistered_instances	FALSE	

Table 3-9: IOP and Recovery Status Distribution QoS, Topic name and structure

IOP Status Distribution QoS					
<b>OMG Name</b>	<b>DDS</b>	<b>Topic</b>	IOP_STATUS	<b>OMG DDS Data Type</b>	IOP::FO::IOP_STATUS
<b>OMG Name</b>	<b>DDS</b>	<b>Topic</b>	RECOVERY_STATUS	<b>OMG DDS Data Type</b>	IOP::FO::RECOVERY_STATUS
OMG DDS Topic QoS					
QoS Policy	QoS Policy Attribute		Value	Note	
DURABILITY	kind		VOLATILE		
OWNERSHIP	kind		SHARED	DDS DEFAULT value	
RELIABILITY	kind		RELIABLE		
DESTINATION_ORDER	kind		BY_SOURCE_TIMESTAMP	This requires	time synchronization

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HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
OMG DDS Subscriber QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	Name of the partition/s the local system instance belongs to	
OMG DDS Data Reader QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	LENGTH_UNLIMITED	
RESOURCE_LIMITS	max_samples	LENGTH_UNLIMITED	
RESOURCE_LIMITS	max_samples_per_instance	1	
OMG DDS Publisher QoS			
QoS Policy	QoS Policy Attribute	Value	Note
PARTITION	name	All the partitions of the IOP Area Stakeholders.	
OMG DDS Data Writer QoS			
QoS Policy	QoS Policy Attribute	Value	Note
DURABILITY	kind	VOLATILE	
OWNERSHIP	kind	SHARED	DDS DEFAULT value
RELIABILITY	kind	RELIABLE	
DESTINATION_ORDER	kind	BY_SOURCE_TIMESTAMP	This requires time synchronization
HISTORY	kind	KEEP_LAST	DDS DEFAULT value
HISTORY	depth	1	DDS DEFAULT value
RESOURCE_LIMITS	max_instances	LENGTH_UNLIMITED	

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RESOURCE_LIMITS	max_samples	LENGTH_UNLIMITED
RESOURCE_LIMITS	max_samples_per_instance	1
WRITER_DATA_LIFECYCLE	autodispose_unregistered_instances	FALSE

**Table 3-10: FlightObjectDistribution Interface OMG DDS Domain Participant and related UDP ports**

OMG Domain Participant	
<b>OMG DDS Domain Participant Identifier</b>	<b>0</b>
DDSI Discovery Traffic UDP Ports	
Kind Of Traffic	UDP Port
MULTICAST	7400
UNICAST	7410
DDSI User Traffic UDP Ports	
Kind Of Traffic	UDP Port
MULTICAST	7401
UNICAST	7411

**Table 3-11: FlightObjectDistribution Interface UDP Fragmentation and DDSI configuration**

DDSI configuration related to UDP Fragmentation Information	
Configuration To Avoid Fragmentation (e.g. needed when IPSec and Firewalls are used)	
DDSI	Size (bytes)
Max Message Size	1228
Fragment Size	1032 (minimum default DDSI value)
Configuration With Fragmentation	
DDSI	Size (bytes)
Max Message Size	1228 < Value <= 65536
Fragment Size	1032 (minimum default DDSI value)

Latest version of the IDL for the FlightObjectDistribution interface contract is provided here after.



BPFDD-FlightObjectD  
istribution.zip

[REQ]

Identifier	REQ-14.01.04-TS-0901.0485
Requirement	The FlightObjectDistribution interface shall be instantiated according to the contract available in the latest 14.01.04 Blue Profile Technical specification.
Title	FlightObjectDistribution Interface Binding Contract
Status	<Validated>
Rationale	FlightObjectDistribution contract consists of the IDL, Topic names, Topics structures and QoS available in the 14.01.04 Technical Specification. DDS Security configuration:REQ-14.01.04-TS-0901.0685, REQ-14.01.04-TS-0901.0690, REQ-14.01.04-TS-0901.0691, REQ-14.01.04-TS-0901.0695, REQ-14.01.04-TS-0901.0698.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0685
Requirement	The FlightObjectDistribution interface instantiation shall use DDS:Auth:PKI-RSA/DSA-DH DDS Security Builtin Authentication plugin.
Title	FlightObjectDistribution Interface Binding Contract DDS Security Authentication plugin
Status	<In Progress>
Rationale	Compliance with security interoperable protocol for DDS and in particular with Builtin Authentication plugin specified in DDS Security FTF Beta 1 clause 9.3.

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	As per DDS Security clause 9.3 three things have to be configured to enable the plug-in: 1. The X.509 Certificate that defines the Shared CA (this certificate contains the 2048-bit RSA Public Key of the CA); 2. The 2048-bit RSA Private Key of the DomainParticipant; 3. An X.509 Certificate that chains up to the Shared CA , that binds the 2048-bit RSA Public Key of the DomainParticipant to the Distinguished Name (subject name) for the DomainParticipant and any intermediate CA certificates required to build the chain. DDS Security does not mandate how to configure this plugin (refer to 9.3.1) but it is important to clarify that the plugin uses a shared Certification Authority (CA) and that all the participants are pre-configured with shared-CA.
Category	<Interface><Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0690
Requirement	The FlightObjectDistribution interface instantiation shall use DDS:Access:PKI-Signed-XML-Permissions DDS Security Builtin Access Control plugin.
Title	FlightObjectDistribution Interface Binding Contract DDS Security Access Control plugin
Status	<In Progress>
Rationale	Compliance with security interoperable protocol for DDS and in particular with Builtin Access Control plugin specified in DDS Security FTF Beta 1 clause 9.4. As per DDS Security clause 9.4, three things have to be configured to enable the plug-in: 1. the Permissions CA X.509 certificate; 2. the Domain governance signed by the shared Permissions CA; 3. the DomainParticipant permissions signed by the Permissions CA.

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	In particular Domain governance configuration includes: - which topics shall be secured and how. - Whether discovery is secured and how. DomainParticipant permissions configuration includes: - what DDS domain Id can be joined. - which topics can be read/write for each domain. - ties of the SubjectName matching the one on IdentityCertificate.
Category	<Interface><Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0691
Requirement	The DDS:Access:PKI-Signed-XML-Permissions DDS Security Builtin Access Control plugin configuration shall be as follows: - grant access only to authenticated DDS entity; - DDS metadata, reliability traffic and discovery shall be protected using MAC; - Payload data sent on all the three <BP FDD> topics shall be protected with Encrypt+MAC.
Title	FlightObjectDistribution Interface Binding Contract DDS Security Access Control plugin configuration
Status	<In Progress>
Rationale	DDS:Access:PKI-Signed-XML-Permissions DDS Security Builtin Access Control plugin configuration for binding REQ-14.01.04-TS-0901.0700.
Category	<Interface><Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0695
Requirement	The FlightObjectDistribution interface instantiation shall use DDS:Crypto: AES-CTR-HMAC-RSA/DSA-DH DDS Security Builtin Cryptography plugin.
Title	FlightObjectDistribution Interface Binding Contract DDS Security Cryptography plugin
Status	<In Progress>
Rationale	Compliance with security interoperable protocol for DDS and in particular with Builtin Cryptography plugin specified in DDS Security FTF Beta 1 clause 9.5. In particular the plugin provides the following modes of operation: - AES128 and AES256 for encryption; - SHA1 and SHA256 for digest; - HMAC-SHA1 and HMAC-SHA256 for MAC. The <BP FDD> Domain governance and DomainParticipant documents shall specifies the applicable modes for application data (Topic), metadata, reliability traffic and discovery.
Category	<Interface><Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0698
Requirement	The FlightObjectDistribution interface instantiation shall use Logging DDS Security Builtin plugin.
Title	FlightObjectDistribution Interface Binding Contract DDS Security Logging plugin
Status	<In Progress>
Rationale	Compliance with security interoperable protocol for DDS and in particular with Builtin Logging plugin specified in DDS Security FTF Beta 1 clause 9.6.
Category	<Interface><Interoperability><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD>
Point of view	<ATM service><SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Interoperability testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<APPLIES_TO>	<ATMS Requirement>	REQ-14.01.04-TS-0901.0700	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

The following set of requirements have been identified in the context of the "Flight Object Overlay" described in the SWIM-TI TAD and aiming at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).

[REQ]

Identifier	REQ-14.01.04-TS-0901.0500
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Requirement	The DDS implementation shall ensure the confidentiality and integrity of the data samples.
Title	DDS Implementation data confidentiality and integrity support
Status	<In Progress>
Rationale	The SWIM infrastructure requires trust between all participant nodes. It is important to protect the SWIM infrastructure from compromised SWIM nodes and malicious eavesdroppers. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD. This requirement covers NIST security controls SC-8.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0515
Requirement	The DDS implementation shall ensure the authentication and authorization of the DDS writers and readers.
Title	DDS Implementation Authentication and Authorization of DDS Writer and Readers
Status	<In Progress>
Rationale	The SWIM infrastructure providing / consuming Flight Object data requires trust between all participant nodes. It is important to protect the SWIM infrastructure and Data from compromised SWIM nodes and malicious eavesdroppers. In particular the authorization and the authentication of publishing/receiving entities are needed. In vases of DDS this consists of the authentication and authorization of DDS Data Writers and Data Reader. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD. This requirement covers NIST security controls AC-3,

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	IA-5 a and SC-8.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	MSG	N/A
<ALLOCATED_TO>	<Functional block>	SO	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-51c	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0901.0520
Requirement	The DDS implementation shall use a pre-defined set port numbers for its communication transport.
Title	Firewall Traversal
Status	<Validated>
Rationale	Define a fixed set of port numbers for firewall traversal. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD. This requirement covers NIST security controls SA-9 (2)
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0535
Requirement	The DDS implementation shall include a standard Path MTU discovery protocol.
Title	Dynamic Path MTU Discovery
Status	<In Progress>
Rationale	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0540
Requirement	The DDS implementation shall only convey externally visible IP addresses within Participant and Endpoint discovery messages.
Title	WAN DDS Deployment and Natting

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Status	<In Progress>
Rationale	When Network Address Translation is used, devices analyse IP packet and translate locally visible only addresses to/from external public addresses. This is usually only done by analysing IP headers and/or TCP/UDP headers only so any local addressing within the payload of the messages will not be translated by the devices. DDS discovery protocols will have to make sure any addressing information exchanged with external participants is publically accessible from outside. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0545
Requirement	The DDS implementation shall be able to send UDP datagrams not larger than the path MTU.
Title	WAN DDS Deployment No IP Fragmentation
Status	<Validated>
Rationale	For efficient use of the network, it is important to limit the loss rate of data samples because lost data samples are resent what results in higher bandwidth usage and, therefore, in higher costs. This requires control of Maximum Transmission Unit (MTU) within IP based networks and avoid IP fragmentation (for security reasons, many firewalls block IP fragments, losing one single IP fragment on the WAN results in resending the entire UDP datagram). Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).

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	For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0550
Requirement	The DDS implementation shall support compression of data samples in an interoperable way.
Title	Interoperable Compression at DDS level
Status	<In Progress>
Rationale	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0555
Requirement	When compression is enabled, the DDS implementation shall compress data samples before any DDS fragmentation.
Title	Compression before DDS level fragmentation
Status	<In Progress>
Rationale	It is more efficient to compress a data sample then fragment it for transfer on the network. The reverse may generate too many small packets on the network. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0560
Requirement	The DDS implementation shall be able to adapt the publication rate to the

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	bandwidth of the Wide Area Network.
Title	DDS Publication rate adapted to the WAN bandwidth
Status	<In Progress>
Rationale	It is required to adapt publication rate to the bandwidth of the Wide Area Network which avoids bursts and subsequent resends of lost data samples. Some DDS vendors already provide some support for bandwidth limitation at the DDS level; but this is not very common. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0565
Requirement	When underlying network supports multiple classes of service, the DDS implementation shall be able to publish data samples according to selected classes of services.
Title	Publishing data with priority
Status	<In Progress>
Rationale	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  Candidate DDS QoS: TRANSPORT_PRIORITY  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>

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Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0570
Requirement	Adding a DataWriter replica in a SWIM Node shall not induce reasonably avoidable useless communication and data transfer on the network.
Title	Limit impact of local redundancy
Status	<Validated>
Rationale	Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0575
Requirement	The SWIM-TI Messaging providing the FlightObjectDistribution shall ensure atomicity of FO updates.
Title	Atomic Flight Object Update
Status	<Validated>
Rationale	One update is performed completely or not at all.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0580
Requirement	The DDS implementation shall provide, scalable, efficient and interoperable discovery protocol supporting PIM-SSM and minimising discovery traffic.
Title	Efficient DDS Discovery
Status	<In Progress>

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Rationale	For scalability, a hierarchical architecture is preferable in order to decrease the exchange of discovery or heartbeat messages between all DDS participants.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0585
Requirement	The DDS multicast locators shall support multicast addresses in the ranges of SSM allocated addresses as defined in RFC 4607.
Title	SSM multicast locators
Status	<Validated>
Rationale	IP version 4 (IPv4) addresses are in the 232/8 (232.0.0.0 to 232.255.255.255) range. For IP version 6 (IPv6), addresses are in the FF3x::/32 range.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.  Prototyping feedback: SSM testing campaign showed that current DDS implementations did not fall back transparently and 'smoothly' to unicast when configuration problems prevented correct working of SSM. Peers were

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	configured to also support DDS unicast locators and DDS uses unicast of ACK/NACK.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0590
Requirement	The DDS implementation shall provide per data instance subscription in an interoperable way.
Title	Instance-level subscriptions support
Status	<In Progress>
Rationale	Limit visibility over DDS Topics. Solutions shall perform any required filtering at the source level (Writer side) to minimise publications over the network. Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0595
Requirement	The DDS implementation shall allow mapping of a DDS partition to a multicast address.
Title	Support for network partitions
Status	<In Progress>
Rationale	<p>Mapping of DDS partitions to SSM multicast addresses allows finer control of network communication paths.</p> <p>Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).</p> <p>The term multicast is intended as IP Multicast.</p> <p>For architectural aspects and terminology refer to latest 14.01.03 TAD.</p>
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0901.0581
Requirement	The DDS heartbeat data shall not cross FO routers.
Title	Hierarchical Discovery
Status	<In Progress>
Rationale	For scalability, a hierarchical architecture is preferable in order to decrease the exchange of discovery or heartbeat messages between all (DDS) participants.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide Area Network (WAN).  For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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[REQ]

Identifier	REQ-14.01.04-TS-0901.0582
Requirement	The FO Router shall support DDS Simple Endpoint and Discovery Protocol for discovering local FO Nodes.
Title	SEDP support
Status	<In Progress>
Rationale	Current discovery protocol can be used as is behind FO Routers.  Requirement identified in the context of the "Flight Object Overlay" that aims at providing an efficient and effective Flight Object distribution over Wide

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	Area Network (WAN). For architectural aspects and terminology refer to latest 14.01.03 TAD.
Category	<Interface>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Publisher><Publication consumer><Publication mediator><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	MSG	N/A
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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## 3.4 Security Functional and non-Functional Requirements

In this chapter functional and non-functional requirements concerning the SWIM-TI Security are provided. These requirements have been specified according to SWIM-TI Technical Use Case and latest TAD.

### 3.4.1 Capabilities

This section provides the functional requirements of the SWIM-TI Security derived from TAD functional and technical views.

#### 3.4.1.1 Confidentiality Ensuring Requirements

This section specifies the SWIM-TI SEC functional requirements concerning the Confidentiality Ensuring as described in §2. This consists mainly of requirements concerning confidentiality at message and transport levels.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0200
Requirement	The SWIM-TI Security shall provide support for confidentiality ensuring of information exchanged through the SWIM-TI.
Title	SWIM-TI Confidentiality Ensuring
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged information it is required to guarantee several security properties including confidentiality.  This requirement covers NIST security controls SC8 and SC-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0027
Requirement	The SWIM-TI Security shall provide support for encryption and decryption techniques.
Title	SWIM Technical Infrastructure encryption and decryption support
Status	<Validated>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality.</p> <p>Encryption and decryption are techniques enabling the expected security properties.</p> <p>This requirement covers NIST security controls SC-8 (1) and SC-11.</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0029
Requirement	The SWIM-TI Security shall provide support for the use of encryption and decryption techniques at least at one of the following levels: + Message. + Transport.
Title	Support of Encryption and Decryption at several levels
Status	<Validated>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected through Communications infrastructure.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality. Encryption and decryption are techniques enabling the expected security properties. These techniques can be applied at different levels: Message level: these kinds of techniques are used to encrypt/decrypt the content (or a part of) of the message. For instance, in a SOAP based communication, only the SOAP body content (or part of) is encrypted/decrypted. Transport level: these kinds of techniques are used to encrypt/decrypt the complete transport communication. For instance, in a SOAP/HTTPS based communication the whole SOAP is encrypted/decrypted.</p> <p>It is important to notice that SWIM-TI Security provides only message and transport levels security whereas it may also rely on network level security as provided by the Communication Infrastructure. Network level: for instance IPsec can be used to be used to provide confidentiality, integrity and authenticity (mutual)</p> <p>This requirement covers NIST security controls SC-8 (1) and SC-11.</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0023
Requirement	The SWIM-TI Security shall be able to provide, for a given information exchange, support for confidentiality ensuring: + Only at message level. + Only at transport level. + At both message and transport levels (two approaches used in combination).
Title	SWIM-TI Confidentiality Ensuring at Transport and Message levels
Status	<Validated>
Rationale	SWIM-TI enables information exchange mainly according to the request-response and publish-subscribe MEPs. According to each MEP and taking into account information exchange security requirements, it could be required to apply message level or transport level encryption/decryption. The two approaches have advantages and disadvantages and therefore they are applicable to specific cases. Channel Protection or transport level security, is applicable to point-to-point communications for which no specific intermediaries are foreseen (examples of intermediaries are data enrichment (METADATA) and service virtualization implemented through Service Agent SOA design pattern. Message protection or message level security, is applicable to point-to-point (with or without intermediaries), one-to-many or many-to-many communications.  This requirement covers NIST security control AC-17 (2), SC-8 (1) and SC-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>

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Testability	<Conformance testable>		
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0025
Requirement	The SWIM-TI Security shall use Symmetric, Asymmetric and Hybrid encryption schemas to allow confidentiality ensuring.
Title	Encryption Schemas for SWIM-TI Confidentiality Ensuring
Status	<Validated>
Rationale	Symmetric, Asymmetric and Hybrid encryption schemas are widely adopted and they represent more appropriate solutions supporting Confidentiality Ensuring in different application contexts. This requirement covers NIST security controls SC-8, SC-13, SC-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0026
Requirement	The SWIM-TI Security shall use Triple DES, AES-128 and AES-256 encryption algorithms to allow confidentiality ensuring.
Title	Encryption Algorithms for SWIM-TI Confidentiality Ensuring
Status	<Validated>
Rationale	Triple DES, AES-128 and AES-256 encryption algorithms are widely adopted and they represent more appropriate solutions supporting Confidentiality Ensuring. This requirement covers NIST security controls SC-13 and SC-8 (1).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0222
Requirement	The SWIM-TI Confidentiality Ensuring shall allow to protect information exchanges by enforcing Confidentiality Ensuring Policy.
Title	Policy Based SWIM-TI Confidentiality Ensuring
Status	<Validated>
Rationale	The need for Confidentiality Ensuring or not as well as the type of confidentiality ensuring can be determined according to a Confidentiality Ensuring Policy. This requirement covers NIST security controls SC-8.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0230
Requirement	The SWIM-TI Confidentiality Ensuring Policy shall include the following information: <ul style="list-style-type: none"> <li>- If a given information exchange requires confidentiality assurance.</li> <li>- Which parts of such information have to be encrypted (applicable only to message level security).</li> <li>- Which encryption schema has to be used (symmetric, asymmetric, hybrid).</li> <li>- Which encryption algorithm has to be used.</li> <li>- If it is required to use a multipurpose key or a dedicated one.</li> <li>- Any other additional information about producer and recipients needed to support the Confidentiality Ensuring mechanisms.</li> </ul>

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Title	SWIM-TI Confidentiality Ensuring Policy Structure
Status	<Validated>
Rationale	<p>This requirement allows a flexible use of the Confidentiality Ensuring that will perform its tasks according to the information defined in the policy:</p> <ul style="list-style-type: none"> <li>- It allows to specify if the encryption/decryption are required for message level encryption.</li> <li>- For such information it could be useful to encrypt only subparts of the messages (this improve the performance) whereas for other information it is required to encrypt the whole message.</li> <li>- It allows to specify which encryption schema has to be used allowing to choose for each information exchange the solution that represents the right trade-off between performance and protection (asymmetric encryption requires more processing resources than symmetric encryption and the two approaches can be combined having an hybrid solution - e.g. symmetric schema is used to encrypt a message (or its parts) and then asymmetrically encrypt the shared key reducing the size of the data that is asymmetrically encrypted).</li> <li>- It allows to specify for a given information exchange the encryption algorithm to be used.</li> <li>- It allows to specify which key has to be used and in particular if it is a multipurpose or a dedicated one.</li> <li>- It allows to provide any other additional information needed to enforce the confidentiality.</li> </ul> <p>This requirement covers NIST security controls SC-1 a.2.</p>
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0600
Requirement	The SWIM-TI Confidentiality Ensuring shall use cryptographic keys managed by the PKI.
Title	SWIM-TI Confidentiality Ensuring cryptographic keys
Status	<Validated>
Rationale	This requirement clarify where are managed (stored, created, etc.) cryptographic keys used to encrypt/decrypt data. This requirement covers NIST security controls SC-12.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour><ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0612
Requirement	The SWIM-TI Audit shall allow to audit encryption and decryption attempts according to the specific Audit policy.
Title	Policy Based Encryption and Decryption attempts auditing
Status	<In Progress>
Rationale	Encryption and decryption attempts (successfully or not performed) can be audited or not according to a specific Audit policy. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>

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Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

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### 3.4.1.2 Information Origin Authentication Requirements

In this section are specified the SWIM-TI Security requirements concerning *Information Origin Authentication* as described in §2. This mainly consists of requirements concerning *Information Origin Authentication* at both message and transport level.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0240
Requirement	The SWIM-TI Security shall provide support to ensure information origin authentication (integrity and authenticity) of information exchanged through the SWIM-TI.
Title	SWIM-TI Information Origin Authentication
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged information it is required to guarantee several security properties including integrity (the information has not been altered while in transit) and authenticity (the information originated from the expected sender). This requirement covers NIST security controls IA-5 a and IA-5 b and SC-20

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	a and SC-20 b.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0055
Requirement	The SWIM-TI Security shall be able to provide, for a given information exchange, support for origin authentication: + Only at message level. + Only at transport level. + Both at message and transport levels (two approaches used in combination).
Title	SWIM-TI Information Origin Authentication at Transport and Message levels
Status	<Validated>
Rationale	SWIM-TI enables information exchange mainly according to the request-response and publish-subscribe MEPs. According to each MEP and taking into account information exchange security requirements, it could be required to apply message level or transport level signing. The two approaches have advantages and disadvantages and therefore they are applicable to specific cases. Channel Protection or transport level security, is applicable to point-to-point communications for which no specific intermediaries are foreseen (examples of intermediaries are data enrichment (METADATA) and service virtualization implemented through Service Agent SOA design pattern.

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	Message protection or message level security, is applicable to point-to-point (with or without intermediaries), one-to-many or many-to-many communications. This requirement covers NIST security control IA-8.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0252
Requirement	The SWIM-TI Information Origin Authentication shall use Symmetric, Asymmetric and Hybrid digital signature schema.
Title	SWIM-TI Information Origin Authentication digital signature schema
Status	<Validated>
Rationale	Information signing techniques are widely adopted and they are more appropriate solutions supporting information integrity and authenticity. This requirement covers NIST security controls IA-2, IA-8, IA-9 and AC-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription

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	handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0253
Requirement	The SWIM-TI Information Origin Authentication shall provide SHA2 digest algorithm to perform message digest.
Title	SWIM-TI Information Origin Authentication digest algorithm
Status	<Validated>
Rationale	Information signing techniques are widely adopted and they are more appropriate solutions supporting information integrity and authenticity. This requirement covers NIST security controls IA-2, IA-8, IA-9 and AC-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0254
Requirement	The SWIM-TI Information Origin Authentication shall provide HMAC as Message Authentication Codes algorithm.
Title	SWIM-TI Information Origin Authentication message Authentication Codes algorithm
Status	<Validated>
Rationale	Information signing techniques are widely adopted and they are more appropriate solutions supporting information integrity and authenticity. This requirement covers NIST security controls IA-2, IA-8, IA-9 and AC-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0255
Requirement	The SWIM-TI Information Origin Authentication shall provide DSA-SHA2 and RSA-SHA2 as signature algorithms.
Title	SWIM-TI Information Origin Authentication signature algorithms
Status	<Validated>
Rationale	Information signing techniques are widely adopted and they are more appropriate solutions supporting information integrity and authenticity. This requirement covers NIST security controls IA-2, IA-8, IA-9 and AC-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0260
Requirement	The SWIM-TI Information Origin Authentication shall provide support for message level information origin authentication.
Title	SWIM-TI Information Origin Authentication purpose
Status	<Validated>
Rationale	The SWIM Technical Infrastructure shall be used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level using the PENS or Internet.

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	Taking into account the overall context it is required to avoid sensitive data tampering (ATM specific data and SWIM-TI internal ones). Information Origin Authentication is one of the services provided by the SWIM-TI Security aiming at ensuring confidentiality (integrity and authenticity) at message level. This requirement covers NIST security controls IA-2, IA-8 and IA-9.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.09	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0271
Requirement	The SWIM-TI Information Origin Authentication shall allow to protect information exchanges according to the Information Origin Authentication Policy.
Title	Policy Based SWIM-TI Information Origin Authentication
Status	<Validated>
Rationale	The need for information origin authentication or not as well as the type of origin authentication can be determined according to an Information Origin Authentication Policy This requirement covers NIST security controls IA-1 a.2, IA-5 a and IA-5 b.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>

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Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0280
Requirement	The SWIM-TI Information Origin Authentication Policy shall include the following information: <ul style="list-style-type: none"> <li>- If a given information exchange requires Information Origin authentication.</li> <li>- Which digital signature schema has to be used (symmetric, asymmetric).</li> <li>- Which digital signature algorithm has to be used.</li> <li>- If it is required to use a multipurpose key or a dedicated one.</li> <li>- Any other additional information about producer and recipients.</li> </ul>
Title	SWIM-TI Information Origin Authentication Policy Structure
Status	<Validated>
Rationale	This requirement allows a flexible use of the Information Origin Authentication that will perform its tasks according to the information defined in the policy: <ul style="list-style-type: none"> <li>- It allows to specify if the digital signature is required.</li> <li>- It allows to specify which signature schema has to be used allowing to choose for each information exchange the solution that represents the right trade-off between performance and protection (Message Authentication Code (MAC) for symmetric signing and digital signature for asymmetric signing based on public/private key pair (note that the symmetric signing does not fulfill non-repudiation needs because the shared secret used to sign the information is shared among several participants).</li> <li>- It allows to specify for a given information exchange the signing algorithm to be used.</li> <li>- It allows to specify which key has to be used and in particular if it is a multipurpose or a dedicated one.</li> <li>- It allows to provide any other additional information needed to enforce the</li> </ul>

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	data origin authentication. This requirement covers NIST security control IA-1 a.2.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0630
Requirement	The SWIM-TI Information Origin Authentication shall use cryptographic keys managed by the PKI.
Title	SWIM-TI Information Origin Authentication cryptographic keys
Status	<Validated>
Rationale	This requirement clarifies where the cryptographic keys used to sign data are managed (stored, created, etc.). This requirement covers NIST security controls IA-3, IA-5 d, IA-5 h, IA-9 and AC-4.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour><ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0641
Requirement	The SWIM-TI Audit shall audit message signature and signature validation attempts according to the specific audit policy.
Title	Policy Based Message signature generation and validation attempts auditing
Status	<Validated>
Rationale	Data signature generation and validation attempts (successfully or not performed) have to be audited. The need for audit or not of the message signature and attempts (successful or not) can be determined according to an Audit Policy. This requirement covers NIST security controls AC-6 (9) and AU-2 a..
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.09	N/A

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<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
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### 3.4.1.3 Policy Management Requirements

In this paragraph policy management requirements for the SWIM-TI Security are provided

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0011
Requirement	The SWIM-TI Security shall allow the application of different types of security policies at the granularity of a SWIM ATM specific service.
Title	Support of Security Policies at SWIM Service granularity
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of Systems and using the PENS as networking infrastructure. It is reasonable to consider that different SWIM services (or groups of) have different security constraints and that for a given SWIM service there could be different consumers having different authorisation (i.e. a user in a role 'R' has the right to use service 'S') and/or authentication (i.e. a service could be available only to authenticated users or public available) policies. This requires to apply the security policies at granularity of a SWIM service. This requirement covers NIST security control AC-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.02	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	SEC	N/A

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<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0303
Requirement	The Authentication Policy shall specify the type of digital identity.
Title	Authentication Policy specified digital identity
Status	<Validated>
Rationale	SWIM-TI Authentication can be enforced on a policy basis. In order to ensure a consistent, systematic application of the established authentication rules and policies and to allow interoperability among different stakeholders, the Authentication Policy shall carry information about the kind of digital identity that shall be adopted by Identity Management. This requirement covers NIST security controls IA-1 a.2, IA-2, IA-8 and IA-9.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0304
Requirement	The Authorization Policy shall specify the type of digital identity.
Title	Authorization Policy specified digital identity
Status	<Validated>
Rationale	SWIM-TI Authorization can be enforced on a policy basis. In order to ensure a consistent, systematic application of the established authorization rules and policies and to allow interoperability among different stakeholders, the Authorization Policy shall carry information about the kind of digital identity that shall be adopted by Identity Management. This requirement covers NIST security controls AC-3, IA-2, IA-8, IA-9 and CA-1 a.2.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.4.1.4 Policy Enforcement Requirements

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Identifier	REQ-14.01.04-TS-0013.0031
Requirement	The Security Policy Enforcement shall be able to manage the following security policies: + Confidentiality Policy. + Authentication Policy. + Authorization Policy. + Information Origin Authentication Policy. + Audit Policy.

Identifier	REQ-14.01.04-TS-0013.0051
Requirement	The Security Policy Enforcement shall be able to synchronously retrieve policies from the Policy Management.

Identifier	REQ-14.01.04-TS-0013.0061
Requirement	The Security Policy Enforcement Infrastructure shall be able to asynchronously retrieve policies from the Policy Management.

### 3.4.1.5 Authentication Requirements

SWIM-TI Authentication as part of the SWIM-TI Security is an infrastructure services. It provides authentication according to the brokered authentication pattern. The SWIM-TI Authentication:

- Supports different authentication mechanisms,
- Validation and issuing of authentication credentials,
- Supports resources requestor authentication and requestor-provider authentication (mutual authentication),
- Realization of a federate single sign-on (brokered authentication) relying on PKIs.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0121
Requirement	The SWIM-TI Security shall use X509 certificates for system or machine authentication.
Title	SWIM Technical Infrastructure X509 certificates basis authentication
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. For what concerns the authentication, the use of certificates is required. This requirement assures that X509 certificates are used. This requirement covers NIST security controls IA-5 c, IA-5 (2) a and IA-3.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator> provider><Service consumer><Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.02	N/A
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0661
Requirement	The SWIM-TI Security shall provide between service consumer and provider for different federated security system, both the following authentication schemes: - Requestor-provider authentication (mutual authentication) mechanism, and - Only resource requestor authentication.
Title	SWIM Technical Infrastructure mutual authentication mechanism support
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. This requirement assures that the SWIM Technical Infrastructure allows systems involved in the communication to mutually authenticate each other. This requirement covers NIST security controls AC-3, IA-9 and SC-7 (11).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0920
Requirement	The SWIM-TI Authentication Policy shall support adaptive authentication by mapping the risk profile of authentication attempts to the appropriate level of information that shall be provided by authenticating entity.
Title	Policy-supported Adaptive Authentication
Status	<In Progress>
Rationale	Adaptive Authentication means that the authentication function takes into consideration the risk profile of the authentication attempt to decide whether or not to require selected entities to provide additional authentication information when certain pre-established conditions or triggers occur, for instance when individuals access information that they do not typically access as part of their normal duties, roles, or responsibilities, accessing greater quantities of information than the individuals would routinely access, or attempt to access information from suspicious network addresses. In SWIM-TI such request for stronger authentication can be enabled through Authentication Policy enforcing for instance the usage of hardware security tokens (see REQ-14.01.04-TS-0002.0890) under certain conditions. This requirement covers NIST security control IA-10.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0350
Requirement	The SWIM-TI security policy enforcement shall allow a service provider to authenticate a consumer request by mutual authentication mechanism.
Title	SWIM Technical Infrastructure mutual authentication mechanism support
Status	<Validated>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication.</p> <p>This requirement assures that the SWIM Technical Infrastructure does not allow service consumption when the consumer is not authenticated according to policy enforcement.</p> <p>This requirement covers NIST security controls IA-8, IA-9, AC-4 and SC-7 (11).</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

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[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0460
Requirement	The SWIM-TI Authentication shall notify the relevant Federated Security Systems and Audit if an entity is released from authentication blacklisting.
Title	Federated liberation of blacklisted entities
Status	<In Progress>
Rationale	Federated Security Systems need to know when a blacklisted entity has been released from the blacklist list in order to allow their further consumption of services/data. This defines some minimal requirements the Authorization Policy shall obey. This requirement covers NIST security control AU-2 a, SI-5 c and CA-3 (5).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0431
Requirement	The SWIM-TI Authentication shall retrieve the maximum number of possible authentication attempts from SWIM-TI Authentication Policy or from information exchange between federated systems.
Title	Federated maximum number of authentication attempts
Status	<In Progress>
Rationale	Authentication blacklists are to be part of SWIM-TI to prevent abuse of authentication attempts. The maximum number of authentications has to be known also by the different federated security systems. This requirement covers NIST security controls AC-7 a and IA-5 (9).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0701
Requirement	The SWIM-TI Security shall detect and record failed authentication attempts when the identity of the consumer and/or the authentication information provided by the consumer is invalid.
Title	SWIM Technical Infrastructure failed authentications detection support
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication.

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	Failed authentication attempts are detected and reported for monitoring or security protection purposes. This requirement covers NIST security controls AC-7 a, AU-2 a, SI-4a.2, SI-4b.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0571
Requirement	The SWIM-TI Authentication shall blacklist entities of the same or different Federated Security Systems when the number of their failed authentication requests exceeds the number of authentication attempts specified into the specific SWIM-TI Authentication Policy.
Title	Entity blacklisted according to maximum number of authentication attempts
Status	<In Progress>
Rationale	Authentication blacklists are to be part of auditing to prevent further authentication attempts by blacklisted entities. This requirement defines when an entity shall be blacklisted after exceeding a certain number of failed authentication attempts. This requirement covers NIST security controls AC-7 a, A-5 (9) and CA-3 (5).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

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Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0710
Requirement	The SWIM-TI Authentication shall report to Audit when an entity has been placed in a blacklist.
Title	Audit report when an entity is blacklisted
Status	<In Progress>
Rationale	Authentication blacklists are to be part of auditing to prevent further authentication attempts by blacklisted entities. This requirement ensures the blacklisting event is reported to the Audit. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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### 3.4.1.6 Authorization Requirements

SWIM-TI Authorization is in charge of granting/denying permission to consumption of services and access to data, as part of the SWIM-TI Security. It relies on Authentication and Identity Management

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to gather the relevant information enabling the Authorization process and on Policy Management and the PEP to provide a policy based approach to Authorization.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0360
Requirement	The SWIM-TI Security shall permit a requestor to consume a service if and only if its authorization is successful.
Title	SWIM-TI authorized consumption services
Status	<Validated>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. This requirement ensures that the SWIM Technical Infrastructure allows service consumption when the consumer is authorized to consume it. This requirement covers NIST security controls AC-3 and AC-24.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0391
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Requirement	The SWIM-TI Security shall allow the enforcement of the Authorization security Policy: + During every information exchange from the SWIM-TI to an external network (e.g. Internet), and + During every information exchange from an external network (e.g. Internet) to the SWIM-TI.
Title	SWIM-TI Secure Import and Export by Information Authorization
Status	<Validated>
Rationale	The SWIM-TI Security needs to ensure secure (integral, confidential, authentic) interchange of information between external networks and the SWIM-TI. To that end it should be possible to allow the Authorization Policy to be enforced during every information exchange with external networks. This requirement covers NIST security controls AC-4, AC-24, AC-21 a, SI-4a.2.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0412
Requirement	The Authorization Policy shall be enforced during a demand of authorization request.
Title	Authorization Policy Enforcement
Status	<Validated>
Rationale	SWIM-TI Authorization will be enforced on a policy basis, this ensures a consistent, systematic application of the established authorization rules and policies. This requirement ensures the enforcement of Authorization Policy during customer demands of authorization. This requirement covers NIST security controls AC-4, AC-21 a, AC-24.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>

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Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0471
Requirement	The SWIM-TI Security shall allow to prevent consumption/access to any service/data not covered by a validated Security Authorization policy.
Title	SWIM-TI Security mandates an applicable authorization policy
Status	<Validated>
Rationale	Making every consumption/access to be covered by a validated Security policy enforces a mandatory policy based authorization and prevents unauthorized consumption/access by default. This requirement covers NIST security controls AC-4 and AC-21 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0481
Requirement	The SWIM-TI Security shall allow to lock inactive sessions after a Policy defined amount of time, to prevent unauthorized access to the system.
Title	SWIM-TI session timeout locking
Status	<In Progress>
Rationale	Inactive sessions are a potential security breach as they may be used by unauthorized bystanders. Inactive sessions lock on minimizes this risk. This requirement covers NIST security controls AC-2 (3), AC-7 b, AC-11, IA-11, CM-7, SC-10, SI-14.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0895
Requirement	The SWIM-TI Authorization Policy shall allow to limit audit record access and deletion to accounts having "Audit Administrator" role.
Title	Audit Records Access restriction
Status	<In Progress>
Rationale	Due to the critical sensitivity of the information managed in SWIM it is necessary that privileged access to this information is kept to a minimum and only to those accounts having an "Audit Administrator" role. This requirement covers NIST security control AU-9 (4), SI-4 d, SI-11b.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0870
Requirement	The SWIM-TI solution shall allow to associate security attributes to data being processed, stored and transferred.
Title	SWIM-TI security metadata
Status	<In Progress>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. In order to enforce information security policies for access control and information flow control, sensitive information shall be bound with security attributes, a form of metadata representing the basic properties or characteristics with respect to safeguarding information. The content or assigned values of security attributes can directly affect the ability of individuals to access organizational information.</p> <p>This requirement covers NIST Security Control 800.53 AC-16 a, b, c, d and SC-16.</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0880
Requirement	The SWIM-TI Authorization mechanism shall rely on security attributes to allow access to data resources.
Title	SWIM-TI security attribute-based access
Status	<In Progress>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. In order to enforce information security policies for access control and information flow control, policy decision point (PDP) for authorization process could take advantage of security attributes bound with sensitive data.</p> <p>This requirement covers NIST Security Control 800.53 AC-16 a,b,c,d and AC-21 a.</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0890
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Requirement	The SWIM-TI Security shall allow usage of hardware security token for authentication when stronger security level is required.
Title	SWIM Technical Infrastructure hardware token-based authentication
Status	<In Progress>
Rationale	<p>The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level.</p> <p>Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication.</p> <p>For most critical services (e.g. services exchanging classified data) it is necessary to have a stronger authentication mechanism that can be achieved using hardware security token working with SWIM-TI PKI.</p> <p>The kind of allowed hardware security token that can be adopted is restricted to devices which satisfy specific quality requirements.</p> <p>This requirement covers NIST Security Control 800.53 IA-5 (11). This requirement is also linked to Adaptive Authentication and can be mapped on NIST Security Control 800.53 IA-10.</p>
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP FDD>
Domain of interest	<SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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### 3.4.1.7 Audit Requirements

SWIM-TI Audit as part of the SWIM-TI Security is in charge of providing logging and reporting of Security related events, allowing the future review, analysis and assessment of these events.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0750
Requirement	The SWIM-TI Security shall include a functionality for reporting the handling of the following Security Incidents: + Denial of Service.

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	+ Intrusion. + Malicious or unauthorized software installation. + Reconnaissance (e.g. port scanning). + Physical damage. + Information compromise. + Software failure (with security implications).
Title	SWIM-TI support for incident reporting
Status	<In Progress>
Rationale	It is important to monitor any incidents that may have an impact on security. This requirement ensures that the SWIM Technical Infrastructure provides a functionality aiming at reporting the handling of these incidents. This requirement covers NIST security control s: AU-2 a, IR-5, SI-4b, SI-4g, SI-11a.
Category	<Functional><HMI><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0760
Requirement	The SWIM-TI Security shall provide a functionality for reporting the following detailed information about any one of the Security Incidents defined in REQ-14.01.04-TS-0002.0750: + Causes of the incident. + Impact of the incident. + How it was handled (step by step description). + Consequences of the incident. + What actions were put in place to mitigate the consequences. + Status of the incident.
Title	SWIM's incident reporting details
Status	<In Progress>
Rationale	It is important to monitor any incidents that may have an impact on security. This requirement specifies the specific details the reporting functionality shall cover. It is expected that some human interaction is needed for fulfilling these reports. This requirement covers NIST security controls AU-3 and AU-3 (1) , SI-4b,

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	SI-4g, SI-11a, IR-5.
Category	<Functional><HMI><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0490
Requirement	The SWIM-TI Security shall uniquely log all user and system access to SWIM services/data detailing: + Time and date of access. + IP of user/system. + Services/data accessed (where technically possible).
Title	SWIM's access unique identification logging
Status	<Validated>
Rationale	In order to enable the auditing of these accesses it is necessary to log every one of them. Additionally, to have more control of access times, patterns and what is done to/with the information; time of access and data/services accessed need to be logged too. This requirement covers NIST security controls AC-17 (1) and AU-2 a and SI-4a.2.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	SEC	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A

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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0900
Requirement	The SWIM-TI Audit Policy shall at least include the following information: - The information which need to be recorded, - The user roles that must be provided with audit records, - The frequency of reporting or event type triggering the audit.
Title	Audit Policy Minimal Content
Status	<In Progress>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement covers the following NIST security controls: SI-4e, SI-4 g.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0512
Requirement	The Audit Policy shall be enforced after a Demand of Identity and Authentication Information Assertion.
Title	Authenticate Identity's Audit Policy Enforcement
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a Demand of Identity and Authentication Information Assertion. This requirement covers NIST security controls AC-17 (1), AU-2 a , SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0522
Requirement	The Audit Policy shall be enforced after a Demand of Data Encryption.
Title	Encryption's Audit Policy Enforcement
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a Demand of Data Encryption. This requirement covers NIST security controls IA-7, AU-2 a , SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service

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	consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	SEC	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0532
Requirement	The Audit Policy shall be enforced after a Demand of Confidentiality Assertion.
Title	Decryption's Audit Policy Enforcement
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a Demand of Confidentiality Assertion. This requirement covers NIST security controls IA-7, AU-2 a, SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0542
Requirement	The Audit Policy shall be enforced after data signature during a Data Origin Authentication process.
Title	Data Origin Authentication's Audit Policy Enforcement (signature)
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a data signature during the Information Origin Authentication process. This requirement covers NIST security controls IA-2, AU-2 a, SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0552
Requirement	The Audit Policy shall be enforced after signature verification during a Data Origin Authentication process.
Title	Data Origin Authentication's Audit Policy Enforcement (signature verification)
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a signature verification during the Information Origin Authentication process. This requirement covers NIST security controls IA-2, AU-2 a, SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>

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Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0562
Requirement	The Audit Policy shall be enforced after a Demand of Authorization Request.
Title	Authorization request's Audit Policy Enforcement
Status	<Validated>
Rationale	To enable the auditing process every security related event needs to be logged with all the additional information specified by the applicable Audit Policy. This requirement ensures that the Audit Policy is enforced after a Demand of Authorization Request. This requirement covers NIST security controls AC-3, AU-2 a, SI-4 g.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0770
Requirement	The SWIM-TI Security shall log everything specified in applicable service-specific Audit Policy.
Title	Audit's service-specific logging
Status	<Validated>
Rationale	The existence of service-specific Audit policies may supplement/override the Global (default) Audit Policy. This requirement ensures that everything specified in additional applicable Audit Policies is logged. This requirement covers NIST security controls AU-12 and AU-3 (1).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0780
Requirement	The SWIM-TI Security shall record events with all additional data specified in the applicable service-specific Audit Policy.
Title	Audit's service-level specific logging
Status	<Validated>
Rationale	The existence of service-specific Audit policies may supplement/override the Global (default) Audit policy. This requirement ensures that any additional data required by these Policies gets logged. This requirement covers NIST security controls AU-12 and AU-3 (1).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core><PP Core>

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Domain of interest	<Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer><Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0820
Requirement	The SWIM-TI Security shall log every blacklisted entity with any additional information provided by Authentication.
Title	Log of blacklisted entities
Status	<In Progress>
Rationale	Blacklisted entities need to be logged for future auditing purposes, any additional information provided by Authentication is valuable as it aids the Audit process. This requirement covers NIST security controls CA-3 (5)
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0831
Requirement	The SWIM-TI Security shall allow for Federated Security System to log every blacklist release and the mechanism applied for its release: + Automatic after a Policy defined amount of time. + Manual (with reason provided for release).
Title	Log of blacklist releases
Status	<In Progress>
Rationale	Blacklist releases need to be logged for future auditing purposes. This requirement covers NIST security control AU-3 (2) and CA-3 (5).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	SEC	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0905
Requirement	The SWIM-TI Security shall allow to configure different monitoring strategies according to current security context.
Title	Monitoring Strategies
Status	<In Progress>
Rationale	Monitoring strategies must suit possible changes in the security context due to increased risk to organizational operations and assets, individuals, other organizations, or the Nation based on law enforcement information, intelligence information, or other credible sources of information. For such reason it shall be ensured that different monitoring strategies can be configured and enforced by SWIM-TI Supervision although the definition of

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	such monitoring strategies won't be imposed nor restricted in advance. This requirement covers the following NIST security controls: SI-4e, SI-5.A.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0910
Requirement	Evidence of the correct execution of security functions shall be provided in the form of either an acknowledgement or auditing.
Title	Security functions execution evidence
Status	<In Progress>
Rationale	This requirement ensures the SWIM-TI Security has the capability to verify that security functions have not been tampered and thus are being executed properly and to perform this check on certain transitions on demand or with certain defined periodicity. This requirement covers the following NIST security controls: SI-6.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription

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	handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0930
Requirement	The SWIM-TI Security shall provide tamper-proof storage of sensitive information by applying encryption and digital signature.
Title	Supporting tamper-proof information storage
Status	<In Progress>
Rationale	Certain types of information used in aviation must be secured so as to be tamper-proof. This can include certain logs for example. Tamper-proofing means that the information will be available and uncompromised for a long period of time – at least 50 years. Tamper-proof information storage is a vital aspect of non-repudiation in aviation and is achieved applying cryptographic techniques such as digital signature. This requirement complies with REQ-14.02.02-TS-SGOV.0110 and REQ-14.02.02-TS-ACCO.0020 and ensures coverage of NIST SP 800 53 security control SC-28.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Advanced><BP Core>
Domain of interest	<Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0940
Requirement	The SWIM-TI Security shall allow to maintain sensitive information in an uncompromised condition for a configurable number of days to be defined either by policy or application level configuration.
Title	Sensitive information preservation
Status	<In Progress>
Rationale	Certain types of information used in aviation must be secured so as to be tamper-proof. This can include certain logs for example. Tamper-proofing means that the information will be available and uncompromised for a long period of time – at least 50 years. Tamper-proof information storage is a vital aspect of non-repudiation in aviation and is achieved applying cryptographic techniques such as digital signature. This requirement complies with REQ-14.02.02-TS-SGOV.0110 and REQ-14.02.02-TS-ACCO.0020 and ensures coverage of NIST SP 800 53 security control SC-28.
Category	<Design><Functional><Security>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Advanced><BP Core>
Domain of interest	<Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.4.1.8 Security Enablers

In this section requirements concerning security enablers are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0132
Requirement	The SWIM-TI Security shall use PKI to retrieve X.509 certificates
Title	SWIM-TI Security certificates retrieve
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. For what concerns the authentication, the use of certificates is required and those have to be signed by a trusted Certification Authority (CA) and managed by the PKI. This requirement covers NIST security controls IA-5 d and IA-5 (2.a).
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.02-REQ_032	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.02	N/A
<ALLOCATED TO>	<Functional block>	SEC	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-43	<Full>
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0133
Requirement	The SWIM-TI Security shall use PKI to validate X.509 certificates
Title	SWIM-TI Security certificates validation
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication. For what concerns the authentication, the use of certificates is required and those have to be signed by a trusted Certification Authority (CA) and managed by the PKI. This requirement covers NIST security controls IA-5 d and IA-5 (2.a).
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.02	N/A
<ALLOCATED TO>	<Functional block>	SEC	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
<SATISFIES>	<Enabler>	A/C-57	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[IREQ]

Identifier	REQ-14.01.04-TS-0002.0162
Requirement	The SWIM-TI Security shall protect the overall SWIM-TI against overload resulting from: + Denial of Service Attack, or + Service Utilisation above maximum levels.
Title	SWIM Technical Infrastructure overload protection support
Status	<In Progress>
Rationale	The SWIM Technical Infrastructure is used to enable the exchanging of several types of information among several types of geographically distributed systems interconnected at network level. Taking into account the overall context and the sensitivity of the exchanged data it is required to guarantee several security properties such as (but not limited to) the information integrity, authorization and confidentiality and service (ATM-specific and Infrastructure services) consumer/provider authentication and to protect information and systems from external unknown and malicious users. This requirement assures that the SWIM Technical infrastructure is protected against overload due to attacks or to legitimate, but above thresholds, use of services; for instance number of concurrent accesses could be limited. This requirement covers NIST Security Control 800.53 AC-10. This requirement covers NIST security controls SC-5 (2), SC-5 (3) and AC-10.
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

The Time Service Enabler for ATM systems and ATM actors is an enabler for time information related to some of the SWIM-TI operations described in this specification. For what concerns SWIM-TI this is introduced in §3.1.8 and specified in REQ-14.01.04-TS-0811.0010.

Furthermore, as described in the TAD, SWIM-TI Security relies also on PKI defined in the SWIM-TI Identity Management Technical Specification [15].

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### 3.4.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.4.3.1) time behaviour, (§3.4.3.2) resource utilization and (§3.4.3.3) capacity.

#### 3.4.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.4.3.2 Resource utilization Requirements

In this section resource utilization requirements concerning SWIM-TI Security are provided.

[IREQ]

Identifier	REQ-14.01.04-TS-0202.0001
Requirement	In the SWIM-TI, the maximum persistent storage for auditing and logging per SWIM Node shall be 10GB.
Title	SWIM-TI Scalability Capacity
Status	<In Progress>
Rationale	The maximum storage for persistent auditing and logging per SWIM Node is based on the SWIM Profile White Paper and ISO 250101. This requirement covers NIST security control AU-4.
Category	<Performance><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	SEC	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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### 3.4.3.3 Capacity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.4.4.1) confidentiality, (§3.4.4.2) integrity, (§3.4.4.3) non-repudiation, (§3.4.4.4) accountability and (§3.4.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.4.4.6) is provided for safety requirements.

[IREQ]

Identifier	REQ-14.01.04-TS-0402.0020
Requirement	The SWIM-TI Security shall limit audit record access to users with an Audit Administrator role.
Title	SWIM-TI Audit record access
Status	<Validated>
Rationale	Due to the sensitivity of read/write access to Audit records it is required that this access is preserved to Audit Administrators This requirement covers NIST security control AU-9 (4).
Category	<Functional><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	SEC	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0402.0030
Requirement	SWIM-TI audit logs shall be stored in a secure storage.
Title	Safe storage for audit logs
Status	<In Progress>
Rationale	Audit logs includes all information needed to successfully audit information system activity, therefore audit logs and audit tools shall be protected from unauthorized access, modification, and deletion. This should be achieved applying both logical and physical protection of audit logs. Logical protection can be addressed by enforcing adequate Security Policies to grant access to

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	audit logs, while physical protection is addressed by media protection controls and physical and environmental protection controls. This requirement covers NIST security control AU-9.
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0402.0040
Requirement	SWIM-TI audit data shall be stored in a storage location remote and independent from the system generating the audit data.
Title	Remote and independent storage for audit logs
Status	<In Progress>
Rationale	Audit logs need to be stored in an independent and remote system. This requirement helps to ensure that a compromise of a system being part of SWIM-TI does not also result in a compromise of the corresponding audit records. This requirement covers NIST security control AU-9 (2).
Category	<Security>
Validation Method	
Verification Method	<Review of Design><Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<SLA><Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication

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	consumer><Subscription Management provider>	handler><Publication handler>	mediator><Identity provider>
Selfstanding set	<Not applicable>		
Conformance	<No>		
High Level	<Yes>		
Testability	<Conformance testable>		

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
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<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	AGSWIM-34	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-06b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.4.4.1 Confidentiality Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.4.2 Integrity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.4.3 Non-repudiation Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

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### 3.4.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.4.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.4.5.1) modularity, (§3.4.5.2) reusability, (§3.4.5.3) analysability, (§3.4.5.4) modifiability and (§3.4.5.5) testability.

### 3.4.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.4.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.4.6.1) maturity, (§3.4.6.2) availability, (§3.4.6.3) fault tolerance and (§3.4.6.4) recoverability.

### 3.4.6.1 Maturity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.6.2 Availability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.6.3 Fault tolerance Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



### 3.4.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.4.8.1) co-existence and (§3.4.8.2) interoperability compatibility NFR sub-characteristics, (§3.4.8.3) installability and (§3.4.8.4) replaceability portability NFR sub-characteristics.

[IREQ]

Identifier	REQ-14.01.04-TS-0802.0020
Requirement	The SWIM-TI cryptographic modules shall be developed in accordance with Level 3 of Security Requirements for Cryptographic Modules US Federal Information Processing Standard (FIPS 140-2).
Title	Conformance to Level 3 of US FIPS 140-2.
Status	<In Progress>
Rationale	The National Institute of Standards and Technology (NIST) issued the FIPS 140 Publication Series to coordinate the requirements and standards for cryptography modules that include both hardware and software components. Protection of a cryptographic module within a security system is necessary to maintain the confidentiality and integrity of the information protected by the module. This standard specifies the security requirements that will be satisfied by a cryptographic module. Given the nature of the air traffic services environment development should be to the equivalent of US Federal Information Processing Standard (FIPS) 140 Level 3.
Category	<Interoperability><Security>
Validation Method	
Verification Method	<Analysis>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.02-REQ_029	<Full>
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0250	N/A
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<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
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### 3.4.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.8.2 Interoperability Requirements

Apart of the requirements provided here below, those in §3.1.8 are also applicable.

[IREQ]

Identifier	REQ-14.01.04-TS-0002.0031
Requirement	Cryptographic algorithms and key sizes shall comply with European Network of Excellence in Cryptology (ECRYPT) II recommendations.
Title	SWIM Technical Infrastructure cryptographic algorithms ECRYPTII compliance
Status	<Validated>
Rationale	ECRYPT II recommendations represent a reference that is used to analyse and to identify the most appropriate cryptographic algorithms and key sizes. For further information about ECRYPT II, please refer to <a href="http://www.ecrypt.eu.org">http://www.ecrypt.eu.org</a> . The encryption algorithms are agreed between partners but are not published for sensitivity reasons. However, taking into account that the access to these information represents a key point enabling the interoperability, the partners are expected to evaluate how to properly govern the access to these information. The ECRYPTII recommendations must be considered as a minimum set of constraints which may be further restricted in specific policies and/or governance bodies. This requirement covers NIST security controls IA-5 c and IA-7 and SC-13.
Category	<Functional><Safety><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SEC-12	<Full>
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.02	N/A
<ALLOCATED_TO>	<Functional block>	SEC	N/A

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<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED TO>	<Functional block>	Purple Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0802.0010
Requirement	Cryptographic algorithms and key sizes shall comply with NIST 800-131A recommendations.
Title	SWIM Technical Infrastructure cryptographic algorithms NIST 800-131A compliance
Status	<In Progress>
Rationale	NIST Special Publication 800-131A "Transitions: Recommendation for Transitioning the Use of Cryptographic Algorithms and Key Lengths" recommendations represent a reference that is used to analyse and to identify the most appropriate cryptographic algorithms and key sizes. In case of differences between ECRYPT II and NIST SP 800-131A recommendations, the most stringent recommendations must be considered as applicable. Although the compliance to NIST Special Publication 800-131A (January 2011) is implicitly included by the compliance to ECRYPT II (see REQ-14.01.04-TS-0002.0031), this requirement allows to ensure that the SWIM-TI will be compliant with up-to date recommendations either from NIST or ECRYPT II. The NIST SP 800-131A recommendations must be considered as a minimum set of constraints which may be further restricted in specific policies and/or governance bodies. This requirement covers NIST security controls IA-5c, IA-7 and SC-13.
Category	<Functional><Safety><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><BP Core><PP Core>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator><Identity Management provider><Identity Management consumer>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.02-REQ 029	<Full>

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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.02	N/A
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<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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### 3.4.8.3 Installability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.4.9 Interface Requirements

In this section interface requirements concerning the SWIM-TI Security are provided. SWIM-TI Security uses SWIM-TI PKIs to retrieve, renew and validate X.509 certificates.

#### 3.4.9.1 Internal Service Interface Bindings

This paragraph provides all the needed details concerning the identified Internal SWIM Technical interfaces as introduced before.

[IREQ]

Identifier	REQ-14.01.04-TS-0914.0040
Requirement	LDAP services shall be instantiated using the following binding: + LDAPv3 over TLS over TCP. + MEPs: SRR-MEP + Fault handling: as defined per LDAP standard + Encoding. - restricted encoding as defined per standard + Security: - Confidentiality: transport - Integrity: transport - Authenticity: transport mutual or LDAP Simple or SASL - Authorization: transport or LDAP Simple or SASL - Non-repudiation: none + Contract: - formalism of contract description: as defined per standard - minimum: not applicable - reference: LDAPv3 + Interoperability: none
Title	Interface Binding. LDAPv3 over TLS over TCP.
Status	<In Progress>
Rationale	A series of LDAP based operations do at least need authentication and authorization and can take advantage of other security controls (confidentiality and integrity at transport level – i.e. TLS). This binding allows different options for authentication and authorization. The first option is to rely on authentication and authorization mechanism at transport level (i.e. TLS). The second option is to use LDAP Simple mechanism defined in the LDAP standard. The third option is to use SASL (Simply Authentication and Security Layer). A number of SASL mechanisms are currently defined. In LDAP based exchanges, External, Digest-MD5 and Kerberos V5 mechanisms are typically used. This requirement covers NIST security controls IA-4 (6) and IA-5 a.
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Core><PP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer>
Selfstanding set	<Internal service binding>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03a	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0914.0050
Requirement	<p>OCSP services shall be instantiated using the following binding:</p> <ul style="list-style-type: none"> <li>+OCSP over HTTP(s) over TCP.</li> <li>+ MEPs: SRR-MEP</li> <li>+ Fault handling: the service shall be able to determine the content of the HTTP status code and HTTP reason phrase</li> <li>+ Encoding. <ul style="list-style-type: none"> <li>- restricted encoding as defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: optionally transport</li> <li>- Integrity: optionally transport</li> <li>- Authenticity: message level for OCSP responses or transport (optionally mutual)</li> <li>- Authorization: optionally transport</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: as defined per standard</li> <li>- minimum: not applicable</li> <li>- reference: OCSP</li> </ul> </li> <li>+ Interoperability: none</li> </ul>
Title	Interface Binding. OCSP over HTTP(s) over TCP.
Status	<In Progress>
Rationale	<p>OCSP based operations do not necessarily need security. Security can be applied but can lead to significant recursive complexity. RFC 6960 requires that OSCP responses are signed. This is why the binding allows message level (OCSP layer on top of HTTP) and transport level (HTTP over TLS) as valid options to authenticate the OCSP responder. This binding allows optionally to have mutual authentication at transport level (HTTP over TLS) in case it is required to authenticate the clients due to specific deployment options/security policies. If the OCSP server does not require some sort of authorization, an attacker can get the server to respond to arbitrary requests. Such responses may give the attacker information that may be valuable for a future attack. Furthermore, when required, the binding allows to apply the other security controls at transport level (HTTP over TLS). Authenticity at transport level has not to be confused with HTTP Basic and Digest Access Authentication that are not supported by this binding. This requirement covers NIST security control IA-5 (2.a).</p>
Category	<Interface><Security>
Validation Method	

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Verification Method	<Review of Design><Test>
Profile Part	<YP Core><PP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer>
Selfstanding set	<Internal service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0115	N/A
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<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03a	<Full>

[IREQ]

Identifier	REQ-14.01.04-TS-0914.0020
Requirement	<p>SCVP services shall be instantiated using the following binding</p> <ul style="list-style-type: none"> <li>+ SCVP over HTTPS over TCP.</li> <li>+ MEPs: SRR-MEP</li> <li>+ Fault handling: the service shall be able to determine the content of the HTTP status code and HTTP reason phrase</li> <li>+ Encoding. <ul style="list-style-type: none"> <li>- restricted encoding as defined per standard</li> </ul> </li> <li>+ Security: <ul style="list-style-type: none"> <li>- Confidentiality: transport</li> <li>- Integrity: transport</li> <li>- Authenticity: message level for SCVP responses or transport (optionally mutual)</li> <li>- Authorization: optionally transport</li> <li>- Non-repudiation: none</li> </ul> </li> <li>+ Contract: <ul style="list-style-type: none"> <li>- formalism of contract description: as defined per standard</li> <li>- minimum: not applicable</li> <li>- reference: SCVP</li> </ul> </li> <li>+ Interoperability: none</li> </ul>
Title	Interface Binding. SCVP over HTTPS over TCP.
Status	<In Progress>
Rationale	<p>SCVP based operations can be protected. This binding should be used to interact with Trusted SCVP (refer to RFC 5055 §1.2) for certification path construction and validation. In particular (refer to RFC 5055 §9) SCVP responses to validation requests must be protected to guarantee authenticity. This is why the binding allows message level (SCVP layer on top of HTTP) and transport level (HTTP over TLS) as valid options to authenticate the SCVP server. This bindings allows optionally to have mutual authentication at transport level (HTTP over TLS) in case it is required to authenticate the clients due to specific deployment options/security policies. According to RFC 5055 §9, If the SCVP server does not require some sort of authorization, an attacker can get the server to respond to arbitrary requests. Such responses may give</p>

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	the attacker information that may be valuable for a future attack. Furthermore the binding requires to apply the other security controls (confidentiality and integrity) at transport level (HTTP over TLS). Authenticity at transport level has not to be confused with HTTP Basic and Digest Access Authentication that are not supported by this binding. For further security considerations refer to RFC 5055 §9. This requirement covers NIST security control IA-5 (2.a).
Category	<Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<YP Security+><PP Core><BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Identity Management provider><Identity Management consumer>
Selfstanding set	<Internal service binding>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable><Interoperability testable>

[IREQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	SEC	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0101	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0111	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0112	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0113	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0114	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0115	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0116	N/A
<INCLUDES>	<ATMS Requirement>	REQ-14.01.04-TS-0811.0160	N/A
<SATISFIES>	<Enabler>	GGSWIM-59c	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03b	<Full>
<SATISFIES>	<Enabler>	SWIM-SUPT-03a	<Full>

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## 3.5 Supervision Functional and non-Functional Requirements

In this chapter functional and non-functional requirements concerning the SWIM-TI Supervision are provided. These requirements have been specified according to SWIM-TI Technical Use Case and latest TAD.

### 3.5.1 Capabilities

This section provides the functional requirements of the SWIM-TI Supervision derived from TAD functional and technical views.

#### 3.5.1.1 Service Control and Lifecycle Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.0420
Requirement	The technical status of a service shall have one of the following values: - UNKNOWN: the status cannot be established - RUNNING: the service is available and its provider applications are capable of accepting and processing requests. - FAILED: the service is unavailable due to an internal malfunction or unavailability of the provider applications. - STOPPED: the service is intentionally stopped
Title	Service technical status
Status	<In Progress>
Rationale	The following statuses indicate whether SWIM Enabling Services and SWIM Services are working: UNKNOWN, RUNNING, FAILED, and STOPPED. This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0430
Requirement	The functional status of a service shall have one of the following values: - UP: the service is available and its provider applications are capable of accepting and processing requests. - DOWN: the service is unavailable and its provider applications are not capable of accepting requests.

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Title	Service functional status		
Status	<In Progress>		
Rationale	The following statuses indicate the availability of SWIM Enabling Services and SWIM Services: UP and DOWN.		
Category	<Functional>		
Validation Method			
Verification Method	<Test>		
Profile Part	<BP Core>		
Domain of interest	<SLA><Governance><Function/Behaviour>		
Point of view	<SWIM-TI provider>		
Roles	<Service provider><Subscription handler><Publication mediator>		
Selfstanding set	<Not applicable>		
Conformance	<No>		
High Level	<No>		
Testability	<Applicable but not testable>		
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0435		
Requirement	The SWIM-TI Supervision shall provide indication when the service is available or unavailable.		
Title	Service technical status availability		
Status	<In Progress>		
Rationale	Provision of the status of the services		
Category	<Functional>		
Validation Method			
Verification Method	<Test>		
Profile Part	<BP Core>		
Domain of interest	<SLA><Governance><Function/Behaviour>		
Point of view	<SWIM-TI provider>		
Roles	<Service provider><Subscription handler><Publication mediator>		
Selfstanding set	<Not applicable>		
Conformance	<No>		
High Level	<No>		
Testability	<Applicable but not testable>		
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0440		
Requirement	The technical status of the SWIM Node should have one of the following		

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	values: - STARTING: the SWIM Node is starting, - STARTED: the SWIM Node is normally running, - FAILED: at least a part of the SWIM Node has fallen down, - STOPPED: the SWIM Node is intentionally stopped.
Title	SWIM Node technical status
Status	<In Progress>
Rationale	The technical status of the SWIM Node is computed based on the technical status of the SWIM-TI local hardware, applications and devices.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0450
Requirement	The functional status of the SWIM Node should have one of the following values: - UNKNOWN: the functional status of the SWIM Node cannot be computed, - FULL: the SWIM Node is fully providing its functions, - DEGRADED: at least an application of the SWIM Node is involuntarily degraded, - LIMITED: at least an application of the SWIM Node is intentionally stopped. - STOPPED: the SWIM Node is intentionally stopped.
Title	SWIM Node functional status
Status	<In Progress>
Rationale	The functional status of the SWIM Node is computed based on the technical status and functional status of the SWIM-TI local hardware, applications and devices.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0462
Requirement	The IOP status of the SWIM Node shall have one of the following values: - ENABLED: the SWIM Node shared object capability is fully operational

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	and the SWIM node if playing its role with the federation. - DISABLED: the SWIM Node is not part of the IOP federation.
Title	SWIM Node IOP status
Status	<In Progress>
Rationale	The IOP status of the SWIM Node is computed based on the status of SWIM-TI Messaging capabilities and functional status of the SWIM-TI local hardware, applications and devices. The IOP recovery status is independent from the IOP status. A SWIM Node may choose to be IOP enabled while still recovering some SOs, or with some SOs not recovered. The IOP status applies to SWIM-TI participating in an IOP federation (IOP Area) for the collaborative provision of shared objects (such as ATC to ATC profile). This requirement covers the following NIST security controls: CP-7 a, CP-10.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Governance><Function/Behaviour><ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>
<SATISFIES>	<Enabler> GGSWIM-10c <Partial>
<SATISFIES>	<Enabler> SWIM-SUPT-06b <Partial>
<SATISFIES>	<Enabler> SWIM-APS-05a <Full>
<SATISFIES>	<Enabler> SWIM-APS-05b <Full>
<SATISFIES>	<Enabler> SWIM-INFR-01a <Full>
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<SATISFIES>	<Enabler> SWIM-INFR-05b <Full>
<SATISFIES>	<Enabler> ER APP ATC 160 <Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0463
Requirement	The IOP recovery status of the SWIM Node shall have one of the following values: - TRUE: the SWIM Node is performing its recovery. - FALSE: the SWIM Node has completed its recovery
Title	Tiered Recovery of Flight Objects: SWIM Node IOP recovery status
Status	<Validated>
Rationale	The IOP recovery status of the SWIM Node is set as long as the recovery process is in progress. The IOP recovery status is independent from the IOP status. A SWIM Node may choose to be IOP enabled while still recovering some SOs, or with some SOs not recovered.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Governance><Function/Behaviour><ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>

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High Level	<No>		
Testability	<Applicable but not testable>		
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0470
Requirement	The technical status of the SWIM Node Application should have one of the following values: - STARTING: the application is starting, - STARTED: the application is normally running, - PARTIAL: parts of the application (sub-applications) are intentionally not running, - FAILED: parts of the application (sub-applications) are involuntarily stopped or degraded, - STOPPED: the application is stopped.
Title	SWIM Node Application technical status
Status	<In Progress>
Rationale	The technical status of the SWIM Node Application is computed based on the technical status of the application parts and communication capabilities. This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0480
Requirement	The functional status of the SWIM Node Application should have one of the following values: - FULL: the application is fully providing its functions, - DEGRADED: at least a function of the application is involuntarily not rendered, - LIMITED: the functions of the application are intentionally not all rendered, - STOPPED: the application is stopped.
Title	SWIM Node Application functional status
Status	<In Progress>
Rationale	The functional status of the SWIM Node Application is computed based on the technical status and functional status of its parts and communication capabilities.
Category	<Functional>

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Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0490
Requirement	The technical status of the SWIM Node Computer should have one of the following values: - UNKNOWN: the computer is not connected to the system, - ALIVE: the computer is booted and can be supervised, - DEGRADED: at least a device or CPU load is not nominal, - RUNNING: at least an application is normally running on the node.
Title	SWIM Node Computer technical status
Status	<In Progress>
Rationale	The technical status of the SWIM Node Computer is computed based on the technical status of the applications and devices of the computer. This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0500
Requirement	The functional status of the SWIM Node Computer should have one of the following values: - UNKNOWN: the functional status cannot be computed, - FULL : all the local applications are running, - DEGRADED: local applications are involuntarily stopped, - LIMITED : local applications are intentionally stopped, - STOPPED: there are no running local applications.
Title	SWIM Node Computer functional status
Status	<In Progress>
Rationale	The functional status of the SWIM Node Computer is computed based on the technical status and functional status of its applications and devices and of the technical status of the SWIM Node Computer.
Category	<Functional>
Validation Method	

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Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0510
Requirement	The SWIM-TI Supervision shall be able to start all of the configured SWIM-TI capabilities for the SWIM Node.
Title	Start of all SWIM node capabilities
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the SWIM capabilities in the SWIM Technical Infrastructure. This controlling includes the capability for starting capabilities (start of all capabilities and services).
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SPV-1	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0520
Requirement	The SWIM-TI Supervision shall be able to stop all of the configured SWIM-TI capabilities for the SWIM Node.
Title	Stop of all SWIM node capabilities
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the SWIM

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	capabilities in the SWIM Technical Infrastructure. This controlling includes the capability for stopping capabilities (stop all capabilities and services).
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SPV-2	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0530
Requirement	The SWIM-TI Supervision Service Control function shall provide an operation for the initial launch of a service.
Title	Initial service launch operation
Status	<In Progress>
Rationale	For safety reasons an initialization operation needs to be executed in order to reset all the values, initialize configuration information, and make the service ready for execution. This initialization has to take place at the first stage during the system initialization.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A

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<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0540
Requirement	The SWIM-TI Supervision shall set the technical status to RUNNING for a service that is launched successfully.
Title	Set status to RUNNING on successful service launch
Status	<In Progress>
Rationale	Supervision is responsible for setting the state of each SWIM Service at the local SWIM Node. In this case, the initial operational state of the service after successful launch is set to RUNNING. If a service is not started successfully, its technical status is set to FAILED.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0070	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0550
Requirement	The SWIM-TI Supervision Service Control function shall provide an operation for stopping a service.
Title	Service stop operation
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services

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	deployed in the SWIM Technical Infrastructure. This controlling includes the capability for stopping a particular service.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0100	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0560
Requirement	The SWIM-TI Supervision shall set the technical status to STOPPED for a service that has been stopped successfully.
Title	Set service status to STOPPED for successful stop operation
Status	<In Progress>
Rationale	As part of the SWIM monitoring capability, the SWIM-TI Supervision capability needs to be aware of the status of the SWIM Services deployed in the SWIM Technical Infrastructure. The Supervision is responsible for setting the status of a service to STOPPED after it has been stopped successfully.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0110	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A

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<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0570
Requirement	The SWIM-TI Supervision Service Control function should provide an operation to destroy a service.
Title	Service destroy operation
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. This controlling includes the capability for destroying a particular service (SWIM Enabling Service or SWIM Service). This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0190	<Full>
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0580
Requirement	The SWIM-TI Supervision shall stop a service prior to destroying it if the service to be destroyed has a current status of RUNNING.
Title	Stop a running service before destroying it
Status	<In Progress>

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Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. The stop operation is executed prior to, or as an essential part of, destruction, to ensure that a service is stopped cleanly, and no longer consumes operational resources. This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0590
Requirement	The SWIM-TI Supervision should remove a service from the local SWIM Node and make it unavailable once destroyed.
Title	Un-deploy service upon destruction
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. This controlling includes the capability for un-deploying a particular service (SWIM Enabling Service or SWIM Service). This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0600
Requirement	The SWIM-TI Supervision shall stop a service that is currently in the RUNNING state on the local SWIM Node when indicated by one of the following: - A valid request from an authorized requester at the local SWIM Node - A valid request from an authorized requester who is external to the local SWIM Node, where the request is in accordance with additional conditions specified in applicable governing documents (if any). - A determination by the local Supervision capability automation that the service is to be stopped.
Title	Triggers for stopping a service
Status	<In Progress>
Rationale	A SWIM Enabling Service can be stopped for three triggers: 1) a request from the local SWIM Node owner; 2) a request from an authorized requester at a remote SWIM Node (such as L2 Supervision); or 3) an indication by the Supervision at the local SWIM Node (for instance, to stop and restart after a configuration change).
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0120	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>

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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0005.0610
Requirement	The SWIM-TI Supervision Service Control function shall provide an operation to start a service that has a current status of STOPPED.
Title	Service start operation for stopped service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. This controlling includes the capability for restarting a particular service after it has been stopped.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0160	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0620
Requirement	The SWIM-TI Supervision shall set the technical status of a service to RUNNING upon starting the service successfully from a STOPPED state.
Title	Set service state to RUNNING after successful restart
Status	<In Progress>
Rationale	As part of the monitoring capability, the SWIM-TI Supervision needs to be aware of the status of the SWIM Services deployed in the SWIM Technical Infrastructure. The Supervision is responsible for placing a service in the RUNNING state after a restart.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0180	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0630
Requirement	The SWIM-TI Supervision should be able to stop and then re-launch a service upon notification of a change to its launch configuration information, if the change cannot be implemented while the service is in RUNNING state.
Title	Re-launch service on change to launch configuration (offline registry update)
Status	<In Progress>
Rationale	The SWIM-TI Supervision must manage service configuration information, and provide a means for a service to use a different configuration without having an impact on other services at the node. This operation covers the case where the configuration change cannot be implemented while the service is running. The determination of when to stop and re-launch the service must be made according to the service's availability and usage constraints, and the criticality of the configuration change.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>

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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0640
Requirement	The SWIM-TI Supervision should discontinue publication of service status and service threshold status reports for a destroyed service.
Title	Discontinue status reports and publication for a destroyed service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. This controlling includes the capability for un-deploying a particular service. No further status reports and status information publications will be sent after the destruction of a service.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0650
Requirement	The SWIM-TI Supervision shall provide an indication of an error that is detected in a process control operation, where the process control operation is one of the following: - Launching a service - Destroying a service - Stopping a service - Starting a service.
Title	Process control error notification for a service
Status	<In Progress>

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Rationale	In order to keep the consistency of the system, if an error occurs in the execution of a process control action, it needs to be reported to the SWIM-TI Supervision capability to allow for mitigation actions. This requirement covers NIST security controls SC-24
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0060	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.2 Status Monitoring, Reporting, and Publication Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.0660
Requirement	The SWIM-TI Supervision shall monitor the technical and functional status of each configured SWIM Enabling Service.
Title	Status Monitoring of SWIM Enabling Service – monitoring service status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to know the status of each SWIM Enabling Service as part of keeping the overall view of the system. The Supervision monitoring capability is essential to system safety, accountability, and service level compliance. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>

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Testability	<Conformance testable>
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[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0670
Requirement	The SWIM-TI Supervision shall monitor the technical and functional status of each configured SWIM Service.
Title	Status Monitoring of SWIM Service – monitoring service status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to know the status of each SWIM Service as part of keeping the overall view of the system. The Supervision monitoring capability is essential to system safety, accountability, and service level compliance. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0010	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0680
Requirement	The SWIM-TI Supervision should monitor the operating condition of each of the following configured resources that are to be managed by Supervision at the local SWIM Node: <ul style="list-style-type: none"> <li>- Node Hardware resources</li> <li>- Node Software (process) resources</li> <li>- Data communications resources.</li> </ul> Configuration information at the local SWIM Node specifies which resources are to be managed by SWIM-TI Supervision.
Title	Status monitoring of node resources
Status	<In Progress>
Rationale	The status of the Supervision needs to be monitored for ensuring that the status of the SWIM Technical Infrastructure is up-to-date. The SWIM-TI Supervision is dependent on a configured hardware, software, and data communications resources. Local Supervision must monitor the health of each of these resources. The Supervision monitoring capability is essential to system safety, accountability, and service level compliance. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0690
Requirement	The SWIM-TI Supervision should determine the status of each of the following monitored items, where the status is one of [RUNNING, STOPPED]: <ul style="list-style-type: none"> <li>- Node Hardware resources</li> <li>- Node Software (process) resources</li> <li>- Data communications resources</li> <li>- SWIM Enabling Services</li> </ul>

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	- SWIM Services.
Title	Status Monitoring of SWIM resources and services – determining status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to have a process for determining the operational status of a monitored resource or a service. The status of the resource or service is set to RUNNING or STOPPED based on this process. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0010	<Full>
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<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0700
Requirement	The SWIM-TI Supervision should provide access to monitoring information for monitored hardware at the local SWIM Node upon request by an authorized requester, where the request is in accordance with additional conditions specified in applicable governing documents (if any). The request may originate at the local SWIM Node or at a remote SWIM Node.
Title	Status Monitoring of local hardware
Status	<In Progress>
Rationale	The Status of the SWIM Technical Infrastructure depends on the HW status, so the HW monitoring needs to be included in the SWIM-TI Supervision capability. This capability supports maintenance and fault-remediation actions for the SWIM Node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0040	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0710
Requirement	The SWIM-TI Supervision should allow an authorized requester to request status for a monitored item in accordance with conditions specified in applicable governing documents.
Title	Monitored service thresholds – status request
Status	<In Progress>
Rationale	The SWIM-TI Supervision must respond to request for the status of its monitored items. This information is useful for improving the performance of the system. Status requests must be submitted in accordance with the ICD.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0005.0720
Requirement	The SWIM-TI Supervision should provide status information on a monitored item in the following list upon receiving a valid request from an authorized requester: <ul style="list-style-type: none"> <li>- Local Node hardware status</li> <li>- Local Node software (process) status</li> <li>- Data communications status</li> <li>- SWIM Service lifecycle status</li> <li>- SWIM Enabling Service lifecycle status.</li> </ul> The status request specifies the set of one or more items (service(s), resource(s)) for which status is to be provided. The request may originate at the local SWIM Node or at a remote SWIM Node.
Title	Status reports on request for SWIM-TI Supervision, SWIM Services, SWIM Enabling Services, HW/SW/Communications components
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to report the status (STOPPED or RUNNING) of services and monitored components for safety reasons. The status information is available upon request. Access to this status information will depend on the requester's authorization as set by policy. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0730
Requirement	The SWIM-TI Supervision should reject a request from an authorized requester for the status of a destroyed service.

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Title	Reject status request for destroyed service
Status	<In Progress>
Rationale	The SWIM-TI Supervision does not have a defined lifecycle status for a destroyed service, so no status can be returned for a service that no longer exists at the SWIM Node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0750
Requirement	The SWIM-TI Supervision shall perform semantic evaluation for a status request from an authorized requester if the request passes the format validation step.
Title	Semantic validation for status request
Status	<In Progress>
Rationale	The SWIM-TI Supervision must validate requests to ensure that semantic requirements are met within the request content. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

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Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0760
Requirement	The SWIM-TI Supervision shall reject a request for status information from an authorized requester if the request fails the format validation step.
Title	Reject status request on failed format validation
Status	<In Progress>
Rationale	The SWIM-TI Supervision should reject a request that has an incorrect format. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0770
Requirement	The SWIM-TI Supervision should accept a request for status information if

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	the request passes the semantic validation step.
Title	Successful status request validation
Status	<In Progress>
Rationale	The SWIM-TI Supervision should accept a status request if the input provided by the user is validated successfully.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0780
Requirement	The SWIM-TI Supervision should reject a request for status information from an authorized requester if the request fails the semantic validation step.
Title	Reject status request if semantic validation fails
Status	<In Progress>
Rationale	The SWIM-TI Supervision should reject a request for status if the requester has not specified the desired status information correctly. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

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Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0800
Requirement	The SWIM-TI Supervision shall send the requested status in the response to the authorized requester in accordance with conditions specified in applicable governing documents if the request passes format validation and semantic validation.
Title	Send requested status report if request is valid
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to send requested status information for monitored items that the requester or the subscriber requests and is authorized to receive. Note: not all requesters will necessarily be allowed to receive status for all items monitored at the node. Access to status information will also depend on the requester's authorization as set by policy.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0005.0810
Requirement	The SWIM-TI Supervision should publish status reports to subscribers on the following monitored items: <ul style="list-style-type: none"> <li>- Local Node hardware status</li> <li>- Local Node software (process) status</li> <li>- Data communications status</li> <li>- SWIM Service lifecycle status</li> <li>- SWIM Enabling Service lifecycle status</li> <li>- Service metric threshold information supporting Service Level Agreement monitoring</li> <li>- Alarm information.</li> </ul> The subscriber may reside at the local SWIM Node or at a remote SWIM Node.
Title	Items for which status reports will be published
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to publish status information to subscribers for the monitored items at the local SWIM Node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0820
Requirement	The SWIM-TI Supervision shall publish lifecycle status information to subscribers in accordance with applicable governing documents.
Title	Publication of lifecycle status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to report the status of monitored items for safety reasons.
Category	<Functional>

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Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0830
Requirement	The SWIM-TI Supervision should allow multiple status subscription patterns to be defined for the same monitored item. A pattern may be specified by the subscriber.
Title	Allow multiple subscription patterns
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to tailor status publication, within configured limitations, according to the needs of the subscriber.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>

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<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0840
Requirement	The SWIM-TI Supervision should allow a default status subscription pattern to be defined for a monitored item. If no default subscription pattern exists, a subscription request that does not specify a pattern will be rejected.
Title	Allow default subscription pattern where defined
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide subscription options to meet the needs of subscribers, within configured limitations. There may be cases where a default subscription pattern is set up for the use of requesters that do not have a specific need to tailor a subscription, or where no special patterns are needed for the published product. If no default subscription pattern is available, then the subscriber must specify a pattern in the subscription request. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0850
Requirement	The SWIM-TI Supervision should publish status reports to subscribers according to the publication pattern associated with the subscription.
Title	Publish status according to subscriber-requested patterns

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Status	<In Progress>
Rationale	If a subscriber has requested a specific subscription pattern for published information, the SWIM-TI Supervision needs to provide the published data according to the requested pattern. This capability allows for different subscribers to receive different kinds of updates depending on their needs (for instance, some subscribers may wish to receive more frequent reports, or receive only certain change notifications, according to allowable configurations.)
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.3 Subscription Management Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.0860
Requirement	The SWIM-TI Security shall authorize subscriptions to a publication, where the publication type is one of the following: - Lifecycle status publication - Alarm status publication - Monitored service metric threshold status publication in support of Service Level Agreement monitoring.
Title	Allow subscription request for published status
Status	<In Progress>
Rationale	The SWIM-TI Security needs to allow subscriptions to the status information that is published to subscribers for monitored items at the local SWIM Node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0890
Requirement	The SWIM-TI Messaging shall add subscriber configuration information in persistent storage if the subscription type is valid and the subscriber information is not already stored.
Title	Add subscriber to configuration for status publication
Status	<In Progress>
Rationale	The SWIM-TI Messaging needs to store subscription information for published status.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>

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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0900
Requirement	The SWIM-TI Security shall reject a subscription request from an authorized requester if the request failed the validation step.
Title	Reject invalid subscription request
Status	<In Progress>
Rationale	The SWIM-TI Security will reject invalid subscription requests for published status. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0930
Requirement	The SWIM-TI Security shall provide the current status information for the subscription type in the subscription-acceptance response.
Title	Provide current status in subscription acceptance response
Status	<In Progress>
Rationale	The SWIM-TI Security needs to provide status information in the response to an accepted subscription request so that the requester will receive the current status of subscribed items. This prevents the requester from having to wait for the next status change or status publication in order to seed the requested status data.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>

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Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0940
Requirement	The SWIM-TI Messaging shall allow a requester to cancel a subscription to a publication.
Title	Cancel subscription upon request
Status	<Validated>
Rationale	The SWIM MSG needs to allow a subscriber to cancel a subscription.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0005.0970
Requirement	The SWIM-TI Messaging shall remove a subscriber from the subscriber configuration information from the persistent storage upon acceptance of a subscription cancellation request.
Title	Remove subscriber from subscriber list for status publication
Status	<In Progress>
Rationale	The SWIM MSG needs to maintain correct subscriber information by removing a subscriber from the list when a subscription is cancelled.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1010
Requirement	SWIM-TI Messaging shall discontinue all subscriptions for a subscribing service upon receiving notification that the subscribing service's status has changed from RUNNING to STOPPED.
Title	Discontinue subscription to stopped subscriber
Status	<In Progress>
Rationale	If the local SWIM-TI Supervision is notified that a subscriber service is no longer operational, then publications of status data will be discontinued for that subscriber. The Messaging needs to stop updating this info. It is assumed that the subscriber needs to request a subscription again if and when the subscribing service is restarted or relaunched.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Subscription handler>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.4 Service Level Agreement (SLA) Compliance Monitoring Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.1020
Requirement	The SWIM-TI Supervision shall collect the following service metrics on a Service with a Request/Response interaction pattern for each consumer-provider pair: <ul style="list-style-type: none"> <li>- Service Time.</li> <li>- Number of Requests.</li> <li>- Time of the Last Request.</li> <li>- Number of Failed Requests.</li> <li>- Number of Successful Requests.</li> <li>- Maximum Response Time.</li> <li>- Average Response Time.</li> <li>- Last Response Time.</li> </ul>
Title	Collection of Service Metrics for Service with R/R pattern – metrics to collect
Status	<In Progress>
Rationale	The SWIM-TI Supervision must collect service metrics in order to monitor system performance and compliance with service level agreements. Note: These metrics are collected per each consumer-provider pair. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider>
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0010	<Full>
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-MSG-18	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1030
Requirement	The SWIM-TI Supervision shall collect the following service metrics on a Service with a Publish/Subscribe interaction pattern: - Service time. - Number of Data publications. - Time of the last data publication. - Number of failed data publications.
Title	Collection of Service Metrics for Service with P/S pattern – metrics to collect
Status	<In Progress>
Rationale	The SWIM-TI Supervision must collect service metrics in order to monitor system performance and compliance with service level agreements. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0020	<Full>
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-MSG-17	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1040
Requirement	The SWIM-TI Supervision shall monitor service metrics against configured thresholds.
Title	Monitor service metrics thresholds
Status	<In Progress>
Rationale	For safety reasons, the SWIM-TI Supervision must determine when a service metric has violated a threshold. This information is useful for improving the quality of service of the system and measuring compliance for service level agreements. This requirement covers NIST security controls SC-5 (3)
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1050
Requirement	The SWIM-TI Supervision shall provide an indication when a monitored service metric violates a configured threshold.
Title	Indicate violation of monitored service metric threshold
Status	<In Progress>
Rationale	The SWIM-TI Supervision must make a service metric threshold violation

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	known to interested entities. This requirement covers NIST security controls SC-5 (3)
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1060
Requirement	The SWIM-TI Supervision shall publish a notification to subscribers when a monitored service metric violates a configured threshold.
Title	Publish violation for service metric threshold
Status	<In Progress>
Rationale	The SWIM-TI Supervision must inform subscribers when a particular service metric of interest has violated a threshold, both to improve system performance and to track service level compliance. This requirement covers NIST security controls SC-5 (3)
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>

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<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1070
Requirement	The SWIM-TI Supervision shall clear a threshold-violation condition for a monitored service metric when indicated by configuration information.
Title	Clear violation of monitored service thresholds
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must have a way of determining when to clear service metric threshold violations when the performance of the system returns to a level that is within the tolerance of the threshold.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1080
Requirement	The SWIM-TI Supervision shall provide an indication when a threshold violation has been cleared for a service metric.

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Title	Provide indication when a service metric threshold violation is cleared
Status	<In Progress>
Rationale	For safety reasons, the SWIM-TI Supervision needs to indicate when a monitored service metric threshold violation has been cleared.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1090
Requirement	The SWIM-TI Supervision shall publish a notification to subscribers when a threshold violation condition for a monitored service metric has been cleared.
Title	Publish clearing of violation for service metric threshold
Status	<In Progress>
Rationale	The SWIM-TI Supervision must let interested subscribers know when a service metric threshold violation is cleared and the system has returned to the expected performance level with respect to the metric.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

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[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1100
Requirement	The SWIM-TI Supervision shall publish service metric threshold status reports to a subscriber in accordance with conditions specified in applicable governing documents.
Title	Publish threshold status reports according to ICD
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to publish the status of service metric thresholds to subscribers in accordance with the ICD.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1110
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Requirement	The SWIM-TI Supervision shall provide status information on a monitored service metric upon receiving a valid request from an authorized requester, where the status information includes the following: - Threshold status, where the status is one of (IN VIOLATION, NOT IN VIOLATION) - Current numeric value for monitored threshold. The status request specifies a service identifier and one or more monitored thresholds for which status is to be provided. The request may originate at the local SWIM Node or at a remote SWIM Node.
Title	Provide status of monitored service metric threshold on request
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide status on request for a monitored service metric threshold.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.5 Alarms Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.1120
Requirement	The SWIM-TI Supervision should provide an indication at the local SWIM Node when a resource raises an alarm, where the resource is configured to be monitored by SWIM-TI Supervision.
Title	Indication of alarm condition at the local SWIM Node
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must recognize and indicate when an alarm is raised for a monitored resource at the local SWIM Node. This indication would also be available to the owner of the SWIM Node to allow for local remedial or mitigating actions. This requirement covers NIST security controls SC-5 (3)

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Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1130
Requirement	The SWIM-TI Supervision should publish a notification to subscribers when a monitored resource raises an alarm.
Title	Publish local alarm condition to subscribers
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to publish local alarms to subscribers to allow for mitigation actions. This requirement covers NIST security controls SI-5 c
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1140
Requirement	The SWIM-TI Supervision should provide an indication at the local SWIM Node when a monitored resource has cleared an alarm condition.
Title	Local indication of cleared alarm
Status	<In Progress>
Rationale	The SWIM-TI Supervision must monitor an alarm condition and provide a local indication when a local alarm is cleared. This indication would also be available to the local owner.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1150
Requirement	The SWIM-TI Supervision should publish a notification to subscribers when an alarm indication is cleared for a monitored resource.
Title	Publish alarm clearing notification to subscribers
Status	<In Progress>
Rationale	The SWIM-TI Supervision must notify subscribers when an alarm condition has been cleared at the local SWIM Node.

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Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0040	<Full>
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1160
Requirement	The SWIM-TI Supervision should publish alarm status reports to a subscriber in accordance with conditions specified in applicable governing documents.
Title	Publish alarm status reports in accordance with ICD
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to publish alarm status information for the local SWIM Node according to the ICD.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1170
Requirement	The SWIM-TI Supervision should allow an authorized requester to request the status of alarms from the local SWIM Node. The request may originate at the local SWIM Node or at a remote SWIM Node.
Title	Provide alarm status report on request
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to report the status of alarms at the local SWIM Node upon request.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.6 Logging Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.1220
Requirement	The SWIM-TI Supervision should log in persistent storage each change to the lifecycle status of a monitored service, where the logged information for a status change contains the following information: - Date and time of status change

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	- Identifier for the element whose status has changed - Status before the change - Status after the change.
Title	Logging of change for service lifecycle status changes, and data to be logged
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a and SI-4 a.1.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1230
Requirement	The SWIM-TI Supervision should log in persistent storage each change to the lifecycle status of a monitored resource, where the logged information for a status change contains the following information: - Date and time of status change - Identifier for the element whose status has changed - Status before the change - Status after the change.
Title	Logging of lifecycle status change for monitored resource, and data to be logged
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a and SI-4 a.1.

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Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1240
Requirement	The SWIM-TI Supervision should log in persistent storage the following alarm-related events: - Raising of an alarm condition for a monitored resource - Clearing of an alarm condition for a monitored resource.
Title	Logging of alarm events
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a and AU-2 d.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>

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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1250
Requirement	The SWIM-TI Supervision should provide the following information for each alarm event recorded in the log: - Date and time of event - Identifier for the event, where event is one of (RAISE ALARM, CLEAR ALARM) - Identifier for the alarm - Identifier for resource causing the alarm.
Title	Data to be logged for alarm event
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0005.1260
Requirement	The SWIM-TI Supervision should log in persistent storage the following threshold-related events: - A violation of a monitored metric threshold - Clearing of a violation condition for a monitored metric threshold.
Title	Logging of service metric threshold violation and clearing events
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a and AU-2 d.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1270
Requirement	The SWIM-TI Supervision should provide the following information for each threshold-violation event recorded in the log: - Date and time of violation - Identifier for the violated threshold - Identifier for service violating the threshold If applicable for the service pattern, identifier of the service consumer in the producer-consumer pair associated with the violation. - Configured threshold control value - Actual value of the service metric.
Title	Data to be logged for service metric threshold violation events
Status	<In Progress>

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Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1280
Requirement	The SWIM-TI Supervision should provide the following information for each threshold-violation clearing event recorded in the log: <ul style="list-style-type: none"> <li>- Date and time of clearing of violation</li> <li>- Identifier for the violated threshold</li> <li>- Identifier for service violating the threshold</li> <li>- If applicable for the service pattern, identifier of the service consumer in the producer-consumer pair associated with the violation.</li> <li>- Configured threshold control value</li> <li>- Actual value of service metric.</li> </ul>
Title	Data to be logged for service metric threshold clearing events
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>

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Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1290
Requirement	The SWIM-TI Supervision should log an event in persistent storage upon the successful completion of a process control action, where the process control action is one of the following: - Launch a service - Stop a service - Start a previously-stopped service - Destroy a service.
Title	Logging of successful process control events
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0070	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A

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<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1300
Requirement	The SWIM-TI Supervision should provide the following information for each successful process control event (service launch, stop, start, destroy) event recorded in the log: - Date and time of event - Identifier for event - Identifier for service upon which the operation was performed.
Title	Data to be logged for successful process control events
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0070	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1310
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Requirement	The SWIM-TI Supervision should log in persistent storage an error that is detected in launching a service.
Title	Logging of service launch errors
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0060	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1320
Requirement	The SWIM-TI Supervision should provide the following information for each launch error recorded in the log: - Date and time of error - Identifier for the error - Identifier for service for which the launch was attempted.
Title	Data to be logged for service launch error
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0060	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1330
Requirement	The SWIM-TI Supervision should log in persistent storage an error that is detected in stopping a service.
Title	Log error detected in stopping a service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0110	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1340
Requirement	The SWIM-TI Supervision should provide the following information for each error in stopping a service that is recorded in the log: - Date and time of error - Identifier for the error - Identifier for service for which the stop operation was attempted.
Title	Data to be logged for error in stopping a service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0110	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1350
Requirement	The SWIM-TI Supervision Service Control function should log in persistent storage an error that is detected during an attempt to start a service that is in the STOPPED state.
Title	Logging of error detected in service restart
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.

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Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0160	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1360
Requirement	The SWIM-TI Supervision should provide the following information for each error in starting a previously-stopped service that is recorded in the log: - Date and time of error - Identifier for the error - Identifier for service for which the start operation was attempted.
Title	Data to be logged for service restart error
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0160	<Full>

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<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1370
Requirement	The SWIM-TI Supervision should log in persistent storage an error that is detected in destroying a service.
Title	Logging of error detected in destroying a service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1380
Requirement	The SWIM-TI Supervision should provide the following information for each error detected in destroying a service that is recorded in the log:

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	- Date and time of error - Identifier for the error - Identifier for service for which the destroy operation was attempted.
Title	Data to be logged for error in destroying a service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1390
Requirement	The SWIM-TI Supervision should log in persistent storage a change to stored service metric threshold information, where the log data contains the following information: - Date and time of change event - Content of change data.
Title	Logging of change to service metric threshold information and data to be logged for this change
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>

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Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1400
Requirement	The SWIM-TI Supervision should log in persistent storage each change to stored subscription configuration information, where the log data contains the following information: - Date and time of change event - Content of change data.
Title	Logging of configuration change (offline registry) and data to be logged for this change
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1410
Requirement	The SWIM-TI Supervision should retain logged information about status lifecycle changes in persistent storage for a configurable number of days.
Title	Retain lifecycle status change log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security controls AU-2 a and AU-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1420
Requirement	The SWIM-TI Supervision should retain logged information about subscription configuration changes in persistent storage for a configurable number of days.

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Title	Retain configuration change log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1430
Requirement	The SWIM-TI Supervision should retain logged information about metrics threshold configuration changes in persistent storage for a configurable number of days.
Title	Retain service metrics threshold configuration change log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-2 a.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1440
Requirement	SWIM-TI Supervision should retain logged information about alarm events for a configurable number of days.
Title	Retain alarm event log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security controls AU-2 a and AU-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0212	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>

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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0005.1450
Requirement	SWIM-TI Supervision should retain logged information about metrics threshold violations for a configurable number of days.
Title	Retain service metrics threshold violation log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security controls AU-2 a and AU-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0212	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1460
Requirement	The SWIM-TI Supervision should retain logged information about the clearing of metrics threshold violations for a configurable number of days.
Title	Retain service metrics threshold violation clearing log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>

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Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0212	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0005.1471
Requirement	The SWIM-TI Supervision should retain logged metrics data in persistent storage for a configurable number of days, where the metrics have been collected as set forth in REQ-14.01.04-TS-0005.1020 for SWIM Enabling Services and SWIM Services with a Request/Response interaction pattern.
Title	Retain Request/Response service metrics for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1481
Requirement	The SWIM-TI Supervision should retain logged metrics data in persistent storage for a configurable number of days, where the metrics have been collected as set forth in REQ-14.01.04-TS-0005.1030 for SWIM Enabling Services and SWIM Services with a Publish/Subscribe interaction pattern.
Title	Retain Publish/Subscribe service metrics for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0211	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1490
Requirement	The SWIM-TI Supervision should retain logged information about process control events for a configurable number of days, where the process control event is one of the following: - Process launch event

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	- Process destroy event - Process start event - Process stop event.
Title	Retain service launch, stop, start, and destroy event log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0213	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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[REQ]

Identifier	REQ-14.01.04-TS-0005.1500
Requirement	The SWIM-TI Supervision should retain logged process control error information for a configurable number of days, where the process control error is one of the following: - Service launch error - Service destruction error - Service start error - Service stop error.
Title	Retain service launch, stop, start, and destroy error event log data for configured period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to provide a persistent record of system events for monitored services, resources, service metric thresholds, and alarms. This event data is used for analyzing system performance, providing reports, analyzing errors, and reconstructing event history. This requirement covers NIST security control AU-4.

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Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0214	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1510
Requirement	The SWIM-TI Supervision should initiate archival of log data that is older than the number of days specified by configuration information.
Title	Initiate log data archival at end of retention period
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to have an archival function available to manage the log content and keep the amount of retained log data within the storage allocation limit. This requirement covers NIST security control AU-11.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A

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<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.7 Statistical Information and Reports Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.1530
Requirement	The SWIM-TI Supervision shall make the following reports available based on log data: - Lifecycle status report - Alarm status report - Service metrics threshold violation report - Service statistics report - Process control report.
Title	Report availability and report types
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to make statistical data available for system analysis. This requirement covers NIST security control IA-7.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0415	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

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Identifier	REQ-14.01.04-TS-0005.1540
Requirement	The SWIM-TI Supervision shall generate a specified report in response to a valid request from an authorized requester where the requested report is one of the available reports as described in REQ-14.01.04-TS-0005.1080. The authorized requester may be at the local SWIM Node or at a remote SWIM Node.
Title	Selection and generation of report
Status	<In Progress>
Rationale	As part of the internalization compliance, the report needs to be generated in a standardized format, as specified in the ICD. This requirement covers NIST security control IA-9.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription consumer> handler<Publisher><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0010	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1550
Requirement	The SWIM-TI Supervision should generate a report based on the language specification provided by the authorized requester.
Title	Language independence for report
Status	<In Progress>
Rationale	As part of the internalization compliance, a report needs to be generated in different languages. The requester can specify which language is to be used for the report.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription consumer> handler<Publisher><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0010	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1590
Requirement	The SWIM-TI Supervision should generate a report over a date and time configurable timeframe, in a machine-readable format as described in REQ-14.01.04-TS-0905.0220.
Title	Report generation in machine-readable format over date and time frame
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be able to generate customized reports based on date and time.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0410	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0005.1600
Requirement	The SWIM-TI Supervision should generate a report over a date and time configurable timeframe, in a human-readable format as described in REQ-14.01.04-TS-0905.0200.
Title	Report generation in human-readable format over date and time frame
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be able to generate customized reports based on date and time.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0410	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1610
Requirement	The SWIM-TI Supervision should allow the authorized requester to specify the timeframe to be used for filtering report data.
Title	Date and time specification for reports
Status	<In Progress>
Rationale	For the sake of flexibility and configurability, the SWIM-TI Supervision needs to allow the requester to specify the date and time period that a report is to cover. The report will be based on only the log data that is within the requested timeframe; log data outside the requested timeframe will be excluded from the report.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>

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Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0410	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1620
Requirement	The SWIM-TI Supervision should allow the authorized requester to specify a report timeframe to include data that is older than the configured retention limit for the data type.
Title	Allow requester to specify use of aged data for reports
Status	<In Progress>
Rationale	For the sake of flexibility and configurability, the SWIM-TI Supervision needs to allow the requester of a report to specify that the report is to include data that is older than the retention period for the applicable log data. The error checking on the timeframe specification must allow for older data to be requested.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0410	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>

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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1630
Requirement	The SWIM-TI Supervision should provide a method to allow the reporting capability at the local SWIM Node to access data that is older than the configured retention time for the data type.
Title	Access to aged log data at local SWIM Node
Status	<In Progress>
Rationale	For the sake of flexibility and configurability, the SWIM-TI Supervision needs to be able to generate customized reports that include data that is older than the retention period for the applicable log data. In this case, the older data must be available for the report. If this data has been archived, then a means is needed to allow access to it. This means may be procedural or automated. The local report implementation will need to be based on the way that this data is provided, and may differ from node to node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1640
Requirement	The SWIM-TI Supervision should be able to generate reports where the report data are grouped by a specified category.
Title	Grouping of different metrics data on reports
Status	<In Progress>

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Rationale	The SWIM-TI Supervision needs to be capable of organizing report output according to data groupings and metrics types, so that the desired information is more readily available to the requester. This requirement covers NIST security control AU-6.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0510	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1650
Requirement	The SWIM-TI Supervision shall allow the authorized requester to specify that report output is to be grouped by category: <ul style="list-style-type: none"> <li>- Time sequence associated with the report data</li> <li>- Local Service associated with the report data</li> <li>- Service producer-consumer pair associated with the report data, applicable for Request/Response pattern services</li> <li>- Data type (for example, status type, threshold type, metric type, alarm type, process control type) associated with the report data.</li> </ul>
Title	Categories for grouping report data
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be able to present report data in groupings that promote the readability and interpretation of data and the usability of the system. These groupings allow the requester of a report to focus on different aspects of the Supervision data as needed. This requirement covers NIST security control AU-6.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>

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	consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0510	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.1.8 Configuration Information Management Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.1660
Requirement	The SWIM-TI Supervision should allocate persistent storage for service configuration information.
Title	Storage allocation for service configuration information
Status	<In Progress>
Rationale	Stored configuration information is needed for SWIM-TI Supervision service management. The Supervision must ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4 and CM-2.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0010	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>

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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1670
Requirement	The SWIM-TI Supervision should allocate persistent storage for logging of accepted changes to stored configuration information.
Title	Storage allocation for logging information on configuration changes
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4 and CM-3 c.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0010	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1680
Requirement	The SWIM-TI Supervision should allocate persistent storage for logging of service status changes.
Title	Storage allocation for logging service lifecycle status changes
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>

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Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1690
Requirement	The SWIM-TI Supervision should allocate persistent storage for logging of service metrics.
Title	Storage allocation for logging service metrics
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0010	<Full>
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-MSG-18	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1700
Requirement	The SWIM-TI Supervision should allocate persistent storage for the logging of alarm status events.
Title	Storage allocation for logging alarm status events
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0070	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1710
Requirement	The SWIM-TI Supervision should allocate persistent storage for logging of monitored threshold events (violation, clearing of violation).
Title	Storage allocation for logging monitored service metrics threshold events
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must

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	ensure that adequate space is available for storing this information. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1720
Requirement	The SWIM-TI Supervision should allocate persistent storage for the logging of successful process control events.
Title	Storage allocation for logging process control success events
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0070	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A

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<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1730
Requirement	The SWIM-TI Supervision should allocate persistent storage for the logging of errors that are detected in the following process control actions: - Launching a service - Stopping a service - Starting a service - Destroying a service.
Title	Storage allocation for logging process control error events
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to store log data about events of importance to the system and its processing history. The Supervision must ensure that adequate space is available for storing this information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler<Publisher><Publication
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0060	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1740
Requirement	The SWIM-TI Supervision at each SWIM Node should use a stored configuration to determine the following:

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	<ul style="list-style-type: none"> <li>- The SWIM Node hardware resources to be monitored</li> <li>- The SWIM Node software (process) resources to be monitored</li> <li>- The SWIM Node data communications resources to be monitored.</li> </ul>
Title	Use of stored configuration to determine resources to monitor
Status	<In Progress>
Rationale	The local SWIM Node resources need to be monitored to ensure that the status of the SWIM Technical Infrastructure is up-to-date. The SWIM-TI Supervision is dependent on configured hardware, software process (including operating system features), and data communications platform, as well as on a set of services that are needed for each node in order for SWIM-TI Supervision to provide the required capabilities at that node. Local Supervision must monitor the health of each of these entities and provide status to the user upon request. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0010	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1750
Requirement	The SWIM-TI Supervision at each SWIM Node should use a stored configuration to determine the following: <ul style="list-style-type: none"> <li>- The SWIM Services to be monitored</li> <li>- The SWIM Enabling Services to be monitored.</li> </ul>
Title	Use of stored configuration to determine services to monitor
Status	<In Progress>
Rationale	The services at the local SWIM Node need to be monitored to ensure that the status of the SWIM Technical Infrastructure is up-to-date. Local Supervision must monitor the health of these services for keeping the overall view of the system. This requirement covers NIST security controls SI-4 a.1
Category	<Functional><Security>
Validation Method	

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Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1760
Requirement	The SWIM-TI Supervision should use stored configuration information associated with a monitored resource to define how the lifecycle status of the resource is determined, where the status is one of [RUNNING, STOPPED].
Title	Use of stored configuration to determine resource lifecycle status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to know how to determine whether the lifecycle status of a resource should be RUNNING or STOPPED. Stored configuration information is useful in cases where this determination is to be rule-based or involves a number of dependencies.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A

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<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1770
Requirement	The SWIM-TI Supervision should use stored configuration information associated with a monitored SWIM Service to define how the lifecycle status of the service is determined, where the status is one of [RUNNING, STOPPED].
Title	Use of stored configuration to determine SWIM Service lifecycle status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to know how to determine whether the lifecycle status of a SWIM service should be RUNNING or STOPPED. Stored configuration information is useful in cases where this determination is to be rule-based or involves a number of dependencies.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1780
Requirement	The SWIM-TI Supervision should use stored configuration information associated with a monitored SWIM Enabling Service to define how the lifecycle status of the service is determined, where the status is one of

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	[RUNNING, STOPPED].
Title	Use of stored configuration to determine SWIM Enabling Service lifecycle status
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to know how to determine whether the lifecycle status of a SWIM service should be RUNNING or STOPPED. Stored configuration information is useful in cases where this determination is to be rule-based or involves a number of dependencies.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1790
Requirement	The SWIM-TI Supervision should associate the following kinds of information with the launch configuration information for a service: - Service pattern information - Subscriber information for a publishing service - Service metrics threshold information - Policy information.
Title	Launch configuration content
Status	<In Progress>
Rationale	Each service needs certain kinds of launch configuration information to provide details about the run-time environment that the service must use. This launch configuration may vary in nature and complexity across different services. The SWIM-TI Supervision must ensure that the launch configuration for each service contains the correct and necessary configuration elements.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>

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Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1800
Requirement	The SWIM-TI Supervision at each SWIM Node should store a launch configuration in persistent storage for each SWIM Service and SWIM Enabling Service.
Title	Persistent storage of launch configuration
Status	<In Progress>
Rationale	Service launch configuration information must be retained in persistent storage so that the Supervision is able to locate and obtain this information when needed to launch a service, as well as to meet performance and availability needs.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0000	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>

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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1810
Requirement	The SWIM-TI Supervision should provide launch configuration information to a service upon launch.
Title	Provide launch configuration information to a service
Status	<In Progress>
Rationale	The SWIM-TI Supervision must be able to retrieve launch configuration information and ensure that a service gets its launch configuration information in a usable format.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1820
Requirement	The SWIM-TI Supervision at each SWIM Node should use a stored configuration to determine the interaction pattern for each configured service, where the interaction pattern is one of the following: - Request/Response - Publish/Subscribe - Both Request/Response and Publish/Subscribe - Other.
Title	Use of stored configuration to determine interaction pattern for Publish/Subscribe service

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Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to determine the interaction pattern for a service in order to provide monitoring capabilities related to that pattern. For example, Supervision will collect different metrics for a Request/Response service than for a Publish/Subscribe service.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1830
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the publication pattern for status information on each monitored item, where the pattern is one of the following: <ul style="list-style-type: none"> <li>- Publish current information upon startup, upon status change, and upon occurrence of monitored event</li> <li>- Publish current information upon startup, upon status change, upon occurrence of monitored event, and upon schedule</li> <li>- Publish current information upon schedule</li> <li>- Publish last N samples of information upon schedule, where N is specified in the subscription configuration information</li> <li>- Publish current information upon startup and upon status change.</li> </ul>
Title	Use of stored configuration to determine the publication patterns for Publish/Subscribe services
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs this publication pattern configuration information to know how to publish status information for a monitored resource or service.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>

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Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1840
Requirement	The SWIM-TI Supervision should use stored configuration information to define the time frequency for publication for each publication pattern that includes scheduled publication.
Title	Use of stored configuration to determine scheduled publication frequency for Publish/Subscribe service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs this publication frequency configuration information to know how often to publish status information for a monitored resource or service for which status must be published according to a schedule.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>

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<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1850
Requirement	The SWIM-TI Supervision should use stored configuration information to determine subscriber information for a publishing service.
Title	Use of stored configuration to determine the subscribers for a Publish/Subscribe service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to store configuration information about accepted subscribers who need to receive publications from a Publish/Subscribe service. The subscription information needs to persist around an outage at the local node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0030-0090	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1860
Requirement	The SWIM-TI Supervision should use a stored configuration to define the following service metrics thresholds to be used for each monitored service with a Request/Response interaction pattern: <ul style="list-style-type: none"> <li>- Maximum number of failed requests</li> <li>- Maximum response time</li> <li>- Average response time.</li> </ul>

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Title	Use of stored configuration to determine service metrics threshold values for Request/Response service
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must monitor system performance for these service metrics for a Request/Response service. The thresholds against which the performance is to be measured are defined in this configuration information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1870
Requirement	The SWIM-TI Supervision should use stored configuration information to determine whether a threshold condition has been violated for a monitored metrics threshold.
Title	Use of stored configuration to determine when a monitored threshold has been violated
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must indicate when a service metric threshold has been violated. Stored configuration information provides the information that the Supervision needs to determine that a threshold has been violated. The violation may be based on finding that a metric has gone above or below a threshold, or has gone above or below a threshold for a certain length of time, or by a certain amount, etc.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>

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	consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1880
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the conditions for clearing a threshold violation condition for a monitored metrics threshold.
Title	Use of stored configuration to determine when to clear a threshold violation
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must indicate when a service metric threshold violation has been cleared. Stored configuration information provides the information that the Supervision needs to determine when to clear the violation condition. This determination may be based on finding that a metric has gone above or below a threshold, or , has gone above or below a threshold for a certain length of time, or by a certain amount, etc.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>

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<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1890
Requirement	The SWIM-TI Supervision should use a stored configuration to define the following service metrics thresholds for monitored services with a Publish/Subscribe interaction pattern: - Maximum number of failed data publications - Maximum number of data publications.
Title	Use of stored configuration to determine service metrics threshold values for Publish/Subscribe service
Status	<In Progress>
Rationale	For safety and statistical reasons, the SWIM-TI Supervision must monitor system performance for these service metrics for a Publish/Subscribe service. The thresholds against which the performance is to be measured are defined in configuration information.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0031	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1900
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the number of days to retain process control log data.
Title	Retention period for Request/Response service metrics
Status	<In Progress>

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Rationale	In order to manage the storage of log data and keep it from growing past the allocated limits, the Supervision must have configuration information that tells it how long to retain the log data in storage that is readily accessible to the local SWIM Node. Log data must be retained for a configurable time period in order to support the reporting, system history, and system analysis functions.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1910
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the number of days to retain lifecycle status log data.
Title	Retention period for lifecycle status
Status	<In Progress>
Rationale	In order to manage the storage of log data and keep it from growing past the allocated limits, the Supervision must have configuration information that tells it how long to retain the log data in storage that is readily accessible to the local SWIM Node. Log data must be retained for a configurable time period in order to support the reporting, system history, and system analysis functions.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>

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Testability	<Conformance testable>
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[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1920
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the number of days to retain alarm event log data.
Title	Retention period for alarms
Status	<In Progress>
Rationale	In order to manage the storage of log data and keep it from growing past the allocated limits, the Supervision must have configuration information that tells it how long to retain the log data in storage that is readily accessible to the local SWIM Node. Log data must be retained for a configurable time period in order to support the reporting, system history, and system analysis functions.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0005.1930
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the number of days to retain service metrics log data.
Title	Retention period for service metrics
Status	<In Progress>
Rationale	In order to manage the storage of log data and keep it from growing past the allocated limits, the Supervision must have configuration information that tells it how long to retain the log data in storage that is readily accessible to the local SWIM Node. Log data must be retained for a configurable time period in order to support the reporting, system history, and system analysis functions.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1940
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the number of days to retain metrics threshold violation and clearing event log data.
Title	Retention period for service metrics threshold events
Status	<In Progress>
Rationale	In order to manage the storage of log data and keep it from growing past the allocated limits, the Supervision must have configuration information that tells it how long to retain the log data in storage that is readily accessible to the local SWIM Node. Log data must be retained for a configurable time period in order to support the reporting, system history, and system analysis functions.
Category	<Functional>

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Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0210	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1950
Requirement	The SWIM-TI Supervision should use stored configuration information to determine the SWIM-TI capabilities that are to be operational for the local SWIM Node.
Title	Use of configuration information for start of SWIM capabilities
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the SWIM capabilities in the SWIM Technical Infrastructure. This control function needs to have configuration information to identify what these necessary capabilities are.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-SPV-1	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1960
Requirement	The SWIM-TI Supervision should update stored configuration information upon a change to offline registry information affecting the management of services at the local SWIM Node. The Supervision at the local SWIM Node will ensure that the local configuration information matches the current offline registry information.
Title	Configuration Update to Offline Registry – update notification
Status	<In Progress>
Rationale	It is expected that the SWIM-TI Supervision will maintain a local version of Offline Registry information that will be used by the SWIM-TI Supervision services and other services at a local SWIM Node. When an update occurs to this Offline Registry information, the local SWIM Node must provide a means by which it can keep the local configuration consistent with the Offline Registry. This requirement covers NIST security controls CM-3
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

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Identifier	REQ-14.01.04-TS-0005.1970
Requirement	The SWIM-TI Supervision should put the changed version of Offline Registry information into use at the local SWIM Node for affected services upon an Offline Registry change.
Title	Configuration Update to Offline Registry – update local stored configuration
Status	<In Progress>
Rationale	It is expected that the SWIM-TI Supervision will maintain Offline Registry information to provide information about services to SWIM-TI Supervision capabilities at a local SWIM Node. When an update occurs to this Offline Registry information, the local SWIM-TI Supervision must start using the updated registry content.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1980
Requirement	The SWIM-TI Supervision should accept a request from an authorized requester at the local SWIM Node to update service metric threshold configuration information for a SWIM-TI Supervision service that has a current status of RUNNING, where the request is in accordance with conditions specified in applicable governing documents (if any).
Title	Configuration Update to Offline Registry – allow threshold update to running service
Status	<In Progress>
Rationale	The SWIM-TI Supervision must allow a requester to update the threshold information that is used for service monitoring without restarting the affected service or services. This approach improves availability and usability of the system.
Category	<Functional>

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Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.1990
Requirement	The SWIM-TI Supervision should reject a request from an authorized requester at the local SWIM Node to update SWIM-TI Supervision service metric threshold configuration information if the request is not in accordance with conditions specified in applicable governing documents.
Title	Configuration Update to Offline Registry – reject invalid threshold update request
Status	<In Progress>
Rationale	The SWIM-TI Supervision must allow a requester to update the threshold information that is used for service monitoring without restarting the affected service or services. This approach improves availability and usability of the system. This requirement covers NIST security controls SI-10
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.2000
Requirement	The SWIM-TI Supervision should notify a SWIM-TI Supervision service upon an update to its service metric threshold configuration information.
Title	Configuration Update to Offline Registry – notify service of update
Status	<In Progress>
Rationale	The SWIM-TI Supervision must allow a requester to update the threshold information that is used for service monitoring without restarting the affected service or services. The Supervision must be able to notify a monitoring service that updated threshold information is available.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.2010
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Requirement	A SWIM-TI Supervision service should accept and use updated threshold configuration information from an authorized requester while remaining in the RUNNING state.
Title	Configuration Update to Offline Registry – implement threshold update to running service
Status	<In Progress>
Rationale	A SWIM-TI Supervision Service that is performing a monitoring function must be able to accept an update to its threshold configuration information without needing to be restarted. Note: this configuration change requires the service to re-evaluate the affected service metrics against the new thresholds to determine the current status.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription handler><Publisher><Publication consumer><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0020-0030	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.2020
Requirement	The SWIM-TI Supervision should remove the configuration information associated with a service from the local service configuration as part of destroying the service.
Title	Remove configuration information for destroyed service
Status	<In Progress>
Rationale	The SWIM-TI Supervision needs to be capable of controlling the services deployed in the SWIM Technical Infrastructure. This controlling includes the capability for un-deploying a particular service. When a service is destroyed, its configuration information is no longer needed, and should be removed as part of managing the configuration storage for the SWIM Node.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>

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Domain of interest	<SLA><Governance><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Subscriber><Subscription consumer><Publication mediator> handler><Publisher><Publication
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0040-0210	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

## 3.5.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.5.3.1) time behaviour, (§3.5.3.2) resource utilization and (§3.5.3.3) capacity.

#### 3.5.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.5.3.2 Resource utilization Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.5.3.3 Capacity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.5.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.5.4.1) confidentiality, (§3.5.4.2) integrity, (§3.5.4.3) non-repudiation, (§3.5.4.4) accountability and (§3.5.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.5.4.6) is provided for safety requirements.

### 3.5.4.1 Confidentiality Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.4.2 Integrity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.4.3 Non-repudiation Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.5.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.5.5.1) modularity, (§3.5.5.2) reusability, (§3.5.5.3) analysability, (§3.5.5.4) modifiability and (§3.5.5.5) testability.

### 3.5.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.5.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.5.6.1) maturity, (§3.5.6.2) availability, (§3.5.6.3) fault tolerance and (§3.5.6.4) recoverability.

### 3.5.6.1 Maturity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.6.2 Availability Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0605.0010
Requirement	The SWIM-TI Supervision should have availability not less than the availability of the entire ATC system.
Title	Availability of SWIM-TI Supervision in ATC
Status	<In Progress>
Rationale	Traces to REQ-08.03.01-CONOPS-0000.0050
Category	<Reliability>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP FDD>
Domain of interest	<ICD><SLA>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.6.3 Fault tolerance Requirements

[REQ]

Identifier	REQ-14.01.04-TS-0005.0330
Requirement	The SWIM-TI Supervision should detect isolation of the SWIM-TI from the SWIM.
Title	Detection of isolation from SWIM of the local SWIM-TI

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Status	<In Progress>
Rationale	Local systems shall detect when they are isolated from the SWIM. This is especially important when using connectionless communication. This requirement contributes to support ED-133 IOP-MFO-200-mdw.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0340
Requirement	The SWIM-TI Supervision should report to local systems isolation of the SWIM-TI from the SWIM.
Title	Reporting isolation from SWIM of the local SWIM-TI
Status	<In Progress>
Rationale	Local systems shall be notified when their SWIM-TI is isolated from SWIM. This is especially important when using connectionless communication. This requirement contributes to support ED-133 IOP-MFO-200-mdw.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0350
Requirement	The SWIM-TI Supervision should change status of the Shared Object Capability upon isolation of the SWIM-TI from SWIM.
Title	Disabling Shared Object Capability upon SWIM-TI isolation from SWIM
Status	<In Progress>
Rationale	When SWIM-TI is isolated from SWIM, local systems need to be notified that the Shared Object capability is disabled. This requirement contributes to support ED-133 IOP-MFO-200-mdw.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0360
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Requirement	The SWIM-TI should monitor the Shared Object capability.
Title	Monitoring of Shared Object capability
Status	<In Progress>
Rationale	Monitoring of IOP capabilities implemented in the SWIM-TI for Flight and AIM data as in ED-133 IOP-SUP-010-mdw and IOP-SUP-310-mdw
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0370
Requirement	The SWIM-TI should monitor the local system services contributing to the Shared Object capability.
Title	Monitoring of System services contributing in Shared Object capability
Status	<In Progress>
Rationale	Monitoring of IOP capabilities implemented in local systems for Flight and AIM data as in ED-133 IOP-SUP-010-mdw and IOP-SUP-310-mdw
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A

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<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0380
Requirement	The SWIM-TI Supervision should provide the status of the Shared Object capability to local systems.
Title	Local provision of the status of Shared Object Capability.
Status	<In Progress>
Rationale	Allow local systems to retrieve the status Shared Object capability as in ED-133 IOP-SUP-320-mdw
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0390
Requirement	The SWIM-TI Supervision should allow local systems to provide status of their SWIM-enabled services.
Title	Local update of status of SWIM-enabled services.
Status	<In Progress>
Rationale	Allow local systems to report the monitoring info of their SWIM-enabled

	services to support ED-133 IOP-SUP-010
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0400
Requirement	The SWIM-TI Supervision should detect status changes of a remote Shared Object Participant.
Title	Monitoring of a Remote Shared Object Participant.
Status	<In Progress>
Rationale	Detect if a remote IOP stakeholder is currently IOP-enabled or not as to support ED-133 IOP-FOM-070-mdw.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A

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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0005.0410
Requirement	The SWIM-TI Supervision shall report to local systems status changes of Shared Object Participants.
Title	Reporting status changes of Shared Object Participants.
Status	<In Progress>
Rationale	Inform the local system of detected status changes of remote participants to support ED-133 IOP-FOM-090-mdw and IOP-SUP-030-mdw
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP FDD>
Domain of interest	<SLA><Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

### 3.5.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

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### 3.5.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



## 3.5.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.5.8.1) co-existence and (§3.5.8.2) interoperability compatibility NFR sub-characteristics, (§3.5.8.3) installability and (§3.5.8.4) replaceability portability NFR sub-characteristics.

### 3.5.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.8.2 Interoperability Requirements

Refer to interoperability requirements in §3.1.8.

### 3.5.8.3 Installability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.5.9 Interface Requirements

This section includes interface requirements applicable to the SWIM-TI Supervision.

[REQ]

Identifier	REQ-14.01.04-TS-0905.0200
Requirement	The SWIM-TI Supervision should generate a report in a human-readable format as selected by the authorized requester, where the allowed format choices are the following: - ISO/IEC 15445(html 4.01) - ISO 32000-1/ISO 19005-1(pdf).
Title	Reports human readability
Status	<In Progress>
Rationale	The reports need to be generated in a standardized and manageable format so the output will be readable by the receiver.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0210
Requirement	The SWIM-TI Supervision should provide images that are part of a report in the format selected by the report requester, where the allowed format choices are the following: - Portable Network Graphics, ISO/ IEC 15948:2003 (PNG) - Joint Photographic Experts Group, ISO/IEC 10918-1 (JPEG).
Title	Reports image format
Status	<In Progress>
Rationale	The reports need to be generated in a standardized and manageable format

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	for performing analysis and data mining.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0220
Requirement	The SWIM-TI Supervision should generate a report in a machine readable format suitable for importing into spreadsheets and other automated processing software, as selected by the authorized requester, where the allowed format choices are the following: - Comma-separated values format - Tab-separated values format - Space-delimited text format - Open Document Format (ODF).
Title	Reports machine readability
Status	<In Progress>
Rationale	The reports need to be generated in a standardized and manageable format for performing analysis and data mining.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

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Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0010
Requirement	SWIM-TI SUPERVISION shall provide an interface as services provided and consumed to the ATM System Supervision
Title	System Supervision Interface Definition
Status	<In Progress>
Rationale	System Supervision is involved in monitoring and controlling processes, applications, hardware and services of a system. SWIM-TI SUPERVISION does the same for SWIM nodes. System Supervision, if present, could provide supervision data to the SWIM-TI SUPERVISION or accept requests from it. It could be useful inside SESAR Project to standardize such an interface (at least e minimum profile).
Category	
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0020
Requirement	SWIM-TI SUPERVISION shall provide an interface as services provided and consumed to other SWIM-TI SUPERVISION distributed instances
Title	SWIM-TI SUPERVISION Interfaces Definition
Status	<In Progress>
Rationale	In order to enable the information exchange between SPV Entities an interface shall be defined. Typical case is information exchange between SPV Entities made from different companies.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0030
Requirement	SWIM-TI SUPERVISION shall provide an interface as services provided and consumed to the external world
Title	External Interfaces Definition
Status	<In Progress>
Rationale	In order to ease integration with non-SWIM-TI Supervision data consumers (e.g. legacy applications) a definition for an interface is needed.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0040
Requirement	SWIM-TI SUPERVISION shall provide an interface between define an interface between L1-L2 SWIM-TI Supervision entities
Title	L1-L2 SWIM-TI Supervision Interfaces Definition
Status	<In Progress>
Rationale	In order to enable the information exchange between L1-L2 SWIM-TI Supervision Entities an interface shall be defined.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0905.0050
Requirement	SWIM-TI SUPERVISION-System Supervision Interface shall provide operations for querying status from the System Supervision.
Title	System Supervision Interface Status Queries
Status	<In Progress>
Rationale	SWIM-TI Supervision shall monitor status of supervised entities. If System Supervision is present it could provide that status to the SWIM-TI Supervision.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0060
Requirement	SWIM-TI SUPERVISION-System Supervision Interface shall provide operations for querying statistics from the System Supervision.
Title	System Supervision Interface Statistics Queries
Status	<In Progress>
Rationale	SWIM-TI Supervision shall calculate statistics. If System Supervision is present it could provide those statistics to the SWIM-TI Supervision.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>

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Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0070
Requirement	SWIM-TI SUPERVISION-System Supervision Interface shall provide operations for querying status alerts from the System Supervision.
Title	System Supervision Interface Status Alerts Queries
Status	<In Progress>
Rationale	SWIM-TI Supervision shall detect status alerts. If System Supervision is present it could provide those status alerts to the SWIM-TI Supervision. This requirement covers NIST security controls SI-4 a.1.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

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[REQ]

Identifier	REQ-14.01.04-TS-0905.0080
Requirement	SWIM-TI SUPERVISION-System Supervision Interface shall provide operations for querying SLA alerts from the System Supervision.
Title	System Supervision Interface Status Alerts Queries
Status	<In Progress>
Rationale	SWIM-TI Supervision shall calculate SLA alerts. If System Supervision is present it could provide those SLA alerts to the SWIM-TI Supervision. This requirement covers NIST security controls SI-5 b.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0090
Requirement	SWIM-TI SUPERVISION-System Supervision Interface shall provide operations for controlling entities lifecycle.
Title	System Supervision Interface Control Methods
Status	<In Progress>
Rationale	SWIM-TI Supervision shall control entities. If System Supervision is present and already controls those entities, SWIM-TI SUPERVISION could use System Supervision Interface to control entities.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>

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Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0100
Requirement	External Interface shall provide operations for querying metrics from the SWIM-TI SUPERVISION.
Title	External Systems Interface Querying methods
Status	<In Progress>
Rationale	External Systems could be interested in metrics from the SWIM-TI SUPERVISION. SWIM-TI Supervision could provide those metrics to the external systems via External Interface. It remains to be specified the set of data to make available to the external system.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
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<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0905.0110
Requirement	Inter SWIM-TI SUPERVISION Interface shall provide operations for sharing supervised entities status between SWIM-TI Supervision instances.
Title	Inter SWIM-TI Supervision Interface Status Sharing
Status	<In Progress>
Rationale	SWIM-TI Supervision entities should be able to share status of their supervised entities. SWIM-TI Supervision could provide those data via Inter SWIM-TI Supervision Interface. This requirement covers NIST security controls SI-5 c.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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[REQ]

Identifier	REQ-14.01.04-TS-0905.0120
Requirement	Inter SWIM-TI Supervision Interface shall provide operations for sharing supervised entities statistics between SWIM-TI Supervision instances.
Title	Inter SWIM-TI Supervision Interface Statistic Sharing
Status	<In Progress>
Rationale	SWIM-TI Supervision entities should be able to share statistics of their supervised entities. SWIM-TI Supervision could share those data via Inter SWIM-TI Supervision Interface.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>

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Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
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[REQ]

Identifier	REQ-14.01.04-TS-0905.0130
Requirement	Inter SWIM-TI Supervision Interface shall provide operations for sharing supervised entities status alerts between SWIM-TI Supervision instances.
Title	Inter SWIM-TI Supervision Interface Status Alerts Sharing
Status	<In Progress>
Rationale	SWIM-TI Supervision entities should be able to share status alerts of their supervised entities. SWIM-TI Supervision could share those data via Inter SWIM-TI Supervision Interface. This requirement covers NIST security controls SI-5 c.
Category	<Functional><Interface><Security>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0140
Requirement	System Supervision Interface shall provide operations for sharing supervised entities SLA alerts between SPV instances.
Title	System Supervision Interface Status Alerts Queries
Status	<In Progress>
Rationale	SWIM-TI Supervision should be able to share SLA alerts of their supervised entities. If System SWIM-TI Supervision could share those data via Inter SWIM-TI Supervision Interface.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0150
Requirement	Inter SWIM-TI Supervision Interface shall provide operations for controlling entities lifecycle.
Title	Inter SWIM-TI Supervision Interface Control Methods
Status	<In Progress>
Rationale	A SWIM-TI Supervision entity could control supervised entities lifecycle of another SWIM-TI Supervision entity. SWIM-TI SUPERVISION could use Inter SWIM-TI Supervision Interface to perform this action.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core>

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Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.03	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0160
Requirement	All SWIM-TI Supervision interfaces shall provide an operation, or a set of operations, to query the current values of all kind of supervised data of a SWIM-TI Supervision entity.
Title	SWIM-TI Supervision interfaces - On demand operational mode
Status	<In Progress>
Rationale	In order to improve flexible communication SWIM-TI Supervision interface shall permit different way of interrogation for data (data is status, SLA alerts, status alerts, statistics).
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
<SATISFIES>	<Enabler>	SWIM-SUPT-06b	<Partial>
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0170
Requirement	All SWIM-TI Supervision interfaces shall provide an operation, or a set of operations, to enable a SWIM-TI Supervision entity to periodically get refresh of supervised data values.
Title	SWIM-TI Supervision interfaces - Continuous operational mode
Status	<In Progress>
Rationale	In order to improve flexible communication SWIM-TI Supervision interface shall permit different way of interrogation for data.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.03-0050-0050	<Full>
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.03	N/A
<ALLOCATED TO>	<Functional block>	SPV	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
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<SATISFIES>	<Enabler>	GGSWIM-10c	<Partial>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0180
Requirement	All SWIM-TI Supervision interfaces shall provide an operation, or a set of operations, to enable a SWIM-TI Supervision entity to publish/subscribe last N samples of supervised data values. N > 0
Title	SWIM-TI Supervision interfaces - Continuous operational mode
Status	<In Progress>
Rationale	In order to improve flexible communication SWIM-TI Supervision interface shall permit different way of interrogation for data.
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>

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Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Functional block>	SPV	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0905.0190
Requirement	SWIM-TI Supervision Interfaces shall support the use of standard formats for data exchange.
Title	SWIM-TI Supervision Interfaces - use of standards formats
Status	<In Progress>
Rationale	Data made available through the SWIM-TI Supervision Interfaces shall be packed using well known standards (e.g. xml).
Category	<Functional>
Validation Method	
Verification Method	<Review of Design><Test>
Profile Part	<BP Core><YP Advanced>
Domain of interest	<ICD>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED_TO>	<Project>	14.02.03	N/A
<ALLOCATED_TO>	<Functional block>	SPV	N/A
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
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Additional supervision interface requirements are provided in §3.3.9.2.1. The FlightObjectDistribution interface allows to share also IOP-Status information. The latter is a data shared for supervision purposes and it is provided in that chapter just because its contract is strongly related to Flight Object distribution.

## 3.6 Recording Functional and non-Functional Requirements

In this chapter functional and non-functional requirements concerning the SWIM-TI Recording are provided. These requirements have been specified according to SWIM-TI Technical Use Case and latest TAD.

### 3.6.1 Capabilities

This section provides the functional requirements of the SWIM-TI Recording derived from TAD functional and technical views.

[REQ]

Identifier	REQ-14.01.04-TS-0004.0001
Requirement	The SWIM-TI Recording shall record the following information of a communication session in a data exchange between SWIM Nodes: - Time Stamp - Communication Session Context - Document Payload
Title	Recording capability
Status	<Validated>
Rationale	For safety and recovery reasons all the operation executed needs to be stored in the SWIM Technical Infrastructure. Note: The SWIM-TI Recording will only record the data exchange via the SWIM Interface. This requirement covers NIST security control AU-10 and SC-7.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Security+>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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[REQ]

Identifier	REQ-14.01.04-TS-0004.0050
Requirement	The SWIM-TI Recording shall retain data which has been collected as set forth in REQ-14.01.04-TS-0004.0001 for a configurable number of days.
Title	Configurable Data
Status	<Validated>
Rationale	Data needs to be kept for a configurable number of days. This requirement covers NIST security control AU-4.
Category	<Functional><Security>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core><YP Security+>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Functional block>	Yellow Profile	N/A
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0004.0060
Requirement	The SWIM-TI Recording shall provide a recording service.
Title	Recording Service
Status	<In Progress>
Rationale	The SWIM-TI Recording shall provide a recording service enabling HMI Screen Recording, Supervision Data Recording, and Audio Data Recording.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

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Relationship	Linked Element Type	Identifier	Compliance
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<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	REC	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
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[REQ]

Identifier	REQ-14.01.04-TS-0004.0070
Requirement	The SWIM-TI Recording shall provide a data playback service.
Title	Recording Data Playback Service
Status	<In Progress>
Rationale	The SWIM-TI Recording shall provide a data play back service enabling Playback Supervision Data and Playback Audio Data.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED TO>	<Project>	14.02.09	N/A
<ALLOCATED TO>	<Functional block>	REC	N/A
<ALLOCATED TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0004.0080
Requirement	The SWIM-TI Recording shall provide a HMI playback service.
Title	Recording HMI Playback Service
Status	<In Progress>
Rationale	The SWIM-TI Recording shall provide a HMI play back service enabling Playback HMI Screen Data and Playback Audio Data.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>

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Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	REC	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

[REQ]

Identifier	REQ-14.01.04-TS-0004.0090
Requirement	The SWIM-TI Recording shall provide an Archiving service.
Title	Recording Archiving Service
Status	<In Progress>
Rationale	The SWIM-TI Recording shall provide an archiving service enabling archiving of HMI Data, Fault/Configuration/Performance/Security Data, and Audio Data.
Category	<Functional>
Validation Method	
Verification Method	<Test>
Profile Part	<BP Core>
Domain of interest	<Function/Behaviour>
Point of view	<SWIM-TI provider>
Roles	<Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<Yes>
Testability	<Applicable but not testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<ALLOCATED_TO>	<Functional block>	REC	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

## 3.6.2 Adaptability

This section includes adaptability requirements as documented in ISO/IEC 25010:2011. In particular, requirements included in this section refer to adaptability sub-characteristic of portability NFRs.

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.3 Performance Characteristics

This section includes performance efficiency requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with performance efficiency NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.6.3.1) time behaviour, (§3.6.3.2) resource utilization and (§3.6.3.3) capacity.

#### 3.6.3.1 Time behaviour Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.6.3.2 Resource utilization Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.6.3.3 Capacity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.6.4 Safety & Security

This section includes security requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with security NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.6.4.1) confidentiality, (§3.6.4.2) integrity, (§3.6.4.3) non-repudiation, (§3.6.4.4) accountability and (§3.6.4.5) authenticity. Furthermore, according to SJU guidelines, a dedicated subsection (§3.6.4.6) is provided for safety requirements.

### 3.6.4.1 Confidentiality Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.4.2 Integrity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.4.3 Non-repudiation Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.4.4 Accountability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.4.5 Authenticity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.4.6 Safety Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.6.5 Maintainability

This section includes maintainability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with maintainability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.6.5.1) modularity, (§3.6.5.2) reusability, (§3.6.5.3) analysability, (§3.6.5.4) modifiability and (§3.6.5.5) testability.

### 3.6.5.1 Modularity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.5.2 Reusability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.5.3 Analysability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.5.4 Modifiability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.5.5 Testability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

## 3.6.6 Reliability

This section includes reliability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with reliability NFR sub-characteristics described in ISO/IEC 25010:2011: (§3.6.6.1) maturity, (§3.6.6.2) availability, (§3.6.6.3) fault tolerance and (§3.6.6.4) recoverability.

### 3.6.6.1 Maturity Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.6.2 Availability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.6.3 Fault tolerance Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.6.4 Recoverability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.7 Internal Data Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



### 3.6.8 Design and Construction Constraints

This section includes compatibility and portability requirements as documented in ISO/IEC 25010:2011. The structure of the section is in accordance with sub-characteristics of both compatibility and portability NFR described in ISO/IEC 25010:2011: (§3.6.8.1) co-existence and (§3.6.8.2) interoperability compatibility NFR sub-characteristics, (§3.6.8.3) installability and (§3.6.8.4) replaceability portability NFR sub-characteristics.

[REQ]

Identifier	REQ-14.01.04-TS-0804.0001
Requirement	The SWIM-TI Recording shall be implemented using COTS products.
Title	SWIM-TI Recording Implementation
Status	<Validated>
Rationale	The SWIM Technical Infrastructure shall be based upon well-recognized or emerging IT standard that are supported by mainstream IT COTS product in the market, that only require little or no further development/customisation.
Category	<Design>
Validation Method	
Verification Method	<Review of Design>
Profile Part	<BP Core><YP Core>
Domain of interest	<Governance>
Point of view	<SWIM-TI provider>
Roles	<Service provider><Service consumer><Subscriber><Publisher><Publication consumer><Subscription handler><Publication mediator>
Selfstanding set	<Not applicable>
Conformance	<No>
High Level	<No>
Testability	<Conformance testable>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<SATISFIES>	<ATMS Requirement>	P14.02.09-SWIM-REC-6	<Full>
<APPLIES_TO>	<Operational Focus Area>	ENB02.01.01	N/A
<ALLOCATED_TO>	<Functional block>	Blue Profile	N/A
<ALLOCATED_TO>	<Functional block>	Yellow Profile	N/A
<ALLOCATED_TO>	<Functional block>	REC	N/A
<ALLOCATED_TO>	<Project>	14.02.09	N/A
<SATISFIES>	<Enabler>	SWIM-APS-05a	<Full>
<SATISFIES>	<Enabler>	SWIM-APS-05b	<Full>
<SATISFIES>	<Enabler>	SWIM-INFR-01a	<Full>
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<SATISFIES>	<Enabler>	SWIM-INFR-05b	<Full>
<SATISFIES>	<Enabler>	ER APP ATC 160	<Full>

#### 3.6.8.1 Co-existence Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

#### 3.6.8.2 Interoperability Requirements

Refer to interoperability requirements in §3.1.8.

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### 3.6.8.3 Installability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.8.4 Replaceability Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.

### 3.6.9 Interface Requirements

Requirements concerning this category have not been identified during SESAR 1 programme. This requirement category may be further investigated according to the evolution of the SWIM-TI Technical Specifications.



## 4 Assumptions

1. The definition of a mapping that associates a Tier for each stakeholder in the Distribution List has to be provided by the IOP Application (P10.02.05).



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## 5.1 Use of copyright / patent material /classified material

N/A.

### 5.1.1 Classified Material

N/A.



## Appendix A Interface Evolution Analysis

Interface evolution activities focus on evolution of ATM Service STDD (Service Technical Design Description), or just technical contract. To specify versioning and evolution strategies of ATM Service, implies to govern the evolution of the ATM service STDD. It is not SWIM-TI (or WP14) responsibility to impose any rules/strategies. It will be up to specific actors (service architects, service provider) and/or governance bodies to decide the strategy to be applied. Provided compatibility assessment, recommendations and rules aim at supporting those actors in properly manage evolution of ATM service STDD. It is than up to those actors to apply or not (or to extend/refine) Rules and recommendations provided hereafter.

The “object under evolution” is the STDD which mainly provides the following groups of information:

- a) “Applicable Service Name and Versioning”, that includes naming, versioning, status and reference concerning the ATM Service (and its related SDD) to which the Service Technical Design applies to.
- b) “Service Technical Interfaces”, that includes the description of the technical interfaces of the service. This is the part where the link with chosen SWIM-TI interface bindings is provided.
- c) “Service Levels And Design Decisions”, that includes the description of the service levels and any relevant design decisions taken during technical design.

Interface evolution analysis focus on evolution of only STDD “Service Technical Interfaces” part. This part in composed by different elements and evolution of one or more of those elements may be compatible or incompatible changes. The link between an ATM service STDD and interface evolution analysis is the SWIM-TI interface binding(s) chosen for that service.

Some rules/recommendations provided below are SWIM-TI Profiles Interface Bindings independent whereas other are binding specific due to particular standards adopted in that binding. For instance rules on XSD modelling techniques to achieve minor version compatibility are only applicable to interface bindings using XML/XSD. Furthermore, ATM service implementations versioning is not addressed. In particular for a given version of the STDD, a stakeholder may plan different versions of the service implementation. According to the “Contract first” (STDD) approach, changes on service implementations are not expected to impact technical interoperability (the STDD version is the same) if what specified in the STDD is properly used as reference by both provider and consumer.

In the tables below rules, recommendations and compatibility assessment applicable to ATM services using interface bindings part of this Technical Specification are provided. The first table provides for each row the applicable interface bindings. The second table provides complete definition of applicable rules, recommendations and compatibility assessment (use the identifier to identify what is applicable to which interface bindings). Exactly the same content is provided in the Interface Evolution Analysis spreadsheet available on the extranet [11].

Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
14.01.04-INTEV-0001	Recommendation	DDS Binding Structural elements	Evolution of DDS Binding Structural elements	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0002	Compatibility Assessment	DDS Binding Structural elements	New DDS version in DDS Binding protocol stack part	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0003	Compatibility Assessment	DDS Binding Structural elements	New DDSI version in DDS Binding protocol stack part	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0004	Recommendation	DDS Bindings	DDS native features based Adapter Compatibility technique realization	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0005	Compatibility Technique	DDS Bindings	DDS native features based Adapter Compatibility technique realization	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0006	Compatibility Technique	DDS Bindings	DDS native features based Adapter Compatibility technique realization	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0007	Recommendation	All the Bindings	Lifecycle Migration plan	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0008	Recommendation	All the Bindings	Lifecycle Retirement plan	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0009	Rule	IDL	Evolution of Topics Names in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0010	Rule	IDL	Evolution of DDS DOMAIN identifiers in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0011	Rule	IDL	Evolution of DDS IDL namespaces in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0012	Rule	IDL	Evolution of DDS IDL in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
14.01.04-INTEV-0013	Compatibility Assessment	DDS QoS Policy	Compatibility Assessment for DDS QoS Policies	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0014	Rule	DDS QoS Policy	Evolution of DDS QoS Policies in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0015	Recommendation	IDL	Handling Incompatible changes of the IDL in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0016	Recommendation	DDS QoS Policy	Handling Incompatible changes of DDS QoS Policies in DDS based bindings	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0017	Compatibility Assessment	DDS Bindings	Compatibility Assessment of evolution of DDS based bindings "contract" part: IDL and QoS Policies	REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0018	Recommendation	SOAP Binding Structural elements	Evolution of SOAP Binding Structural elements	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0019	Compatibility Technique	All the Bindings	Evolution of binding Structural elements	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0020	Recommendation	All the Bindings	Evolution of binding structural elements: Security	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0021	Recommendation	All the Bindings	Evolution of binding structural elements: Protocol Stack	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0022	Recommendation	WSDL	Handling Incompatible changes of WSDL in SOAP based bindings	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0023	Compatibility Assessment	WSDL	Compatibility Assessment of evolution of SOAP based bindings "contract" part: WSDL	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0024	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new data elements	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0025	Rule	WSDL	Evolution of WSDL in SOAP based bindings: temporary data elements	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0026	Rule	WSDL	Evolution of WSDL in SOAP based bindings: elements/attributes order	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0027	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new Data Element Type	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0028	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Data Element renaming	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0029	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Namespaces	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0030	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Namespaces and WSDL version	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0031	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of Data Element QName.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0032	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of wsdl:message.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0033	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of order of wsdl:input messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0034	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:input messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0035	Rule	WSDL	Evolution of WSDL in SOAP based bindings: remove wsdl:input messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0036	Rule	WSDL	Evolution of WSDL in SOAP based bindings: order of wsdl:output messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0037	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:output messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0038	Rule	WSDL	Evolution of WSDL in SOAP based bindings: remove wsdl:output messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0039	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:fault messages.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0040	Rule	WSDL	Evolution of WSDL in SOAP based bindings: operation renaming.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0041	Rule	WSDL	Evolution of WSDL in SOAP based bindings: removal of wsdl:operation from a wsdl:portType.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0042	Rule	WSDL	Evolution of WSDL in SOAP based bindings: "message" and "name" attributes renaming.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0043	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:portType renaming and removal.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0044	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:binding definition.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0045	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:service definition.	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0046	Recommendation	WSDL	WSDL namespaces	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0047	Recommendation	WSDL	WSDL versioning	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0048	Recommendation	XSD	XSD namespaces	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0049	Recommendation	XSD	XSD versioning	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
14.01.04-INTEV-0050	Recommendation	XSD	Handling Incompatible changes of XSD in SOAP based bindings	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0051	Compatibility Assessment	XSD	Compatibility Assessment of evolution of SOAP based bindings "contract" part: XSD	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0052	Rule	XSD	Evolution of XSD: new data elements	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0053	Rule	XSD	Evolution of XSD: temporary data elements	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0054	Rule	XSD	Evolution of XSD: elements/attributes order	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0055	Rule	XSD	Evolution of XSD: new Data Element Type	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0056	Rule	XSD	Evolution of XSD: Data Element renaming	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0057	Rule	XSD	Evolution of XSD: Namespaces	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0058	Rule	XSD	Evolution of XSD: Namespaces and XSD version	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
14.01.04-INTEV-0059	Rule	XSD	Evolution of XSD: update of Data Element QName.	REQ-14.01.04-TS-0901.0700 REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0325
14.01.04-INTEV-0060	Recommendation	All the Bindings	Recommended Versioning Approach	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0061	Recommendation	All the Bindings	Recommended Interface Evolution Strategy	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0062	Recommendation	All the Bindings	Balance between evolution flexibility and contract effectiveness	REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0705 REQ-14.01.04-TS-0901.0710 REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0315 REQ-14.01.04-TS-0901.0316 REQ-14.01.04-TS-0901.0325 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0063	Recommendation	DDS Security Configuration	Handling Incompatible changes of DDS Security Configuration in DDS based bindings	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0064	Compatibility Assessment	DDS Security Configuration	Compatibility Assessment of evolution of DDS based bindings "contract" part: DDS Security Configuration	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0065	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Authentication (DDS:Auth:PKI-RSA/DSA-DH).	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0066	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permission CA hierarchy or trust path.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0067	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0068	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0069	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0070	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0071	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0072	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0073	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0074	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0075	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0076	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0077	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0078	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0079	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0080	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0081	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0082	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0083	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0084	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0085	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0086	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0087	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720

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Identifier	Type	Artifact	Title	Applicable Blue Profile Interface Bindings
				REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0088	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700
14.01.04-INTEV-0089	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Cryptography (DDS:Crypto:AES-CTR-HMAC-RSA/DSA-DH)	REQ-14.01.04-TS-0901.0715 REQ-14.01.04-TS-0901.0720 REQ-14.01.04-TS-0901.0700

Identifier	Type	Artifact	Title	Description	Rationale
14.01.04-INTEV-0001	Recommendation	DDS Binding Structural elements	Evolution of DDS Binding Structural elements	Changes in DDS Binding Structural elements are recommended to result in a new major version of the STDD. The choice to use a minor version in case of compatible changes is left up to service designers although they are considered sufficiently fundamental to justify a major version change for documentation purposes.	All the changes in DDS Binding Structural elements typically imply the selection/specification of a new interface binding resulting in the most general case in an incompatible change. Possible exceptions in protocol stack part are 14.01.04-INTEV-0002 and 14.01.04-INTEV-0003.
14.01.04-INTEV-0002	Compatibility Assessment	DDS Binding Structural elements	New DDS version in DDS Binding protocol stack part	Changing DDS standard version is an Incompatible Change when the new DDS version introduces a new QoS AND that is used in the contract part of the ATM Service using that binding.	Changing DDS standard version ONLY may not imply an Incompatible change because the wire interoperability is based on DDSI. Changing DDS standard version is an Incompatible Change when the new DDS version introduces a new QoS AND that is used in the contract part of the ATM Service using that binding
14.01.04-INTEV-0003	Compatibility Assessment	DDS Binding Structural elements	New DDSI version in DDS Binding protocol stack part	Changing DDSI standard version is not an Incompatible change when backward compatibility is ensured at DDSI standard level.	Changing DDSI standard version may not imply an Incompatible change because backward compatibility may be already

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Identifier	Type	Artifact	Title	Description	Rationale
					addressed at DDSI standard level (DDSI 2.2 backward compatible with DDSI 2.1).
14.01.04-INTEV-0004	Recommendation	DDS Bindings	DDS native features based Adapter Compatibility technique realization	Adapter Compatibility techniques to handle Incompatible changes in DDS based bindings should be realized using DDS native features.	Reuse native features of DDS to realize such technique is considered valuable in terms of reuse, evolution and flexibility of the technical environment. This is feasible for all incompatible changes in DDS based bindings "contract" part. Furthermore, for changes in DDS Binding Structural elements (and in particular protocols stack), this recommendation applies only to the cases where new version of the STDD still include DDS standards based protocols stack. See 14.01.04-INTEV-0019. Current two options are identified: 14.01.04-INTEV-0005 and 14.01.04-INTEV-0006.
14.01.04-INTEV-0005	Compatibility Technique	DDS Bindings	DDS native features based Adapter Compatibility technique realization	For each new version introducing an incompatibility (new major version number), a new DDS Domain shall be created to segregate old-version exchanges from new-version exchanges.	For each new version introducing an incompatibility (new major version number), a new DDS Domain is created to segregate old-version exchanges from new-version exchanges. The publisher introduces an Adapter that supports the previous version in the previous DDS domain to support old-version subscribers. A new domain is created for the new version. Subscribers can migrate at their pace by moving from

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Identifier	Type	Artifact	Title	Description	Rationale
					the old DDS domain to the new one. Hence it is recommended to apply and document specific rules to map major version number with DDS Domain identifier (e.g. Major version 2.x on Domain 1 and Major version 3.x on Domain 2). Even if DDS standard the Domain identifier is defined as a “long”, more user friendly naming rules may be applied but ensuring that the mapping to/from standard Domain identifier type (i.e. “long”) is properly provided.
14.01.04-INTEV-0006	Compatibility Technique	DDS Bindings	DDS native features based Adapter Compatibility technique realization	For each new version introducing an incompatibility (new major version number), a new DDS PARTITION shall be created to segregate old-version exchanges from new-version exchanges.	For each new version introducing an incompatibility (new major version number), a new DDS PARTITION is created to segregate old-version exchanges from new-version exchanges. The publisher introduces an Adapter that supports the previous version of the previous DDS partition to support old-version subscribers. A new partition is created for the new version. Subscribers can migrate at their pace by moving from the old DDS partition to the new one. Hence it is recommended to apply and document specific rules to map major version number with DDS partitions (e.g. Major version 2.x on partition “atmdata.flight.2-x” and Major version 3.x on

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Identifier	Type	Artifact	Title	Description	Rationale
					<p>partition "atmdata.flight.3-x"). Of course, in case DDS PARTITION QoS is already used as part of the STDD, this techniques can be still used by ensuring that service specific partitioning rules are still applied. For instance, the STDD could use PARTITION QoS to apply following domain specific rules:  flightdata.REGION.COUNTRY allowing partitions like "flightdata.US.*", "flightdata.EU.*", "flightdata.*" and "flightdata.US.ITALY". In case PARTITION QoS is used for realizing the Adapter Compatibility technique the following naming rule could be applied: "major-version-number.flightdata.REGION.COUNTRY". That will allow to support service specific logics and segregation due to incompatible changes. This technique cannot be used if incompatible DDSI versions are used at both publisher and subscriber sides. On the other hand this technique may allow publishers to publish (when the different contract versions allow that) the data on multiple partitions without duplicate the operation (and memory use) for multiple major versions.</p>

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Identifier	Type	Artifact	Title	Description	Rationale
14.01.04-INTEV-0007	Recommendation	All the Bindings	Lifecycle Migration plan	If previous Major version is still available, migration plan should be produced.	Migration plan is required to enable consumers/providers to plan the migration to the new major version.
14.01.04-INTEV-0008	Recommendation	All the Bindings	Lifecycle Retirement plan	If previous Major version is still available but its deprecation or retirement is already foreseen, retirement plan should be produced.	Retirement plan is required to enable consumers/providers to know when the previous version will be retired and to plan accordingly the migration to the new major version.
14.01.04-INTEV-0009	Rule	IDL	Evolution of Topics Names in DDS based bindings	If backward compatibility between two consecutive versions is required, do not change Topic(s) names.	Changes of Topic name is an incompatible change that can be avoided (this rule) or handled through the adapter compatibility techniques.
14.01.04-INTEV-0010	Rule	IDL	Evolution of DDS DOMAIN identifiers in DDS based bindings	If backward compatibility between two consecutive versions is required, do not change DDS Domain identifier.	Changes of Domain identifier is an incompatible change that can be avoided (this rule) or handled through the adapter compatibility techniques.
14.01.04-INTEV-0011	Rule	IDL	Evolution of DDS IDL namespaces in DDS based bindings	If backward compatibility between two consecutive versions is required, do not change Namespaces ("module" names in IDL).	Changes of IDL module names is an incompatible change that can be avoided (this rule) or handled through the adapter compatibility techniques.
14.01.04-INTEV-0012	Rule	IDL	Evolution of DDS IDL in DDS based bindings	If backward compatibility between two consecutive versions is required, be conformant with Extensible and Dynamic Topic Types for DDS standard when designing the IDL. - The IDL type definition of all modified topics is recommended to be ENVISAGED AS EXTENSIBLE. - USE optional annotation technique for new Data Elements. - Do NOT remove non-optional Data Elements (in IDL elements are not optional by default). - Do NOT change order of elements/attributes in Data Element between minor versions.	By applying Dynamic Topic Types for DDS standard when designing IDL allows anticipate future changes by guaranteeing backward compatibility.
14.01.04-INTEV-	Compatibility Assessment	DDS QoS Policy	Compatibility Assessment for DDS QoS Policies	DDS QoSPolicy objects that need to be set in a compatible manner between the publisher and subscriber ends are	

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Identifier	Type	Artifact	Title	Description	Rationale
0013				<p>indicated by the setting of the 'RxO' property:</p> <ul style="list-style-type: none"> <li>- An 'RxO' setting of "Yes" indicates that the policy can be set both at the publishing and subscribing ends and the values must be set in a compatible manner. In this case the compatible values are explicitly defined.</li> <li>- An 'RxO' setting of "No" indicates that the policy can be set both at the publishing and subscribing ends but the two settings are independent. That is, all combinations of values are compatible.</li> <li>- An 'RxO' setting of "N/A" indicates that the policy can only be specified at either the publishing or the subscribing end, but not at both ends. So compatibility does not apply.</li> </ul> <p>The 'changeable' property determines whether the QoSPolicy can be changed after the Entity is enabled. In other words, a policy with 'changeable' setting of 'NO' is considered "immutable" and can only be specified either at Entity creation time or else prior to calling the enable operation on the Entity. For what concerns the analysis of compatible and incompatible changes, only DDS QoSs with 'RxO' setting of "Yes" may introduce or not incompatible changes. DDS QoS 'changeable' property is not considered relevant in this analysis. For instance, Durability_Service QoS has 'changeable' property setting of "No" but 'RxO' setting of "No". This implies that any changes of this QoS will not affect other publishing and/or subscribers applications/systems.</p> <p>Changing DDS QoSs with 'RxO' setting of "Yes" may also result in a compatible change if the change matches existing QoS setting for other DDS entities. In other words, the changes of those QoS should be compatible with RxO schema defined by the DDS standard for that specific QoS.</p>	
14.01.04-INTEV-0014	Rule	DDS QoS Policy	Evolution of DDS QoS Policies in DDS based bindings	<p>If backward compatibility between two consecutive versions is required, apply following rules to the Durability, Presentation, Deadline, Latency Budget, Ownership, Liveliness and Reliability QoS Policies:</p> <ul style="list-style-type: none"> <li>- Do NOT change the QoS configuration, OR</li> <li>- The changes of those QoS should still be compatible, according to the RxO schema defined by the DDS standard for that specific</li> </ul>	Refer to 14.01.04-INTEV-0013 compatibility assessment.

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Identifier	Type	Artifact	Title	Description	Rationale
				QoS, with DDS entities using previous minor version configuration (e.g. the changes of DEADLINE QoS on DataWriter side does not break compatibility with DataReaders and does not requires third applications/systems restart/configuration).	
14.01.04-INTEV-0015	Recommendation	IDL	Handling Incompatible changes of the IDL in DDS based bindings	If it is required to provide compatibility techniques to handle incompatible major versions due to IDL evolution, Adapter compatibility technique should be adopted in accordance with 14.01.04-INTEV-0004.	See 14.01.04-INTEV-0004.
14.01.04-INTEV-0016	Recommendation	DDS QoS Policy	Handling Incompatible changes of DDS QoS Policies in DDS based bindings	If it is required to provide compatibility techniques to handle incompatible major versions due to QoS Policies evolution, Adapter compatibility technique should be adopted in accordance with 14.01.04-INTEV-0004.	See 14.01.04-INTEV-0004.
14.01.04-INTEV-0017	Compatibility Assessment	DDS Bindings	Compatibility Assessment of evolution of DDS based bindings "contract" part: IDL and QoS Policies	If one of the following rules is violated backward compatibility between two consecutive versions is broken (no compatible change): 14.01.04-INTEV-0009, 14.01.04-INTEV-0010, 14.01.04-INTEV-0011, 14.01.04-INTEV-0012, 14.01.04-INTEV-0014. In such case, recommendations 14.01.04-INTEV-0015 and 14.01.04-INTEV-0016 apply if it is required to handle incompatible major versions compatibility.	
14.01.04-INTEV-0018	Recommendation	SOAP Binding Structural elements	Evolution of SOAP Binding Structural elements	Changes in SOAP Binding Structural elements are recommended to result in a new major version of the STDD. The choice to use a minor version in case of compatible changes is left up to service designers although they are considered sufficiently fundamental to justify a major version change for documentation purposes.	All the changes in SOAP Binding Structural elements typically imply the selection/specification of a new interface binding resulting in the most general case in an incompatible change.
14.01.04-INTEV-0019	Compatibility Technique	All the Bindings	Evolution of binding Structural elements	When major (and incompatible) versions compatibility is required, the Adapter Compatibility technique is typically adopted. This techniques is not always applicable and in general is not always guaranteeing full compatibility: depending on the changes in binding Structural elements this techniques may or not guarantee "full" major versions compatibility. In particular if the "Security" part is updated moving from transport level to message level (updating accordingly also the "Protocol stack part") security mechanisms, the use of the Adapter Compatibility technique may not be enough to guarantee that message level security attributes are properly "mediated"/handled. Other changes in G1 (protocol stack) may	

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Identifier	Type	Artifact	Title	Description	Rationale
				also make impossible/complicated to use the Adapter Compatibility technique (SOAP x.y to SOAP x.z can be easily handled but SOAP x.y to AMQP not). Above considerations are also relevant when designing the first major version of the STDD. For instance, if it is planned to start with transport level security but in a given point in time the migration to message level security is already foreseen, the STDD architects already know that Backward compatibility will be broken between two major versions in future.	
14.01.04-INTEV-0020	Recommendation	All the Bindings	Evolution of binding structural elements: Security	If major versions compatibility is required do not change transport level to message level security.	As documented in 14.01.04-INTEV-0019, the use of the Adapter compatibility technique could not guarantee in this case a full compatibility between two major versions.
14.01.04-INTEV-0021	Recommendation	All the Bindings	Evolution of binding structural elements: Protocol Stack	If major versions compatibility is required do not select new protocols that may make expensive the realization of the mediation logic (in some case the FULL compatibility cannot be achieved) required to implement the Adapter compatibility technique.	As documented in 14.01.04-INTEV-0019, the use of the Adapter compatibility technique could not guarantee in this case a full compatibility between two major versions.
14.01.04-INTEV-0022	Recommendation	WSDL	Handling Incompatible changes of WSDL in SOAP based bindings	If it is required to provide compatibility techniques to handle incompatible major versions due to WSDL evolution, Adapter compatibility technique should be adopted OR do design the WSDL as generic as possible to anticipate further evolution and use the Dynamic Binding Compatibility technique.	It should be noted that too flexible WSDL (second option) may result in too generic interfaces, impacting application semantics and increasing complexity.
14.01.04-INTEV-0023	Compatibility Assessment	WSDL	Compatibility Assessment of evolution of SOAP based bindings "contract" part: WSDL	If one of the following rules is violated backward compatibility between two consecutive versions is broken (no compatible change): 14.01.04-INTEV-0024 to 14.01.04-INTEV-0045. In such case, if it is required to handle incompatible major versions compatibility, recommendation 14.01.04-INTEV-0022 apply.	
14.01.04-INTEV-0024	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new data elements	If backward compatibility between two consecutive versions is required, do use optional Data Element technique for new Data Element (wsdl:types).	
14.01.04-	Rule	WSDL	Evolution of WSDL in SOAP based	If backward compatibility between two consecutive versions is	

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Identifier	Type	Artifact	Title	Description	Rationale
INTEV-0025			bindings: temporary data elements	required, do consider as optional Data Element the elements that may be removed in further minor versions (wsdl:types).	
14.01.04-INTEV-0026	Rule	WSDL	Evolution of WSDL in SOAP based bindings: elements/attributes order	If backward compatibility between two consecutive versions is required, do not change order of elements/attributes in Data Element between minor versions (wsdl:types).	
14.01.04-INTEV-0027	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new Data Element Type	If backward compatibility between two consecutive versions is required, do use Flexible Data Types technique to anticipate (in any) further modification of Data Element type and cardinality (wsdl:types).	
14.01.04-INTEV-0028	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Data Element renaming	If backward compatibility between two consecutive versions is required, do use Selectable Data Element technique to anticipate further renaming of Data Elements (wsdl:types).	
14.01.04-INTEV-0029	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Namespaces	If backward compatibility between two consecutive versions is required, do not change Namespaces.	
14.01.04-INTEV-0030	Rule	WSDL	Evolution of WSDL in SOAP based bindings: Namespaces and WSDL version	If backward compatibility between two consecutive versions is required, do not embed the version of the WSDL within its Namespace.	Minor version of the WSDL would imply Namespace renaming which results in an incompatible change
14.01.04-INTEV-0031	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of Data Element QName.	If backward compatibility between two consecutive versions is required, do not change element QName when Selectable Data Element technique is not used.	
14.01.04-INTEV-0032	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of wsdl:message.	If backward compatibility between two consecutive versions is required, do apply following rules for changes on the elements used by Web Services operations input, output and fault messages (wsdl:message): 14.01.04-INTEV-0024, 14.01.04-INTEV-0025, 14.01.04-INTEV-0026, 14.01.04-INTEV-0027, 14.01.04-INTEV-0028, 14.01.04-INTEV-0031.	
14.01.04-INTEV-0033	Rule	WSDL	Evolution of WSDL in SOAP based bindings: update of order of wsdl:input messages.	If backward compatibility between two consecutive versions is required, do not change the order of wsdl:input messages in wsdl:operation.	
14.01.04-INTEV-0034	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:input messages.	If backward compatibility between two consecutive versions is required, do not add new wsdl:input messages in wsdl:operation.	
14.01.04-INTEV-0035	Rule	WSDL	Evolution of WSDL in SOAP based bindings: remove wsdl:input messages.	If backward compatibility between two consecutive versions is required, do not remove wsdl:input messages from wsdl:operation.	

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Identifier	Type	Artifact	Title	Description	Rationale
14.01.04-INTEV-0036	Rule	WSDL	Evolution of WSDL in SOAP based bindings: order of wsdl:output messages.	If backward compatibility between two consecutive versions is required, do not change the order of wsdl:output messages in wsdl:operation.	
14.01.04-INTEV-0037	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:output messages.	If backward compatibility between two consecutive versions is required, do not add new wsdl: output messages in wsdl:operation.	
14.01.04-INTEV-0038	Rule	WSDL	Evolution of WSDL in SOAP based bindings: remove wsdl:output messages.	If backward compatibility between two consecutive versions is required, do not remove wsdl: output messages from wsdl:operation.	
14.01.04-INTEV-0039	Rule	WSDL	Evolution of WSDL in SOAP based bindings: new wsdl:fault messages.	If backward compatibility between two consecutive versions is required, do not add new wsdl:fault messages in wsdl:operation.	
14.01.04-INTEV-0040	Rule	WSDL	Evolution of WSDL in SOAP based bindings: operation renaming.	If backward compatibility between two consecutive versions is required, do not rename a wsdl:operation.	
14.01.04-INTEV-0041	Rule	WSDL	Evolution of WSDL in SOAP based bindings: removal of wsdl:operation from a wsdl:portType.	If backward compatibility between two consecutive versions is required, do not remove a wsdl:operation from a wsdl:portType.	
14.01.04-INTEV-0042	Rule	WSDL	Evolution of WSDL in SOAP based bindings: "message" and "name" attributes renaming.	If backward compatibility between two consecutive versions is required, do not rename "message" and "name" attributes of wsdl:operation input, output and fault messages.	
14.01.04-INTEV-0043	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:portType renaming and removal.	If backward compatibility between two consecutive versions is required, do not rename or remove a wsdl:portType.	
14.01.04-INTEV-0044	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:binding definition.	If backward compatibility between two consecutive versions is required, do not change the wsdl:binding definition, in particular for the SOAP protocol: - Do not change the soap:binding style or transport protocol (RPC to Document or vice versa – Document style is recommended) - Do not change the wsdl:operations inside a wsdl:binding. - Do not change the soap:operation of a wsdl:operation. - Do not change the soap:body "use" attribute (encoded, literal, literal wrapped – the latter is recommended).	
14.01.04-INTEV-0045	Rule	WSDL	Evolution of WSDL in SOAP based bindings: wsdl:service definition.	If backward compatibility between two consecutive versions is required, do not change the wsdl:service definition, in particular:	

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Identifier	Type	Artifact	Title	Description	Rationale
				<ul style="list-style-type: none"> <li>- Do not change the wsdl:service name.</li> <li>- Do not change the wsdl:ports inside a wsdl:service.</li> <li>- Change of the actual address of the service is not considered as a change of the WSDL because it is a run-time/deployment information (even if sometime is provided in the WSDL).</li> </ul>	
14.01.04-INTEV-0046	Recommendation	WSDL	WSDL namespaces	Avoid having a single namespace mixing concepts that have different lifecycle (partitioning of the model).	
14.01.04-INTEV-0047	Recommendation	WSDL	WSDL versioning	Include the WSDL version as part of WSDL definitions for documentation purposes.	
14.01.04-INTEV-0048	Recommendation	XSD	XSD namespaces	Avoid having a single namespace mixing concepts that have different lifecycle (partitioning of the model).	
14.01.04-INTEV-0049	Recommendation	XSD	XSD versioning	Include schema version in the XSD.	
14.01.04-INTEV-0050	Recommendation	XSD	Handling Incompatible changes of XSD in SOAP based bindings	If it is required to provide compatibility techniques to handle incompatible major versions due to XSD evolution, Adapter compatibility technique should be adopted OR do design the XSD as generic as possible to anticipate further evolution and use the Dynamic Binding Compatibility technique.	It should be noted that too flexible XSD (second option) may result in too generic interfaces, impacting application semantics and increasing complexity.
14.01.04-INTEV-0051	Compatibility Assessment	XSD	Compatibility Assessment of evolution of SOAP based bindings "contract" part: XSD	If one of the following rules is violated backward compatibility between two consecutive versions is broken (no compatible change): 14.01.04-INTEV-0052 to 14.01.04-INTEV-0059. In such case, if it is required to handle incompatible major versions compatibility, recommendation 14.01.04-INTEV-0050 apply.	
14.01.04-INTEV-0052	Rule	XSD	Evolution of XSD: new data elements	If backward compatibility between two consecutive versions is required, do use optional Data Element technique for new Data Element.	
14.01.04-INTEV-0053	Rule	XSD	Evolution of XSD: temporary data elements	If backward compatibility between two consecutive versions is required, do consider as optional Data Element the elements that may be removed in further minor versions.	
14.01.04-INTEV-	Rule	XSD	Evolution of XSD: elements/attributes order	If backward compatibility between two consecutive versions is required, do not change order of elements/attributes in Data	

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Identifier	Type	Artifact	Title	Description	Rationale
0054				Element between minor versions.	
14.01.04-INTEV-0055	Rule	XSD	Evolution of XSD: new Data Element Type	If backward compatibility between two consecutive versions is required, do use Flexible Data Types technique to anticipate (in any) further modification of Data Element type and cardinality.	
14.01.04-INTEV-0056	Rule	XSD	Evolution of XSD: Data Element renaming	If backward compatibility between two consecutive versions is required, do use Selectable Data Element technique to anticipate further renaming of Data Elements.	
14.01.04-INTEV-0057	Rule	XSD	Evolution of XSD: Namespaces	If backward compatibility between two consecutive versions is required, do not change Namespaces.	
14.01.04-INTEV-0058	Rule	XSD	Evolution of XSD: Namespaces and XSD version	If backward compatibility between two consecutive versions is required, do not embed the version of the XSD within its Namespace.	New version of the XSD would imply Namespace renaming which results in an incompatible change
14.01.04-INTEV-0059	Rule	XSD	Evolution of XSD: update of Data Element QName.	If backward compatibility between two consecutive versions is required, do not change element QName when Selectable Data Element technique is not used.	
14.01.04-INTEV-0060	Recommendation	All the Bindings	Recommended Versioning Approach	It is recommended that service designers utilize a “significance of change” versioning approach with at least two levels of significance.	In SWIM-TI TAD a number of possible versioning approaches are documented. It is recommended to apply “significance of change” approach with at least two levels of significance.
14.01.04-INTEV-0061	Recommendation	All the Bindings	Recommended Interface Evolution Strategy	It is recommended that service designers utilize the Flexible Interface Evolution Strategy for managing the evolution of service technical contract.	In SWIM-TI TAD a number of possible Interface Evolution Strategies are documented (Strict Strategy, Flexible Strategy and Loose Strategy). Taking into account the pros and cons (see SWIM-TI TAD) it is recommended to apply Flexible Strategy.
14.01.04-INTEV-0062	Recommendation	All the Bindings	Balance between evolution flexibility and contract effectiveness	It is recommended that service designers consider the right balance of technical contract evolution flexibility as it comes with the cost of vague and undefined interfaces.	In SWIM-TI TAD a number of possible Interface Evolution Strategies are documented (Strict Strategy, Flexible Strategy

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Identifier	Type	Artifact	Title	Description	Rationale
					and Loose Strategy). Service designers are expected to maximize (when possible and when future planned versions are already known) the use of recommended rules for achieving forwards compatibility. This may result in a vague technical contract. According to that, service designers are recommended to consider the right balance.
14.01.04-INTEV-0063	Recommendation	DDS Security Configuration	Handling Incompatible changes of DDS Security Configuration in DDS based bindings	If it is required to provide compatibility techniques to handle incompatible major versions due to DDS Security Configuration evolution, Adapter compatibility technique should be adopted in accordance with 14.01.04-INTEV-0004.	
14.01.04-INTEV-0064	Compatibility Assessment	DDS Security Configuration	Compatibility Assessment of evolution of DDS based bindings "contract" part: DDS Security Configuration	If one of the following rules is violated backward compatibility between two consecutive versions is broken (no compatible change): 14.01.04-INTEV-0065 to 14.01.04-INTEV-0089. In such case, recommendations 14.01.04-INTEV-0063 applies if it is required to handle incompatible major versions compatibility.	
14.01.04-INTEV-0065	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Authentication (DDS:Auth:PKI-RSA/DSA-DH).	If backward compatibility between two consecutive versions is required, do not change Shared CA hierarchy or trust path.	DDS implements authentication using a trusted Certificate Authority (CA). Performing mutual authentication between discovered participants using Digital Signature Algorithm (DSA) and establishes a shared secret using Diffie-Hellman (D-H) Key Agreement Method. The DDS Security standard §9.3 identifies 3 configuration items: 1. The X.509 Certificate that defines the Shared CA. This certificate contains the 2048-bit RSA Public Key of the CA.

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Identifier	Type	Artifact	Title	Description	Rationale
					<p>2. The 2048-bit RSA Private Key of the DomainParticipant.</p> <p>3. An X.509 Certificate that chains up to the Shared CA, that binds the 2048-bit RSA Public Key of the DomainParticipant to the Distinguished Name (subject name) for the DomainParticipant and any intermediate CA certificates required to build the chain. Changes affecting shared CA or trust path are evaluated as incompatible changes. It is obvious that revocation of shared CA and/or participant certificates is an incompatible change.</p>
14.01.04-INTEV-0066	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permission CA hierarchy or trust path.	If backward compatibility between two consecutive versions is required, do not change Permission CA hierarchy or trust path.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes to the Permissions CA hierarchy or trust path or revocation of the certificate will result in a not valid signature that should result in a new version of the Domain Governance and DomainParticipant Permissions documents signed with the new valid certificate of the

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Identifier	Type	Artifact	Title	Description	Rationale
					Permissions CA. It is obvious that revocation of permission CA and/or participant certificates is an incompatible change.
14.01.04-INTEV-0067	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change the /dds/domain_access_rules/domain_rule/domain_id.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0068	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change to "TRUE" the value of /dds/domain_access_rules/domain_rule/allow_unauthenticated_join (changes to "FALSE" are backwards compatible).	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.

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Identifier	Type	Artifact	Title	Description	Rationale
14.01.04-INTEV-0069	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change to "TRUE" the value of /dds/domain_access_rules/domain_rule/enable_join_access_control (changes to "FALSE" are backwards compatible).	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0070	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/discovery_protection_kind.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0071	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/liveliness_protection_kind.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance

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Identifier	Type	Artifact	Title	Description	Rationale
					document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0072	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/rtps_protection_kind.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0073	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/topic_expression to values that don't match the previous value.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in

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Identifier	Type	Artifact	Title	Description	Rationale
					Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0074	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/enable_discovery_protection.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0075	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/enable_read_access_control (changes to "FALSE" are backwards compatible).	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML

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Identifier	Type	Artifact	Title	Description	Rationale
					tree.
14.01.04-INTEV-0076	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/enable_write_access_control (changes to "FALSE" are backwards compatible).	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0077	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain Governance document.	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/metadata_protection_kind.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0078	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Domain	If backward compatibility between two consecutive versions is required, do not change /dds/domain_access_rules/domain_rule/topic_access_rules/topic_rule/data_protection_kind.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii)

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Identifier	Type	Artifact	Title	Description	Rationale
			Governance document.		The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in Domain Governance document may be or may be not incompatible changes. The rule is expressed referring to the Domain Governance XML tree.
14.01.04-INTEV-0079	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change the /permissions/grant/subject_name to a value that doesn't match the Distinguished Name of the DomainParticipant.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0080	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change to a later date the /permissions/grant/validity/not_before element.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The

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Identifier	Type	Artifact	Title	Description	Rationale
					DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0081	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change to an earlier date the /permissions/grant/validity/not_after element.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0082	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change /permissions/grant/allow_rule/domain_id value to values that not contain all previous Domain identifiers.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions

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Identifier	Type	Artifact	Title	Description	Rationale
					document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0083	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change /permissions/grant/allow_rule/{publish subscribe relay}/{topics partitions} to values that don't match previous ones using POSIX fnmatch() values and syntactic rules.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0084	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change /permissions/grant/allow_rule/{publish subscribe relay}/data_tags.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the

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Identifier	Type	Artifact	Title	Description	Rationale
					Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission. NOTE: Compatibility aspects of this field are not clearly defined, thus it is recommended to not be changed
14.01.04-INTEV-0085	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change /permissions/grant/deny_rule/{publish subscribe relay}/{topics partitions} to values that match a superset of previous ones using POSIX fnmatch() values and syntactic rules.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0086	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change /permissions/grant/deny_rule/{publish subscribe relay}/data_t ags. NOTE: Compatibility aspects of this field are not clearly defined, thus it is recommended to not be changed.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the

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Identifier	Type	Artifact	Title	Description	Rationale
					Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0087	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change the value of the element /permissions/grant/default to DENY.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0088	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Access Control (DDS:Access:PKI-Signed-XML-Permissions) - Permissions document.	If backward compatibility between two consecutive versions is required, do not change the value of the attribute /permissions/grant/@name.	The Access Control in DDS is configured with the following 3 configuration items: (i) The Permissions CA certificate; (ii) The Domain governance document signed by the Permissions CA; (iii) The

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Identifier	Type	Artifact	Title	Description	Rationale
					DomainParticipant permissions document signed by the Permissions CA. Changes in DomainParticipant permissions document may be or may be not incompatible changes. The rule is expressed referring to the DomainParticipant permissions XML tree. The rule applies for each grant permission.
14.01.04-INTEV-0089	Rule	DDS Security Configuration	Evolution of DDS Security Configuration: DDS Builtin Cryptography (DDS:Crypto:AES-CTR-HMAC-RSA/DSA-DH)	If backward compatibility between two consecutive versions is required, do not change DDS:Crypto:AES-CTR-HMAC-RSA/DSA-DH configuration.	The DDS builtin Cryptographic plugin is referred to as "DDS:Crypto:AES-CTR-HMAC-RSA/DSADH" plugin. DDS:Crypto:AES-CTR-HMAC-RSA/DSA-DH provides data encryption services using Advanced Encryption Standard (AES) in counter (CTR) mode. It supports two AES key sizes: 128 bits and 256 bits. It also provides hash-based message authentication (HMAC) services with two different hashing functions: SHA256 and SHA1. Any changes to its configuration will result in an incompatible change. Changes to the cryptographic algorithms or key sizes used should result in a new major version of the technical contract of the service.

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