



European ATM Service Description for the AirportMETObservation Service

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Abstract

The *AirportMETObservation* service covers the dissemination of customized airport meteorological observations over SWIM. This service aims therefore at bringing the benefits of increased interoperability via SWIM to the MET Community of Interest. Service design has been performed in the context of Service Activity SVA003 entailing Airport Meteorological and Surface Contamination services.

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Executive summary

This document is the result of the “Service Design” step of the B.4.3 Working Method on Services for the AirportMETObservation Service. The document provides a comprehensive logical specification for system engineers on how to realize the dissemination of MET data over SWIM.

The service covers the dissemination of customized airport meteorological observations over SWIM. This service aims therefore at bringing the benefits of increased interoperability via SWIM to the MET Community of Interest. Service design has been performed in the context of Service Activity SVA003 entailing Airport Meteorological and Surface Contamination services.

SVA003 has happened in the frame of the SESAR MET Coordination Group and has seen the participation of a good number of different partners, both Operational and System, from OFA5.1.1 (WP6 and WP12) and WP11.2.

Edition 1.0 for this SDD first published as part of ISRM 1.3. It was then updated to 1.1. for ISRM 1.4 and used as reference for SESAR validation exercise EXE-06.03.01-VP-669 (SESAR R5). This edition wraps all quality improvements for delivery with the final SESAR ISRM 2.0.

1 Introduction

1.1 Purpose of the document

The purpose of this SDD is to provide a complete logical description of the AirportMETObservation Service, its operational context, its basic architectural features, its dynamical aspects, its operations and the data provided. All these aspects are presented as model views according to the ISRM UML EATMA Profile, which organize knowledge about a service into views inspired by the NAF Framework.

This SDD serves as a complement to a model based description and supports the configuration management process by providing well-defined baselines.

The logical service model presented in this SDD edition is part of the ISRM 2.0 release, and provides a blueprint which service developers must follow in order to create SWIM-Compliant implementations of the AirportMETObservation Service.

The service presented will be a part of the Service Portfolio. The Service portfolio presents all services that are available or are planned to become available at a high level.

1.2 Intended readership

SESAR Deployment Manager, SCG, the OPS and SYS projects participating in the SVA003 Team, Service Architects, Information Architects, System Engineers and Developers in pursuing architecting, design and development activities.

1.3 Inputs from other projects

N/A

1.4 Glossary of terms

N/A

1.5 Acronyms and Terminology

1.5.1 Acronyms

| Term | Definition |
|---------------|--|
| ADD | Architecture Description Document |
| ATM | Air Traffic Management |
| CC | Capability Configuration |
| EATMA | European Air Traffic Management Architecture |
| E-ATMS | European Air Traffic Management System |
| FAA | Federal Aviation Administration |
| IER | Information Exchange Requirement |

| Term | Definition |
|---------------------------|---|
| ISRM | Information Service Reference Model |
| MET | Meteorology or meteorological |
| MG | ISRM Modelling Guidelines |
| NAF | NATO Architecture Framework |
| NSOV | NATO Service Oriented View |
| NOV | NATO Operational View |
| NSV | NATO System View |
| OSED | Operational Service and Environment Definition |
| QFE | Altimeter pressure setting relative to airfield elevation |
| QNH | Altimeter pressure setting code relative to sea level |
| QoS | Quality of Service |
| SAR | Service Allocation Report |
| SCG | Service Coordination Group |
| SDD | Service Description Document |
| SESAR | Single European Sky ATM Research Programme |
| SESAR Programme | The programme which defines the Research and Development activities and Projects for the SJU. |
| SIR | Service Identification Report |
| SJU | SESAR Joint Undertaking (Agency of the European Commission) |
| SJU Work Programme | The programme which addresses all activities of the SESAR Joint Undertaking Agency. |
| SWIM | System Wide Information Management |
| UML | Unified Modelling Language |
| V&V | Validation and Verification |
| WSDL | Web Services Definition Language |
| XSD | XML Schema Definition |

1.5.2 Terminology

| Term | Definition | Source |
|---------------------------------|---|------------------------------|
| Capability | Capability is the ability of one or more of the enterprise's resources to deliver a specified type of effect or a specified course of action to the enterprise stakeholders. | EATMA Guidance Material [13] |
| Capability Configuration | A Capability Configuration is a combination of Roles and Systems configured to provide a Capability derived from operational and/or business need(s) of a stakeholder type. | EATMA Guidance Material [13] |
| Node | A logical entity that performs Activities. Note: nodes are specified independently of any physical realisation. | EATMA Guidance Material [13] |
| Service | The contractual provision of something (a non-physical object), by one, for the use of one or more others. Services involve interactions between providers and consumers, which may be performed in a digital form (data exchanges) or through voice communication or written processes and procedures. | EATMA Guidance Material [13] |
| Service function | A type of activity describing the functionality of a Service. | EATMA Guidance Material [13] |
| Service interface | The mechanism by which a service communicates | EATMA Guidance Material [13] |

2 Service identification

| | |
|--------------|--|
| Name | AirportMETObservation |
| ID | {352A01DB-A3C8-4e5f-966D-9D74BE31D946} |
| Version | 2.0 |
| Keywords | Airport Meteorology, Weather Observation |
| Architect(s) | ██████████ FINMECCANICA |

| Lifecycle status | Date | References |
|------------------|---|---|
| Identified | 12/12/2013 | See reference [3] |
| Allocated | 21/02/2014 | See reference [4] |
| Designed | 31/05/2016 | This document |
| Validated | 03/03/2016 | See reference [16] |
| IOC | Date for Initial Operational Capability | [Reference to technical enabler hosting the service in the ATM master plan] |
| FOC | Date for Full Operational Capability | [Reference to technical enabler hosting the service in the ATM master plan] |

3 Operational and Business context

The requirements for provisioning of a service for dissemination of the meteorological observations of interest for airport operations and the full business and operational context for this service is given by the P06.05.04 OSED[1][2]. It is also been described in the SVA003 Service Identification Report (SIR) [3] and has been elaborated further in the SVA003 Service Allocation Report (SAR) [4]. These documents in particular have already covered:

- a description of what ATM goals and problems the service addresses;
- business level capabilities the service will realise;
- the positioning of the service into the SESAR technical Architecture (ADD and TADs);
- the link to Operational Improvements;
- the list of IERs, operational and non-functional requirements from source documents;
- the relevance to the SESAR MET Coordination Group, and the linkage to the “2013 MET Issue Resolution”;
- the prototyping and validation triggers from within the Programme.

3.1 Information Exchange Requirements

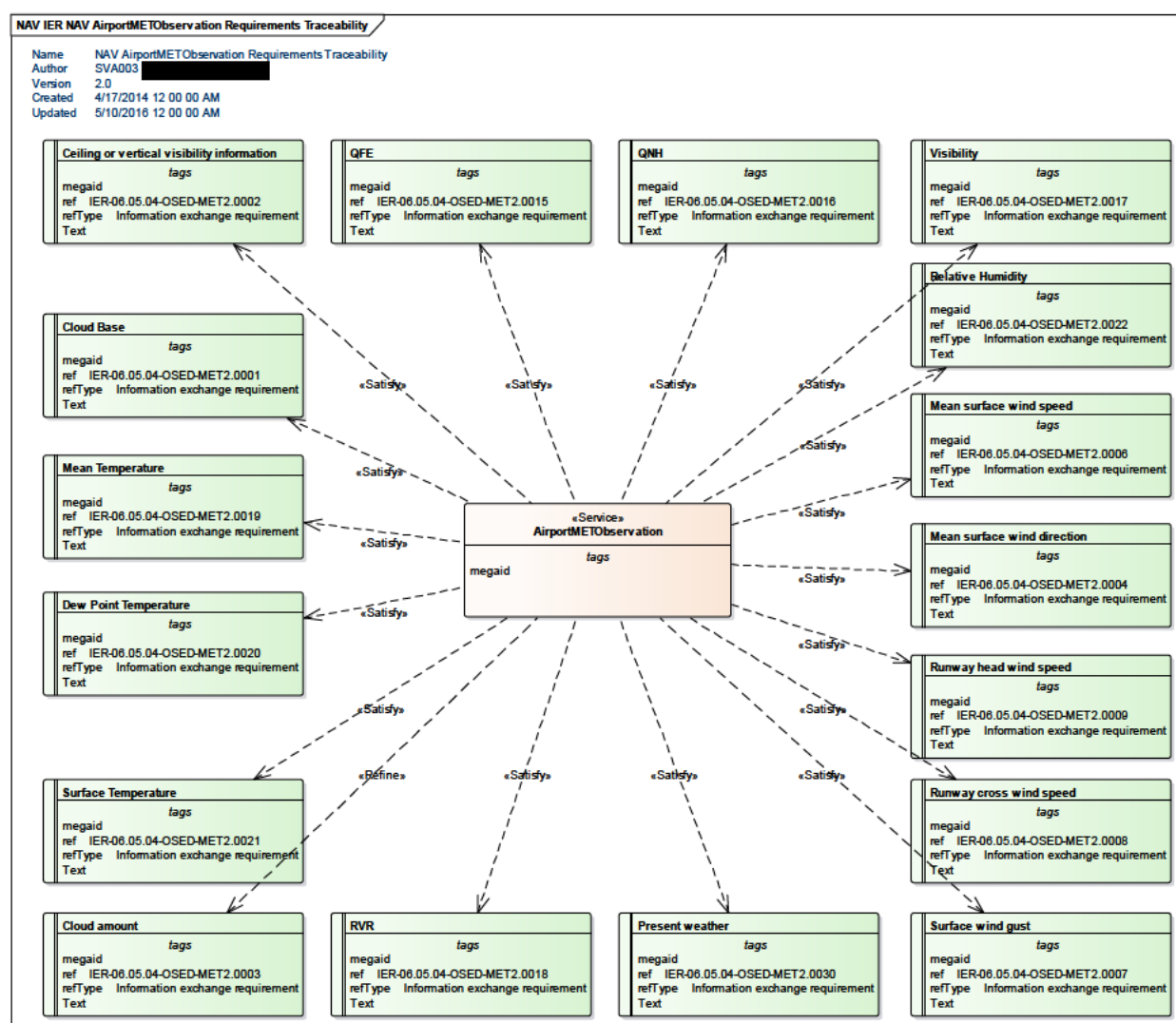


Figure 1: NAV AirportMETObservation Service Requirements Traceability IER Diagram

It has to be noted that for ISRM 2.0 the IERs have not been updated according to more recent versions of the OSED and therefore have been left as they were in the original operational context in the first version of this SDD.

3.2 Other Requirements

3.2.1 Non-Functional Requirements

N/A.

3.2.2 Relevant Industrial Standards

N/A.

3.2.3 Nodes

The EATMA nodes specified in the service are shown in the NOV-2 AirportMETObservation Service To Nodes Mapping diagram below:

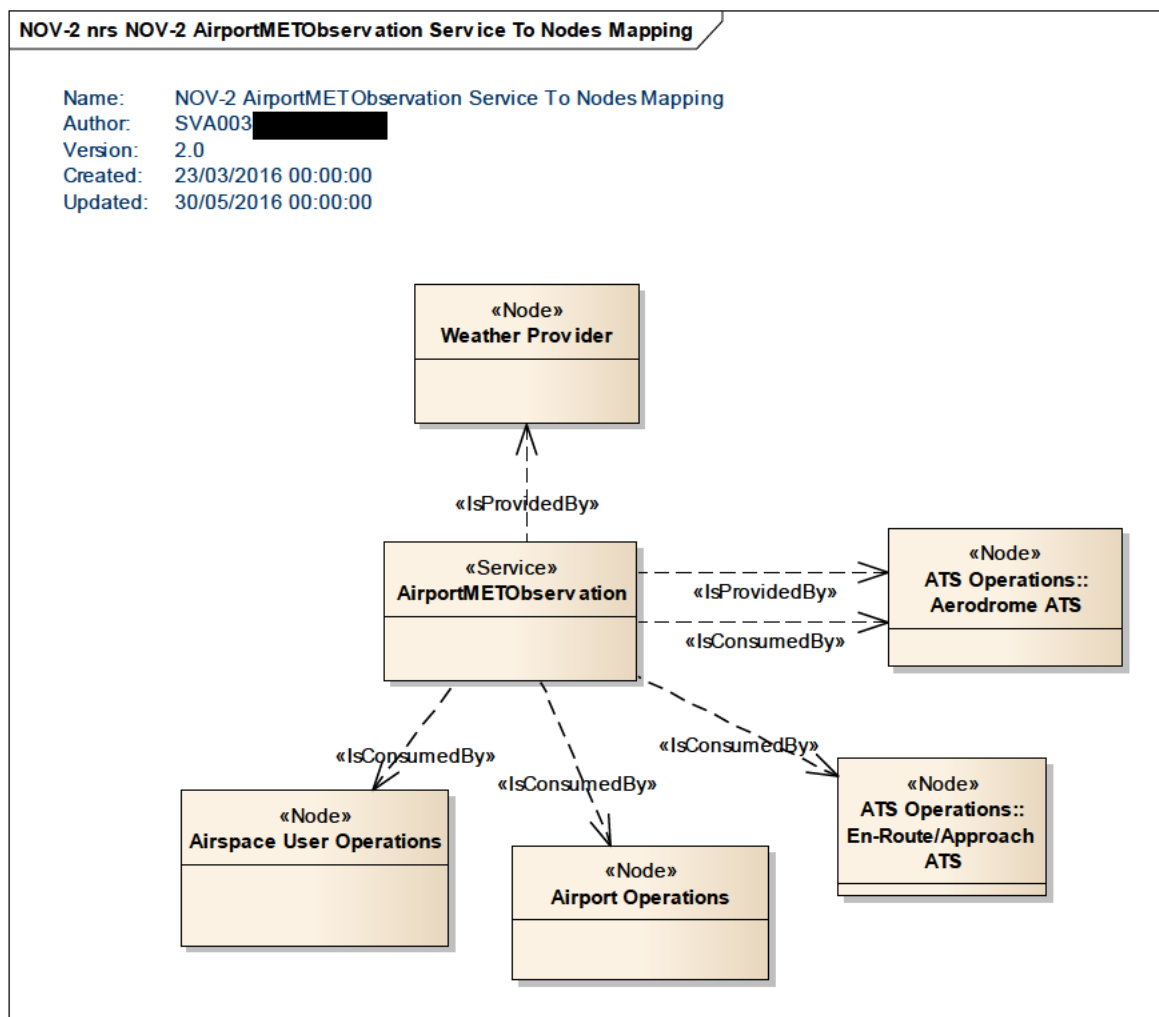


Figure 2: NOV-2 AirportMETObservation Service to Nodes Mapping diagram

4 Service overview

4.1 Service Taxonomy

The service taxonomy is described in the ISRM Service Portfolio document [5].

4.2 Service Levels (NfRs)

N/A.

4.3 Service Functions and Capabilities

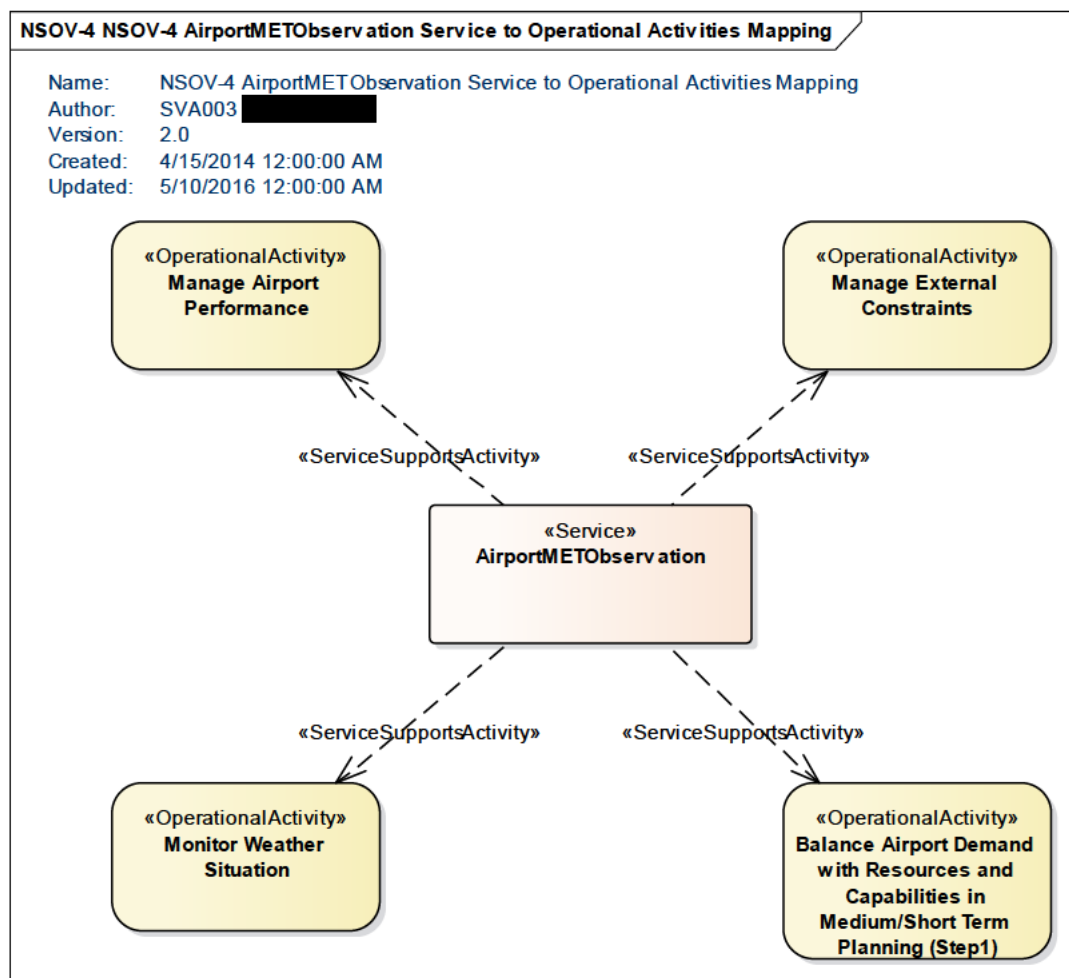


Figure 3: NSOV-4 AirportMETObservation Service to Operational Activities Mapping diagram

For the service to capabilities mapping, see the NSOV-2 Service Interface Definition diagram in Section 4.4.

4.4 Service Interfaces

The service is based on a single pub/sub interface. The AirportMETObservationPublisher service interface definition enables the consumer to subscribe or unsubscribe to the data, while the AirportMETObservationSubscriber service interface definition enables the service provider to publish the message containing the data. The messages for subscription and unsubscription are only logical abstract wrappers, since the actual management of the publication mechanism is done at the level of the SWIM Technical Infrastructure.

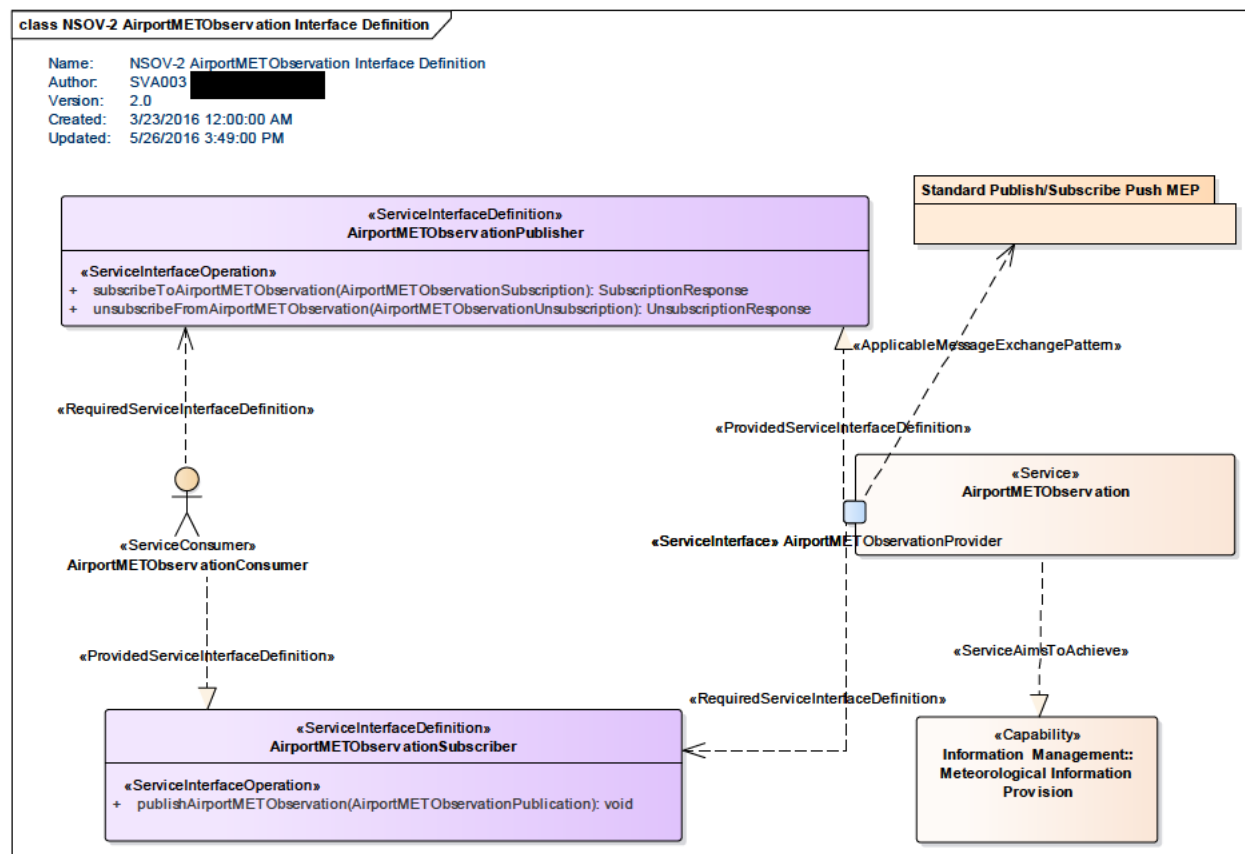


Figure 4: NSOV-2 AirportMETObservation Service Interface Definition diagram

| ServiceInterface | ServiceInterfaceDefinition | ServiceInterfaceOperation | Role |
|-------------------------------|---------------------------------|--------------------------------------|----------|
| AirportMETObservationProvider | AirportMETObservationPublisher | subscribeToAirportMETObservation | provided |
| AirportMETObservationProvider | AirportMETObservationPublisher | unsubscribeFromAirportMETObservation | provided |
| AirportMETObservationConsumer | AirportMETObservationSubscriber | publishAirportMETObservation | required |

Table 1: Service Interfaces

5 Service interface specifications

5.1 Service Interface AirportMETObservationProvider

This is the only interface for this service. It implements the Standard Publish/Subscribe Push message exchange pattern, and exposes two service interface definitions, one for the provider and one for the consumer side.

5.1.1 Service Interface Definition AirportMETObservationPublisher

This interface definition enables a consumer to subscribe or unsubscribe from the provision of the service message.

5.1.1.1 Operation subscribeToAirportMETObservation

The service operation enables the service consumer to subscribe to a particular airport meteorological observation.

5.1.1.1.1 Operation Functionality

The service operation enables the consumer to select the desired airport for which he wants an airport meteorological observation.

5.1.1.1.2 Operation Parameters

The operation is modelled with a return type representing the generic outcome for a subscription.

| Element Name | Author | Notes |
|-----------------------------------|--------|--------------------------------------|
| AirportMETObservationSubscription | | Message for the Subscription |
| SubscriptionResponse | | Reply to the subscription operation. |

Table 2: Payload elements for the subscribeToAirportMETObservation operation

5.1.1.2 Operation unsubscribeFromAirportMETObservation

The service operation enables the service consumer to unsubscribe from the service.

5.1.1.2.1 Operation Functionality

The service operation enables the consumer to select the desired airport for which he does not want airport meteorological observation anymore.

5.1.1.2.2 Operation Parameters

The operation is modelled with a return type representing the generic outcome for an unsubscription.

| Element Name | Author | Notes |
|-------------------------------------|--------|--|
| AirportMETObservationUnsubscription | | Message for the Unsubscription |
| UnsubscriptionResponse | | Reply to the unsubscription operation. |

Table 3: Payload elements for the unsubscribeFromAirportMETObservation operation

5.1.2 Service Interface Definition

AirportMETObservationSubscriber

This interface definition enables the provider to publish the AirportMETObservation.

5.1.2.1 Operation publishAirportMETObservation

The service operation enables the service consumer to receive a notification for a new AirportMETObservation which he has subscribed to.

5.1.2.1.1 Operation Functionality

The service operation simply enables the consumer to access a pre-subscribed new AirportMETObservation available from the MET provider.

5.1.2.1.2 Operation Parameters

The operation is modelled without a return type. The operation has a single input parameter which represents the full service payload as represented above.

The relevant EntityItems are described in the table below, each attribute and relationship is described. The tagged values show the linked AIRM class.

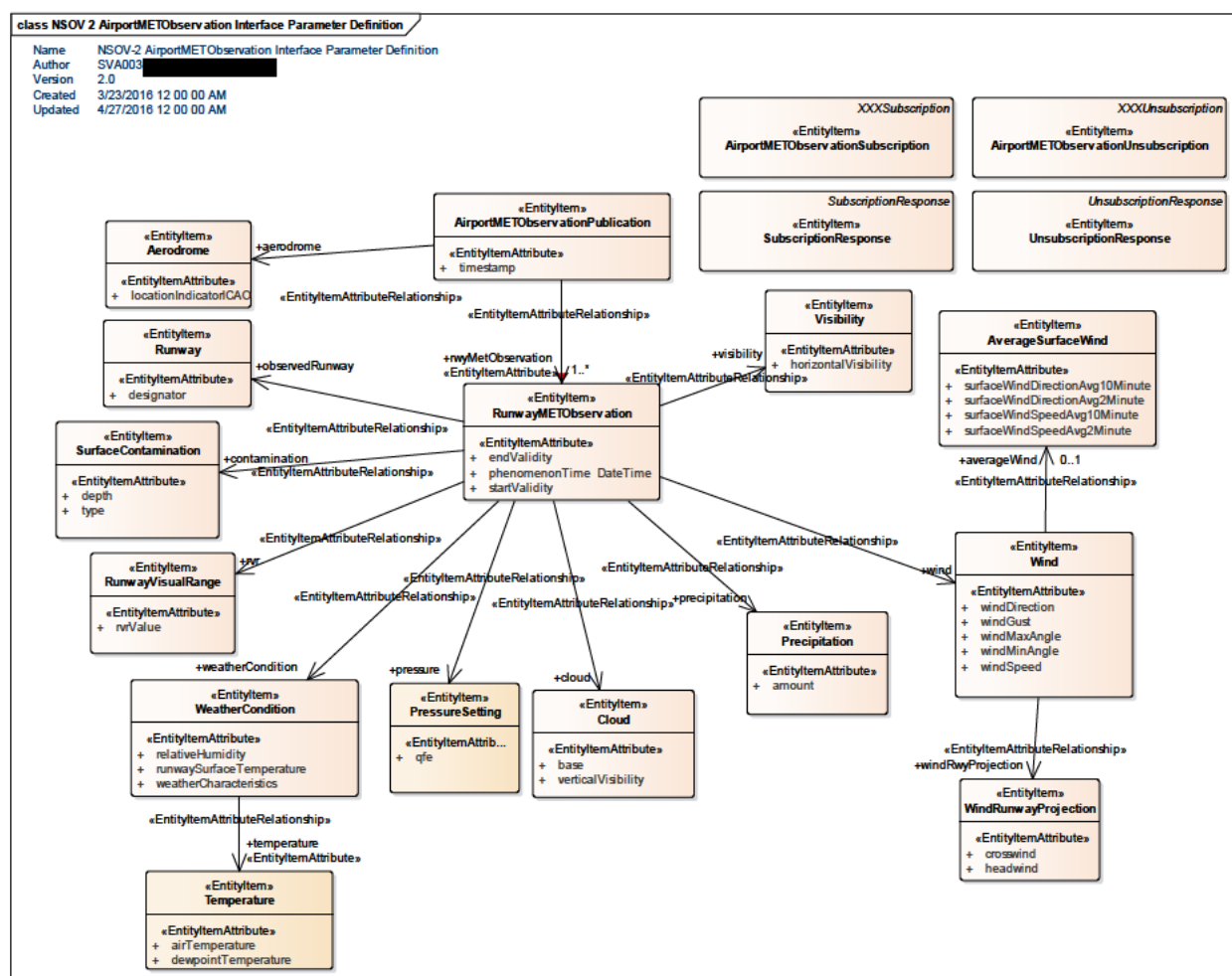


Figure 5: NSOV-2 AirportMETObservation Service Interface Parameter Definition diagram

| Element Name | | Author | Notes |
|-------------------------------------|--|---|---|
| SubscriptionResponse | | | Reply to the subscription operation. |
| Element Name | | Author | Notes |
| UnsubscriptionResponse | | | Reply to the unsubscription operation. |
| Element Name | | Author | Notes |
| AirportMETObservationPublication | | | Publication message |
| Attribute Name | | Type | Notes |
| timestamp | | | Time at which the message is generated. |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Abstract:TemporalEnabledEntity@startEntityLifetime | |
| Element Name | | Author | Notes |
| AirportMETObservationSubscription | | | Message for the Subscription |
| Element Name | | Author | Notes |
| AirportMETObservationUnsubscription | | | Message for the Unsubscription |
| Element Name | | Author | Notes |
| SurfaceContamination | | | Presence or removal of hazardous conditions on movement areas due to snow, ice, slush, water. |
| Element Tagged Value Name | | Value | |
| persistence | | transient | |
| Attribute Name | | Type | Notes |
| depth | | | The depth of the contamination on the surface. |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirTrafficOperations:AerodromeOperations:SurfaceContamination:SurfaceContamination@depth | |
| Attribute Name | | Type | Notes |
| type | | | The type of contaminating substance on the movement area surface. |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirTrafficOperations:AerodromeOperations:SurfaceContamination:SurfaceContaminationLayer@type | |
| Element Name | | Author | Notes |
| RunwayMETObservation | | | Container of meteorological information of relevance to a runway. |
| Attribute Name | | Type | Notes |
| endValidity | | | Date and time at which the data contained in the entity state ceases to be effective |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Abstract:TemporalEnabledEntity@endValidity | |
| Attribute Name | | Type | Notes |
| phenomenonTime | | DateTime | The time at which the observation applies to the meteorological parameters. |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | CLDM_out of scope | |
| Attribute Name | | Type | Notes |

| Element Name | | Author | Notes |
|----------------------------------|-------------------|---|--|
| SubscriptionResponse | | | Reply to the subscription operation. |
| Element Name | | Author | Notes |
| UnsubscriptionResponse | | | Reply to the unsubscription operation. |
| Element Name | | Author | Notes |
| AirportMETObservationPublication | | | Publication message |
| | Attribute Name | Type | Notes |
| | startValidity | | Date and time at which the data contained in the entity state starts to be effective |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Abstract:TemporalEnabledEntity@startValidity | |

| Element Name | | Author | Notes |
|--------------|---------------------------|--------|--|
| Aerodrome | | | A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft. |
| | Element Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Aerodrome |
| | Attribute Name | Type | Notes |
| | locationIndicatorICAO | | The four letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910. |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Aerodrome@designator |

| Element Name | | Author | Notes |
|--------------|---------------------------|--------|--|
| Runway | | | A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. |
| | Element Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Runway |
| | Attribute Name | Type | Notes |
| | designator | | The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one. E.g. 09/27, 02R/20L, RWY 1. |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Runway |

| | |
|--|--------------|
| | y@designator |
|--|--------------|

| Element Name | | Author | Notes |
|-------------------|---------------------------|--------|--|
| RunwayVisualRange | | | Horizontal distance over which a pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line. RVR is normally expressed in metres. |
| | Element Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:RunwayVisualRange |
| | Attribute Name | Type | Notes |
| | rvrValue | | Value of the Runway Visual Range |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:RunwayVisualRange@rvrValue |

| Element Name | | Author | Notes |
|------------------|---------------------------|--------|--|
| WeatherCondition | | | Weather observations or forecast of relevance for ATM. |
| | Element Tagged Value Name | | Value |
| | URN | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:AviationCondition |
| | Attribute Name | Type | Notes |
| | relativeHumidity | | At a given pressure and temperature, the percentage ratio of the gram-molecular weight of the water vapour to the gram-molecular weight that the air would have if it were saturated with respect to water at the same pressure and temperature. |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:AviationCondition@relativeHumidity |
| | Attribute Name | Type | Notes |
| | runwaySurfaceTemperature | | The temperature measured by a probe under the runway surface at the touchdown (TDZ) zone. |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:RunwayCondition@temperature |
| | Attribute Name | Type | Notes |
| | weatherCharacteristics | | Characteristics and type of weather according to Annex 3 table A3-1. |
| | Tagged Value Name | | Value |
| | CLDMSemanticTrace | | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:WeatherPhenomenon@phenomenonType |

| Element Name | | Author | Notes |
|-----------------|---------------------------|--|---|
| PressureSetting | | | Weather observations and or forecast for a runway. |
| | Element Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:RunwayCondition | |
| | Attribute Name | Type | Notes |
| | qfe | | Q Code corresponding to the atmospheric pressure at the point of reference (generally of an aerodrome). It is used as an altimeter setting. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:RunwayCondition@qfe | |

| Element Name | | Author | Notes |
|--------------|---------------------------|---|--|
| Cloud | | | Feature describing the cloud conditions for cloud of operational significance. |
| | Element Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Cloud | |
| | Attribute Name | Type | Notes |
| | base | | Altitude of the lowest level of the description of a phenomenon. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Cloud@base | |
| | Attribute Name | Type | Notes |
| | verticalVisibility | | Maximum distance at which an observer can see and identify an object on the same vertical as himself, above or below. The vertical visibility should be reported in steps of 30 m (100 ft) up to 600 m (2 000 ft). |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:AviationCondition@verticalVisibility | |

| Element Name | | Author | Notes |
|---------------|---------------------------|--|--|
| Precipitation | | | Any product of the condensation of atmospheric water vapour that falls under gravity. Precipitation is one of the WxPhenomBase. Precipitation is described by an enumeration PrecipitationTypes, and a Boolean "isFreezing". |
| | Element Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Precipitation | |
| | Attribute Name | Type | Notes |

| | | | |
|--|--------------------------|---|-----------------------|
| | amount | | Precipitation amount. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Precipitation@amount | |

| Element Name | | Author | Notes |
|--------------|----------------------------------|--|---|
| Wind | | | Air motion relative to the Earth's surface |
| | Element Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:S ubjectFields:Meteorology:Wind | |
| | Attribute Name | Type | Notes |
| | windDirection | | The angle representing the direction of the wind source. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windDirection | |
| | Attribute Name | Type | Notes |
| | windGust | | Rapid fluctuations in wind speed with a variation of 10 kt or more between peaks and lulls. Wind speed data for the most recent 10 minutes are examined and a gust, the maximum instantaneous wind speed during that 10-minute period, is reported if the definition above is met during that period. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windGust | |
| | Attribute Name | Type | Notes |
| | windMaxAngle | | The maximum angle between the two extreme directions between which the surface wind has varied. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@extremeClockwiseWindDirecti on | |
| | Attribute Name | Type | Notes |
| | windMinAngle | | The minimum angle between the two extreme directions between which the surface wind has varied. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@extremeCounterClockwiseWin dDirection | |
| | Attribute Name | Type | Notes |
| | windSpeed | | The speed of the wind. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windSpeed | |

| Element Name | | Author | Notes |
|-------------------------------------|------|---|------------------------------------|
| AverageSurfaceWind | | | Averaged measures of surface wind. |
| Attribute Name | Type | Notes | |
| surfaceWindDirectionAvg 10Minute | | | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windDirection | |
| Attribute Name | Type | Notes | |
| surfaceWindDirectionAvg 2Minute | | | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windDirection | |
| Attribute Name | Type | Notes | |
| surfaceWindSpeedAvg10 Minute | | | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windSpeed | |
| Attribute Name | Type | Notes | |
| surfaceWindSpeedAvg2Mi nute | | | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@windSpeed | |

| Element Name | | Author | Notes |
|---------------------------|------|---|---|
| WindRunwayProjection | | | Components of the wind vector obtained by its projection on the runway direction. |
| Element Tagged Value Name | | Value | |
| CLDMSemanticTrace | | CLDM_out_of_scope | |
| Attribute Name | Type | Notes | |
| crosswind | | Component of wind that is blowing across the runway | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@crosswind | |
| Attribute Name | Type | Notes | |
| headwind | | Component of wind that is blowing in the opposite direction with respect to the runway direction. | |
| Tagged Value Name | | Value | |
| CLDMSemanticTrace | | urn:x- ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje ctFields:Meteorology:Wind@headwind | |

| Element Name | | Author | Notes |
|--------------|---------------------------|--|---|
| Visibility | | | The greatest horizontal distance at which selected objects can be seen, identified, and/or measured with instrumentation. |
| | Element Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:HorizontalVisibility | |
| | Attribute Name | Type | Notes |
| | horizontalVisibility | | The greatest visibility value, observed in accordance with the definition of “visibility”, which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors. |
| | Tagged Value Name | Value | |
| | CLDMSemanticTrace | urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:HorizontalVisibility@prevailingVisibility | |

Table 4: Payload tracing to AIRM

6 Service dynamic behaviour

The interface offers three operations, namely to subscribe/unsubscribe from the publication of the data, and to notify the consumer on the data being available. The service dynamic behaviour can be shown using the NSOV-5c Service-Event diagram created for the purpose. The following diagram shows that the interaction envisaged between provider and consumer is an asynchronous publish/subscribe “push” type MEP.

6.1 Service Interface AirportMETObservationProvider

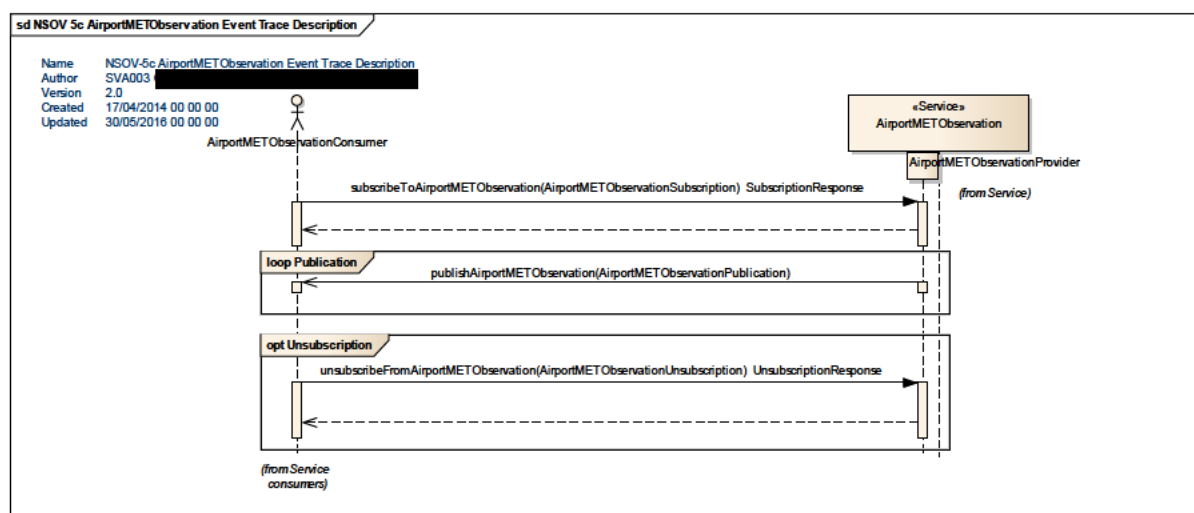


Figure 6: NSOV-5c AirportMETObservation Service Event Trace Description

7 Service provisioning (optional)

Service prototyping has been performed in the context of MET-related validation exercise EXE-06.03.01-VP-669 in SESAR. The technology so far identified for the technical interface is the OASIS standard Web Service Notification and belongs to the SWIM Yellow Profile. The detailed description of the technical service contract and service implementation for these exercises is part of technical deliverables by project 12.7.5.

8 Validation and Verification

8.1 Verification

Verification was performed according to the ISRM Rulebook [11] and the ISRM Verification Guidance [12].

8.1.1 Verification Results

Verification was performed via manual inspection and assisted by a script developed in 8.3.10. The verification outcome is completely free of errors.

Verification reports are in these files “Designed_Services_-_AirportMETObservationService.xls” and “Designed_Services_-_AirportMETObservationService_Common.xls” available in [15].

8.2 Validation

Validation for this service was performed as part of the SESAR validation exercise EXE-06.03.01-VP-669 in Q1 2016. The outcome is recorded in the Validation report VALR [16].

9 References

| Name | Version | Document ID / Location |
|--|-------------------------------------|---|
| [1] 06.05.04-D16-OFA 05.01.01 Consolidated OSED (Part1) | 03.00.00 | 06.05.04 D16 |
| [2] 06.05.04-D16-OFA 05.01.01 Consolidated OSED (Part2) | 03.00.00 | 06.05.04 D16 |
| [3] Service Identification Report - SVA003 | 00.01.00 | 08.03.06 |
| [4] B.4.3 Service Allocation - SVA003 | 00.00.03 | B04.03 |
| [5] ISRM Service Portfolio | 00.08.01 | 08.03.10 D65 |
| [6] Project deliverables template | 03.00.00 | SJU templates & guidelines package, Project deliverables template |
| [7] SESAR Operational Service and Environment Definition | 03.00.00 | SJU templates & guidelines package, OSED template |
| [8] SESAR Safety and Performance Requirements | 03.00.00 | SJU templates & guidelines package, SPR template |
| [9] ISRM Tooling Guidelines | 00.07.00 | 08.03.10 D44 |
| [10] ISRM Modelling Guidelines | 00.07.00 | 08.03.10 D44 |
| [11] ISRM Foundation Rulebook | 00.07.00 | 08.03.10 D44 |
| [12] ISRM Verification Guidelines | 00.07.00 | 08.03.10 D44 |
| [13] EATMA Guidance Material | 00.04.02 | B04.01 D66 |
| [14] ICAO Annex 3, Meteorological Service for International Air Navigation | 17 th Edition, July 2010 | www.icao.int |
| [15] Verification reports for the service | N/A | 08.03.10 D65 Verification reports |
| [16] EXE-06.03.01-VP-669 Validation Report (VALR) | 1.0 | 06.03.01 D140 |

-END OF DOCUMENT-

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