European ATM Service Description for the AerodromeMapInformation Service

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Abstract

This document describes the Aerodrome Map Information Service (AMIS) and the relevant architectural elements. The Service aims to publish Aerodrome Map Feature Types as described by EUROCAE in standard ED99C and Aerodrome Map Types as described by EUROCAE in standard ED119B .

The service is named Aerodrome Map Information Service, abbreviated AMIS and was identified with the standard operations for the OGC WFS and WMS.

The operations are all compatible with the OGC standards but enforce some standardisation of aerodrome maps by providing the set of supported map layers and several formatting standards for the rendering of those layers.

The formatting styles allow for the map to be printed (shades of grey) displayed on a screen and displayed on a screen at night. The supported layers allow users to select the most common aerodrome features and overlay them on a single graphical map.

The set of aerodrome features available are directly compatible with the EUROCAE standards for AMDB. A further operation to access all features uses a lower level operation with a built in query.

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Executive summary

This document describes the Aerodrome Map Information Service (AMIS) and the two service interfaces it presents to the users of the service.

The Service aims to publish Aerodrome Map Features and the Maps themselves as described by EUROCAE in standard ED99C and ED119B. The Service design process of AMIS has been conducted in the Fast Track 6 initiative.

The service is named Aerodrome Map Information Service, abbreviated to AMIS and was modelled with two service interfaces each with several operations. The two service interfaces are:

- AccessAMDBFeatures: This interface provides the user with the requested features from the AMDB (Airport Map Database). The features capable of being requested is a subset of the total set of feature types available from the AFIS (ATM Feature Information Service) being developed under FT13. The features returned by the service are those that meet the filter criteria set by the user.
- AccessAMDBMap: Returns to the user the map of the airport in a graphical form with the features rendered according to a pre-set set of styles.

1 Introduction

The services described in this document arise from the OSED developed by project 05.06.01 (see ref [25] as agreed at a F2F meeting between 08.03.07 and 05.06.01 early in Q2 2012.

They arise from requirements listed in the OSED and relate to ADS-C type datalink messages described by EUROCAE WG 78.

1.1 Purpose of the document

The purpose of this Service Design Description is to give an overview of the service, its operations and functions. The document should be seen as a complement to the service model itself, included as one part of the deliverable for ISRM.

The service AMIS has been identified by P8.3.3 in the work of Fast Track 6 as a service with two service interfaces, namely

- AccessAMDBFeatures: Aims to fulfil Information Exchange Requirements of accessing specific features of an AMDB based on multiple filtering capabilities.
- AccessAMDBMap Aims to fulfil Information Exchange Requirements of accessing pre-styled geo-referenced AMDB layers (bitmap images).

The service aims to supply Aerodrome Map Information as described by Eurocae industry standard ED99C [7] and/or ED119B [8] to consumers. The content consists of 40 FeatureTypes covering geospatial information of an airport layout. An AMDB or parts of it is primarily intended to be used as map layers.

Of those two identified service interfaces mentioned above only the AccessAMDBFeatures has been delivered in ISRM 0.6, whilst the AccessAMDBMap has been delivered in ISRM 1.1.

1.2 Intended readership

This service description is intended to be read by Enterprise Architects, Service Architects, Information Architects, System Engineers and Developers in pursuing architecting, design and development activities.

1.3 Inputs from other projects

The generic standards from which this service is derived were produced by EUROCAE WG 44 and are documented in their documents ED99 and ED119 refs [7] and [8] respectively.

1.4 Glossary of terms

All the terms referred to in this document are defined in referenced documents.

1.5 Acronyms and Terminology

1.5.1 Acronyms

Term	Definition
ADD	Architecture Description Document
AIRM	ATM Information Reference Model
AMDB	Aerodrome Mapping Database
AMIS	Aerodrome Map Information Service

Term	Definition
ATM	Air Traffic Management
DOD	Detailed Operational Description
EATMA	European Air Traffic Management Architecture
IER	Information Exchange Requirement
ISRM	Information Service Reference Model
ITAP	Part of unique Identifier for requirements from P6.7.1 (“Traffic Alerts for Pilots”)
NAF	NATO Architecture Framework
NSOV	NATO Service Oriented View
NOV	NATO Operational View
NSV	NATO System View
OSED	Operational Service and Environment Definition
QoS	Quality of Service
SDD	Service Description Document
SESAR	Single European Sky ATM Research Programme
SoaML	Service Oriented Architecture Modelling Language
UML	Unified Modelling Language

1.5.2 Terminology

Term	Definition	Source
Capability	The collective ability to deliver a specified type of effect or a specified course of action. Within the context of the SESAR Programme a capability is therefore the ability to support the delivery of a specific operational concept to an agreed level of performance.	Common working meeting between B41 EA study and B43 T5
Capability Configuration	A combination of organisational aspects (with their competencies) and equipment that combine to provide a capability. A Capability Configuration represents a recognisable set of resources (technical systems, human roles, and physical assets) derived from a generic stakeholder organisation. Note: Capability Configuration is a term used in NAF. The equivalent SoaML stereotype to be used is Participant. Also see note in Node term definition.	Project B.04.03

Term	Definition	Source
Node	A logical entity that performs Operational Activities specified independently of any physical realisation e.g. a stakeholder type providing and/or consuming operational information within a network of others. Note: Node is a term used in NAF. The equivalent SoaML stereotype to be used is Participant. Be aware that the original intention of SoaML is that Participants are physical items and not logical constructs. Service architects must indicate whether the Participant is a logical (Node) or a physical (Capability Configuration) construct.	Common working meeting between B41 EA study and B43 T5
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.	B43 T5 study
Service attribute	A Service Attribute defines a property of a service. Examples: Response time, Frequency of invocation, Message Exchange Pattern.	B43 T5 study
Service contract	A service contract represents an agreement between the stakeholders involved for how a service is to be provided and consumed.	B43 T5 study
Service function	A Service function describes what functionality is needed to provide or consume a service; it is the trigger for or is triggered by the Service interactions. A Service function can be automated to different extents depending on the context e.g. a Service function supporting a complex activity may need more automation than a Service function for a simple activity. Note: The equivalent SoaML stereotype is Capability, in WP8 Foundation documentation referred to as Service Capability.	B43 T5 study
Service interaction	A Service interaction is a description of an information exchange between ATM stakeholders' systems which can potentially be automated; phone calls / voice exchanges are considered as non-automated service interactions. In considering automated interactions, a service interaction is described by several modelling artefacts depicting the static and dynamic behaviour of a service. This includes service operations, data messages model and interaction behaviour.	B43 T5 study
Service interface	The mechanism by which a service communicates. Service providers and consumers need to implement service interfaces to be able to collaborate. A service interface includes service operations that enable access to the functionality of the services identified, as well as the data used in the service interaction.	B43 T5 study

2 Service identification

Name	AerodromeMapInformationService
ID	{176E1EB7-35DA-4d47-9F25-91448868B0AC}
Version	3.0
Keywords	AMIS, AMDB, AMXM, AMXS, Airport Map, Aerodrome Map, Airport Layout, Airport Feature
Architect(s)	[redacted] NORACON

Lifecycle status	Date	Reference
Identified	15/12/2013	See reference [17]
Allocated	20/12/2013	See reference [24]
Designed	25/04/2016	This document
Validated	*Date when validated. Filled by WP3*	*Name of protocol documenting the decision*
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

Operations at large aerodromes have become a complex combination of many activities being performed by many individuals (pilots, air traffic controllers, apron controllers, surface vehicle operators, construction/maintenance crews, emergency/security personnel, commercial and cargo airline operations personnel, and general and business aviation operations personnel). All of these individuals must work collaboratively to ensure safe efficient flight operations at the aerodrome. Furthermore, many of these actors require some shared knowledge and awareness of the aerodrome layout. This can be provided through standardised digital aerodrome mapping.

More and more aircraft are equipped with on-board systems using airport mapping information in order at least to display static airport maps in the cockpit or to present “Airport moving maps” with aircraft position information overlay – a function referred to as “own-ship position awareness”. Plans are now emerging to develop advanced avionics able to support more critical operations related to surface movement (Traffic display, Runway alerts and Runway Incursion Prevention, Taxi routing, Taxi guidance…).

Runway incursions, defined as an unauthorized entry by an aircraft or vehicle into protected areas surrounding active runways, have caused several severe accidents in the past. Recently, ground collisions at Taipei in October 2000 and at Milan in 2001, resulted into a large number of casualties. These accidents are reminders of the hazards potential in relation to runway incursions.

Consequently aircraft manufacturers are engaged into the development and industrialisation of systems using aerodrome map databases. Initial “own-ship” position functionality helps to ease taxi operations on aircraft by providing an aircraft’s position overlaid on the airport map. Starting from 2006, the On-board Airport Navigation System has been fully integrated in the cockpit of the new Airbus A380 using aerodrome databases according to an airborne airport database format (ARINC 816) derived from EUROCAE ED-119 / RTCA DO-291. This airborne standard defines a single open encoding format for airport data bases to be loaded into airborne systems. In addition these standards clearly define the data numerical requirements in relation to intended function.

The use of accurate aerodrome mapping data implies an interchange between data providers and users based on common agreed information standards and services. However, the definitions of aerodrome map services are not part of the current industry standards. Yet the standardisation of these services is key, in order to achieve a common level of service provision and standardisation in alignment with the service oriented approach of SESAR, and in order to fulfil the requirements and intended functions related to the collaborative use of aerodrome map data.

It should be noted that there are no business level capabilities provided from the Business Architect (WPB4.1) at the time of writing. The description of what business level capabilities the service aims to achieve is only based on deliverables from the Ops and Sys projects that are participants in the FT6. Hence the business level capabilities might be changed once these are available from WP B4.1.

3.1 Information Exchange Requirements

Requirements in relation to the operational context identified so far have their origin in:

- 6.7.1 D39 OSED V2 [9]
- 6.7.1 D47 OSED ITAP [10]
- 6.7.2 D74 Updated SPR [11]
- 6.7.2 D73 Updated OSED [12]
- 13.2.2 D10 OSED for Step 2 (in particular Annex B "OSED IER") [13]

In addition to those Information Exchange Requirements, P9.31 puts out requirements concerning content and format of the input data of their airport data preparation data chain:

- 9.31 D49 ("Database Definition & requirements at airborne level – AIS and DataChain") [16]

It should be noted here that the requirements specified within P9.31 D49 are not targeted in this release of the service (AccessAMDBFeatures) since the requirement explicitly defined ED119B-compliant data payload.

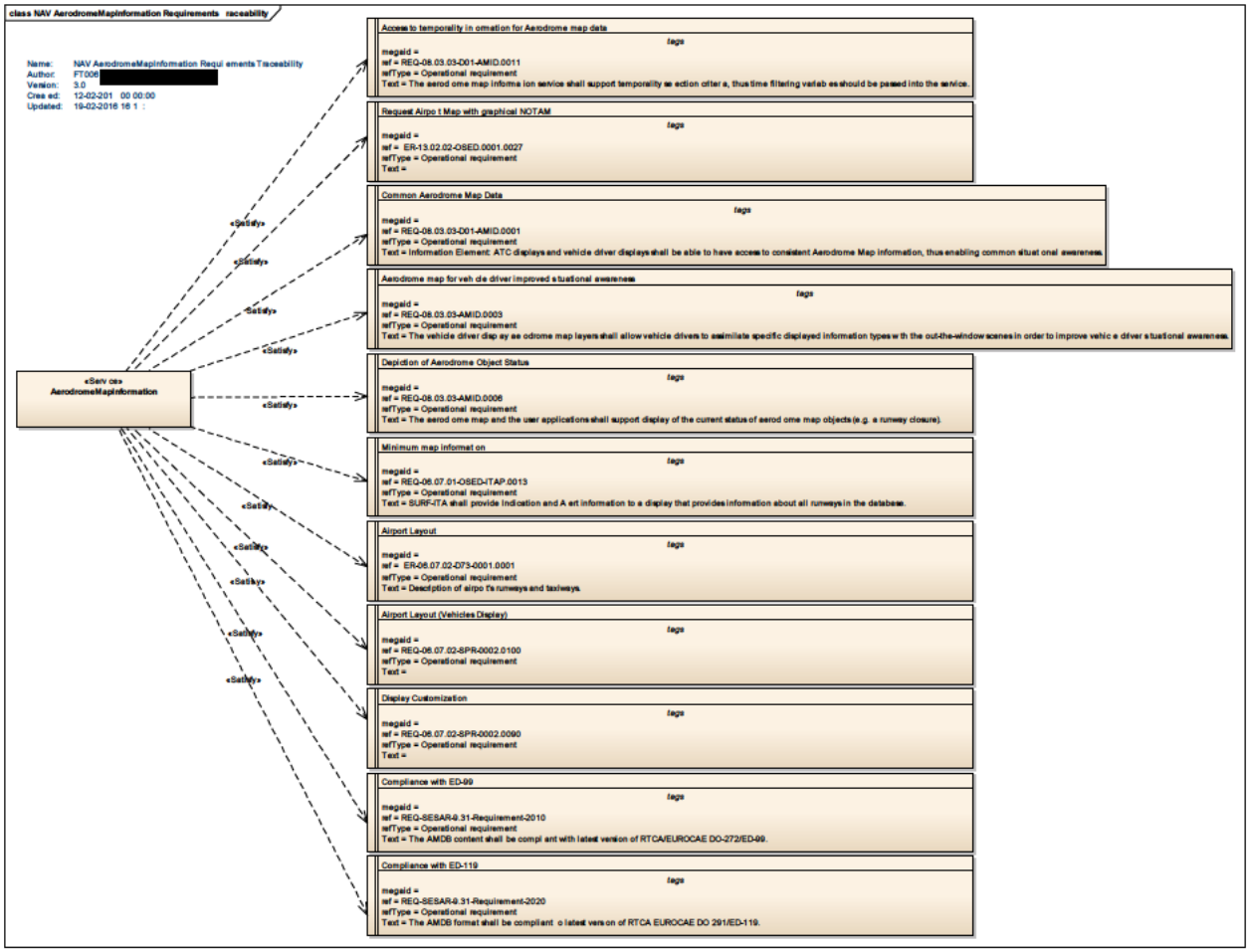

Figure 1: NAV AerodromeMapInformation Requirements Traceability

This consolidated list of IER:s are based upon the requirements identified in the Service Identification Document [17] and the internal IER Spread sheet [21] produced by P8.3.3.

Element Name	Author	Notes
Access to temporality information for Aerodrome map data	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	REQ-08.03.03-D01-AMID.0011
	refType	Operational requirement
	Text	The aerodrome map information service shall support temporality selection criteria, thus time filtering variables should be passed into the service.

Element Name	Author	Notes
Aerodrome map for vehicle driver improved situational awareness	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	REQ-08.03.03-AMID.0003
	refType	Operational requirement
	Text	The vehicle driver display aerodrome map layers shall allow vehicle drivers to assimilate specific displayed information types with the out-the-window scenes in order to improve vehicle driver situational awareness.

Element Name	Author	Notes
Airport Layout	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	IER-06.07.02-D73-0001.0001
	refType	Operational requirement
	Text	Description of airport's runways and taxiways.

Element Name	Author	Notes
Airport Layout (Vehicles Display)	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	REQ-06.07.02-SPR-0002.0100
	refType	Operational requirement
	Text	

Element Name	Author	Notes
Common Aerodrome Map Data	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	REQ-08.03.03-D01-AMID.0001
	refType	Operational requirement
	Text	Information Element: ATC displays and vehicle driver displays shall be able to have access to consistent Aerodrome Map information, thus enabling common situational awareness.

Element Name	Author	Notes
Compliance with ED-119	[redacted]	OSED Operational Requirement.

	Element Tagged Value Name	Value
	megaid	
	ref	SESAR-9.31-Requirement-2020
	refType	Operational requirement

	Text	The AMDB format shall be compliant to latest version of RTCA/EUROCAE DO-291/ED-119.
Element Name	**Author**	**Notes**
Compliance with ED-99	[redacted]	OSED Operational Requirement.
	Element Tagged Value Name	**Value**
	megaid	
	ref	SESAR-9.31-Requirement-2010
	refType	Operational requirement
	Text	The AMDB content shall be compliant with latest version of RTCA/EUROCAE DO-272/ED-99.
Element Name	**Author**	**Notes**
Depiction of Aerodrome Object Status	[redacted]	OSED Operational Requirement.
	Element Tagged Value Name	**Value**
	megaid	
	ref	REQ-08.03.03-AMID.0006
	refType	Operational requirement
	Text	The aerodrome map and the user applications shall support display of the current status of aerodrome map objects (e.g. a runway closure).
Element Name	**Author**	**Notes**
Display Customization	[redacted]	OSED Operational Requirement.
	Element Tagged Value Name	**Value**
	megaid	
	ref	REQ-06.07.02-SPR-0002.0090
	refType	Operational requirement
	Text	
Element Name	**Author**	**Notes**
Minimum map information	[redacted]	OSED Operational Requirement.
	Element Tagged Value Name	**Value**
	megaid	
	ref	REQ-06.07.01-OSED-ITAP.0013
	refType	Operational requirement
	Text	SURF-ITA shall provide Indication and Alert information to a display that provides information about all runways in the database.
Element Name	**Author**	**Notes**
Request Airport Map with graphical NOTAM	[redacted]	OSED Operational Requirement.
	Element Tagged Value Name	**Value**
	megaid	
	ref	IER-13.2.2-OSED.0001.0027
	refType	Operational requirement
	Text	

Table 1: Requirements tracing

NOTE 1: *Despite the fact that the numbering of some of the requirements in the table below starts with REQ-08.03.03-… these requirements can be found in the 06.07.01-D39 OSED, Ref [9]*

NOTE 2: *Requirement* **IER-13.2.2-OSED.0001.0027** *has been interpreted by P8.3.3 as two-folded; one with AMDB data payload as XML, one with data payload as georeferenced AMDB information in bitmap format. In this version only the first requirement (AMDB in XML) will be met. The second requirement is mapped to the identified AccessAMDBMMap interface which is planned for ISRM 1.1*

3.2 Other Requirements

3.2.1 Non-Functional Requirements

There are not yet any NFR for the service.

3.2.2 Relevant Industrial Standards

The standards for the AMDB provision of airport map and feature services are defined in refs [7] and [8].

3.2.3 Nodes

The consumer and provider nodes are shown below:

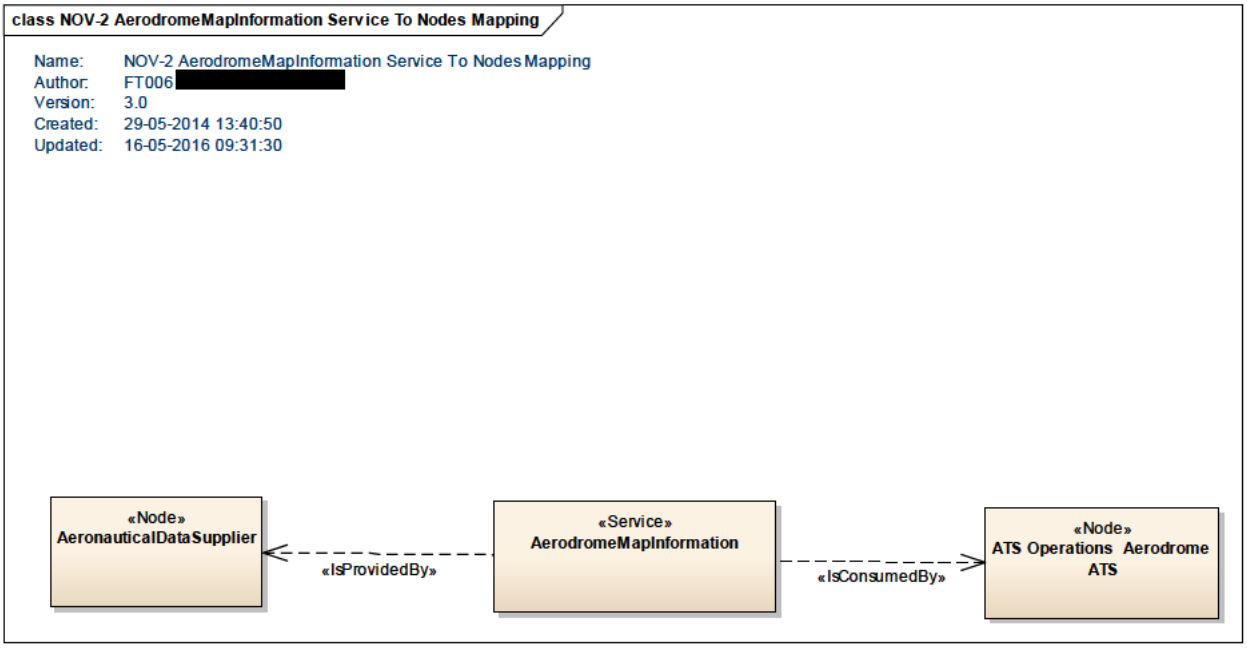

Figure 2: NOV-2 AerodromeMapInformation Service To Nodes Mapping

4 Service overview

4.1 Service Taxonomy

The service taxonomy is described in the ISRM Service Portfolio document [22].

4.2 Service Levels (NfRs)

N/A.

4.3 Service Functions and Capabilities

The functions and capabilities of the service can be shown through the following diagrams:

The Business Process overview showing the interaction between Aerodrome and AMIS Consumers in relation to the publication of Aerodrome Maps and Features is shown in Figure 3

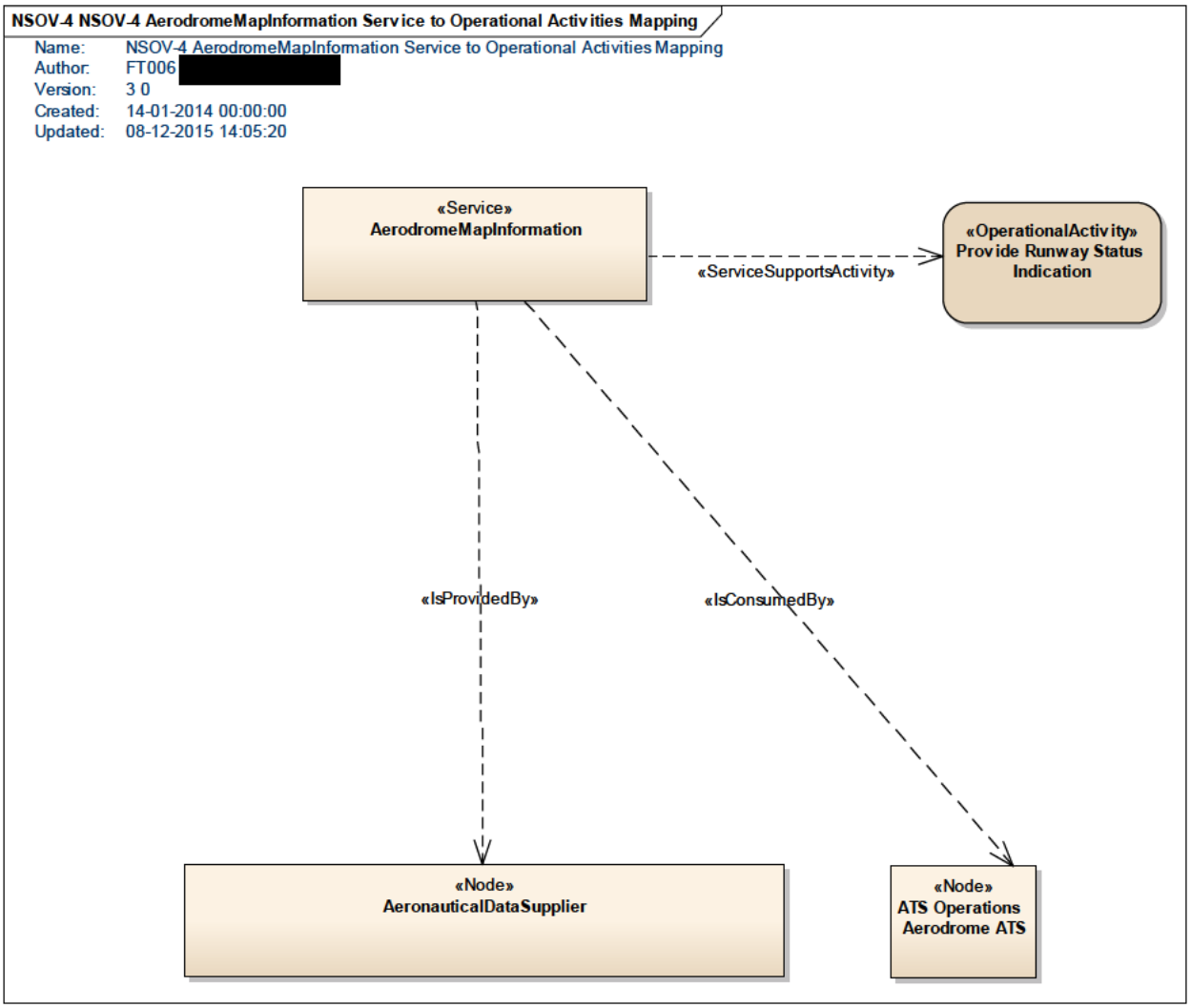

Figure 3 NSOV-4 AerodromeMapInformation Service to Operational Activities Mapping

The service fulfils some identified EATMA capabilities; these are shown in Figure 4

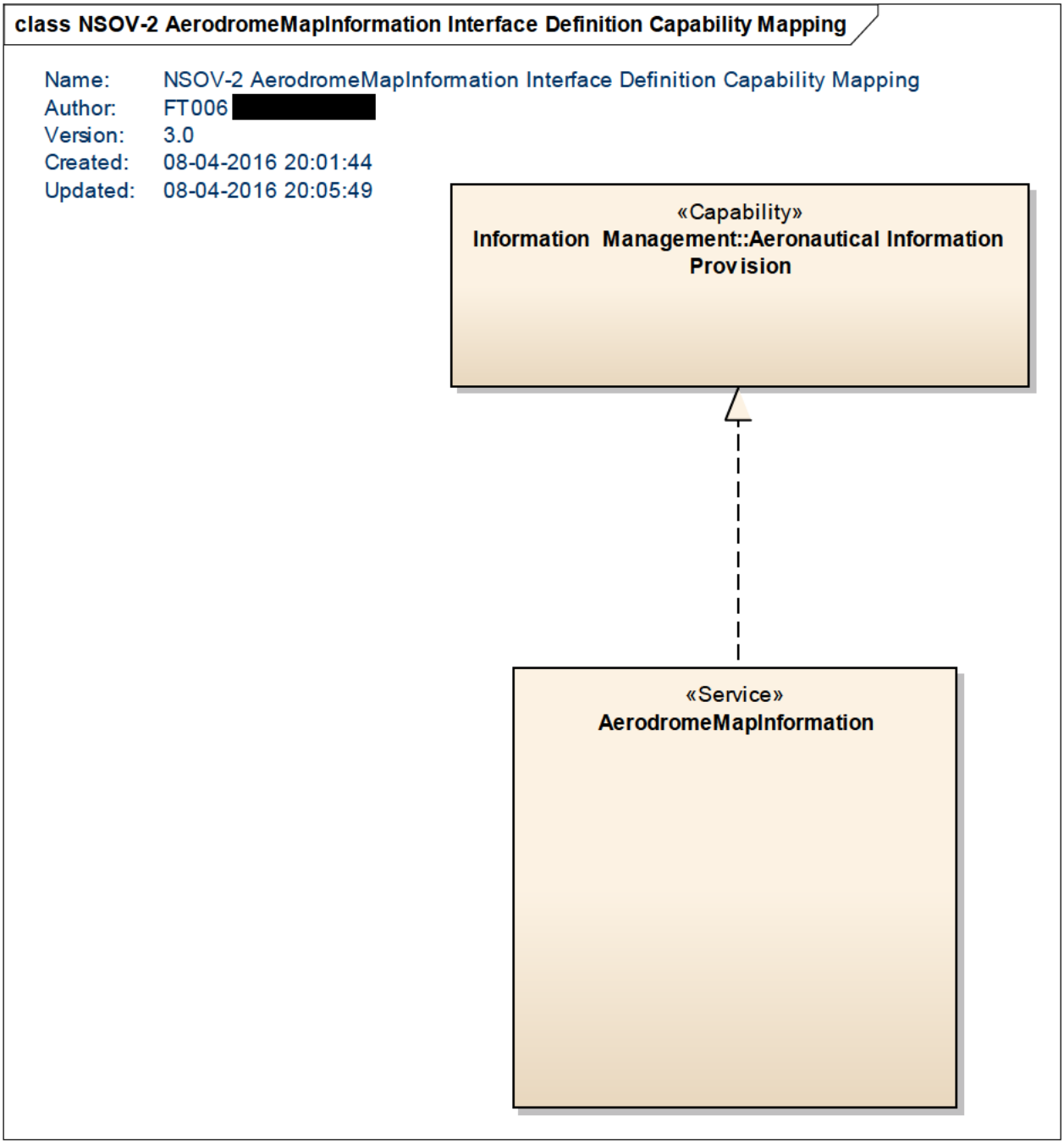

Figure 4 NSOV-2 AerodromeMapInformation Interface Definition Capability Mapping

4.4 Service Interfaces

The service is based on two interfaces both using a standard Synchronous Request/Reply MEP, one providing the map information and the other the feature information.
The interfaces of the AerodromeMapInformation service are described in more detail in the following sections.

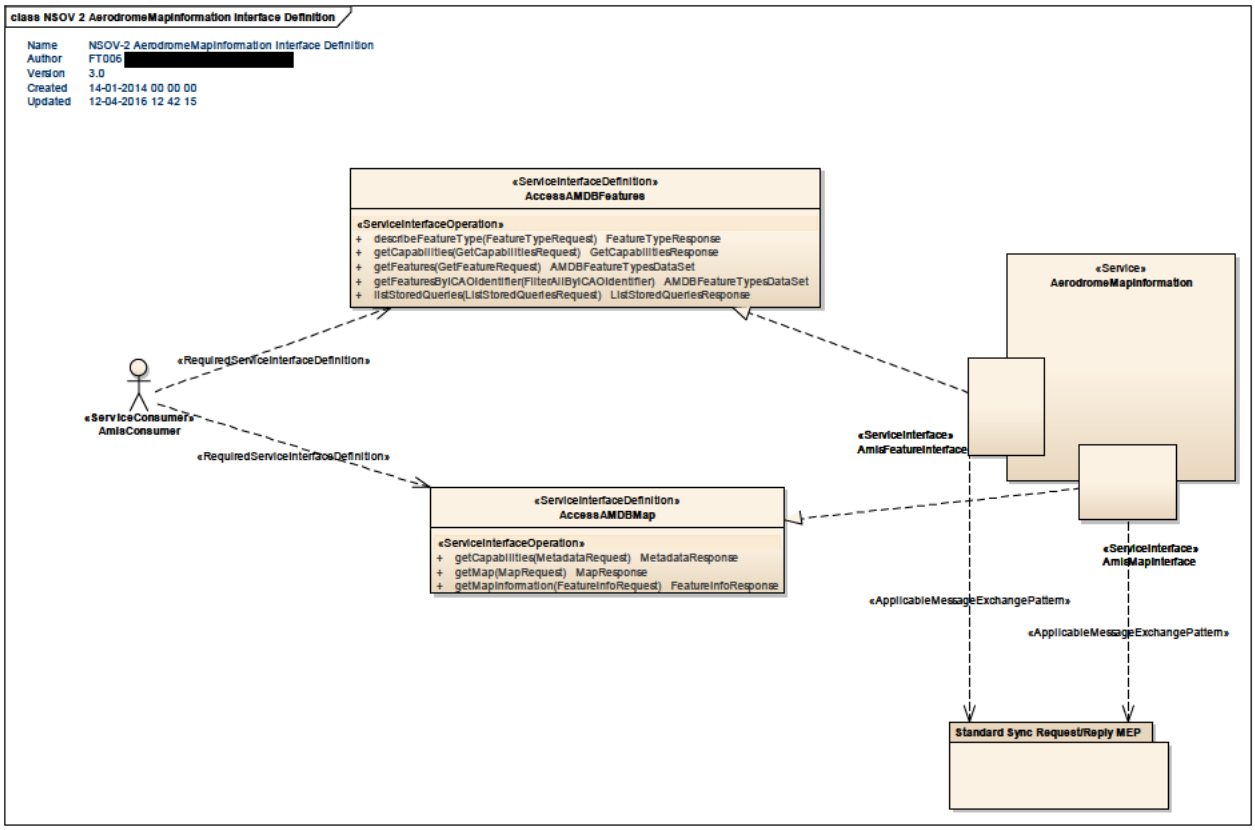

Figure 5: NSOV-2 Service Interface Definition

ServiceInterface	ServiceInterfaceDefinition	ServiceInterfaceOperation	Role
AmisMapInterface	AccessAMDBMap	getCapabilities	provided
AmisMapInterface	AccessAMDBMap	getMap	provided
AmisMapInterface	AccessAMDBMap	getMapInformation	provided
AmisFeatureInterface	AccessAMDBFeatures	getCapabilities	provided
AmisFeatureInterface	AccessAMDBFeatures	getFeatures	provided
AmisFeatureInterface	AccessAMDBFeatures	getFeaturesByICAOIdentifier	provided
AmisFeatureInterface	AccessAMDBFeatures	describeFeatureType	provided
AmisFeatureInterface	AccessAMDBFeatures	listStoredQueries	provided

Table 2: Service Interfaces

5 Service interface specifications

The interfaces of the AerodromeMapInformation service are shown in Figure 5: NSOV-2 Service Interface Definition they. They are described in more detail in the sections below.

5.1 Service Interface AmisMapInterface

5.1.1 Service Interface Definition AccessAMDBMap

The AccessAMDBMap Interface exposes the operations described below:

getCapabilities(MetaDataRequest)

- This R/R operation returns the capabilities of the user specified service. In compliance with the OGC standards for a WMS the main output is a set of layers that can be supplied along with the styles used to render them into a graphical format.

getMap(MapRequest)

- This R/R operation returns the graphical representation of the requested map layers over the specified spatial and temporal filters. This graphical representation can then be displayed on computer screen, paper or other media.

getMapInformation(FeatureInfoRequest)

- This R/R operation returns the set of airport features at or near to a specified spatial point, supplied by the user. In compliance with the OGC standards for a WMS the main output is a set of features that are used to build graphical output on the layers of the map specified by the user.

5.1.1.1 Operation getCapabilities

5.1.1.1.1 Operation Functionality

The operation has a single parameter which supplies the name of the service and other minor parameters (defined in the WMS standard defined by the OGC). It returns the capabilities of the WMS that allow the user to request them in subsequent calls to the service using the getMap operation.

The response is a message structure also defined in the WMS standard that contains the layers and styles that the service can provide to the getMap operation.

5.1.1.1.2 Operation Parameter

The input parameter is called MetadataRequest and is shown below:

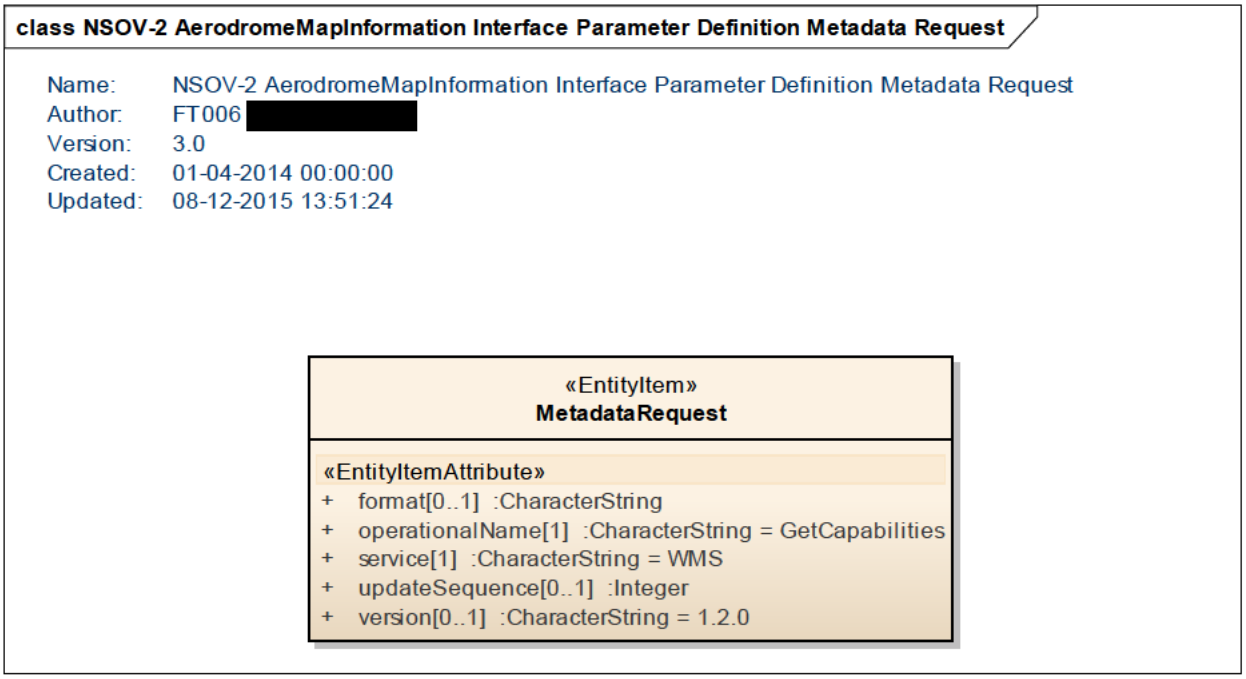

Figure 6 NSOV-2 AerodromeMapInformation Interface Parameter Definition Metadata Request

Element Name	Author	Notes
MetadataRequest	[redacted]	Get the capabilities of the WMS service.
Element Tagged Value Name	Value	
encoding		
Attribute Name	Type	Notes
format[0..1]	CharacterString	The format to be used for the response.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
operationalName[1]	CharacterString	The name of the operation to use.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
service[1]	CharacterString	The name of the service to use.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
updateSequence[0..1]	Integer	The sequence number of the last request.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
version[0..1]	CharacterString	The version of the service to use.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	

Table 3: Interface Parameter Definition Metadata Request

The output returned by the operation is called MetadataResponse and is shown below:

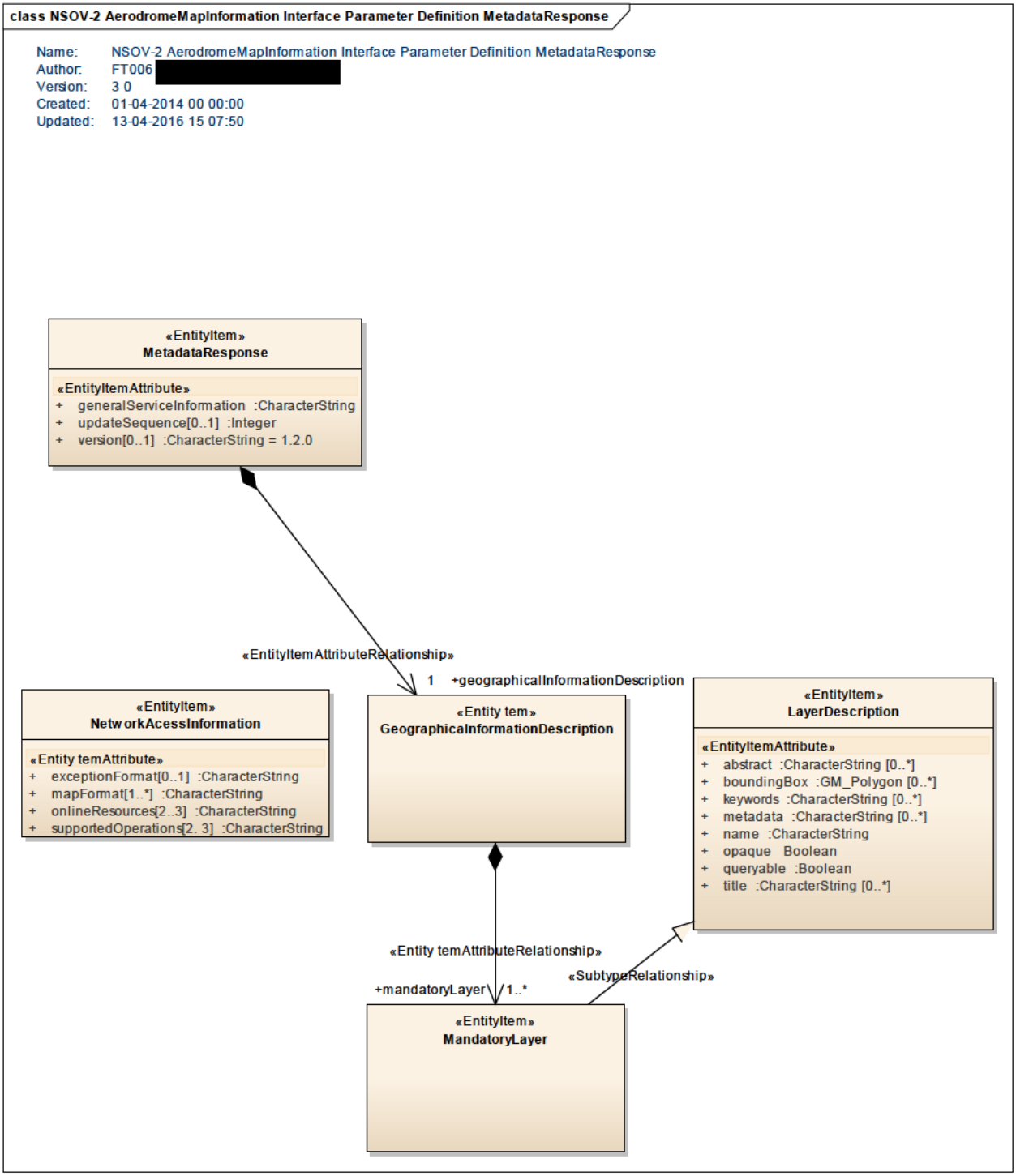

Figure 7 NSOV-2 AerodromeMapInformation Interface Parameter Definition MetadataResponse

Element Name	Author	Notes
MetadataResponse	[redacted]	The output from a WMS giving its capabilities in terms of geographic extent and layers supported.
Element Tagged Value Name	Value	
encoding		
Attribute Name	Type	Notes
generalServiceInformation	CharacterString	Available Service information from the service capability.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
updateSequence[0..1]	Integer	The sequence number of the last request.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
version[0..1]	CharacterString	The version of the service to use.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	

Table 4: Interface Parameter Definition MetadataResponse

Element Name	Author	Notes
LayerDescription	[redacted]	A layer of a map.
Attribute Name	Type	Notes
abstract	CharacterString	
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
boundingBox	GM_Polygon	The extents of the layer
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
keywords	CharacterString	Keywords associated with the layer.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
metadata	CharacterString	The URLs of the metadata.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
name	CharacterString	The name of the layer.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
opaque	Boolean	Indication that the layer is opaque, ie hides layers underneath.
Tagged Value Name	Value	
CLDMSemanticTrace	CLDM_out_of_scope	
Attribute Name	Type	Notes
queryable	Boolean	Indication that the layer can be queried for features.
Tagged Value Name	Value	

	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	title	CharacterString	The layer title.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	

Table 5: Interface Parameter Definition LayerDescription

Element Name	**Author**	**Notes**
MandatoryLayer	[redacted]	A mandatory layer must be available from a SEASAR AMDB service. These are based on the mandatory feature set but are grouped to put features that always appear on a map together, together in a layer. Each mandatory layer has at least one style that forms the standard for showing features on the layer. Every layer is transparent to allow for arbitrary layering not excluding some layers.
Element Tagged Value Name	**Value**	
megaid		

Table 6: Interface Parameter Definition MandatoryLayer

The EntityItem MandatoryLayer has been introduce to standardise which layers the AMIS service must support and gives some idea as to how the layers should be represented on the map. The structure of MandatoryLayer is shown below:

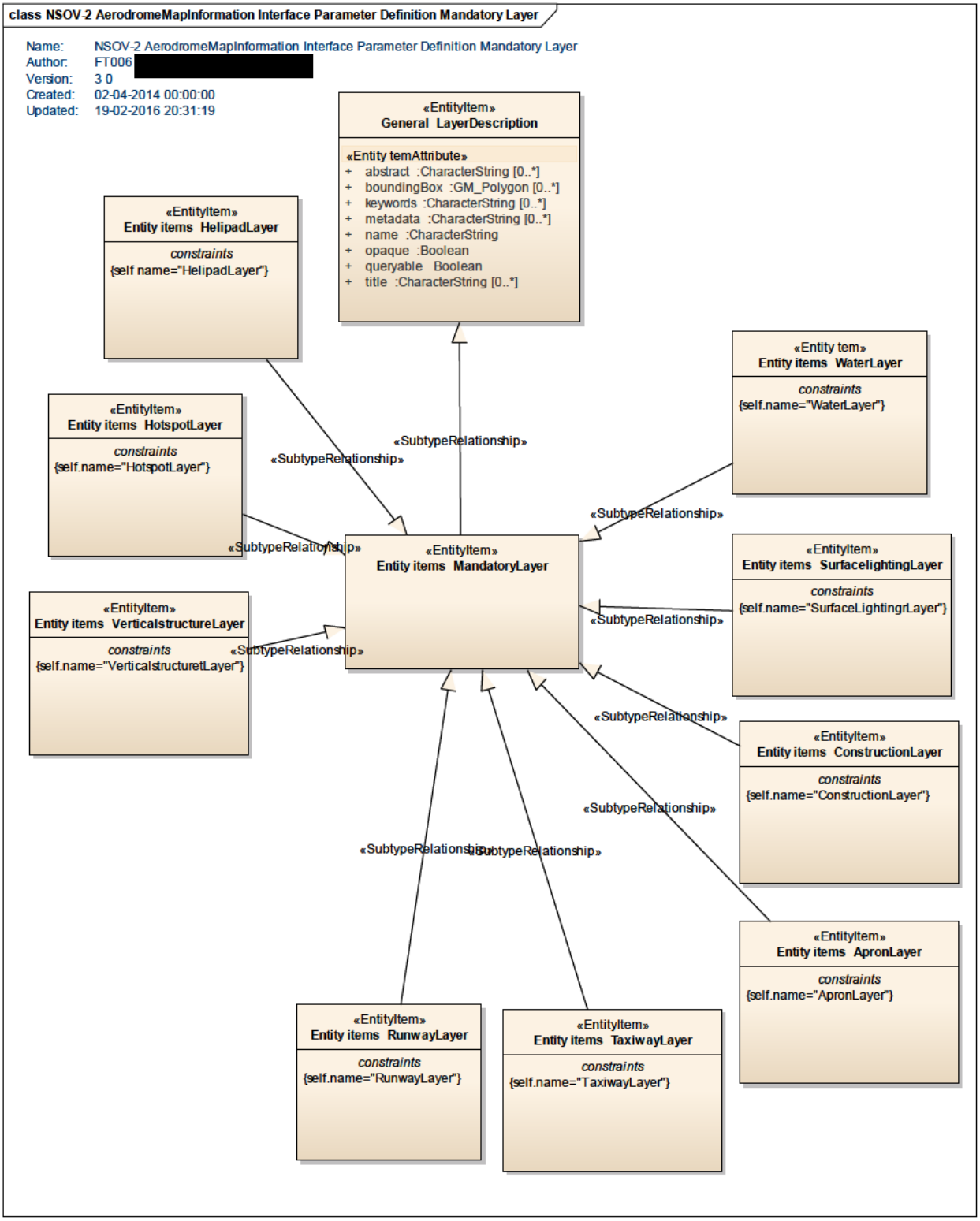

Figure 8 NSOV-2 AerodromeMapInformation Interface Parameter Definition Mandatory Layer

Element Name	Author	Notes
MandatoryLayer	[redacted]	A mandatory layer must be available from a SEASAR AMDB service. These are based on the mandatory feature set but are grouped to put features that always appear on a map together, together in a layer. Each mandatory layer has at least one style that forms the standard for showing features on the layer. Every layer is transparent to allow for arbitrary layering not excluding some layers.
Element Tagged Value Name		Value
megaid		

Table 7: Interface Parameter Definition MandatoryLayer

Element Name		Author	Notes
LayerDescription		[redacted]	A layer of a map.
Attribute Name	Type		Notes
abstract	CharacterString		
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
boundingBox	GM_Polygon		The extents of the layer
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
keywords	CharacterString		Keywords associated with the layer.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
metadata	CharacterString		The URLs of the metadata.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
name	CharacterString		The name of the layer.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
opaque	Boolean		Indication that the layer is opaque, ie hides layers underneath.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
queryable	Boolean		Indication that the layer can be queried for features.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		
Attribute Name	Type		Notes
title	CharacterString		The layer title.
Tagged Value Name	Value		
CLDMSemanticTrace	CLDM_out_of_scope		

Table 8: Interface Parameter Definition LayerDescription

The mapping of the EntityItems to the AIRM is not possible as the structures used are taken from ISO 19128 standard and are thus not part of the AIRM nor are they in scope.

5.1.1.2 Operation getMap

5.1.1.2.1 Operation Functionality

The user supplies the operation has a single parameter which supplies the name of the service, the list of layers to return, the style for each requested layer, the spatial dimension filter and other minor parameters (defined in the WMS standard defined by the OGC). It returns the graphical representation of the requested layers in the requested format.

The proposal from 8.3.3 is that the list of layers available from the AMDB service has a fixed core that are always available for every airport plus additional optional layers which might be needed at some but not all airports. The list of available styles will also contain a fixed core at least one per fixed layer that will enable all users of the service to produce a common map of every airport that can be understood by pilots and other users without the aid of a key. This commonality will start to bring about a standard for airport maps in Europe, without removing entirely the ability to support special features at some airports.

5.1.1.2.2 Operation Parameters

The input parameter is called MapRequest and is shown below:

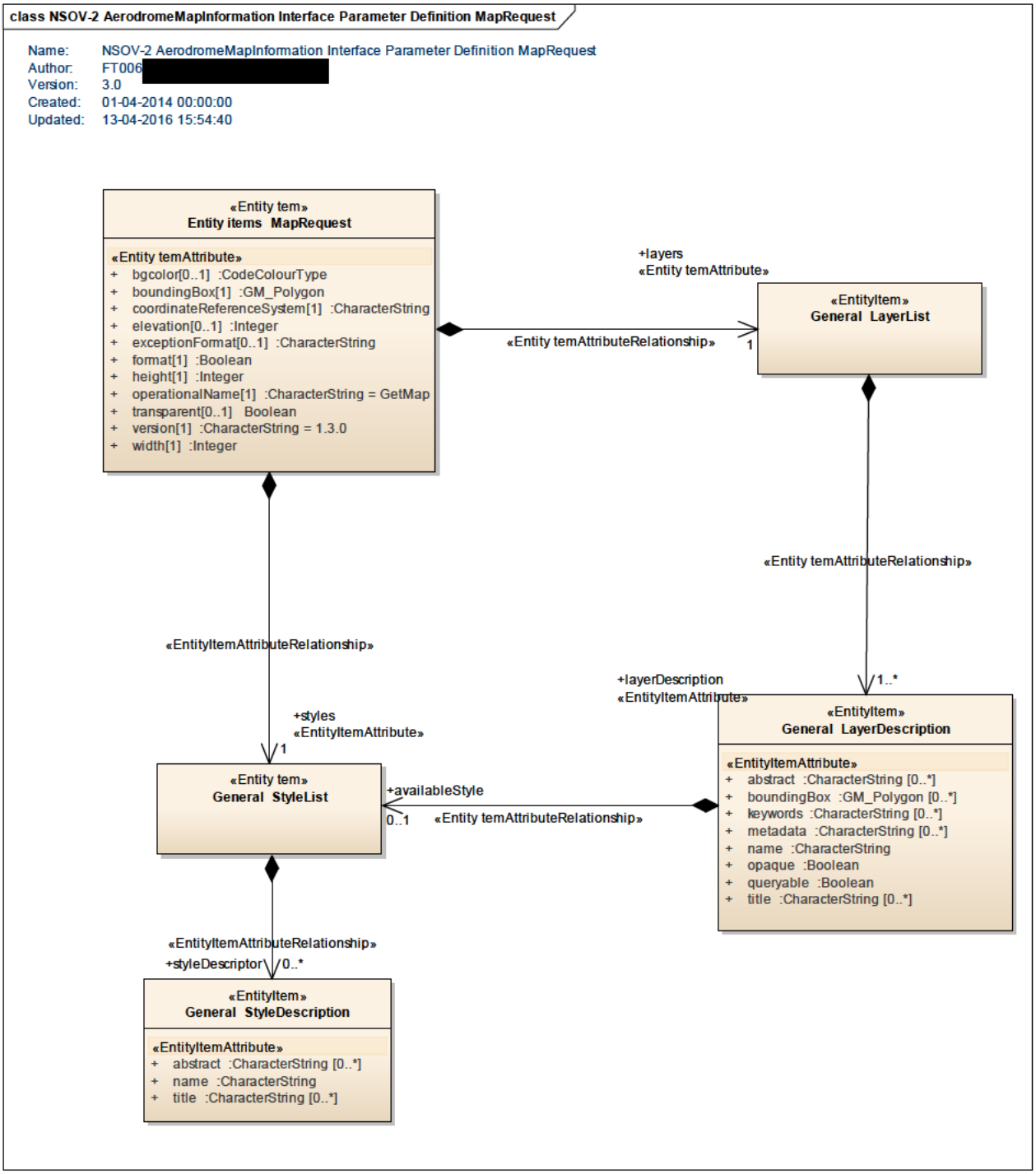

Figure 9 NSOV-2 AerodromeMapInformation Interface Parameter Definition Map Request

Element Name	Author	Notes
MapRequest	[redacted]	Request a map using the supplied information to select layers and appropriate formatting for a specified bounding box (x and y extent) from the WFS service.
	Element Tagged Value Name	**Value**

	encoding		
	Attribute Name	**Type**	**Notes**
	bgcolor[0..1]	CodeColourType	The background map colour if not transparent in RGB form.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	boundingBox[1]	GM_Polygon	The area to be represented by the returned map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	coordinateReferenceSystem[1]	CharacterString	The coordinate reference system to be used in producing the output map (usually WGS84).
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	elevation[0..1]	Integer	Elevation value of layer desired.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	exceptionFormat[0..1]	CharacterString	An optional field giving the exception reason should the get map request fail.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	format[1]	Boolean	The format of the required map, jpg,tiff,bmp etc.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	height[1]	Integer	The number of pixels in the required height of map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	operationalName[1]	CharacterString	The name of the operation to use.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	transparent[0..1]	Boolean	Indication as to whether the map should be transparent or not.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	version[1]	CharacterString	The version of the service to use.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	width[1]	Integer	The number of pixels in the required width of map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	

Table 9: Interface Parameter Definition MapRequest

Element Name	Author	Notes

LayerList	[redacted]	A list of map layers.

Table 10: Interface Parameter Definition LayerList

Element Name			Author	Notes
LayerDescription			[redacted]	A layer of a map.
	Attribute Name	**Type**		**Notes**
	abstract	CharacterString		
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	boundingBox	GM_Polygon		The extents of the layer
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	keywords	CharacterString		Keywords associated with the layer.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	metadata	CharacterString		The URLs of the metadata.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	name	CharacterString		The name of the layer.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	opaque	Boolean		Indication that the layer is opaque, ie hides layers underneath.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	queryable	Boolean		Indication that the layer can be queried for features.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		
	Attribute Name	**Type**		**Notes**
	title	CharacterString		The layer title.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		

Table 11: Interface Parameter Definition LayerDescription

Element Name	Author	Notes
StyleList	[redacted]	A list of map styles.

Table 12: Interface Parameter Definition StyleList

Element Name			Author	Notes
StyleDescription			[redacted]	A style of a map.
	Attribute Name	**Type**		**Notes**
	abstract	CharacterString		
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	CLDM_out_of_scope		

	Attribute Name	Type	Notes
	name	CharacterString	The name of the style.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	title	CharacterString	The style title.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	

Table 13: Interface Parameter Definition StyleDescription

The output returned by the operation is called MapResponse and is shown below:

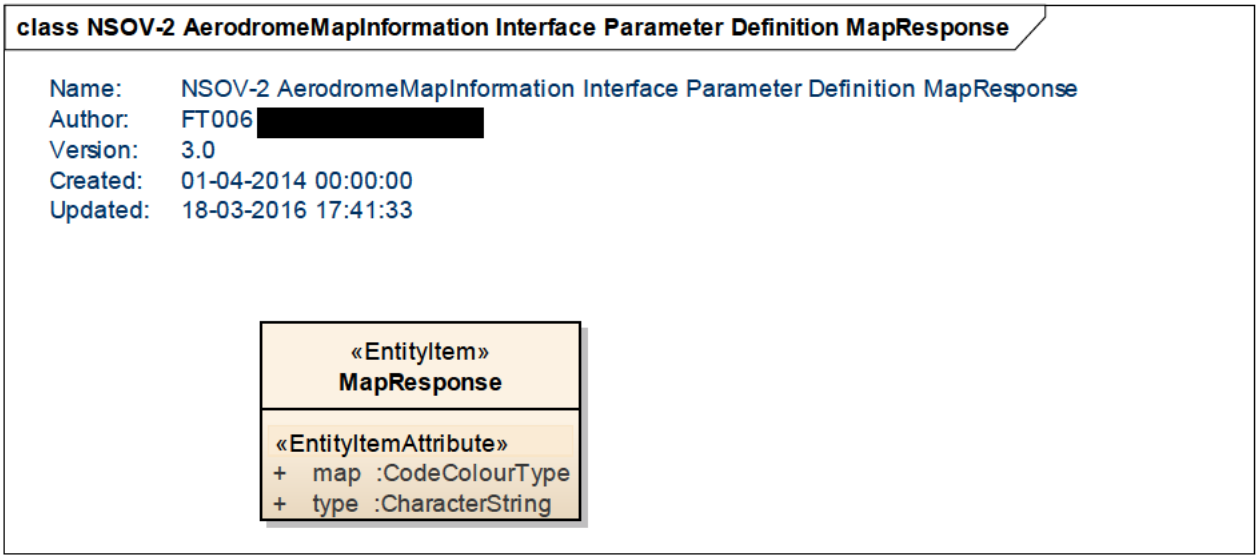

Figure 10 NSOV-2 AerodromeMapInformation Interface Parameter Definition Map Response

Element Name	Author	Notes
MapResponse	[redacted]	The response from the WMS to a GetMapRequest. The response is a graphic that represents the requested layers formatted according to the request for the geospatial limits.

	Element Tagged Value Name	Value
	encoding	

	Attribute Name	Type	Notes
	map	CodeColourType	A graphical map in the form specified in the GetMap request.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	type	CharacterString	The type of graphic being returned as the map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	

Table 14: Interface Parameter Definition MapResponse

The mapping of the EntityItems to the AIRM is not possible as the structures used are taken from ISO 19128 standard and are thus not part of the AIRM nor are they in scope.

5.1.1.3 Operation getMapInformation

5.1.1.3.1 Operation Functionality

The operation has a single parameter which is similar to the input to the getMap operation but contains in addition a specified geospatial position. This position is then used by the service to extract the features used on the selected layers, from the AMDB.

The set of features is then returned to the user.

The response is a message structure also defined in the WMS standard that contains the set of features meeting the criteria of the input selection.

The OGC indicates that this operation of a WMS is optional. It is the intention of 8.3.3 to make this operation mandatory for the AerodromeMapInformation Service.

The output from the operation can be used with other operations of the service to access the features directly. This might allow a user to click on a map of the aerodrome over a runway, get a pop-up showing the runway status and allow its modification purely using operations of the AerodromeMapInformation Service.

5.1.1.3.2 Operation Parameters

The input parameter is called FeatureInfoRequest and is shown below:

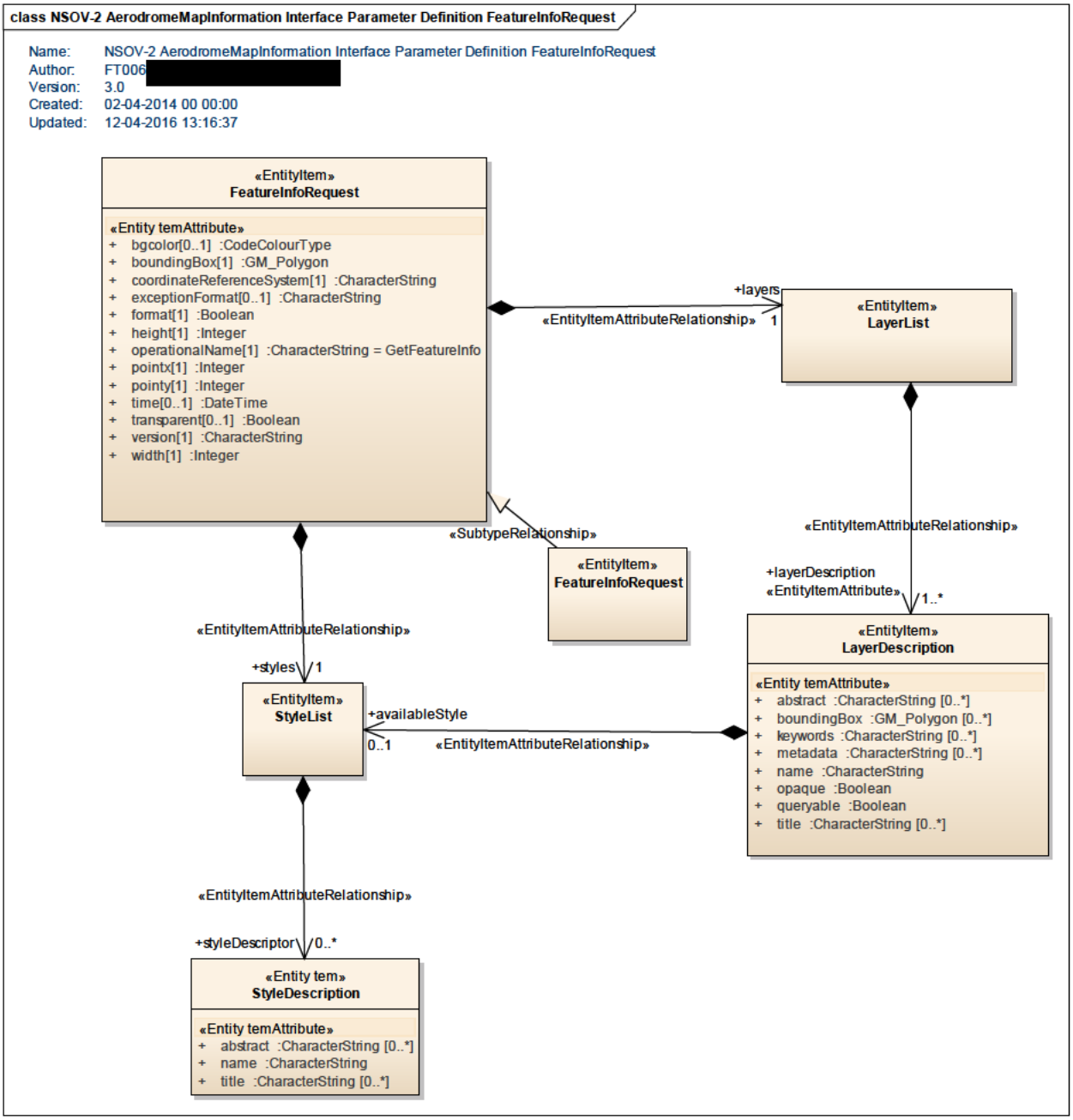

Figure 11 NSOV-2 AerodromeMapInformation Interface Parameter Definition Feature Info Request

Element Name			Author	Notes
FeatureInfoRequest				Request the features nearest the specified point available on the layers indicated in the request.
	Element Tagged Value Name		Value	
	encoding			
	Attribute Name	Type		Notes
	bgcolor[0..1]	CodeColourType		The background map colour if not transparent in RGB form.
	Tagged Value Name	Value		

	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	boundingBox[1]	GM_Polygon	The area to be represented by the returned map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	coordinateReferenceSystem[1]	CharacterString	The coordinate reference system to be used in producing the output map (usually WGS84).
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	exceptionFormat[0..1]	CharacterString	An optional field giving the exception reason should the get map request fail.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	format[1]	Boolean	The format of the required map, jpg,tiff,bmp etc.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	height[1]	Integer	The number of pixels in the required height of map.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	operationalName[1]	CharacterString	The name of the operation to use.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	pointx[1]	Integer	The number of pixels along the x axis of the specific point for which the features are requested.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	pointy[1]	Integer	The number of pixels along the y axis of the specific point for which the features are requested.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	time[0..1]	DateTime	Time value of layer desired.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	transparent[0..1]	Boolean	Indication as to whether the map should be transparent or not.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	version[1]	CharacterString	The version of the service to use.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	CLDM_out_of_scope	
	Attribute Name	**Type**	**Notes**
	width[1]	Integer	The number of pixels in the required width of map.

	Tagged Value Name	Value
	CLDMSemanticTrace	CLDM_out_of_scope

Table 15: Interface Parameter Definition FeatureInfoRequest

The output returned by the operation is called FeatureInfoResponse and is shown below:

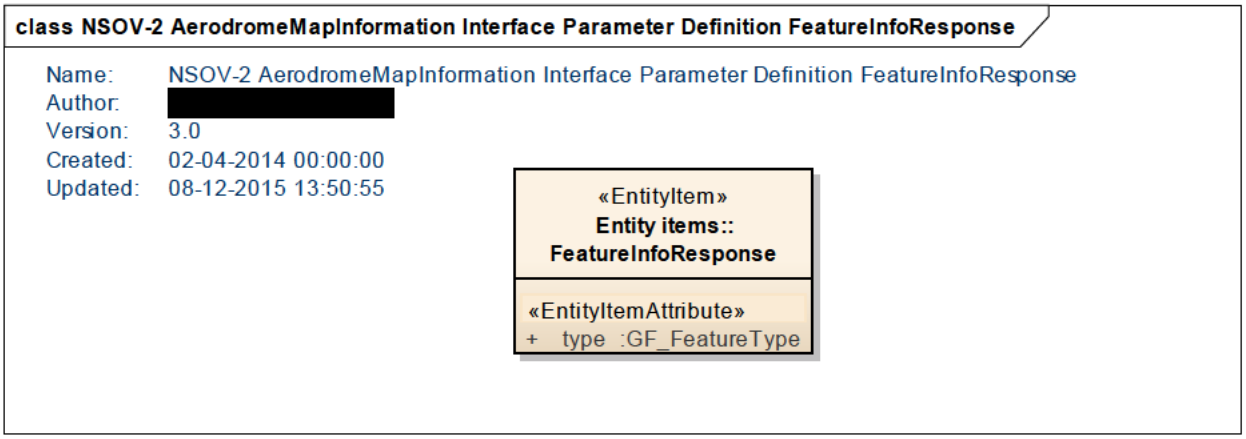

Figure 12 NSOV-2 AerodromeMapInformation Interface Parameter Definition Feature Info response

Element Name	Author	Notes
FeatureInfoResponse		Supplies the features that meet the criteria in the FeatureInfoRequest.

	Element Tagged Value Name	Value
	encoding	

	Attribute Name	Type	Notes
	type	GF_FeatureType	The type of feature being returned.

	Tagged Value Name	Value
	CLDMSemanticTrace	CLDM_out_of_scope

Table 16: Interface Parameter Definition FeatureInfoResponse

The mapping of the EntityItems to the AIRM is not possible as the structures used are taken from ISO 19128 and ISO 19142 standards and are thus not part of the AIRM nor are they in scope.

5.2 Service Interface AmisFeatureInterface

The interfaces of the AerodromeMapInformation service are shown in Figure 5.

5.2.1 Service Interface Definition AccessAMDBFeatures

The AccessAMDBFeatures Interface exposes the operations described below:

describeFeatureType(FeatureTypeRequest)

- This R/R operation returns the types of features supported by the Feature Service Interface.

getCapabilities(GetCapabilitiesRequest)

- This R/R operation returns the capabilities of the user specified service. In compliance with the OGC standards for a WFS the main output is the set of feature types the service supports.

getFeatures(GetFeatureRequest)

- This R/R operation returns the features matching the entered criteria over the specified spatial and temporal filters. The matching features are returned to the user.

getFeaturesByICAOIdentifier(FilterAllByICAOIdentifier)

- This R/R operation returns all the features defined for the specified airport.

listStoredQueries(StoredQueriesRequest)

- This R/R operation returns the pre-defined queries supported by the Feature Service Interface.

5.2.1.1 Operation describeFeatureType

5.2.1.1.1 Operation Functionality

The user supplies the name of the feature to describe and the service returns the detail of the features.

5.2.1.1.2 Operation Parameters

The input parameter is called FeatureTypeRequest is defined fully in [7]. it supplies the feature type name to be described.

The output returned by the operation is called FeatureTypeResponse and is also defined fully in [7], it supplies details about each feature type requested, that the service interface supports.

The input .parameter structure is shown below:

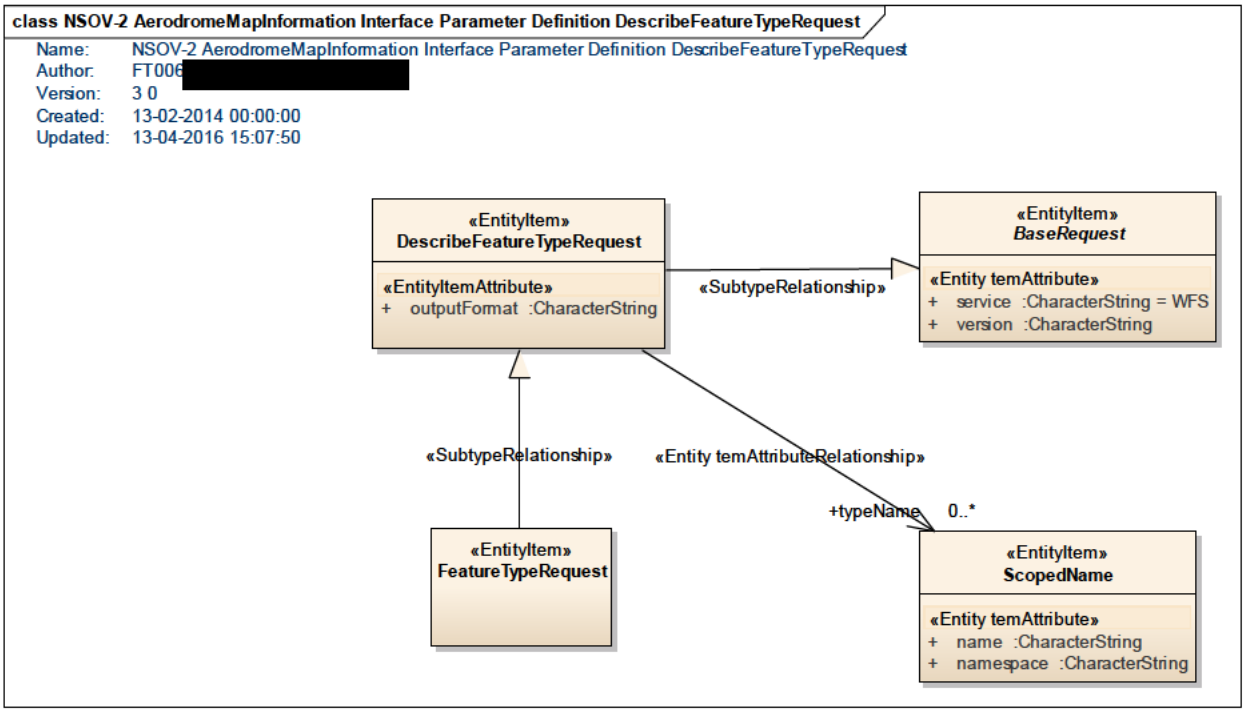

Figure 13: NSOV-2 AerodromeMapInformation Interface Parameter Definition Feature Type Request

Mapping of this entityitem is not required as it is defined in the standard ISO19142.

The output parameter structure is shown in below:

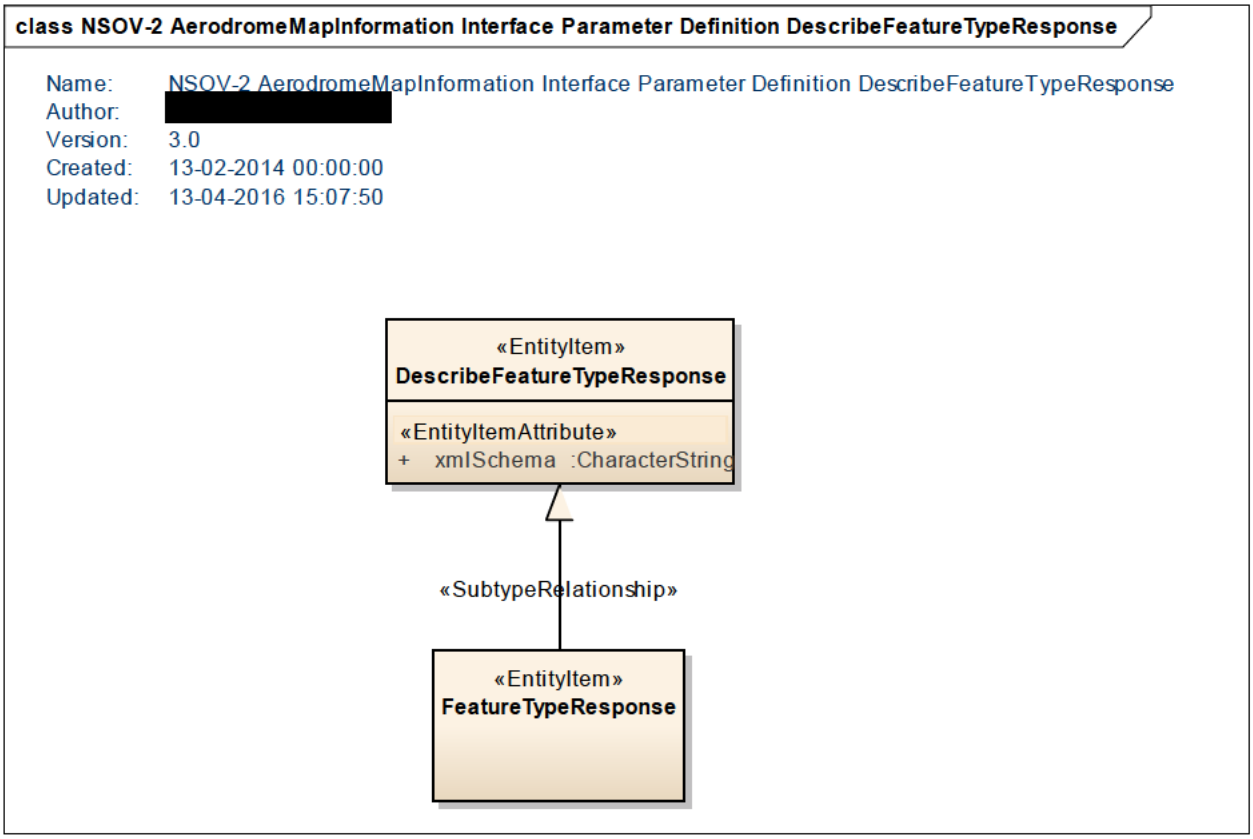

Figure 14: NSOV-2 AerodromeMapInformation Interface Parameter Definition Feature Type Response

Mapping of this entityitem is not required as it is defined in the standard ISO19142.

5.2.1.2 Operation getCapabilities

5.2.1.2.1 Operation Functionality

The operation has a single parameter which supplies the name of the service and other minor parameters (defined in the WFS standard defined by the OGC). It returns the capabilities of the WFS that allow the user to request them in subsequent calls to the service using the getFeatures operation.

The response is a message structure also defined in the WFS standard that contains the feature types that the service can provide to the getFeatures operation.

5.2.1.2.2 Operation Parameters

The input parameter is called GetCapabilitiesRequest and is shown below:

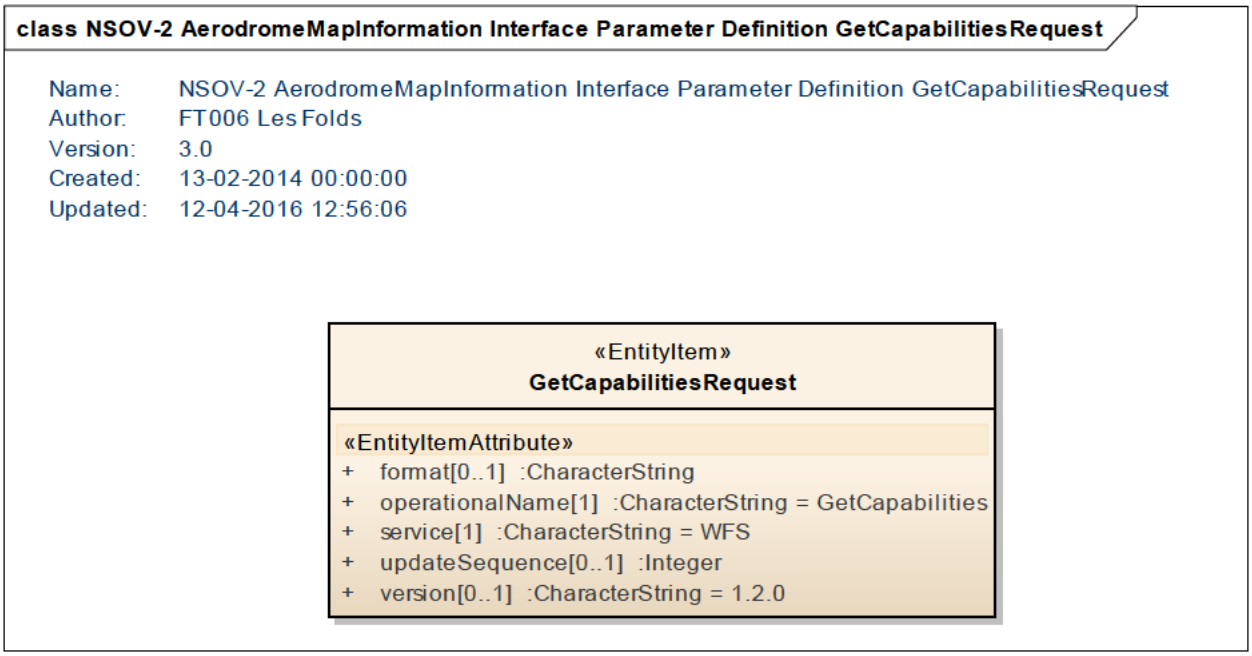

Figure 15: NSOV-2 AerodromeMapInformation Interface Parameter Definition GetCapabilities Request

Element Name			Author		Notes
GetCapabilitiesRequest			[redacted]		Get the capabilities of the WFS service.
	Element Tagged Value Name		Value		
	encoding				
	Attribute Name	Type			Notes
	format[0..1]	CharacterString			The format to be used for the response.
	Tagged Value Name		Value		
	CLDMSemanticTrace		CLDM_out_of_scope		
	Attribute Name	Type			Notes
	operationalName[1]	CharacterString			The name of the operation to use.
	Tagged Value Name		Value		
	CLDMSemanticTrace		CLDM_out_of_scope		
	Attribute Name	Type			Notes
	service[1]	CharacterString			The name of the service to use.
	Tagged Value Name		Value		
	CLDMSemanticTrace		CLDM_out_of_scope		
	Attribute Name	Type			Notes
	updateSequence[0..1]	Integer			The sequence number of the last request.
	Tagged Value Name		Value		
	CLDMSemanticTrace		CLDM_out_of_scope		
	Attribute Name	Type			Notes
	version[0..1]	CharacterString			The version of the service to use.
	Tagged Value Name		Value		
	CLDMSemanticTrace		CLDM_out_of_scope		

Table 17: Interface Parameter Definition GetCapabilitiesRequest

The output returned by the operation is called GetCapabilitiesResponse and is shown below:

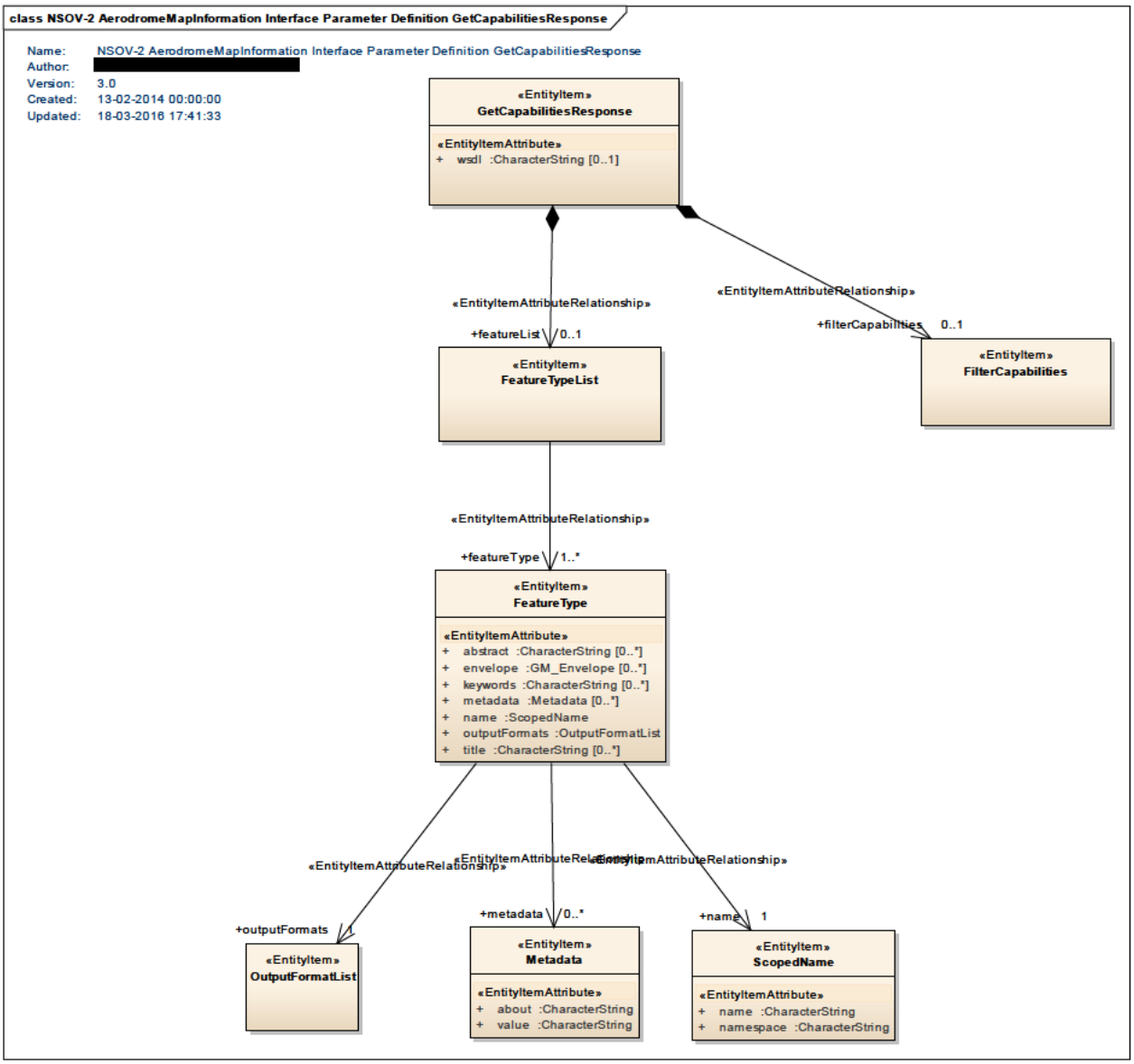

Figure 16: NSOV-2 AerodromeMapInformation Interface Parameter Definition GetCapabilitiesResponse

The mapping of the EntityItems to the AIRM is not possible as the structures used are taken from ISO 19142 and ISO 19143 standards and are thus not part of the AIRM nor are they in scope.

Element Name			Author		Notes
GetCapabilitiesResponse			[redacted]		The WFS service capabilities.
	Element Tagged Value Name		Value		
	encoding				
	Attribute Name		Type		Notes
	wsdl		CharacterString		The WSDL in text form.
		Tagged Value Name		Value	
		CLDMSemanticTrace		CLDM_out_of_scope	

Table 18: Interface Parameter Definition GetCapabilitiesResponse

5.2.1.3 Operation getFeatures

5.2.1.3.1 Operation Functionality

The user supplies the operation has a single parameter which supplies the name of the service, the list of feature types to return, the spatial dimension filter and other minor parameters (defined in the WFS standard defined by the OGC). It returns the set of features that meet the specified criteria from the set of feature types selected.

The proposal from 8.3.3 is that the set of features available from the AMDB service has a fixed core that are always available for every airport plus additional optional features which might be needed at some but not all airports. There are also a standard set of pre-defined filter criteria which are defined and are always available. This commonality will start to bring about a standard for airport maps in Europe, without removing entirely the ability to support special features at some airports.

5.2.1.3.2 Operation Parameters

The input parameter is called GetFeatureRequest and is shown below:

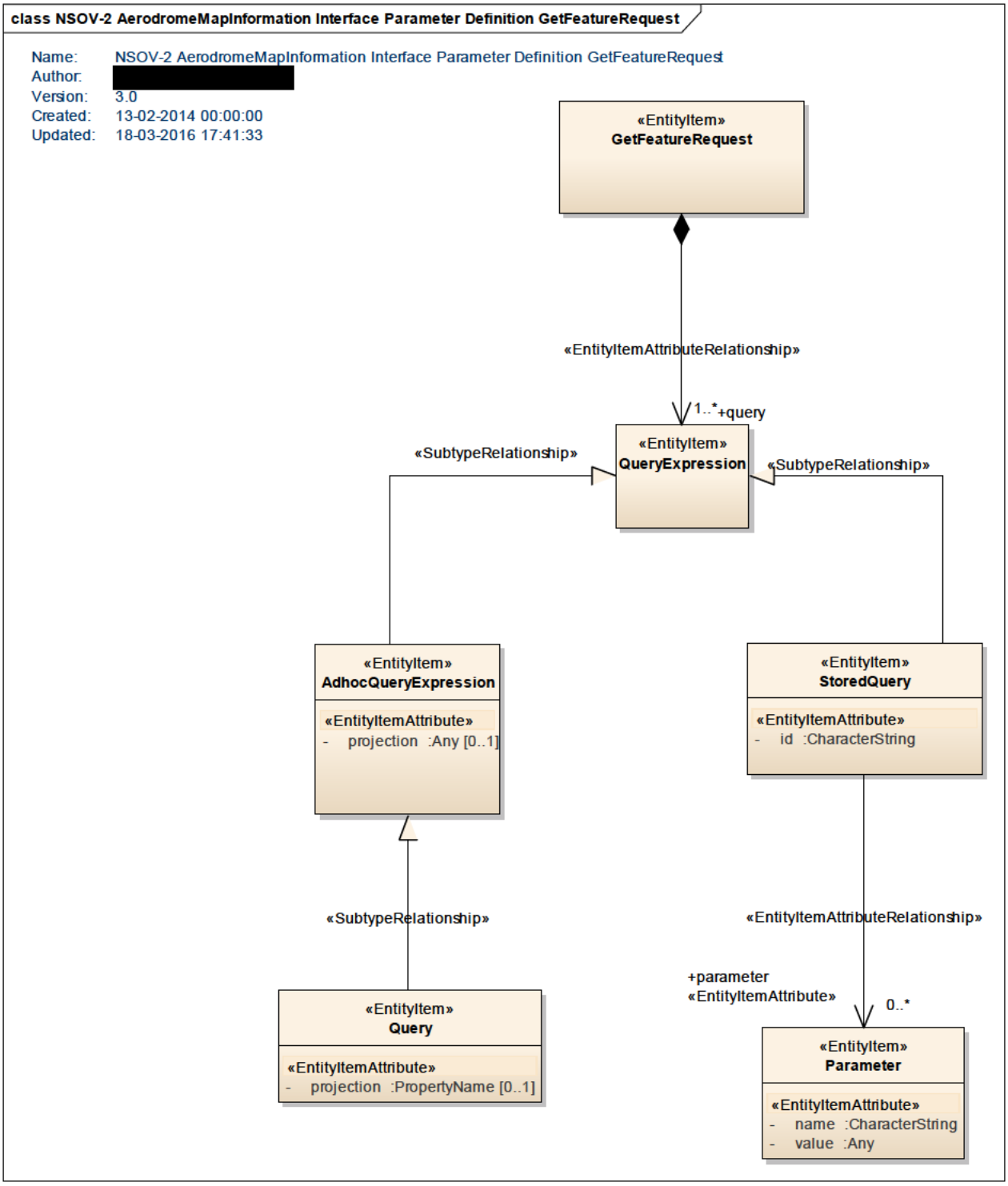

Figure 17: NSOV-2 AerodromeMapInformation Interface Parameter Definition GetFeatureRequest

Element Name		Author	Notes
GetFeatureRequest		[redacted]	Get a set of features matching the queries.
	Element Tagged Value Name	**Value**	
	encoding		

Table 19: Interface Parameter Definition GetFeatureRequest

The output returned by the operation is called AMDBFeatureTypesDataSet and is shown below:

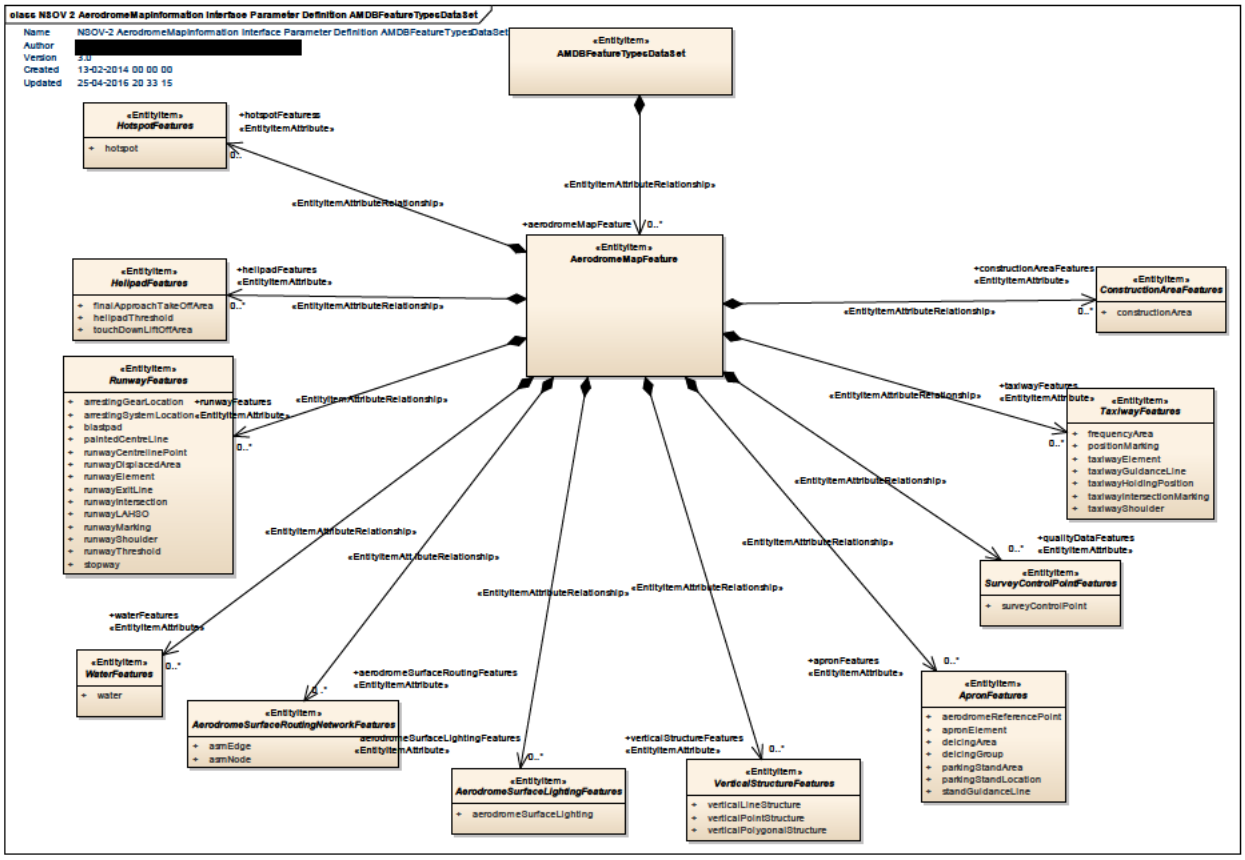

Figure 18: NSOV-2 AerodromeMapInformation Interface Parameter Definition AMDBFeatureTypesDataSet

The complete set of EntityItems making up the different types of features are shown in the following diagrams along with their AIRM linkage to existing AIRM classes.

Element Name		Author	Notes
AMDBFeatureTypesDataSet		[redacted]	Resulting data set from executing an AMDB query.
	Element Tagged Value Name	**Value**	
	encoding		

Table 20: Interface Parameter Definition AMDBFeatureTypesDataSet

Element Name		Author	Notes
AerodromeMapFeature		[redacted]	An instance of an Aerodrome Map Feature, out of the available 40 different feature Types (according to ED99C)
	Element Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:airm:v401:ConsolidatedLogicalDataModel:Abstract:EntityCollection	

Table 21: Interface Parameter Definition AerodromeMapFeature

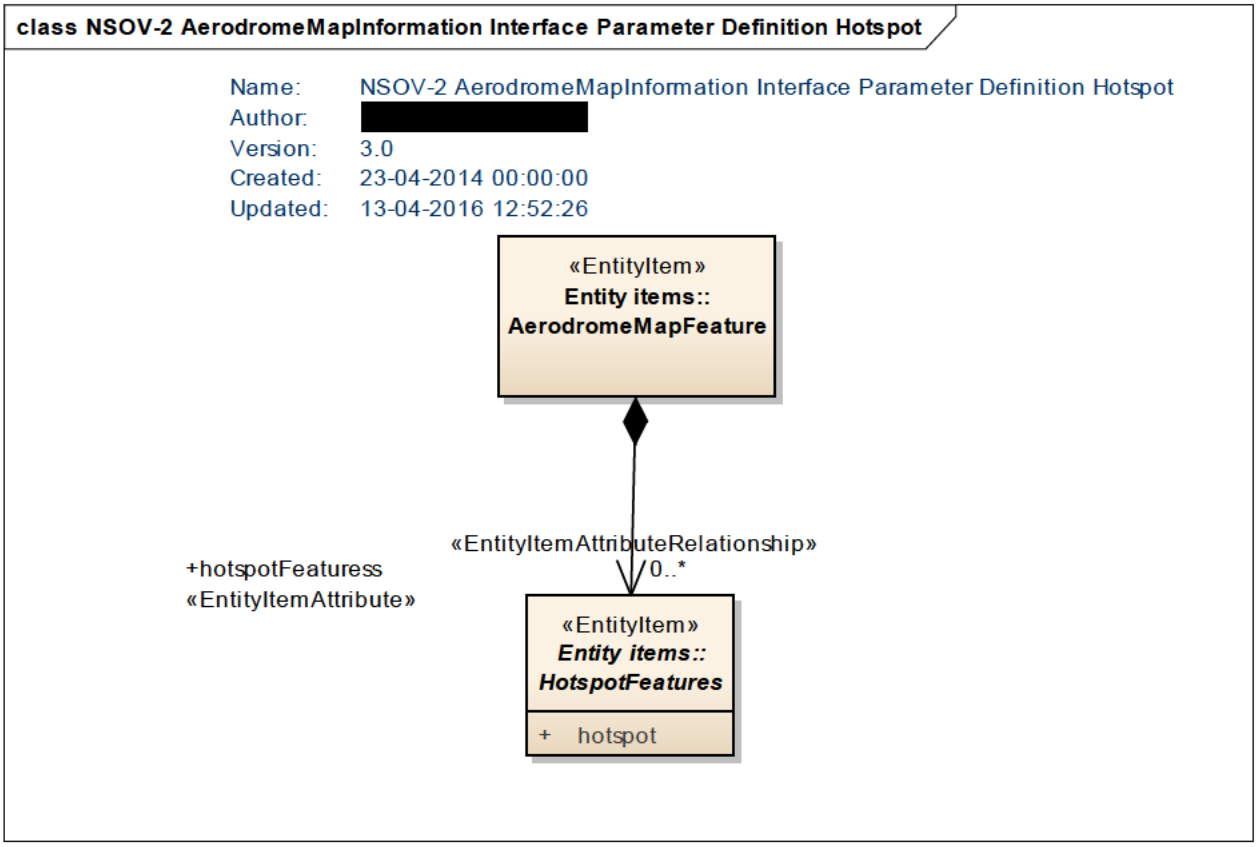

Figure 19: NSOV-2 AerodromeMapInformation Interface Parameter Definition Hotspot

Element Name		Author	Notes
HotspotFeatures		[redacted]	Abstract class used to group features related to an aerodrome's taxiways.
	Attribute Name	**Type**	**Notes**
	hotspot		A location on an aerodrome movement area with a history or potential risk of collision or runway incursion and where heightened attention by pilots/drivers is necessary.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:AerodromeHotSpot	

Table 22: Interface Parameter Definition Hotspot

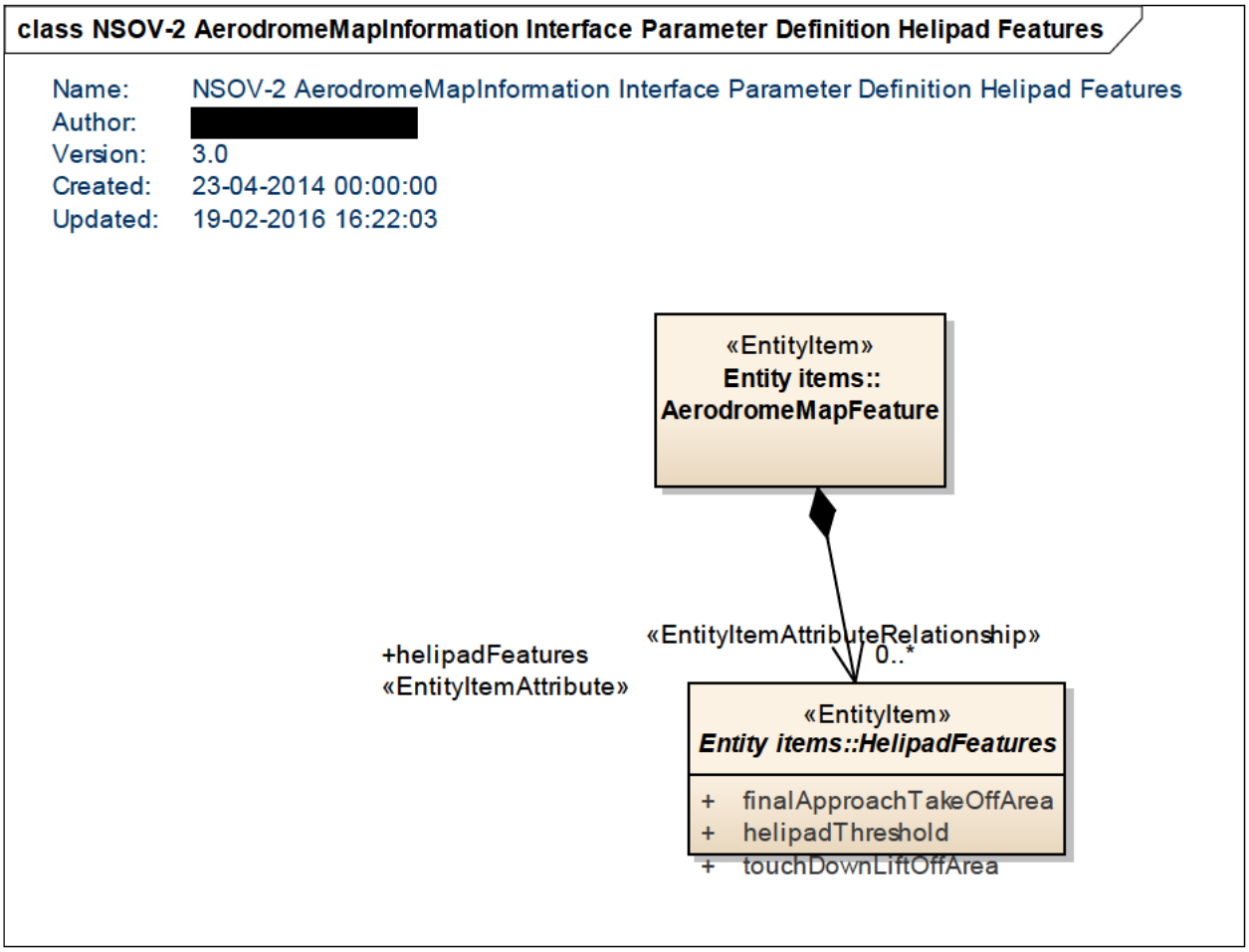

Figure 20: NSOV-2 AerodromeMapInformation Interface Parameter Definition Helipad Final Approach / TLOF

Element Name			Author	Notes
HelipadFeatures			[redacted]	Abstract class used to group features related to an AMDB Helipad.
	Attribute Name	**Type**		**Notes**
	finalApproachTakeOffArea			Approach and Takeoff Area of the Helipad
	Tagged Value Name	**Value**		
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwayType@FATO		
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Runway@type		
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Runway		

	Attribute Name	Type	Notes
	helipadThreshold		Threshold of the Helipad
	Tagged Value Name	**Value**	
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Codelists:CodePointUsageType@THRESHOLD	
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint@infrastructurePointUsage	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint	
	Attribute Name	**Type**	**Notes**
	touchDownLiftOffArea		Touchdown and Lift Off Area of the Helipad
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TouchDownLiftOff	

Table 23: Interface Parameter Definition HelipadFeature

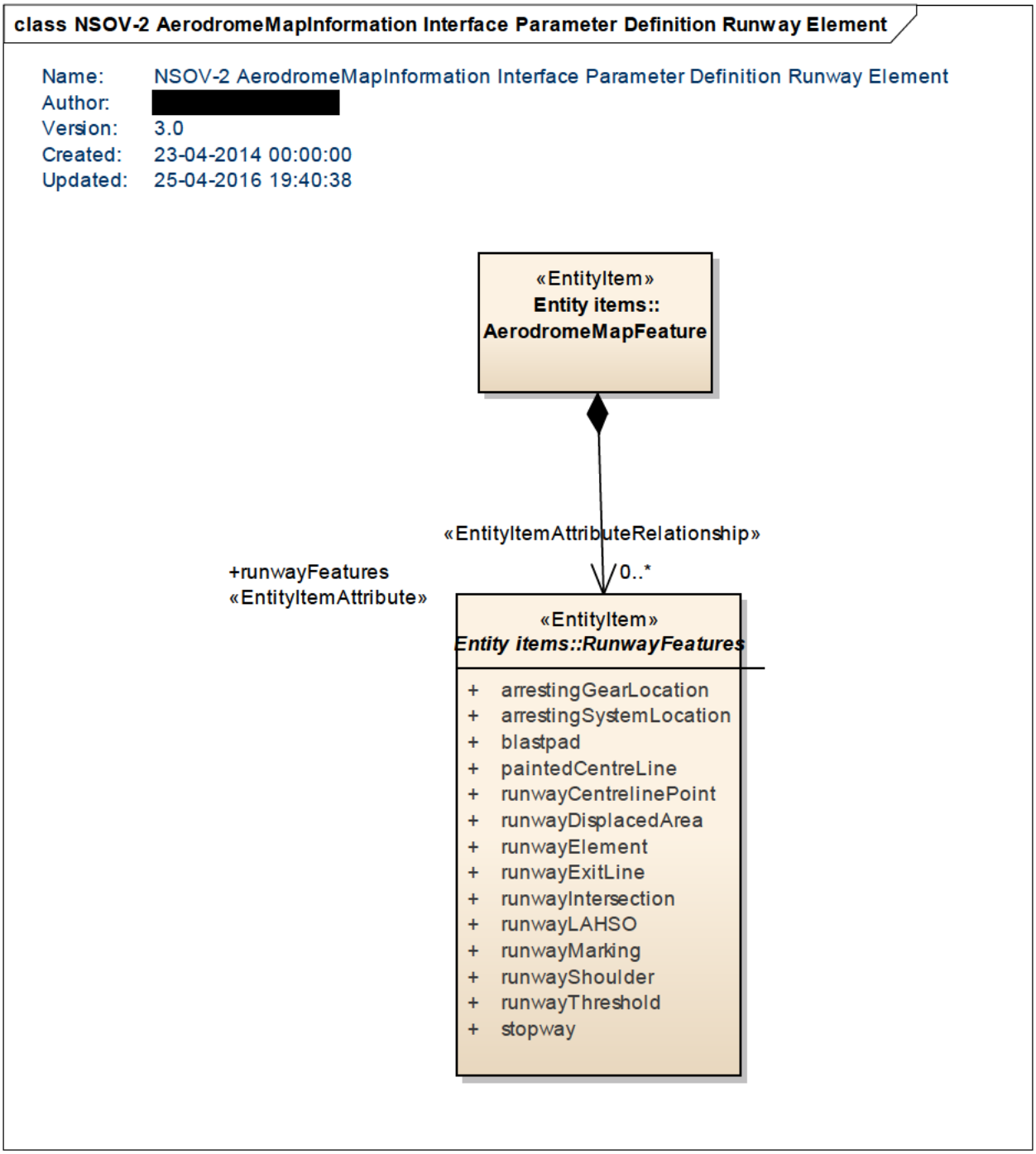

Figure 21: NSOV-2 AerodromeMapInformation Interface Parameter Definition Runway Features

Element Name			Author	Notes
RunwayFeatures			[redacted]	Abstract class used to group features related to an AMDB Runway.
	Element Tagged Value Name		Value	
	CLDMSemanticTrace		urn:x-ses:airm:v401:ConsolidatedLogicalDataModel:Abstract:EntityCollection	
	Attribute Name	Type		Notes

	arrestingGearLocation		A series of devices (for example: engaging or catching devices and energy absorption devices) that are used to stop an aircraft by absorbing its momentum in a routine landing emergency landing or aborted take-off.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ArrestingGear@curveExtent
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ArrestingGear

	Attribute Name	Type	Notes
	arrestingSystemLocation		A series of devices (for example: engaging or catching devices and energy absorption devices) that are used to stop an aircraft by absorbing its momentum in a routine landing emergency landing or aborted take-off.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ArrestingGear@surfaceExtent
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ArrestingGear

	Attribute Name	Type	Notes
	blastpad		Specially prepared surface placed adjacent to the end of a runway to eliminate the erosive effect of the high wind forces produced by airplanes at the beginning of their takeoff rolls.

	Tagged Value Name	Value
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayBlastPad

	Attribute Name	Type	Notes
	paintedCentreLine		the Painted line down the centre of the runway.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwaySectionType@CENTRELINE
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayMarking@markingLocation
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayMarking

	Attribute Name	Type	Notes
	runwayCentrelinePoint		An operationally significant position on the centerline of a runway.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Codelists:CodePointUsageType@RUNWAY_CENTRELINE_POINT
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint@infrastructurePointUsage
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint

	Attribute Name	Type	Notes
	runwayDisplacedArea		That portion of a runway between the beginning of the runway and the displaced threshold.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwayElementType@DISPLACED
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement@type
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement

	Attribute Name	Type	Notes
	runwayElement		A portion of a runway.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwayElementType@NORMAL
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement@type
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement

	Attribute Name	Type	Notes
	runwayExitLine		Guidance line painted on the runway exit.

	Tagged Value Name	Value
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayExitLine

	Attribute Name	Type	Notes
	runwayIntersection		An intersection of the runway with another runway or taxiway.

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-

			ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwayElementType@INTERSECTION
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement@type
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement
Attribute Name		**Type**	**Notes**
runwayLAHSO			Location of marking used for Land and Hold Short Operations (LAHSO).
	Tagged Value Name	**Value**	
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Codelists:CodePointUsageType@LAND_AND_HOLD_SHORT_OPERATION_POINT
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint@infrastructurePointUsage
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint
Attribute Name		**Type**	**Notes**
runwayMarking			A symbol or group of symbols displayed on the surface of the runway in order to convey aeronautical information.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayMarking
Attribute Name		**Type**	**Notes**
runwayShoulder			The shoulder or edge of the runway.
	Tagged Value Name	**Value**	
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeRunwayElementType@RUNWAY_SHOULDER
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement@type
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement
Attribute Name		**Type**	**Notes**
runwayThreshold			The threshold of the runway. The beginning of that portion of the runway usable for landing.
	Tagged Value Name	**Value**	
	CLDMContextTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje

		ctFields:AirspaceInfrastructure:Codelists:CodePointUsageType@THRESHOLD
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint@infrastructurePointUsage
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint

	Attribute Name	Type	Notes
	stopway		The threshold of the runway. The beginning of that portion of the runway usable for landing.

	Tagged Value Name	Value
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:RunwayElement

Table 24: Interface Parameter Definition RunwayFeatures

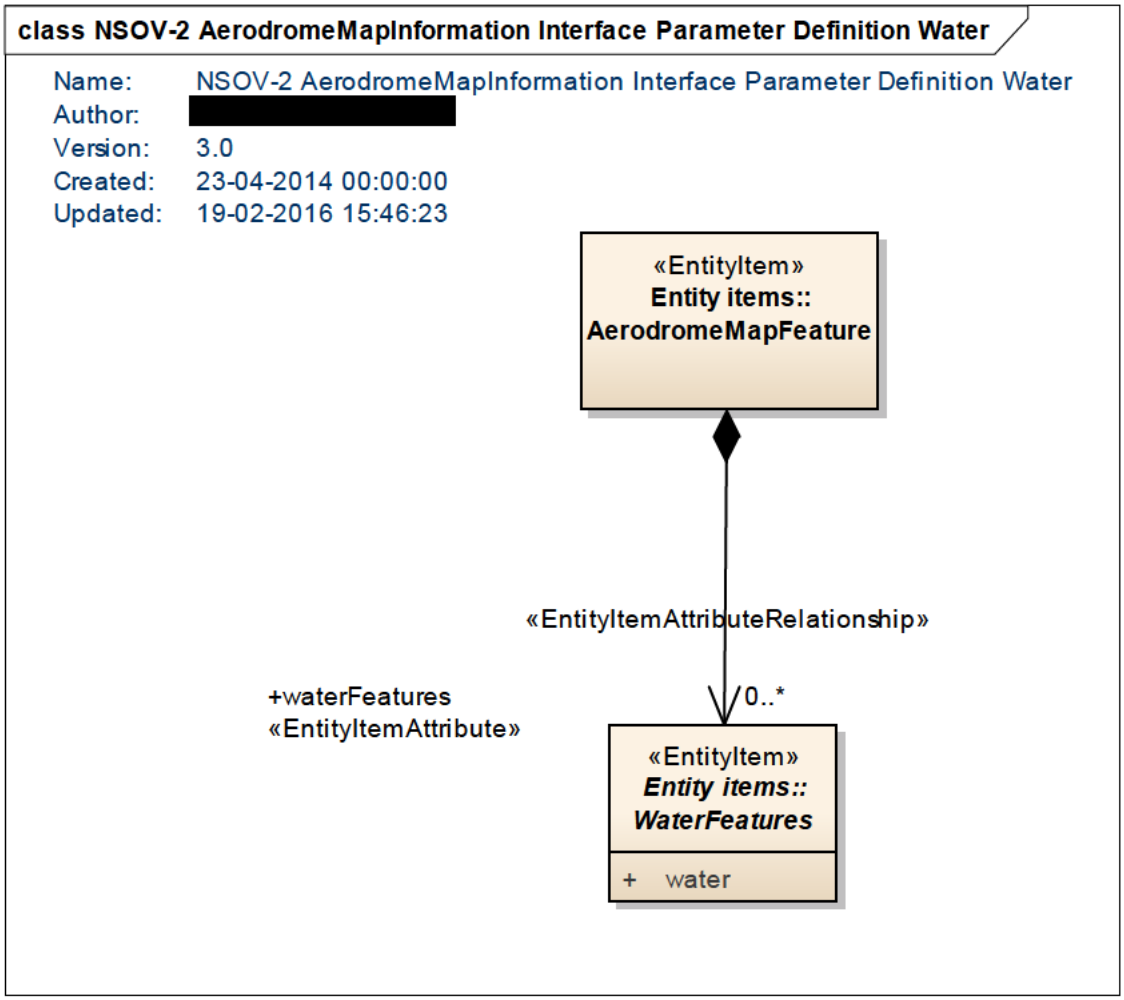

Figure 22: NSOV-2 AerodromeMapInformation Interface Parameter Definition Water Features

Element Name		Author		Notes
WaterFeatures		[redacted]		Abstract class used to group features related to water expanses around an aerodrome.
	Attribute Name	**Type**		**Notes**
	water			Water bodies close to the aerodrome movement zone.
	Tagged Value Name		**Value**	
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:WaterBody	

Table 25: Interface Parameter Definition WaterFeatures

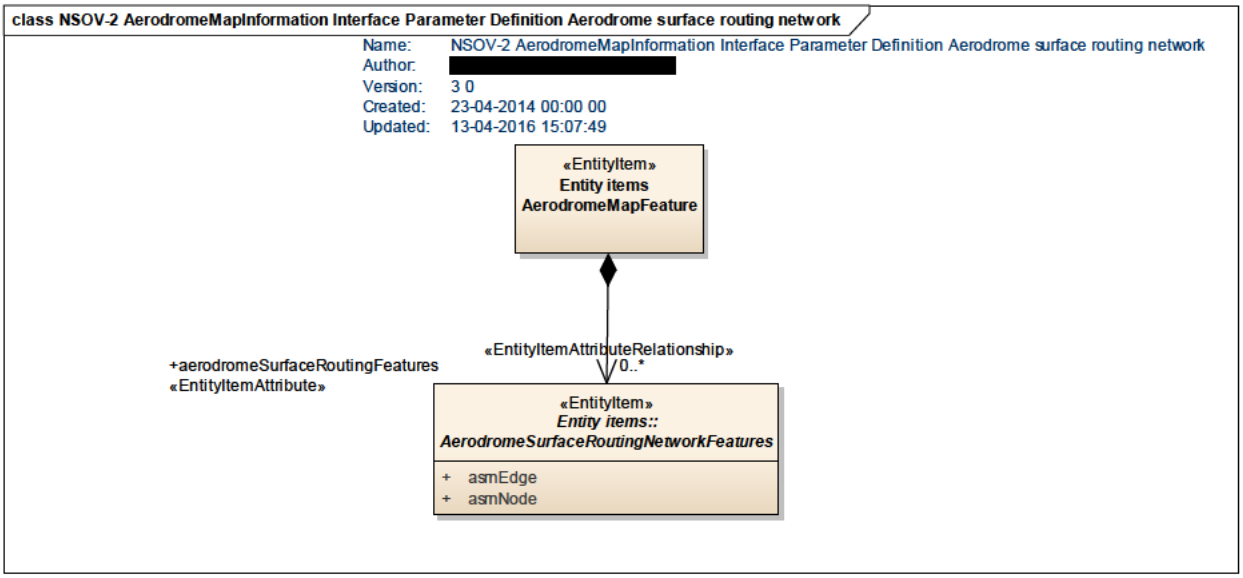

Figure 23: NSOV-2 AerodromeMapInformation Interface Parameter Definition AerodromeSurfaceRoutingNetwork Features

Element Name		Author		Notes
AerodromeSurfaceRoutingNetworkFeatures		[redacted]		Abstract class used to group features related to the available routing network used by taxiing aircraft (ASRN).
	Attribute Name	**Type**		**Notes**
	asrnEdge			A connection between two nodes in a graphic defining the Aerodrome Surface Routing Network.
	Tagged Value Name		**Value**	
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:AerodromeSurfaceRoutingNetworkEdge	
	Attribute Name	**Type**		**Notes**
	asrnNode			A vertex in a graphic defining the Aerodrome Surface Routing Network.
	Tagged Value Name		**Value**	
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje	

		ctFields:BaseInfrastructure:AerodromeInfrastructure:AerodromeSurfaceRoutingNetworkNode

Table 26: Interface Parameter Definition AerodromeSurfaceRoutingNetworkFeatures

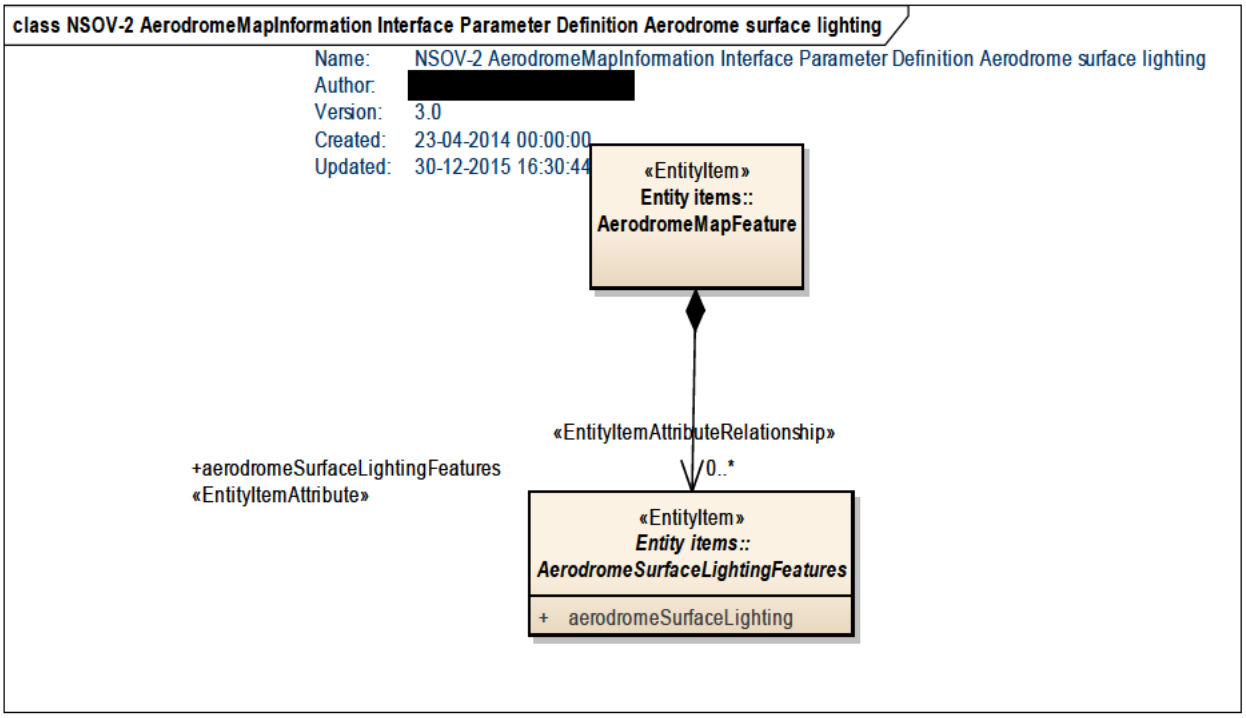

Figure 24: NSOV-2 AerodromeMapInformation Interface Parameter Definition AerodromeSurfaceLighting Features

Element Name			Author	Notes
AerodromeSurfaceLightingFeatures			[redacted]	Abstract class used to group features related to a the surface lighting at an aerodrome..
	Attribute Name	**Type**		**Notes**
	aerodromeSurfaceLighting			One or more light sources located on the ground and that provide visual assistance for air and ground navigation.
	Tagged Value Name	**Value**		
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:GroundLightSystem		

Table 27: Interface Parameter Definition AerodromeSurfaceLightingFeatures

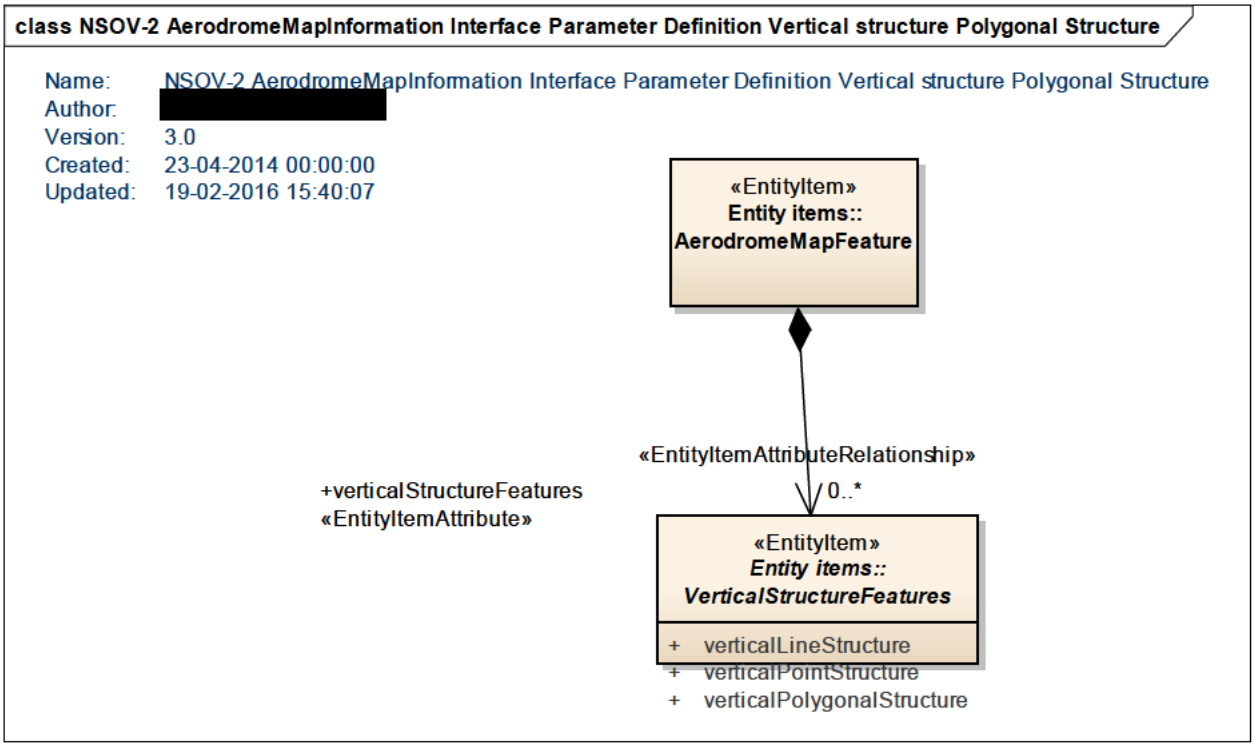

Figure 25: NSOV-2 AerodromeMapInformation Interface Parameter Definition VerticalStructure Features

Element Name	Author	Notes
VerticalStructureFeatures	[redacted]	Abstract class used to group features related to a set of vertical structures (buildings, towers etc) .

	Attribute Name	Type	Notes
	verticalLineStructure		Line structure of a defined vertical extent that is located within an area that extends from the edge(s) of the runway(s) to 90m from the runway centerline(s) and for all other parts of the aerodrome movement area(s) 50m from the edge(s) of the defined area(s).

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure@curveExtent
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure

	Attribute Name	Type	Notes
	verticalPointStructure		Point structure of a defined vertical extent that is located within an area that extends from the edge(s) of the runway(s) to 90m from the runway centerline(s) and for all other parts of the aerodrome movement area(s) 50m from the edge(s) of the defined area(s).

	Tagged Value Name	Value
	CLDMContextTrace	urn:x-

		ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure@position	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure	
	Attribute Name	**Type**	**Notes**
	verticalPolygonalStructure		Polygonal structure of a defined vertical extent that is located within an area that extends from the edge(s) of the runway(s) to 90m from the runway centerline(s) and for all other parts of the aerodrome movement area(s) 50m from the edge(s) of the defined area(s).
	Tagged Value Name	**Value**	
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure@surfaceExtent	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Common:Geospatial:VerticalStructure	

Table 28: Interface Parameter Definition VerticalStructureFeatures

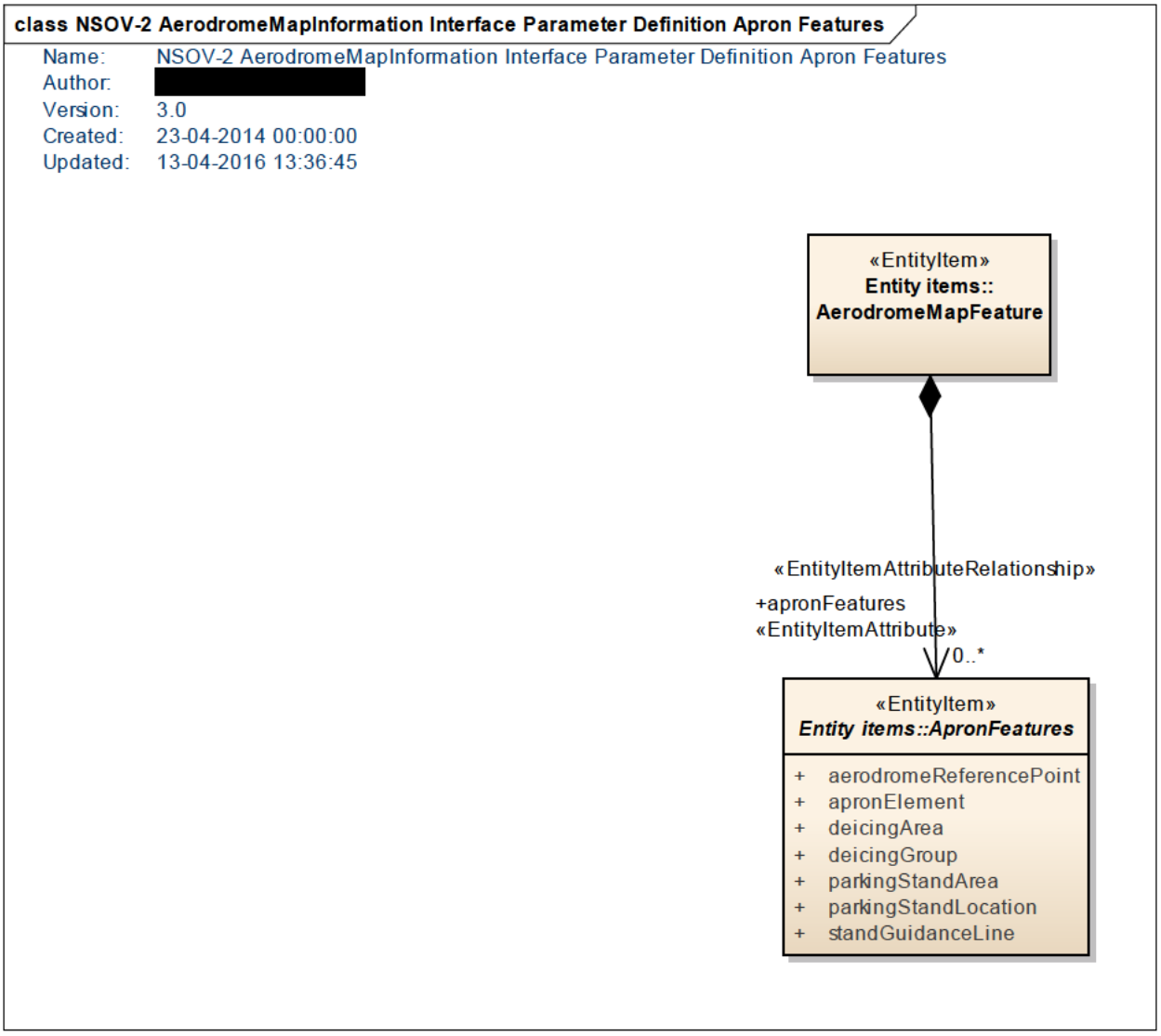

Figure 26: NSOV-2 AerodromeMapInformation Interface Parameter Definition Apron Features

Element Name			Author	Notes
ApronFeatures			[redacted]	Abstract class used to group features related to the apron of an aerodrome.
	Attribute Name	**Type**		**Notes**
	aerodromeReferencePoint			The designated geographical location of an aerodrome.
	Tagged Value Name	**Value**		
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Codelists:CodePointUsageType@AERODROME_REFERENCE_POINT		
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:SignificantPoint@infrastructurePointUsage		
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:AirspaceInfrastructurePoint:		

		SignificantPoint	
	Attribute Name	**Type**	**Notes**
	apronElement		Parts of a defined apron area.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ApronElement	
	Attribute Name	**Type**	**Notes**
	deicingArea		An area comprising an inner area for the parking of an aeroplane to receive de-icing / anti-icing treatment and an outer area for the manoeuvring of two or more mobile de-icing / anti-icing equipment.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:DeicingArea	
	Attribute Name	**Type**	**Notes**
	deicingGroup		A group of deicing areas.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:DeicingGroup	
	Attribute Name	**Type**	**Notes**
	parkingStandArea		A designated area on an apron intended to be used for parking an aircraft.
	Tagged Value Name	**Value**	
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeApronElementType@PARKING_STAND_AREA	
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ApronElement@type	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:ApronElement	
	Attribute Name	**Type**	**Notes**
	parkingStandLocation		A designated area on an apron intended to be used for parking an aircraft.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:AircraftStand	
	Attribute Name	**Type**	**Notes**
	standGuidanceLine		Guidance line on a designated area on an apron intended to be used for parking an aircraft.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Guidan	

		ceLine

Table 29: Interface Parameter Definition ApronFeatures

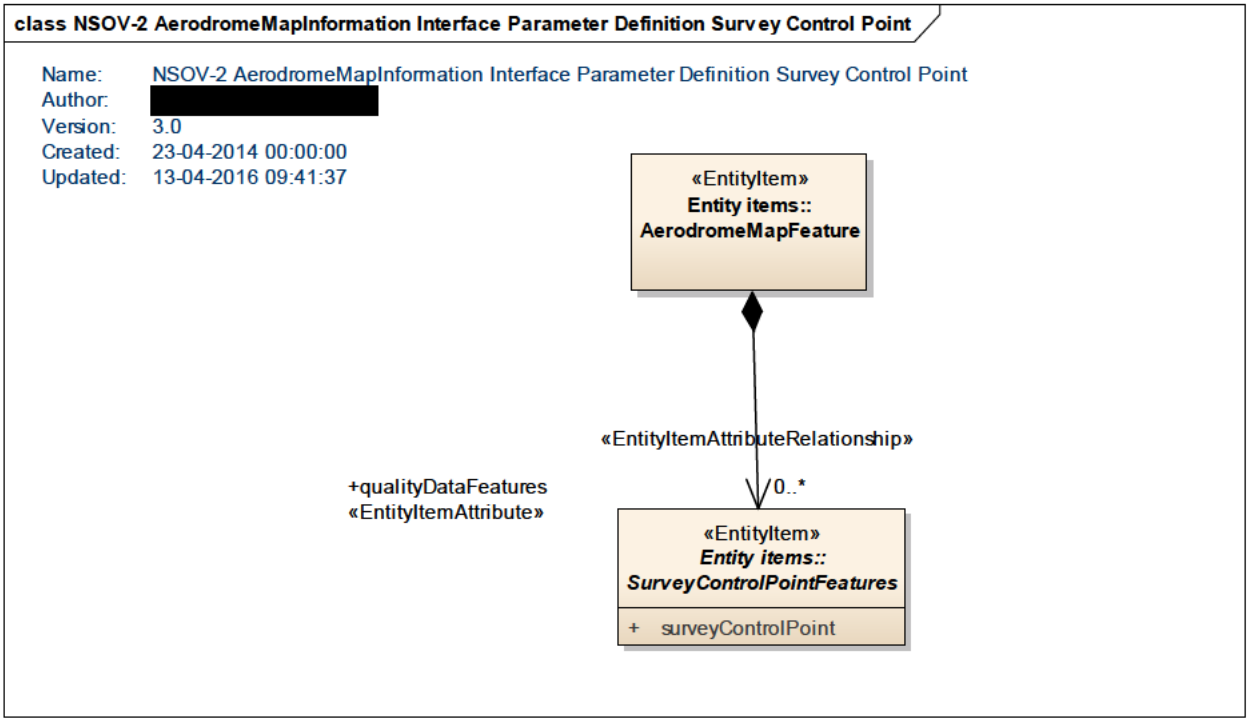

Figure 27: NSOV-2 AerodromeMapInformation Interface Parameter Definition SurveyControlPoint Features

Element Name		Author	Notes
SurveyControlPointFeatures			Abstract class used to group features related to a points used to survey the aerodrome and hence ensure data quality in a geospatial domain.
	Attribute Name	**Type**	**Notes**
	surveyControlPoint		The actual survey control point.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Aerodrome@surveyControlPoint	

Table 30: Interface Parameter Definition SurveyControlPointFeatures

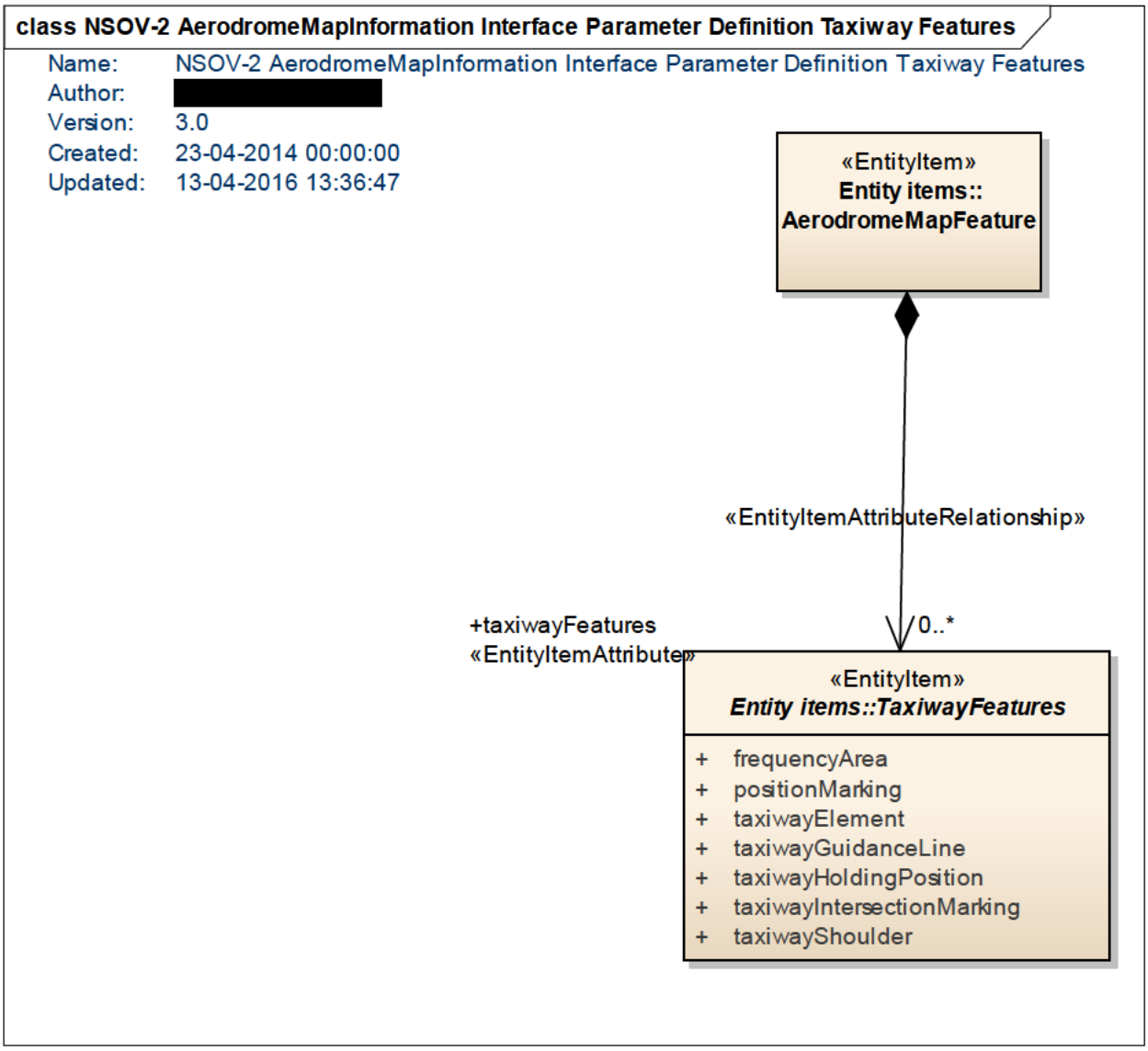

Figure 28: NSOV-2 AerodromeMapInformation Interface Parameter Definition Taxiway Features

Element Name			Author	Notes
TaxiwayFeatures			[redacted]	Abstract class used to group features related to an aerodrome's taxiways.
	Attribute Name	**Type**		**Notes**
	frequencyArea			A position at which taxiing aircraft and vehicles can be cleared to by the aerodrome control tower.
	Tagged Value Name		**Value**	
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:NavigationInfrastructure:RadioFrequencyArea	
	Attribute Name	**Type**		**Notes**
	positionMarking			A position at which taxiing aircraft and vehicles can be cleared to by the aerodrome control tower.
	Tagged Value Name		**Value**	

	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:PositionMarking

Attribute Name	Type	Notes
taxiwayElement		A portion of a taxiway.

Tagged Value Name	Value
CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeTaxiwayElementType@NORMAL
CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayElement@type
CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayElement

Attribute Name	Type	Notes
taxiwayGuidanceLine		A symbol or group of symbols displayed as the guidance line.

Tagged Value Name	Value
CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeGuidanceLineType@TAXIWAY_GUIDANCE_LINE
CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:GuidanceLine@type
CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:GuidanceLine

Attribute Name	Type	Notes
taxiwayHoldingPosition		A designated position at which taxiing aircraft and vehicles must stop and hold position unless otherwise authorized by the aerodrome control tower.

Tagged Value Name	Value
CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayHoldingPosition

Attribute Name	Type	Notes
taxiwayIntersectionMarking		A symbol or group of symbols displayed on the surface of the taxiway.

Tagged Value Name	Value
CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayIntersectionMarking

Attribute Name	Type	Notes
taxiwayShoulder		The shoulder or edge of the taxiway.

Tagged Value Name	Value
CLDMContextTrace	urn:x-

		ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:Codelists:CodeTaxiwayElementType@TAXIWAY_SHOULDER
	CLDMContextTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayElement@type
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:TaxiwayElement

Table 31: Interface Parameter Definition TaxiwayFeatures

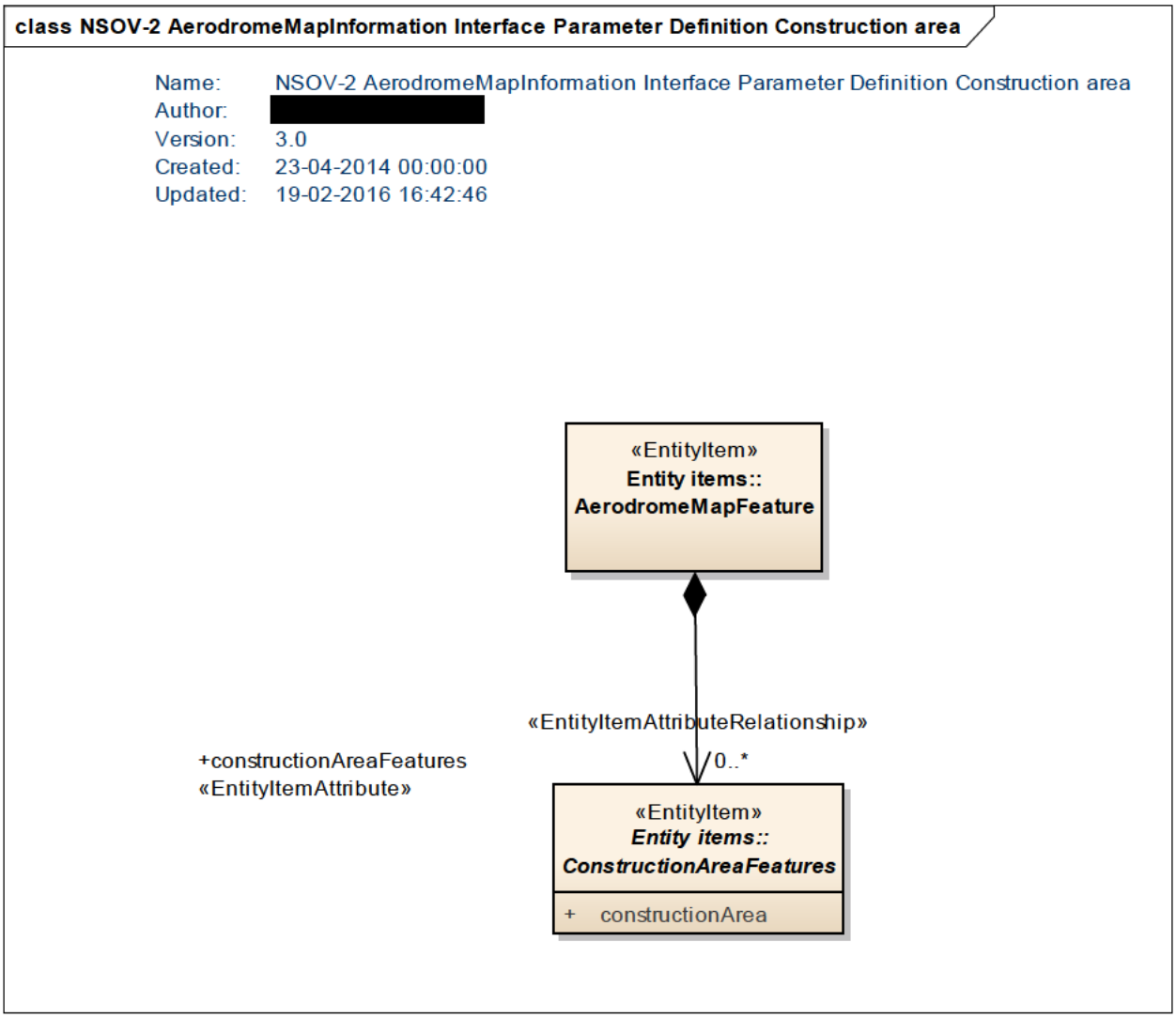

Figure 29: NSOV-2 AerodromeMapInformation Interface Parameter Definition ConstructionArea Features

Element Name	Author	Notes

ConstructionAreaFeatures			Abstract class used to group features related to any construction areas that may be sited at an aerodrome.
	Attribute Name	**Type**	**Notes**
	constructionArea		A part of an aerodrome in which maintenance or construction works are in progress.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:WorkArea	

Table 32: Interface Parameter Definition ConstructionAreaFeatures

5.2.1.4 Operation getFeaturesByICAOIdentifier

5.2.1.4.1 Operation Functionality

The user supplies the ICAO identifier of the airport to the operation which returns all the defined feature types associated with the aerodrome.

The operation is the same as selecting all feature types over the complete geospatial area defined for the airport. It returns the necessary features.

The proposal from 8.3.3 is every AMDB service provider will have a pre-defined filter matching the ICAO identifier of the airport being supported and that it will return all features defined for the airport matching the ICAO identifier.

5.2.1.4.2 Operation Parameters

The input parameter is called FilterAllByICAOIdentifier, it supplies a single airport ICAO identifier.

The output returned by the operation is called AMDBFeatureTypesDataSet and is also defined fully in[7].

The input parameter structure is shown below:

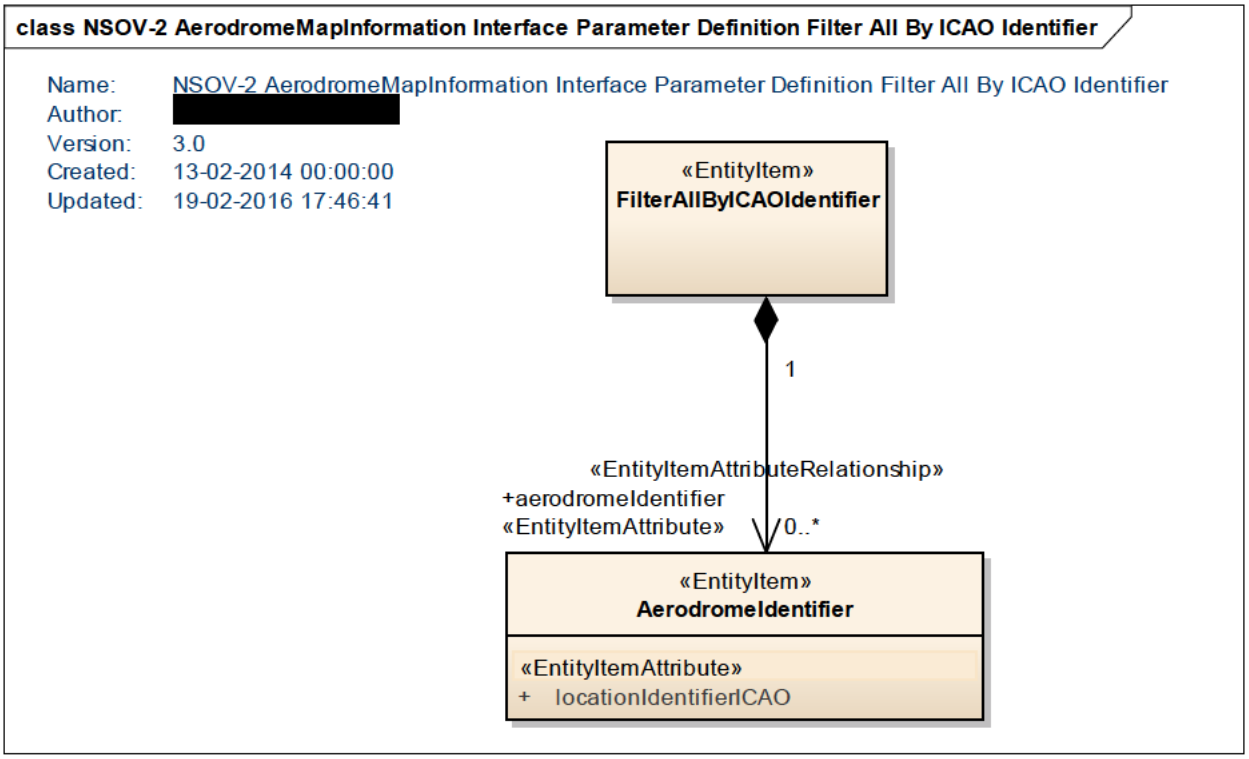

Figure 30: NSOV-2 AerodromeMapInformation Interface Parameter Definition FilterAllByICAOIdentifier

Element Name	Author	Notes
FilterAllByICAOIdentifier	[redacted]	A filter to select by ICAO identifier for an aerodrome (like EDDF, EGLL etc)

Table 33: Interface Parameter Definition FilterAllByICAOIdentifier

Element Name		Author	Notes
AerodromeIdentifier		[redacted]	Class to supply attributes used to identify the aerodrome.
	Attribute Name	**Type**	**Notes**
	locationIdentifierICAO		The ICAO identifier of the specified aerodrome, e.g. EGLL, EDFF.
	Tagged Value Name	**Value**	
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:BaseInfrastructure:AerodromeInfrastructure:Aerodrome:Aerodrome@locationIndicatorICAO	

Table 34: Interface Parameter Definition AerodromeIdentifier

The output parameter structure is shown below:

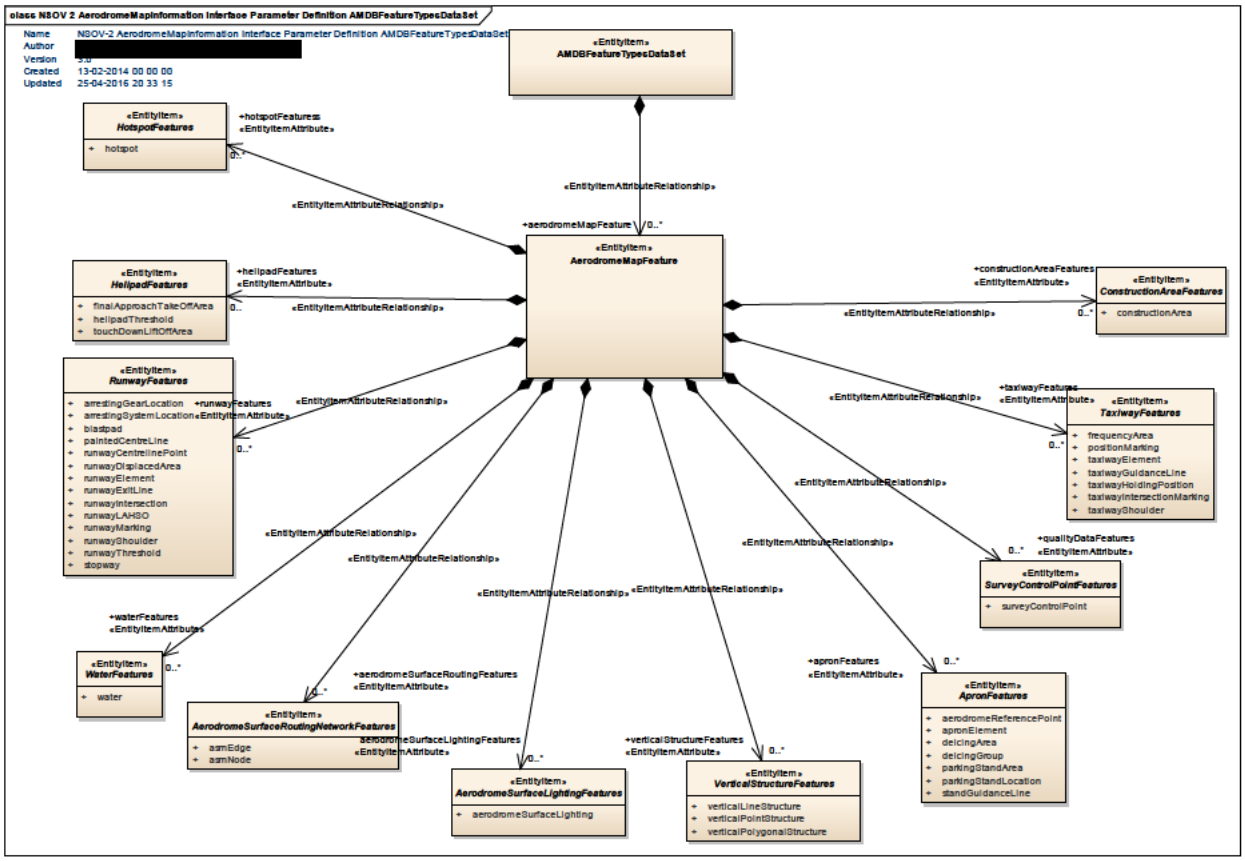

Figure 31: NSOV-2 AerodromeMapInformation Interface Parameter Definition AMDBFeatureTypesDataSet

5.2.1.5 Operation listStoredQueries

5.2.1.5.1 Operation Functionality

The user makes a simple request for the service to list all its stored queries, which are returned to the user in the response.

5.2.1.5.2 Operation Parameters

The input parameter is called ListStoredQueriesRequest is defined fully in[7]. it supplies set of simple parameters requesting the set of pre-defined queries..

The output returned by the operation is called ListStoredQueriesResponse and is also defined fully in[7], it supplies details about each pre-defined query the service interface supports. The set should include a query for each supported airport named with the ICAO identifier of the airport.

The input .parameter structure is shown below:

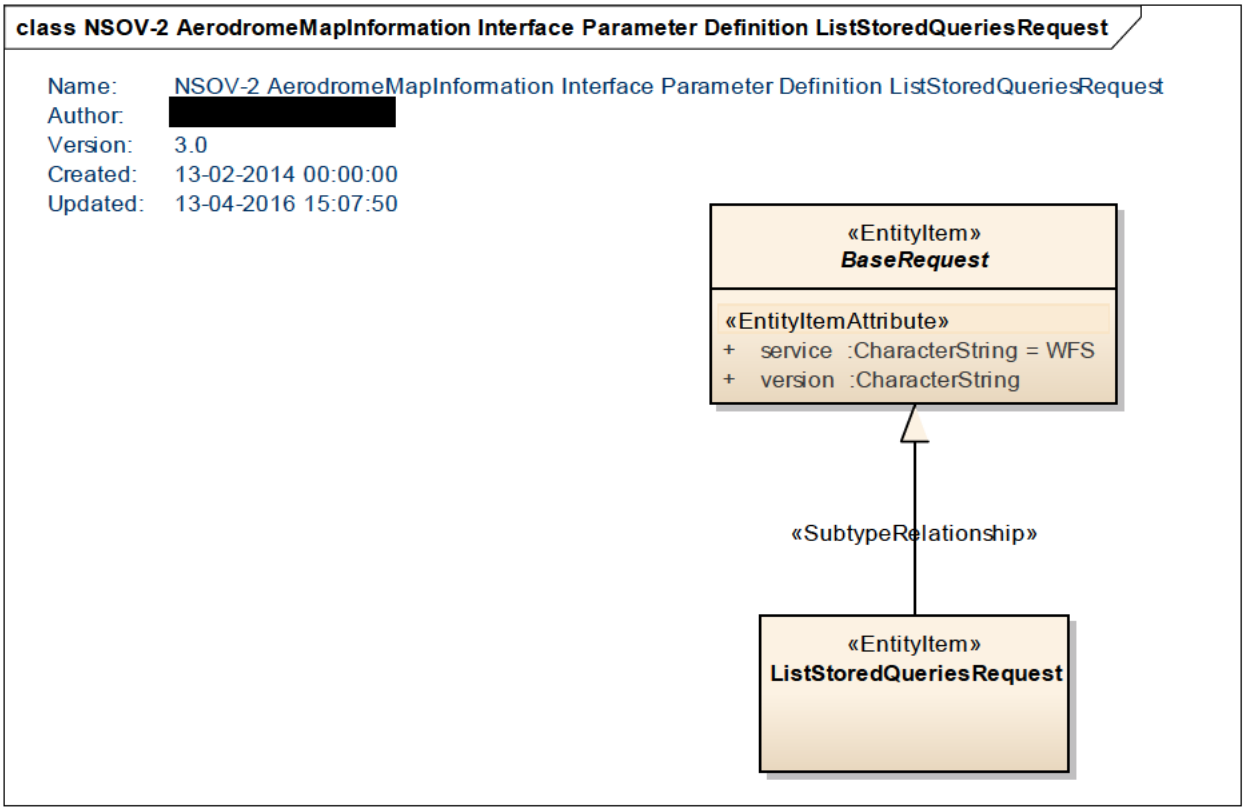

Figure 32: NSOV-2 AerodromeMapInformation Interface Parameter Definition ListStoredQueriesRequest

Mapping of this entityitem is not required as it is defined in the standard ISO19142.

The output parameter structure is shown in below:

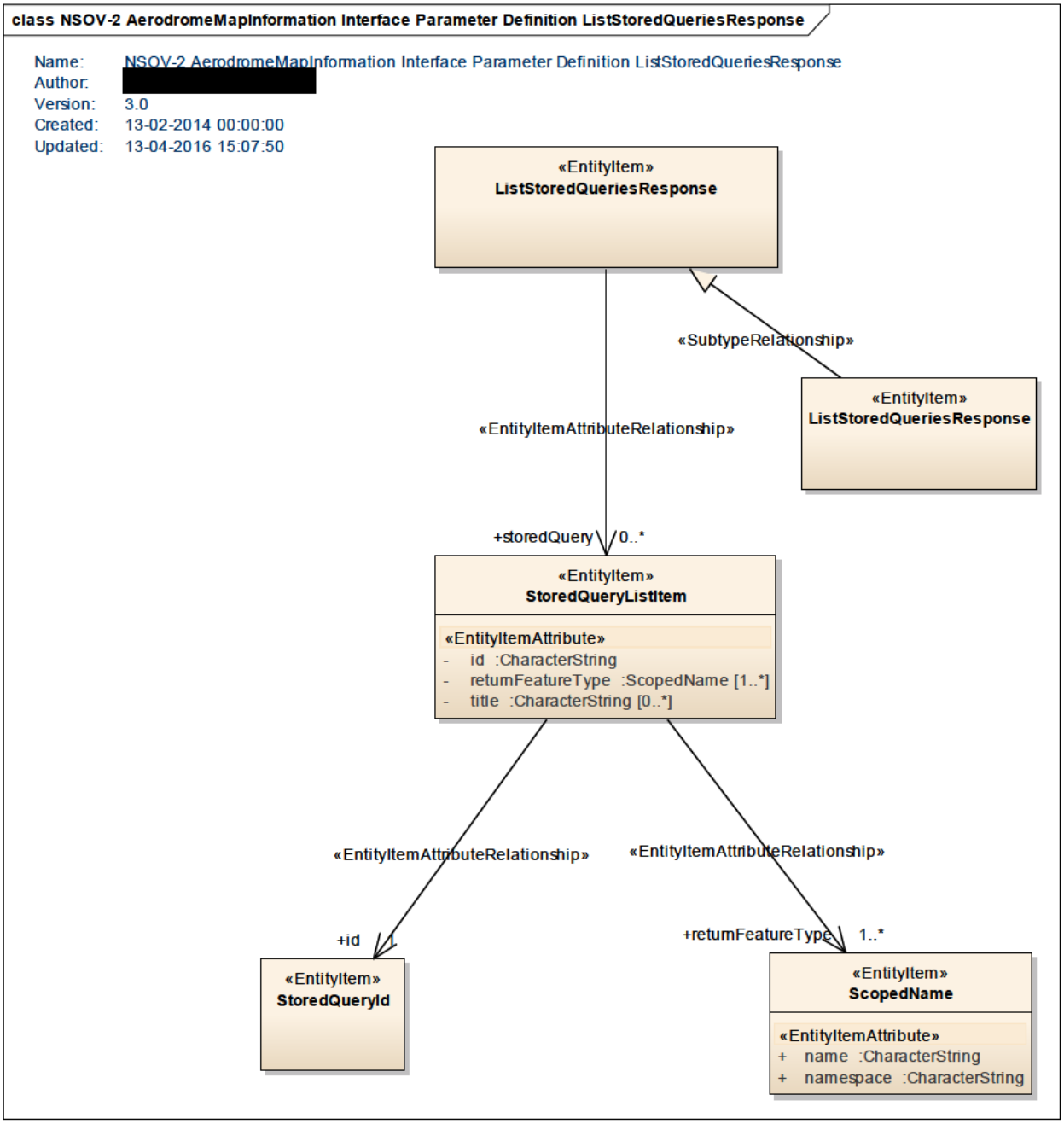

Figure 33: NSOV-2 AerodromeMapInformation Interface Parameter Definition ListStoredQueriesResponse

Mapping of this entityitem is not required as it is defined in the standard ISO19142.

6 Service dynamic behaviour

6.1 Service Interface AMISFeatureInterface

The requests and possible responses to those requests are shown in Figure 35.

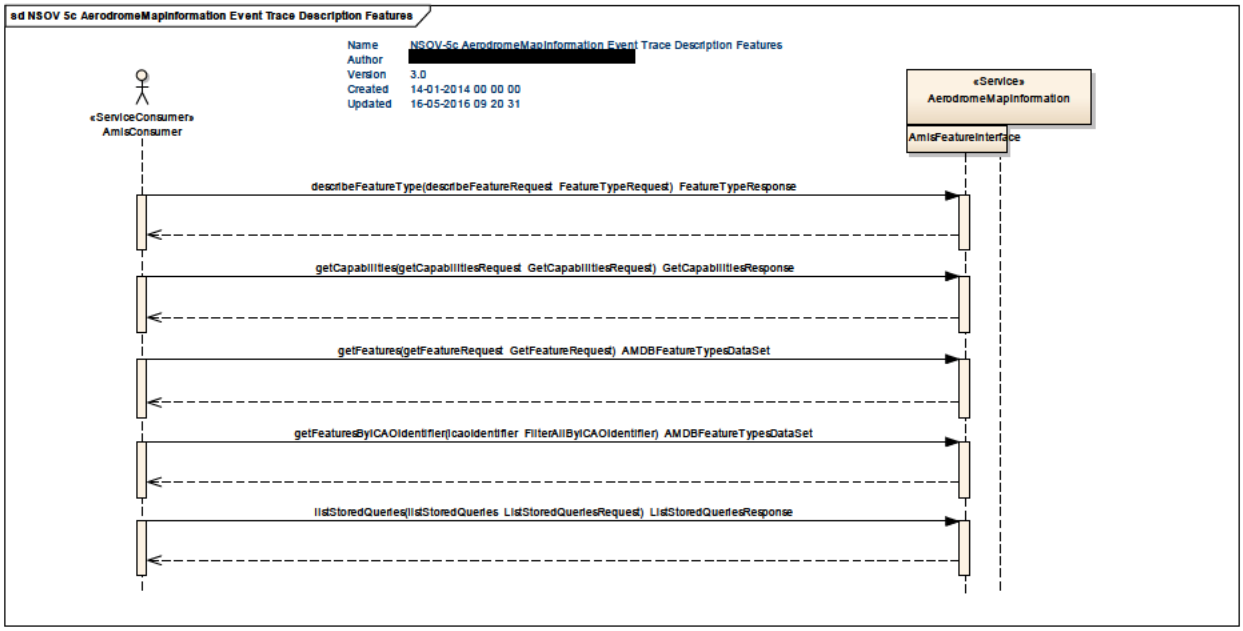

Figure 34: NSOV-5c AerodromeMapInformation Event Trace Description - Features

6.2 Service Interface AMISMapInterface

The requests and possible responses to those requests are shown in Figure 35.

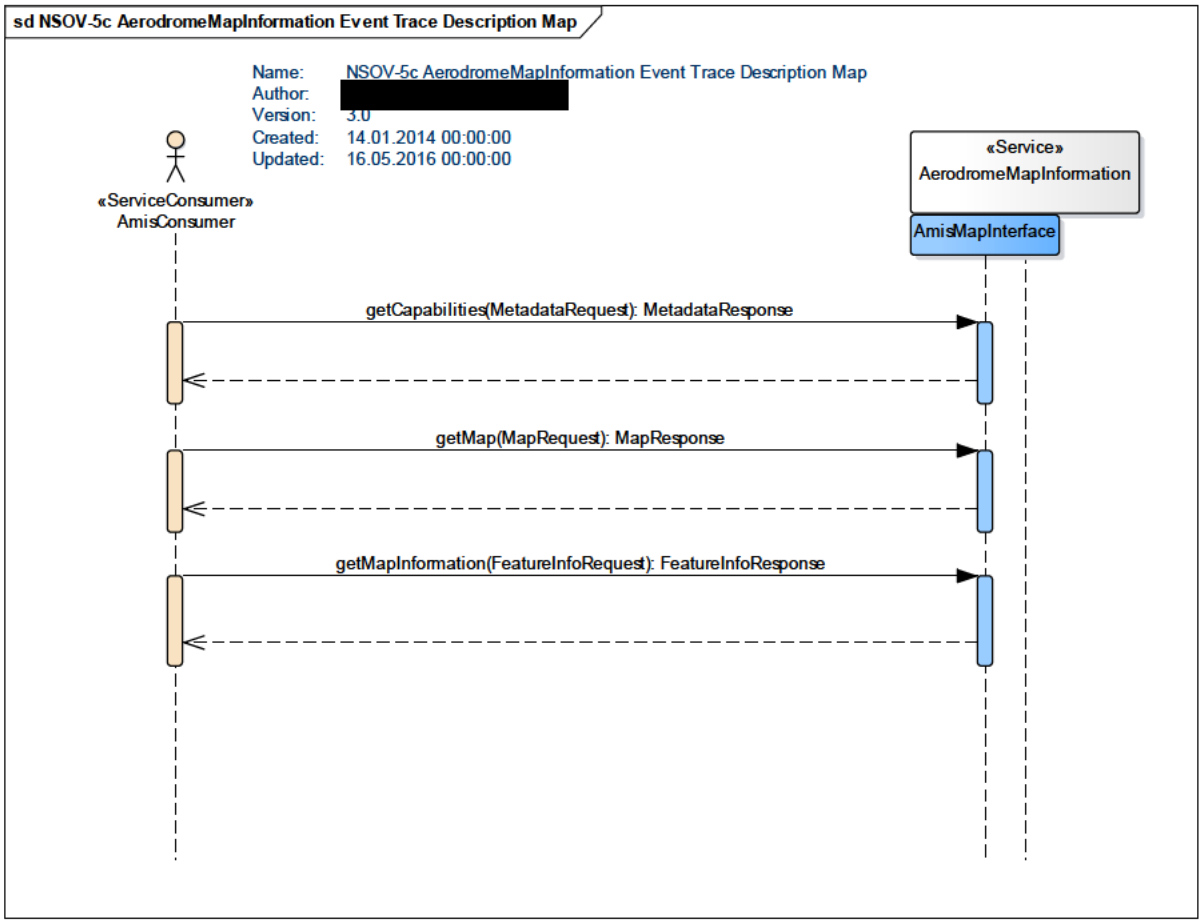

Figure 35: NSOV-5c AerodromeMapInformation Event Trace Description - Map

7 Service provisioning (optional)

The service is provided by an AMDB data provider which might be an AIS provider, a commercial datahouse provider, etc.

The consumer of the service could be airport systems related to displaying the information for the airside ground controllers, vehicle display, aircraft taxiing operations and ATC controllers. It may also be consumed by other airport management systems, Airline Operations Centres, pilot briefing and other airport stakeholders consuming airport layout maps.

It could also be used for commercial Data Integrators / Data houses as input for refinement to proprietary formats such as ARINC 816.

8 Validation and Verification

8.1 Verification

The developed Aerodrome Map Information Service is an access service providing different type of users AMDB maps or specific AMDB feature types based on filtering. Fast information distribution and retrieval are key elements together with service modelling and definitions according to Enterprise Architecture and SOA principles. In addition to SESAR related requirements, industry standardization activities within EUROCAE/RTCA throughout over the past 10 years have defined user requirements as well as exchange standards for aeronautical information data, namely the EUROCAE ED-99C [7] document which mentions user requirements for aerodrome mapping information and the EUROCAE ED-119B [8] document which describes the interchange standards for terrain, obstacle, and aerodrome mapping data. ..“ In contrast to current approaches, SESARs ATM Information Reference Model approach covers this by extending AIXM 5.1 to cover the ED-99C [7] and ED-119B [8] standards. Identified operations of the service aim to fulfil information exchange requirements by accessing a complete AMDB over a certain airport, specific features of an AMDB, based on multiple filtering capabilities, pre-styled geo-referenced AMDB graphics (bitmap images) and a generic publish/subscribe service. The developed approach clearly proved the harmonization of existing concepts and ensures interoperability resulting in reduced data processing effort.

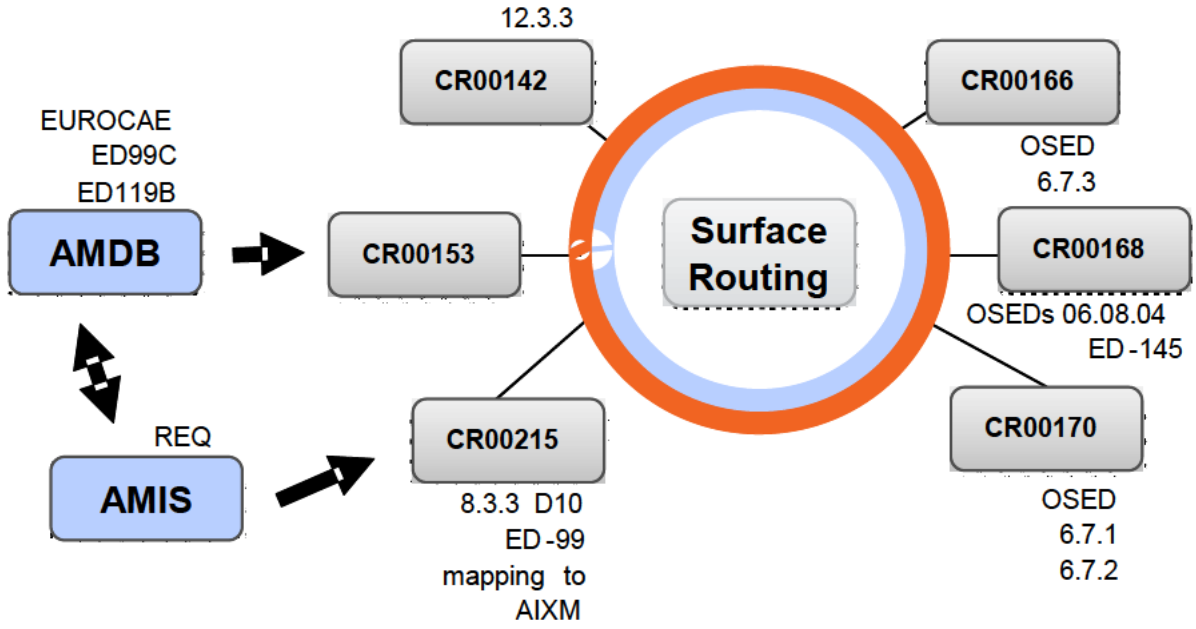

Figure 36: AMIS Relation to the Surface Routing Theme

Verification performed according to the ISRM Rulebook (Ref [26]) following the ISRM Verification Guidelines (Ref[20])]. This includes use of verification scripts. Verification is partly automatic, partly semi-automatic and partly manual.

8.1.1 Verification Results

The verification reports for the service can be found in the Verification Reports directory located in the D65 delivery package:
Designed_Services_-_AerodromeMapInformationService.xls
Designed_Services_-_AerodromeMapInformationService_Common.xls
Based on the results in the verification reports the service has been successfully verified.

8.2 Validation

The AMIS service is part of the services used in EXE-462, organised by Frequentis. The exercise included AIS and MET services, provision via Ground-Ground SWIM communication for creation of electronic PIB for consumption preflight.

The AccessAMDBMap service was used as the background source map of AMDB-data in the baseline data chain provision. The baseline AMDB map data was then used as background data on which temporal Information Updates (e.g. digital NOTAMs) was overlaid.

Figure 37: Example of NOTAM overlaid AMDB-Data (ESSA Stockholm Arlanda)

Figure 38: Example of NOTAM overlaid AMDB-Data (ESSB Stockholm Bromma)

9 References

Name	Version	Document ID / Location
[1] FAA Web Service Description Document	2008-16-10	http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/atc_comms_services/swim/documentation/media/briefings/WSDD%20FPS%20EXAMPLE%2008-16-10.pdf
[2] NATO Architecture Framework	V4.0	http://nafdocs.org/
[3] SoaML	1.0 Beta 09-04-01	http://www.omg.org/spec/SoaML/
[4] WP8 Internal workflow including modelling artefacts	00.00.22	08.00
[5] Working Methods on Services (2nd edition) former D35	00.03.00	B.04.03 D46
[6] ADD for Step 1	00.01.04	B.04.03 D32
[7] EUROCAE/RTCA, ED-99C - User Requirements for Aerodrome Mapping Information	C	http://www.eurocae.net
[8] EUROCAE/RTCA, ED-119B - Interchange Standards For Terrain, Obstacle, And Aerodrome Mapping Data	B	http://www.eurocae.net
[9] Updated OSED for "Alerts for Vehicle Drivers" following V2 trials	00.01.02	06.07.01 D39
[10] Preliminary OSED for "Traffic Alerts for pilots"	00.01.03	06.07.01 D47
[11] Updated SPR	00.01.00	06.07.02 D74
[12] Updated OSED	00.01.00	06.07.02 D73
[13] OSED for Step 2	00.07.00	13.02.02 D10
[14] ED-99 mapping to AIXM (Eurocontrol report)	0.5	08.03.03 Fast track 6
[15] evolution of ED99	N/A	08.03.03 Fast track 6
[16] Database Definition & requirements at airborne level – AIS and DataChain	00.00.01	09.31 D49

Name	Version	Document ID / Location
[17] Service Identification Document for the Aerodrome Map Information Service (first SID incl. all 3 services)	00.01.00	08.03.03 D010-002
[18] ISRM Modelling Guidelines	00.07.00	08.03.10 D44
[19] ISRM Tooling Guidelines	00.07.00	08.03.10 D44
[20] ISRM Verification Guidelines	00.07.00	08.03.10 D44
[21] 08.03.03 Internal list of IER for Aerodrome Map	00.01.01	08.03.03 D10
[22] ISRM Service Portfolio	00.08.01	08.03.10 D65
[23] ISRM Foundation Rulebook	00.07.00	08.03.10 D44
[24] B.04.03 FT6 AMIS Service Allocation and Evolution Document	00.01.00	B04.03
[25] Step 1 OSED - Iteration 3	01.00.00	05.06.01 D74

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