European ATM Service Description for the METHazardEnrouteForecast Service

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Abstract

The METHazardEnrouteForecast service defines an information service for exchanging Forecasts and Nowcasts of significant weather phenomena. The service is realised in the publish/subscribe message exchange pattern and to this end defines subscribe, unsubscribe and publish operations. The subscription mechanism additionally allows for fine-grained filtering.

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Rational for rejection

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Intellectual Property Rights (foreground)

This deliverable consists of SJU foreground.

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Executive summary

The METHazardEnrouteForecast service addresses the delivery of information on forecast significant weather phenomena for air traffic. Interested consumers can subscribe to the service and will then receive publication messages when their subscribed to information changes.

The subscription mechanism implements a filter, consumers can specify for which airspaces and for what kind of weather conditions they want to receive updates. Consumers also have the same level of control for unsubscribing.

This service offers two service levels. They differ in aspects of safety, response time and availability and allow a provider to differentiate between the providing of Nowcasts and Forecasts of significant weather phenomena.

1   Introduction

1.1 Purpose of the document

This document intends to provide an overview of the described Service and its components complementary to the formal Service description as modelled in the ISRM. The service will be part of the Service Portfolio where all services available and planned to be available are presented at a high level.

Additionally this document supports the configuration management process by providing well-defined baselines.

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

Step 1 OSED by P07.06.01[11] and the INTEROP developed by P11.02.01 [10]

1.4 Glossary of terms

N/A

1.5 Acronyms and Terminology

1.5.1 Acronyms

Term	Definition
4DWxCube	4D Weather Cube
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
ISRM	Information Service Reference Model
MG	ISRM Modelling Guidelines
NAF	NATO Architecture Framework

Term	Definition
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
SESAR Programme	The programme which defines the Research and Development activities and Projects for the SJU.
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SJU Work Programme	The programme which addresses all activities of the SESAR Joint Undertaking Agency.
SoaML	Service Oriented Architecture Modelling Language
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 [8]
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 [8]
Node	A logical entity that performs Activities. Note: nodes are specified independently of any physical realisation.	EATMA Guidance Material [8]
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	EATMA Guidance Material [8]

Term	Definition	Source
	written processes and procedures.	
Service function	A type of activity describing the functionality of a Service.	EATMA Guidance Material [8]
Service interface	The mechanism by which a service communicates	EATMA Guidance Material [8]

2   Service identification

Name	METHazardEnrouteForecast
ID	{AC8C4678-3C7B-4a7b-A915-BDC40334D6CE}
Version	2.0
Keywords	Nowcast, Forecast, MET, Hazard
Architect(s)	███████████ NORACON

Lifecycle status	Date	References
Identified	21/04/2015	See reference [12]
Allocated	13/05/2015	See reference [13]
Designed	31/05/2016	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

Today's European ATM Operations do not yet fully integrate weather information in a consistent and collaborative way.

The different local planning processes at both airports, ACCs and eventually FABs do not use the same weather information and do not share in a consistent way the different processes that may lead to ATM measures in the event of certain weather phenomena affecting their area of responsibility. The Regional Network Manager also uses its own processes and data to evaluate the potential impact of forecasted weather phenomena in points of the European Network eventually influencing the Network beyond their specific local impact.

In the future, the Network Operation Planning process will be improved through the use of meteorological network relevant data provided by the 4DWxCube used as the basis to launch the necessary DCB processes that in a collaborative way agree on the Network Operations Plan that achieves the best feasible and performing Network for a given day "D".

Two types of weather conditions can be differentiated, nominal and adverse (degraded) or significant weather conditions. The Network Manager is only interested in the latter.

The significant weather may have a negative impact on airport and/or airspace performance unless a proper response is organized (i.e., The selection of an airport operating mode to respond to given degraded conditions and eventually the use of additional airport resources such as de-icing/anti-icing services or the selection of mitigation ATFM measures to counteract on the impact on airspace). This would be the case when visibility is poor and/or in case of freezing conditions, precipitations, at airports or convective weather at airspaces, etc.

The 4DWxCube significant weather information (forecast) permits the Network to anticipate and prepare effective mitigations on potential reduction of capabilities that can have an impact in the network performance with or without causing a severe disruption.

The horizon of the forecast is normally as from D-1 but it is meant to be extended to D-3 in the future.

The anticipation and preparation of mitigations for potential reduction of capabilities in one or more parts of the network will lead to a NOP produced at D-1 closer to the actual execution of the plan. With this, the ATM community will increase their trust in the NOP and improve the Network performance. Forecast closer to the target time (on D day) provide more confident predictions that improve the NOP and the subsequent actions and decisions.

The 4DWxCube should also provide the actual significant weather (observations) that will be used in post-analysis. Comparison between the forecast and the subsequent actions and decisions taken in NOP versus the actual weather and actual network situation will be analyzed, lessons learnt derived/knowledge base enriched to improve weather management procedures.

The METHazardEnrouteForecast / Observation are a first set of services aiming at demonstrating the increase in ATM performance through the efficient and coordinated use of weather information within the framework of EXE-13.02.03-VP-700.

3.1 Information Exchange Requirements

The service identification is based on IERs from two documents. The P11.02.01 INTEROP [10] for general MET requirements and for NOP MET requirements the P07.06.01 OSED [11]. Figure 1 shows the tracing of the service to the relevant requirements.
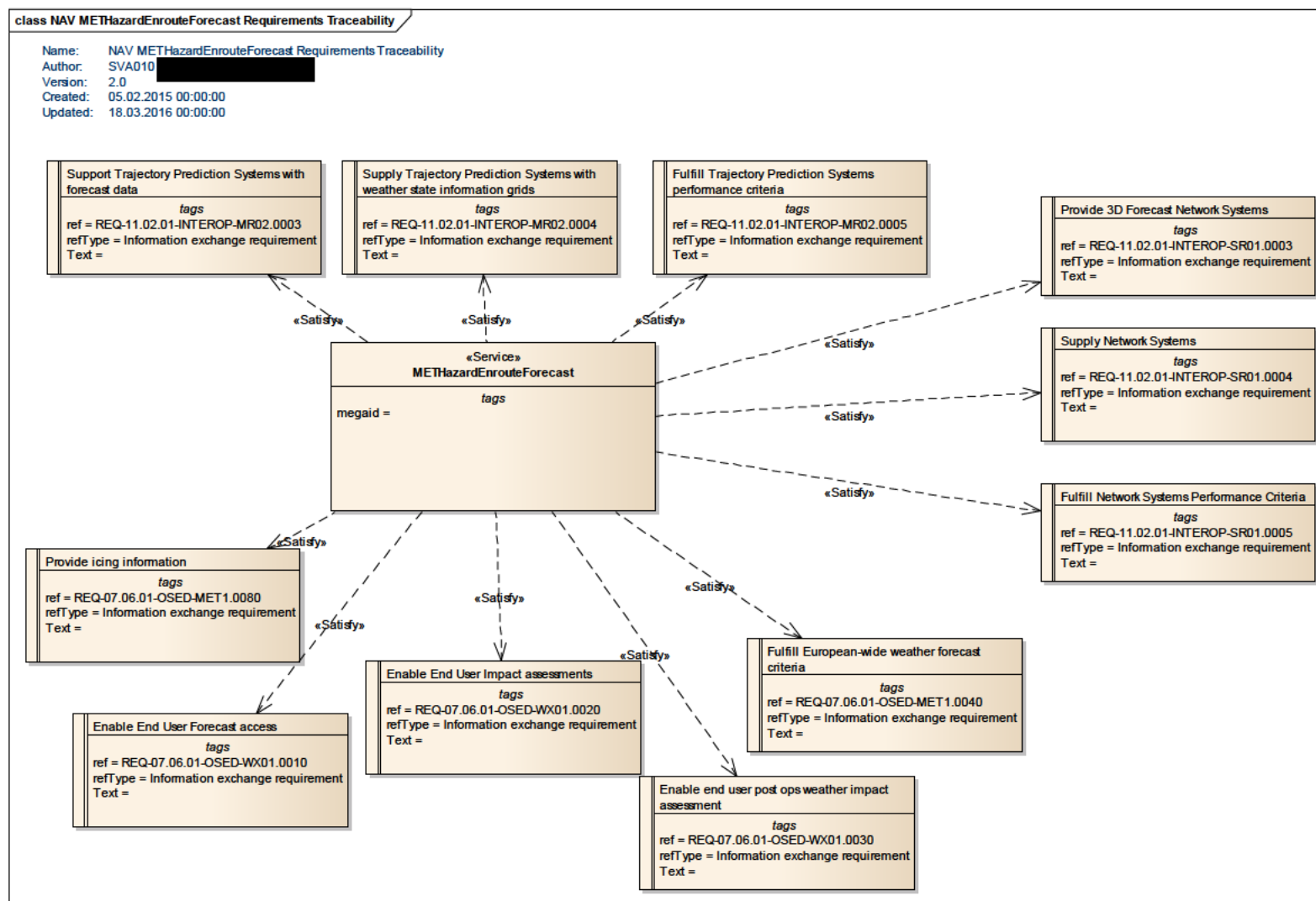
Figure 1: NAV METHazardEnrouteForecast Requirements Traceability IER diagram

Element Name	Author	Notes
Fulfill Network Systems Performance Criteria	08.03.10 ███████	The MET dataset supporting Network short-term planning operations shall be delivered with the following transaction performances : - a maximum delivery time to the customer of 3 to 15 mn (tbc) -a maximum miss rate of 1 per week (tbc)

	Element Tagged Value Name	Value
	ref	REQ-11.02.01-INTEROP-SR01.0005
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Fulfill Trajectory Prediction Systems performance criteria	08.03.10 ███████	The MET dataset supporting NM Trajectory Prediction Systems shall be delivered with the following transaction performances: - a maximum delivery time to the customer of 10 to 30 mn (tbc) -a maximum miss rate of 1 per week (tbc)

	Element Tagged Value Name	Value
	ref	REQ-11.02.01-INTEROP-MR02.0005
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Provide 3D Forecast Network Systems	08.03.10 ███████	The MET dataset supporting Network short-term planning operations shall be delivered for a selected time forecast horizon (between 1 and 24 h), for a selected geographical area (described by a Lat/Long/FLmin/FLmax volume or corridor along a 4D trajectory), and for a list of preferred Airports within the selected area (designated by their ICAO or IATA codes or by a geographical lat/long domain or corridor along a 4D trajectory)

	Element Tagged Value Name	Value
	ref	REQ-11.02.01-INTEROP-SR01.0003
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Supply Network Systems	08.03.10 ███████	The MET dataset supporting Network short-term planning operations shall consist of : - En Route OPMET data (SIGMET, AIRMET, VAA, TCA) - Aerodrome OPMET data (TAF, TREND) - weather state parameters grids aloft ST forecast data - SIGWX, Turb/Conv/Icing…ST forecast data or a subset of the above.

	Element Tagged Value Name	Value

	ref	REQ-11.02.01-INTEROP-SR01.0004
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Supply Trajectory Prediction Systems with weather state information grids	08.03.10 ███████	The MET dataset supporting NM Trajectory Prediction Systems shall consist of weather state information grids MT forecast data
	Element Tagged Value Name	**Value**
	ref	REQ-11.02.01-INTEROP-MR02.0004
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Support Trajectory Prediction Systems with forecast data	08.03.10 ███████	The MET dataset supporting NM Trajectory Prediction Systems shall be delivered for a selected time forecast horizon (between 12h and 7 days) and for a selected geographical area (described by a volume - Lat/Long polygon, FLmin/FLmax - or a corridor along a 4D trajectory)
	Element Tagged Value Name	**Value**
	ref	REQ-11.02.01-INTEROP-MR02.0003
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Enable End User Forecast access	08.03.10 ███████	It shall be possible for the end user to access up-to-date network weather forecasts (up to D-10) in the specified geographical areas (regional/sub-regional/local) or airports (e.g. snow situation), with variable granularity levels depending on the time horizon.
	Element Tagged Value Name	**Value**
	ref	REQ-07.06.01-OSED-WX01.0010
	refType	Information exchange requirement
	Text	

Element Name	Author	Notes
Enable End User Impact assessments	08.03.10 ███████	It shall be possible for the end user to access up-to-date weather impact assessments (regional/sub-regional/local) related to the specified geographical area (regional/sub-regional/local) or airports, and the planned mitigation strategies/tactics.
	Element Tagged Value Name	**Value**
	ref	REQ-07.06.01-OSED-WX01.0020
	refType	Information exchange requirement
	Text	

Element Name		Author	Notes
Enable end user post ops weather impact assessment		08.03.10 ███████	It shall be possible for the end user to identify (post-ops) the weather phenomenon impacting network operations when reporting weather induced delays. The reported phenomena shall include at a minimum delays due to TS /CB squall lines, CAT, wind, precipitation, and reduced visibility.
	Element Tagged Value Name		**Value**
	ref		REQ-07.06.01-OSED-WX01.0030
	refType		Information exchange requirement
	Text		

Element Name		Author	Notes
Fulfill European-wide weather forecast criteria		08.03.10 ███████	A D-1 European-wide weather forecast is required in the NOP, depicting at ACC/sector level: - forecast of strong high and low pressure systems (high/low pressure systems, wind, snow, jet stream, temperature change data), - active fronts (precipitation and CB and thunderstorm activity in the summer) and - events such as ash cloud trajectories.
	Element Tagged Value Name		**Value**
	ref		REQ-07.06.01-OSED-MET1.0040
	refType		Information exchange requirement
	Text		

Element Name		Author	Notes
Provide icing information		08.03.10 ███████	Icing information (forecasts and observations) at flight levels as defined in Amendment 76 to ICAO Annex 3 (valid in November 2013) is required in the NOP
	Element Tagged Value Name		**Value**
	ref		REQ-07.06.01-OSED-MET1.0080
	refType		Information exchange requirement
	Text		

Table 1: Requirements tracing

3.2 Other Requirements

3.2.1 Non-Functional Requirements

Some of IERs from the P11.02.01 INTEROP [10] contain information regarding non-functional requirements of the respective information exchange. No proper NFR have yet been identified by operational projects.

3.2.2 Nodes

Figure 2 below shows the nodes consuming and providing the service.
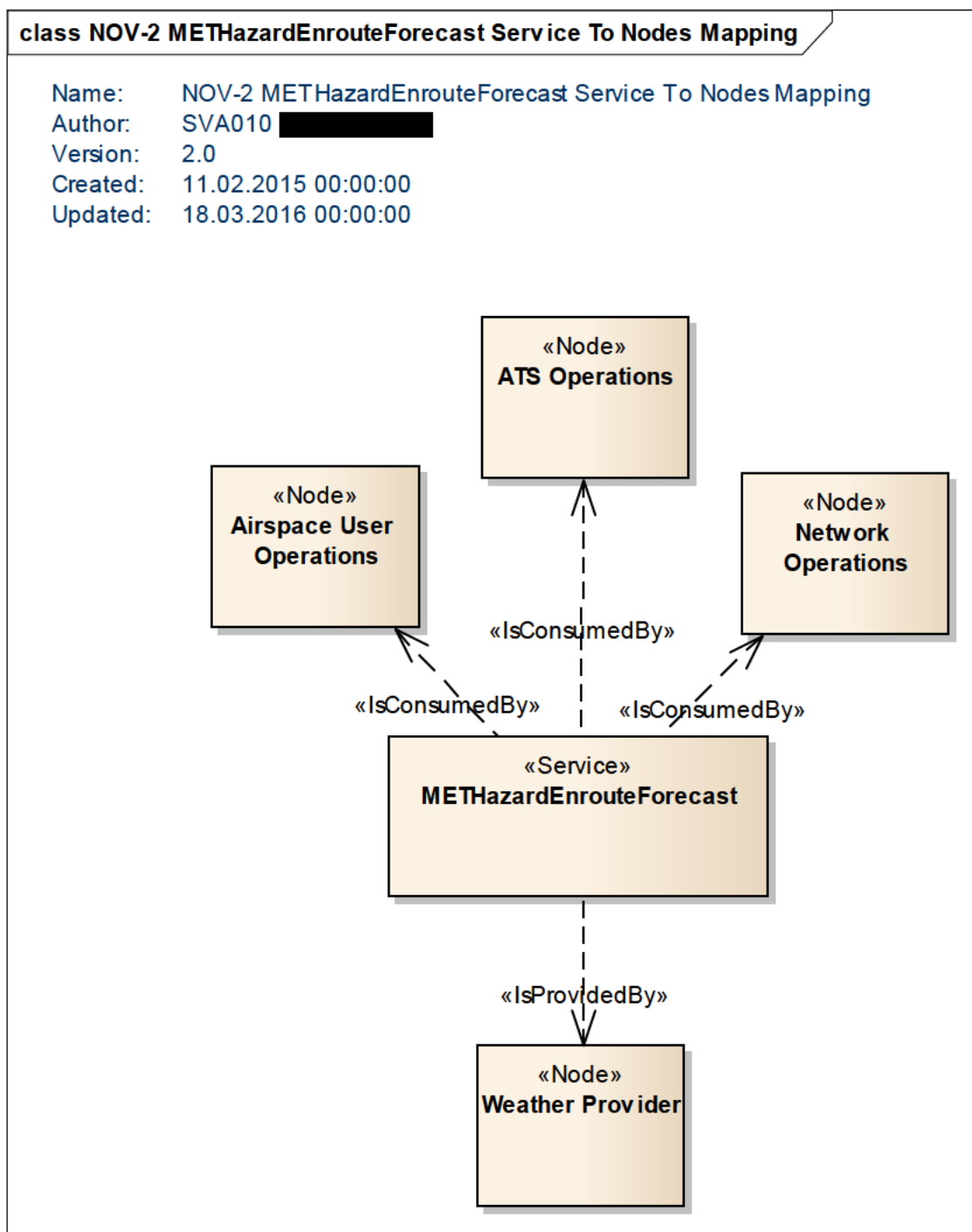
Figure 2: NOV-2 METHazardEnrouteForecast Service to Nodes Mapping diagram

4 Service overview

4.1 Service Taxonomy

The service taxonomy is described in the ISRM Service Portfolio document [9].

4.2 Service Levels (NfRs)

Non Functional Requirements are described in section 3.2.1.

4.3 Service Functions and Capabilities

The mappings to Operational Activities are as described in Figure 3. The capability mapping is shown in combination with the interface definition in Figure 4.
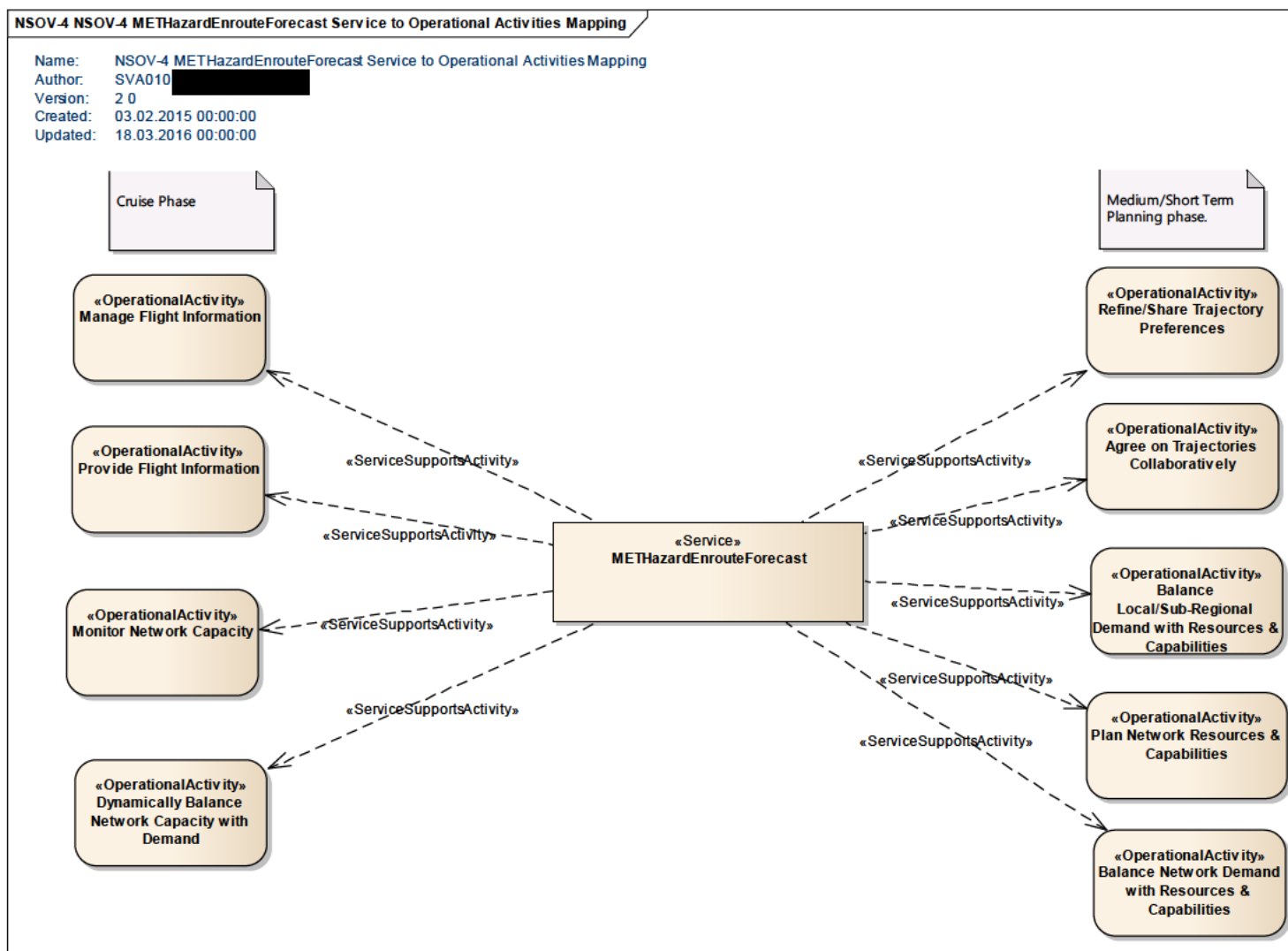
Figure 3: NSOV-4 METHazardEnrouteForecast Service to Operational Activities Mapping diagram

4.4 Service Interfaces
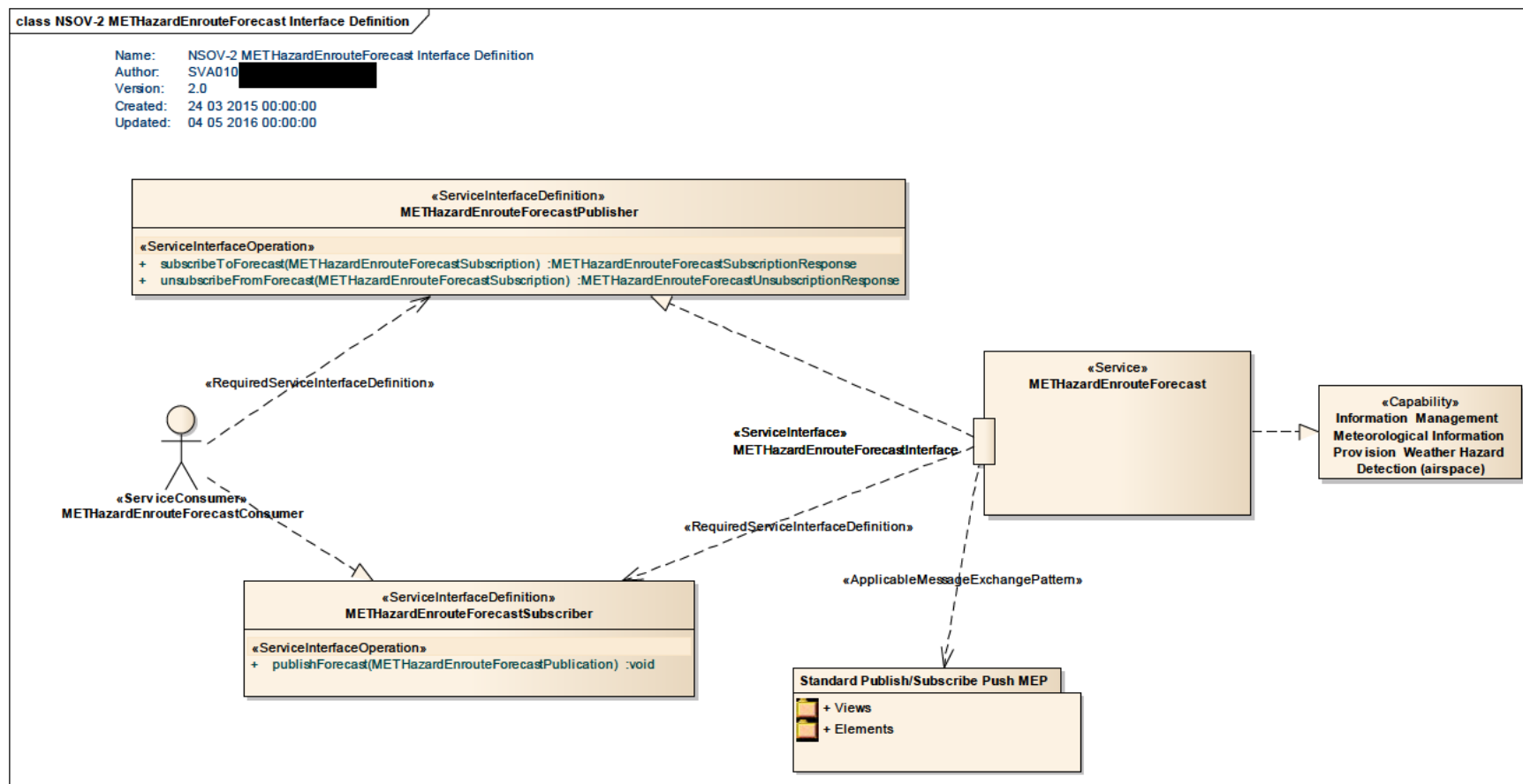
Figure 4: NSOV-2 METHazardEnrouteForecast Service Interface Definition diagram with Capability Mapping

The Service Interface Definition is given, combined with the capability mapping, in the above Figure 4.

ServiceInterface	ServiceInterfaceDefinition	ServiceInterfaceOperation	Role
METHazardEnrouteForecastInterface	METHazardEnrouteForecastPublisher	subscribeToForecast	provided
METHazardEnrouteForecastInterface	METHazardEnrouteForecastPublisher	unsubscribeFromForecast	provided
METHazardEnrouteForecastInterface	METHazardEnrouteForecastSubscriber	publishForecast	required

Table 2: Service Interfaces

5 Service interface specifications

5.1 Service Interface METHazardEnrouteForecastInterface

The interface consists of a total of 3 operations and represents a standard publish/subscribe information service for MET Hazard Forecast or Nowcast data.

5.1.1 Service Interface Definition METHazardEnrouteForecastPublisher

5.1.1.1 Operation subscribeToForecast

The service operation enables a consumer to subscribe to MET Hazard Forecast or Nowcast data.

5.1.1.1.1 Operation Functionality

The subscribe operation registers a consumer of the service to receive data updates in form of publications by the service.

5.1.1.1.2 Operation Parameters

The subscription parameter is a set of filters that allow for control over which updates a consumer wants to receive. Each filter that is passed to the subscription message defines a set of conditions under which a update is to be published to the subscriber. A filter can restrict updates to specific airspaces as well as weather conditions. No filter being passed as input is to be interpreted as a consumer requesting updates for all data.

The operation parameters are described in detail in Figure 4 and the entities in Table 3. The WeatherCondition entity and its elements are detailed along with the publish parameter in Table 4.

The return type of the operation represents the outcome of the subscription.

Element Name	Author	Notes
METHazardEnrouteForecastSubscription	SVA010	Message describing the Subscription

Element Name	Author	Notes
METHazardEnrouteForecastSubscriptionResponse	SVA010	Reply to the subscription operation.

Element Name	Author	Notes
METHazardEnrouteForecastUnsubscriptionResponse	SVA010	Reply to the unsubscription operation.

Element Name	Author	Notes
METHazardEnrouteFilter	08.03.10	METHazardEnrouteFilter providing the means to filter WeatherConditions and Airspaces
	Element Tagged Value Name	**Value**
	CLDMSemanticTrace	CLDM_out_of_scope

Element Name			Author		Notes	
Airspace			08.03.10 ▓▓▓▓▓		A defined three dimensional region of space relevant to air traffic.	
	Element Tagged Value Name				**Value**	
	CLDMSemanticTrace				urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Airspace:Airspace	
	Attribute Name		**Type**		**Notes**	
	designator				A published sequence of characters allowing the identification of the airspace. Description: Typical examples are the ID of the Danger, Prohibited, Temporary segregated Areas, etc.	
	Tagged Value Name			**Value**		
	CLDMSemanticTrace			urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:AirspaceInfrastructure:Airspace:Airspace@designator		

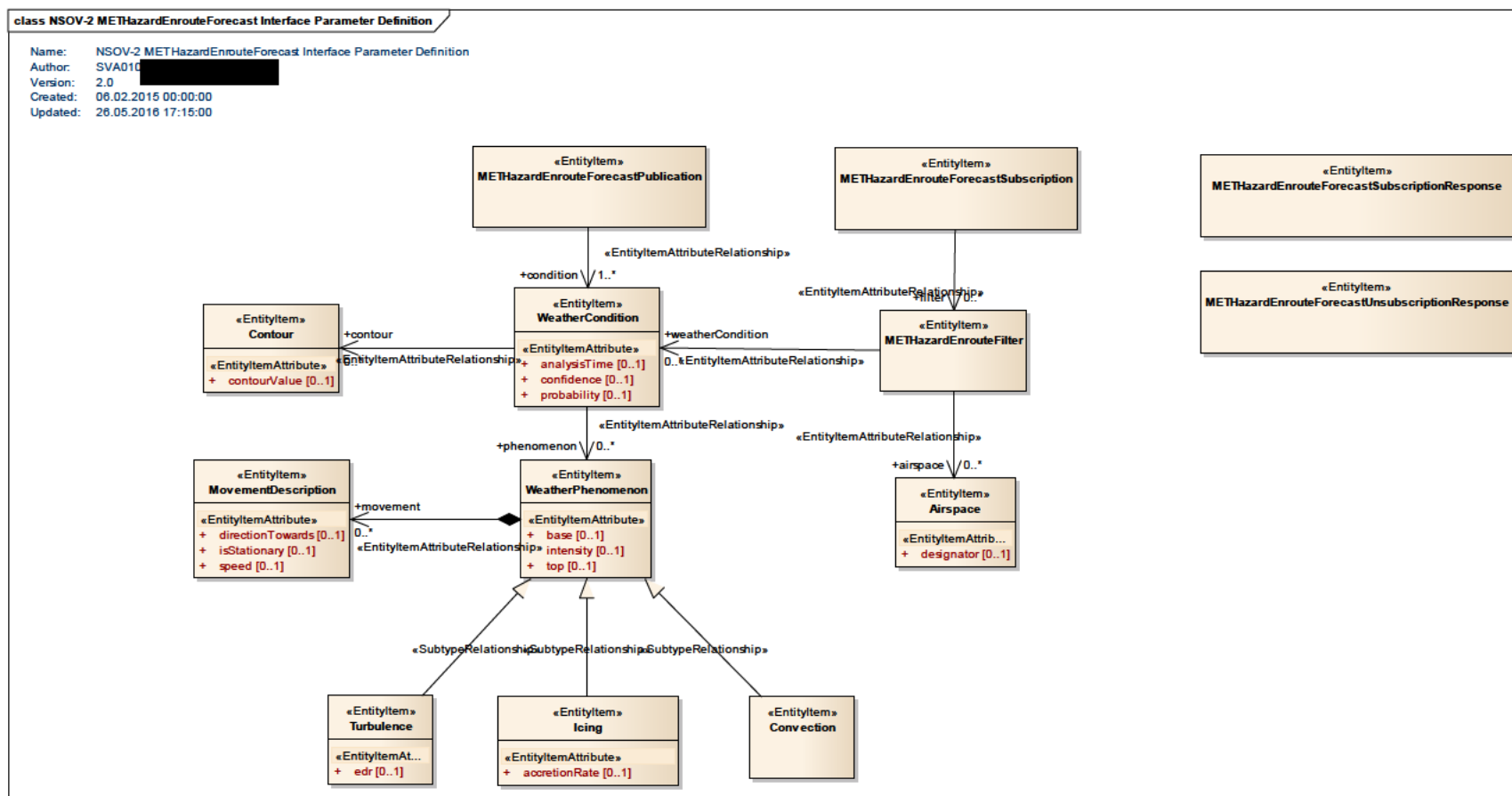**Table 3: Payload tracing to AIRM for subscribe**

Figure 5: NSOV-2 METHazardEnrouteForecast Interface Parameter Definition diagram

5.1.1.2 Operation unsubscribeFromForecast

The unsubscribe operation signals to the service that a participant no longer wants to receive publications of new data.

5.1.1.2.1 Operation Functionality

The operation enables a subscriber to withdraw his active subscriptions for Forecast and Nowcast updates.

5.1.1.2.2 Operation Parameters

The input parameters are the same as for the subscribe operation described above. In the context of the unsubscribe operation the filter specifies the airspaces or weather conditions for which no more publications are to be received. Passing no filters as parameters signifies unsubscribing from all updates.

The return type of the operation represents the outcome of the operation.

5.1.2 Service Interface Definition METHazardEnrouteForecastSubscriber

5.1.2.1 Operation publishForecast

This operation enables consumers to receive changes in information on significant weather phenomena to which they are subscribed.

5.1.2.1.1 Operation Functionality

When the service registers information changes that match the filter of a subscriber then that subscriber will receive the updated information through the service calling the publish operation.

5.1.2.1.2 Operation Parameters

The input parameters are one or more WeatherCondition items representing the updated data. The operation parameters are described in detail in Figure 5 and the entities in Table 4.

The operation has no return type.

Element Name	Author	Notes
METHazardEnrouteForecastPublication	SVA010 ▮	Container for the actual data to be provided by the ATM-specific (ISRM) service

Element Name			Author		Notes
WeatherCondition			08.03.10 ▮		Weather observations or forecast for an area of interest.
	Attribute Name		Type		Notes
	analysisTime				The time at which the forecast or observation process starts.
		Tagged Value Name		Value	
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje	

			ctFields:Meteorology:WeatherCondition@analysisTime
	Attribute Name	**Type**	**Notes**
	confidence		Quality of trusting for a forecast expressed as a percentage
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:WeatherCondition@confidence
	Attribute Name	**Type**	**Notes**
	probability		Relative likelihood of a forecast expressed as a percentage
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:WeatherCondition@probability

Element Name		**Author**	**Notes**
Contour		08.03.10 ██████████	An estimated or observed outline of a particular weather situation.
	Attribute Name	**Type**	**Notes**
	contourValue		The value of the measure that applies to that contour. For example a pressure chart could have contours where each contour line represents a specific pressure value, this could be sorted in the contourValue.
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Contour@contourValue

Element Name		**Author**	**Notes**
WeatherPhenomenon		08.03.10 ██████████	Head of substitution group for all weather phenomena classes.
	Attribute Name	**Type**	**Notes**
	base		
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:WeatherPhenomenon@base
	Attribute Name	**Type**	**Notes**
	intensity		Severity of a weather phenomenon expressed using an enumeration of 7 distinct intensities.
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:WeatherPhenomenon@intensity
	Attribute Name	**Type**	**Notes**
	top		
	Tagged Value Name		**Value**
	CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:Subje

		ctFields:Meteorology:WeatherPhenomenon@top

Element Name			Author		Notes	
MovementDescription			08.03.10 ▮▮▮▮▮		Movement information associated with a phenomenon.	
	Attribute Name		Type		Notes	
	directionTowards				Heading of the movement of a meteorological phenomenon.	
		Tagged Value Name		Value		
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:MovementDescription@directionTowards		
	Attribute Name		Type		Notes	
	isStationary				Indication whether a meteorological phenomenon is moving or not.	
		Tagged Value Name		Value		
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:MovementDescription@isStationary		
	Attribute Name		Type		Notes	
	speed				Velocity of the movement of a meteorological phenomenon	
		Tagged Value Name		Value		
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:MovementDescription@speed		

Element Name			Author		Notes	
Turbulence			08.03.10 ▮▮▮▮▮		Atmospheric flow regime characterized by chaotic and stochastic property changes. This includes low momentum diffusion, high momentum convection, and rapid variation of pressure and velocity in space and time.	
	Attribute Name		Type		Notes	
	edr				Eddy dissipation Rate, characterization of atmospheric turbulence.	
		Tagged Value Name		Value		
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Turbulence@edr		

Element Name			Author		Notes	
Icing			08.03.10 ▮▮▮▮▮		Formation of ice, rime, or hoarfrost on an aircraft in flight.	
	Attribute Name		Type		Notes	
	accretionRate				Ratio of growth of the ice deposit.	
		Tagged Value Name		Value		
		CLDMSemanticTrace		urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Icing@accretionRate		

Element Name	Author	Notes
Convection	08.03.10 ▇▇▇▇▇▇	In the atmosphere, convection is the dominant vertical transport process in convective boundary layers, which are common over tropical oceans and, during sunny days, over continents. Moist convection in the atmosphere is characterized by deep, saturated updrafts and downdrafts, and unsaturated downdrafts driven by the evaporation and melting of precipitation. This form of convection is made visible by cumulus clouds and cumulonimbus clouds in the case of precipitation convection.

	Element Tagged Value Name	Value
	CLDMSemanticTrace	urn:x-ses:sesarju:airm:v410:ConsolidatedLogicalDataModel:SubjectFields:Meteorology:Convection

Table 4: Payload tracing to AIRM for publish

6 Service dynamic behaviour

6.1 Service Interface METHazardEnrouteForecastInterface

The service interface operates in usual publish/subscribe message exchange pattern. This is represented in the diagram shown in Figure 6.
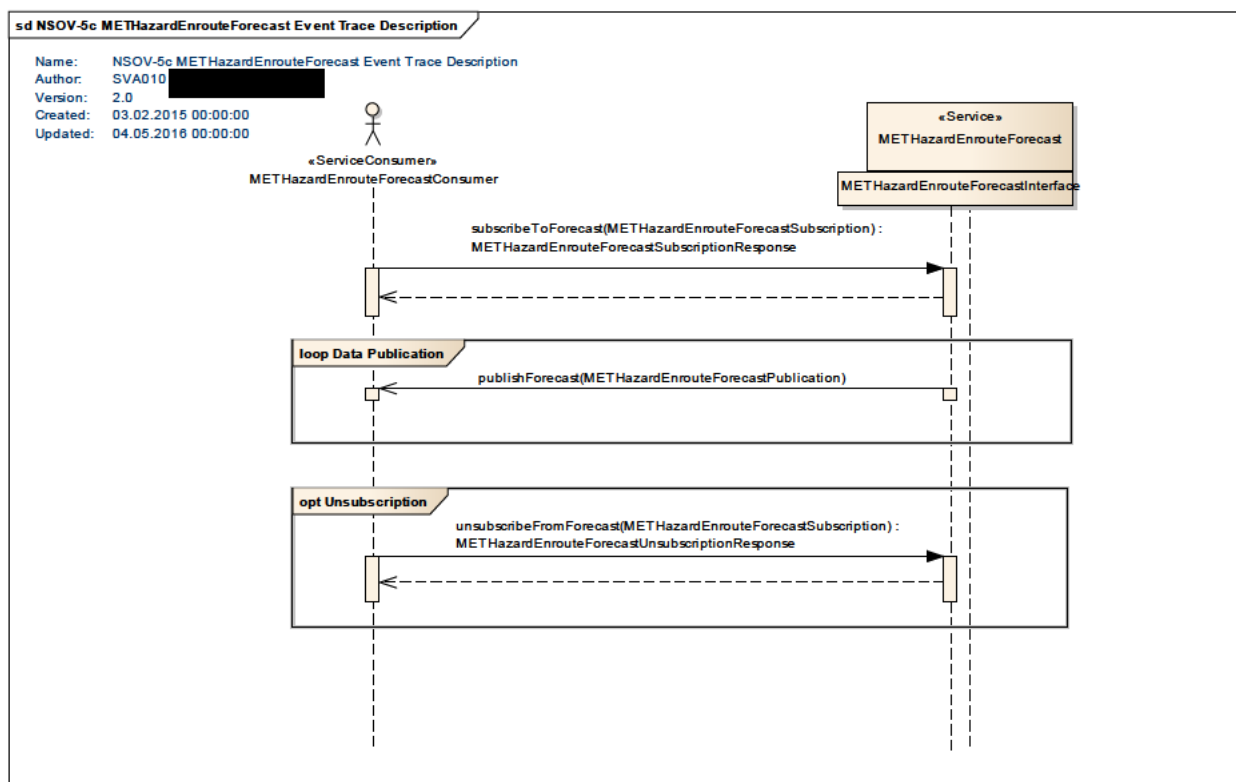

Figure 6: NSOV-5c METHazardEnrouteForecast Event Trace Description

7 Service provisioning

The METHazardEnrouteForecast service is designed to provide either Nowcast or Forecast data. Nowcasts require higher QoS standards due to their applications being more time and safety critical. For this purpose two service levels are defined to differentiate between these two uses of the service. The defined service levels can be seen below in Figure 7.

NSOV-1 SL NSV-12 METHazardEnrouteForecast Service Provisioning

Name: NSV-12 METHazardEnrouteForecast Service Provisioning
Author: SVA010
Version: 2.0
Created: 16.03.2015 00:00:00
Updated: 18.03.2016 00:00:00

«ServiceLevel»
**METHazardEnrouteNowcastLevel :
METHazardEnrouteForecast**

requiredResponseTime = 5
requiredResponseTimeUnit = Minutes
requiredConfidentiality = Low
requiredSafety = Medium
requiredAvailabilityInPercent = 99.95

«ServiceLevel»
**METHazardEnrouteForecastLevel :
METHazardEnrouteForecast**

requiredResponseTimeUnit = Minutes
requiredResponseTime = 10
requiredConfidentiality = Low
requiredSafety = Low
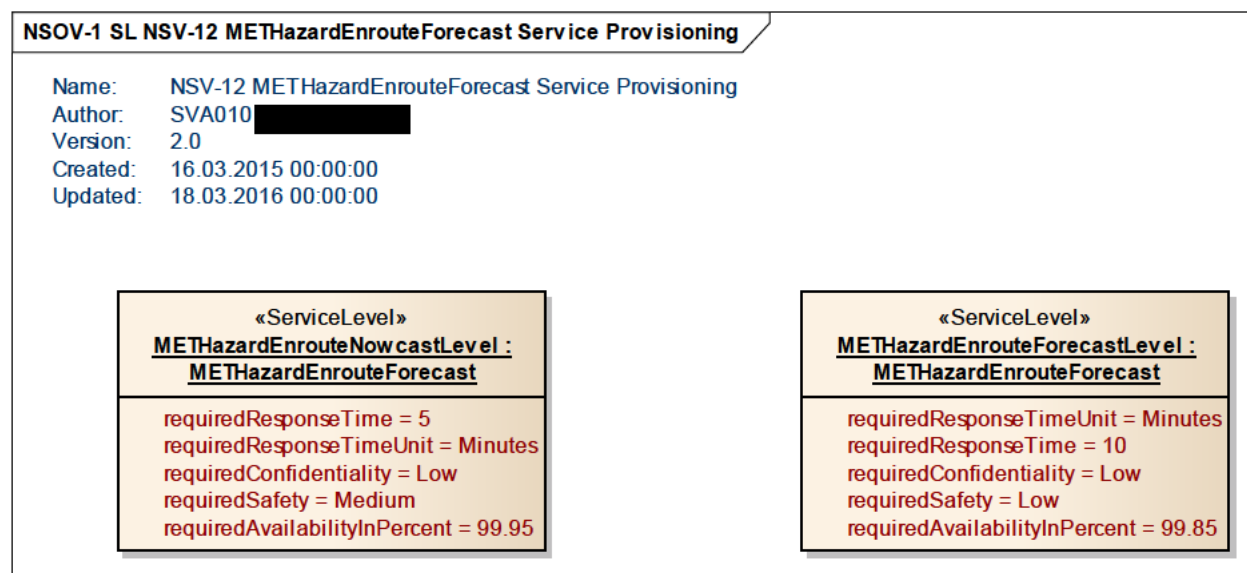requiredAvailabilityInPercent = 99.85

Figure 7: NSV-12 METHazardEnrouteForecast Service Provisioning

8 Validation and Verification

8.1 Verification

Verification was performed according to the latest ISRM Rulebook [6] and Verification Guidelines [7] based on the automated verification scripts.

The verification reports for the service can be found in the Verification Reports directory located in the D65 delivery package [14]:

Designed_Services_-_METHazardEnrouteForecastService.xls

Designed_Services_-_METHazardEnrouteForecastService_Common.xls

Based on the results in the verification reports the service has been successfully verified.

8.2 Validation

At the time of writing the service is being validated in form of a prototype implementation as part of EXE-13.02.03-VP-700.

9 References

Name	Version	Document ID / Location
[1] Project deliverables template	03.00.00	SJU templates & guidelines package, Project deliverables template
[2] SESAR Operational Service and Environment Definition	03.00.00	SJU templates & guidelines package, OSED template
[3] SESAR Safety and Performance Requirements	03.00.00	SJU templates & guidelines package, SPR template
[4] ISRM Tooling Guidelines	00.07.00	P08.03.10 D44
[5] ISRM Modelling Guidelines	00.07.00	P08.03.10 D44
[6] ISRM Rule Book	00.07.00	P08.03.10 D44
[7] ISRM Verification Guidelines	00.07.00	P08.03.10 D44
[8] EATMA Guidance Material	00.04.02	B04.01 D66
[9] ISRM service portfolio	00.08.00	P08.03.10 D65
[10] MET Interoperability Requirements	00.01.01	P11.02.01 D21
[11] Collaborative NOP OSED Step 1	00.02.07	P07.06.01 D45
[12] SCG24 Meeting minutes		B4.3
[13] B4.3 Service Allocation - SVA010	00.00.01	B4.3
[14] Verification reports for the service	N/A	P08.03.10 D65 Verification reports

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