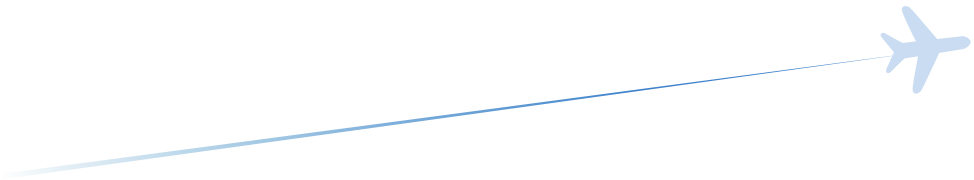

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PJ15-01 SUB-REGIONAL DCB COMMON SERVICES

This High-Level Architecture Description is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 734160 under European Union's Horizon 2020 research and innovation programme.

Abstract

This document describes the High-Level Architecture for the PJ.15-01 Sub-Regional Demand and Capacity Balancing (Sub-Regional DCB) Common Service for TRL6 maturity phase.

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1 Executive Summary

The Sub-Regional Demand Capacity Balancing (DCB) aims to contribute to a better usage of the airspace at sub-regional level, through enhanced planning and consequently more appropriate tactical intervention in support of AU and AO operations. The Sub-regional Demand Capacity Balancing (DCB) Common Service aims to enable Sub-Regional Demand Capacity Balancing (DCB) by reducing cost through the provision of a common service.

In TRL2 and TRL4, PJ.15-01 described the scenarios where this Common Service could be provided, from a business perspective. The Business Model that captures these scenarios has been updated for the TRL6 phase [2].

In line with this, this document has been updated as well to reflect the changes in High-level Architecture description from TRL4 to TRL6. The main changes can be observed in the System layer, where the architecture description provides an overview of the two services that have been identified and described in TRL6. These two services have also been prototyped and used in two distinct technical validation exercises.

Please notice that although two different scenarios were identified in PJ.15-01 TRL6 Sub-Regional DCB Business Model [2], it was decided that only one architecture description would be sufficient for them. The rationale is that the main difference between the two scenarios is the business value proposed to the consumers of the Common Service, however this difference has no impact on the architectural changes introduced by the provision of Common Service, in terms of who are the actors and what information/data is being exchanged between them.

Following the Architecture steering principles provided by PJ.19, existing architecture elements have been reused wherever possible. The identification and definition of new elements has been done only where deemed strictly necessary.

2 Introduction

2.1 Purpose of the document

This document describes the High-Level Architecture for the Sub-Regional Demand and Capacity Balancing (DCB) Common Service. It follows the architecting approach defined in the Common Services Foundation Method [1] from SESAR 1 and uses the Business Model [2] previously produced in PJ.15-01 to provide the definition of operational, service and system architectures for the Sub-Regional DCB Common Service.

2.2 Intended readership

The intended audience for this document is the SESAR Joint Undertaking, the members in the SESAR 2020 Programme, the ATM stakeholders (e.g. Airspace Users, ANSPs, Airports, and manufacturing industry) with those third parties directly affected by its findings and the contributions having dependencies with the Solution such as PJ09.

Other transversal projects, such as PJ.19, and tasks within the SESAR 2020 Programme may also have an interest.

The document also provides inputs for future work in PJ.15-01 regarding the service definition activities.

2.3 Inputs from other projects

The basic notions of the Sub-Regional DCB Common Service are described by PJ.15-01 in its TRL6 Business Model document [2], including the potential customers of the service, the value propositions and the information flows needed between the stakeholders.

The concept of the DCB operations, although not always focused on the specificities of the Sub-Regional dimension, were widely developed in SESAR 1 Programme, mainly by WP07 and WP13.

In SESAR2020, the fundamentals of the Sub-Regional DCB are described in the SESAR2020 CONOPS [3], specifically based on the “Flow Manager” role. In addition, the DCB and NM concepts will further evolve in PJ09 and is specifically documented in the PJ09 OSED-SPR-Interop – Part 1 (2019) [12].

The reference architecture, including its individual elements, are from the EATMA Repository, which is maintained by using the MEGA modelling tool [4] and can be accessed via the European ATM Portal [5].

2.4 Glossary of basic concepts

Term	Definition	Source
Capability	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.	SESAR2020 PJ.19.05 EATMA Guidance Material Version 10

Capability Configuration	A Capability Configuration is a combination of Roles and Technical Systems configured to provide a Capability derived from operational and/or business need(s) of a stakeholder type.	PJ19: EATMA Guidance Material and Report (2017) [11]
Common Service	A service providing a capability in the same form to consumers that might otherwise have been undertaken by themselves.	SESAR B04.05 D02
Consumer	A user of a service	SESAR B04.05 D02
Customer	A consumer of a service under a specific contract.	SESAR B04.05 D02
Demand and Capacity Balancing	Assessment and balancing of demand and capacity at network and airport level to provide the NOP/AOP for the day of operation.	EATMA V12 – ATM Capability Model
Flow Manager	The Flow Manager is a role performed at sub-regional level which contributes to the Network Management Function.	SESAR2020 Concept of Operations Edition 2017
Node	A logical entity that performs activities. Note: nodes are specified independently of any physical realisation.	PJ19: EATMA Guidance Material and Report (2017) [11]
Operational Node Interaction Description (NOV-2)	Defines the nodes and describe information exchanges and (services between nodes). Mapping capability and nodes. In EATMA it is a high-level communication material	PJ19: EATMA Guidance Material and Report (2017) [11]
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.	PJ19: EATMA Guidance Material and Report (2017) [11]
Service contract (SLA)	A service contract represents an agreement between the stakeholders involved for how a service is to be provided and consumed. A service contract is specified through the service interface, the QoS and Service policies.	SESAR B.04.03 – Working method on service
Service instance	Service which has been implemented in accordance with its specification in the service catalogue (during the SESAR Development Phase, the service definitions are available in the ISRM) by a service provider (by itself or contracted to a third party).	SESAR B.04.03 – Working method on service
Service Provider	An organisation supplying services to one or more internal or external consumers.	SESAR B.04.05 – D02
Service taxonomy	The service taxonomy describes the categorisation of services provided between ATM stakeholders. It is used to organise the responsibilities of the service design as well as to provide a means of identifying services in the run-time environment.	SESAR B.04.03 – Working method on service
Stakeholder	A stakeholder is an individual, team, or organization (or classes thereof) with interest in, or concerns relative to, an enterprise (e.g. the European ATM). Concerns are those	PJ19: EATMA Guidance Material and Report (2017) [11]

	interests, which pertain to the enterprise's development, its operation or any other aspect that is critical or otherwise important to one or more stakeholders.	
System Interface Description (NSV-1)	Links together the Operational View and the System View by depicting which systems and system connections realize which information exchanges. It is based on the definition of Capability Configurations and describes the assets, both technical and human which are required in order to provide capability.	PJ19: EATMA Guidance Material and Report (2017) [11]

Table 1: Glossary of basic concepts

2.5 Acronyms and Terminology

Term	Definition
ACC	Area Control Centre
AIRM	ATM Information Reference Model
AIXM	Aeronautical Information Exchange Model
AMAN	Arrival Manager (Controller Support Tool)
ANSP	Air Navigation Service Provider
AO	Airport Operator
AOCC	Airline Operations and Control Centre
AOP	Airport Operation Portal
ASM	Airspace Management
ATFCM	Air Traffic Flow and Capacity Management
ATM	Air Traffic Management
ATS	Air Traffic Services
AU	Airspace Users
CC	Capability Configuration
CDM	Collaborative Decision Making
DCB	Demand and Capacity Balancing
CLDM	Consolidated Logical Data Model
DPI	Departure Planning Information
EATMA	European ATM Architecture
EOBT	Estimated Off-Block Time
ER	En-Route
FAB	Functional Airspace Block
FIXM	Flight Information Exchange Model

FM	Flow Manager
HTTPS	Hypertext Transfer Protocol Secure
ICAO	International Civil Aviation Organization
ISRM	Information Service Reference Model
KPI	Key Performance Indicator
NAF	NATO Architecture Framework
NM	Network Manager
NMF	Network Management Function
NOP	Network Operation Portal
NOV	NAF Operational View
NSV	NAF System View
PJ	Project
QoS	Quality of Service
SDD	Service Definition Document
SESAR	Single European Sky ATM Research Programme
SID	Standard Instrument Departure
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SLA	Service Level Agreement
SOAP	Simple Object Access Protocol
SPR	Safety and Performance Report
STAM	Short Term ATFCM Measures
STAR	Standard Terminal Arrival Route
SUA	Special Use Area
SWIM	System Wide Information Management
TRL	Technology Readiness Level
TTA	Target Time of Arrival
TWR	Tower (Capability Configuration in EATMA)
UDPP	User Driven Prioritisation Process
WOC	Wing Operations Centre
XML	eXtensible Markup Language

Table 2: Acronyms and Terminology

3 Scope of the High-level Architecture Description

The main objective of the high-level architecture is to describe the main architecture elements and their relationships across the different architecture layers of the Sub-Regional DCB Common Service. This description starts with the business and operational needs and goes down to the system resources that will need to collaborate with each other to meet these needs, supported by the services that enable the actual exchange of data.

In order to clearly define the borders of this architecture description, some working assumptions have been made regarding the modelling activities and for this document. These are described later in this chapter. Before presenting them, it is necessary to understand the aspects of the Common Service that have motivated these assumptions.

3.1 Sub-Regional DCB Common Service

Although the complete definition and the underlying principles of the Sub-Regional DCB Common Service can be found in the Business Model [2], some extracts are provided below to better understand the scope of this document.

Sub-regional activity takes management responsibility for the airspace for a number of geographically adjacent ACCs whilst presenting a single operational interface to the regional actor; representing the local actors, including Airports, within this airspace.

The objective of developing Sub-Regional DCB as a common service is to provide optimised operation of a highly integrated part of the network by working closely with the units to balance demand against the available capacity of the different stakeholders.

It is expected that Sub-regional DCB can be applied within a multi-ACC or multi-ANSP environment and facilitate an improved usage of the airspace at sub-regional level and facilitate tactical interventions when necessary, ensuring that any potential disruptions could be correctly managed.

3.1.1 Sub-Regional DCB Common Service Scenarios

In the Business Model, two potential scenarios have been identified as candidates for deployment:

- New Sub-Regional DCB Common Service. In this scenario an ANSP that does not provide or participate in any Sub-Region wishes to do so in a multi-ACC environment.
- Refreshment of legacy Sub-Regional DCB Service. In this scenario an ANSP who was already part of a Sub-Region intends to migrate to a SESAR compliant service due to cost efficiency purposes.

3.2 High-level Architecture assumptions

Based on the definition of the Sub-Regional DCB Common Service provided in section 2.1, the following assumptions have been made regarding the high-level architecture description presented in this document:

- Architecture models have been produced for only one of the potential deployment scenarios, in this case for the first one –New Sub-Regional DCB Common Service (sections 4.1 and 4.2 in the TRL6 Business Model [2]).

  An initial analysis has been done regarding the two scenarios in terms of who are the actors and which are the information flows between them, and the conclusion is that there is no difference between the two scenarios, from the architecture perspective. The stakeholders involved in the two scenarios are the same, as well as the need for information exchanges between them.

  The main difference between them is the business value proposed by the Common Service: in the first scenario the value is the provision of a new service which could bring new operational procedures and performance benefits but the stakeholders in this scenario would need to face additional costs to put the service in operation; on the other hand the second case is mainly focused on cost efficiency as the stakeholders will migrate from an existing service to the Common Service while maintaining or even enhancing the level of performance. However, these different added values cannot be shown by the architecture description, and therefore it is proposed to produce only one set that could serve to the two scenarios.

- Airport is one of the users described in the Business Model [2]. Although it makes sense to describe it as one single business entity in the context of the Common Service definition, EATMA recognises two different types of actors with a clear separation of responsibilities for each of them. On one hand, Airport Operator who handles the management of the airport resources; and on the other hand, the Control Tower (provided by an ANSP) who takes care of the Air Traffic Control for the concerned Airport. It is therefore proposed to use the two actors for the architecture description.

3.3 Standardisation Needs

PJ 15-01 relies on AIRM and ISRM to be standardised to the greatest extent possible.

AIRM describes the payload / content to be transmitted over SWIM. This payload needs to be defined in detail in order to allow SWIM nodes / connected systems to seamlessly exchange information. For this purpose, the data format (syntax) and also the business rules governing the information need to be defined and standardised. As AIRM is a complex and flexible data model, in addition to formal rules, there also needs to be standardisation in terms of information harmonisation. Harmonisation concerns the fact that operators are free to choose to encode syntactically correct information in different ways, which still make it difficult for users to interpret it correctly. An example for this is the encoding of the various types of DCB information provided by organisations providing ATM services. This information can be encoded correctly in different ways, but a common approach would be helpful for users.

ISRM describes the service model, i.e. the available functions that every compliant system has to support in order to interoperate with other compliant systems. ISRM standardisation is necessary in

order to ensure that the same way of accessing a certain type of information is possible with every actor in a compliant system in order to allow seamless interoperability.

An example for such an interface is the definition of a query function for a data type with its parameters (data type, sequence), return values and pattern for executing.

In addition to the transport mechanism and payload, also visualisation standards that can guarantee global airspace users a standardised depiction with standardised symbology, contents scale levels, units, colours etc. are necessary.

4 New Sub-Regional DCB Service

4.1 Introduction

The Business Model describes a number of users that play a role in the Sub-Regional DCB Common Service, either as provider or consumers of the service, or simply by providing information needed for the undertaking of the DCB process.

In EATMA, these users are described as Nodes in the operational layer or as Capability Configurations in the System layer. Table 3 shows the mapping between the actors and the EATMA elements used to describe them. The modelling tool (MEGA) allows to instantiate architecture elements with a customized local name in the folder where the content is created. This is the functionality used to differentiate the various contexts of the same EATMA elements, e.g. when describing a local ACC or an adjacent ACC.

User (as in Business Model)	Node (Operational layer)	Capability Configuration (System layer)
Sub-Regional Flow Manager (ANSP)	Sub-Regional Network Operations (Local)	Sub-Regional ATFCM (Local)
Sub-Regional Common Service Provider	Sub-Regional DCB Common Service Provision	Sub-Regional DCB Common Service Provision
Sub-Regional Flow Manager (Adjacent)	Sub-Regional Network Operations (Adjacent)	Sub-Regional ATFCM (Adjacent)
Regional Network Manager	Regional Network Operations	Regional ATFCM
ACC (Local)	En-Route ATS (Local)	ER ACC (Local)
ACC (Adjacent)	En-Route ATS (Adjacent)	ER ACC (Adjacent)
Airport (Local)	Airport Ops Support	Airport
	Aerodrome ATS	TWR
Airspace User (AU)	Airspace User Ops Support (Civil)	Civil AU Operations Centre
Military User (MIL)	Airspace User Ops Support (Military)	State AU Operations Centre

Table 3: Mapping between the users from Business Model and Nodes and Capability Configurations from EATMA V12

Sub-Regional Flow Manager is a role assumed by an ANSP. The Business Model explains that in the context of this Solution, this role is fulfilled by the ANSP acting as a consumer of the Common Service offered by a provider, who could be an independent commercial entity. More importantly, the provision-consumption of Common Service stays at a technical level, focused on exchange of data without any operational responsibility. The Sub-Regional Flow Manager retains the responsibility for managing the operational needs within the concerned airspace and it is the delivery interface towards the other actors at regional or local level.

Following the architecting method defined in [1], this chapter aims to provide an overview of the architecture description across all EATMA layers in each of the subsequent sections.

4.2 Reference Architecture

In SESAR 1, Work Packages 7 and 13 were in charge of developing the operational aspects and the system/technical aspects of the Network Operations, respectively. In SESAR 2020 the work on the DCB domain is being followed up by PJ09 –Advanced DCB–.

Although a significant amount of documentation can be found from SESAR 1 and SESAR 2020 Programmes on DCB concept, these are mainly focused on the Regional and Local levels (e.g. focused on one single ACC). However, the DCB function at Sub-Regional level was very lightly touched upon in SESAR 1, and very often integrated with either the Regional or the Local actor. This lack of specific documentation around Sub-Regional DCB affects architecture content as well, as there is very limited material from EATMA V12 specifically addressing Sub-Regional DCB aspects.

Therefore, the overall approach adopted by PJ.15-01 partners was to take the existing material on Regional and Local DCB as the starting point and then try to "isolate" the Sub-Regional actor and its related functionalities, based on the wide range of knowledge and experience of the participants on the subject. This led to the identification of a complete set of information flows (aggregated as Information Exchanges) between each pair of actors involved in the provision and consumption of the Sub-Regional DCB Common Service (See [2]). In turn, the information flows serve as inputs to define the high-level architecture description for TRL-6 maturity phase, which consists of a NOV-2 Operational Node Context Diagram and a NSV-1 Capability Configuration Context diagram.

4.3 Business Architecture

Figure 1 below illustrates the latest version of the European ATM Capability Model [5] (currently EATMA V12). It shows the hierarchical breakdown of the high-level abilities that the European ATM, as a global enterprise, needs to provide to its stakeholders. There are nine Capability areas (or Level 1 Capabilities) which are aligned with the main components of the ICAO Global Operating Concept [6].

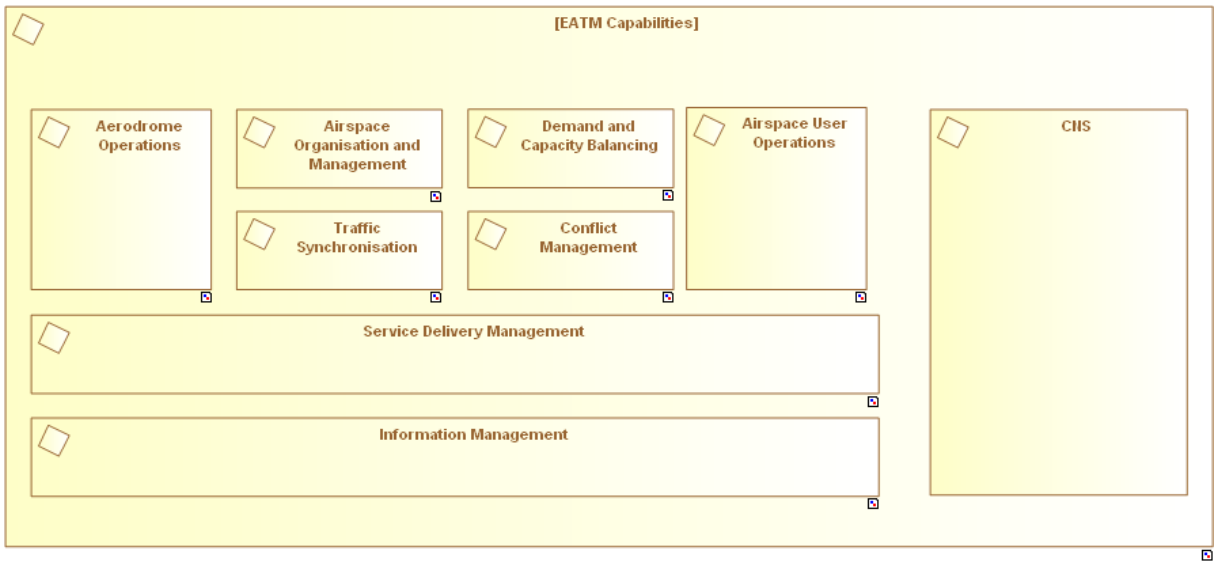

Figure 1: European ATM Capability Model in EATMA V12 (Level 1)

Although one of the areas is dedicated to the Demand and Capacity Balancing, it is proposed to create a new Capability in the Service Delivery Management area to highlight the essence of the Sub-Regional

DCB Common Service is focused on contributing to a cost-efficient provision of services across the European ATM, rather than on the operational concept itself.

Therefore, the proposal is to use the following Level 3 Capability. The Sub-Regional DCB Common Service aims to achieve this new Capability. This is illustrated below in Figure 2.

- [Level 1] Service Delivery Management
    - [Level 2] ATM Service Management
        - [Level 3] **Sub-Regional DCB Common Service Management**

Figure 2: Service Delivery Management Capability area

4.4 Operational Architecture

Table 4 below captures the Nodes used to represent the users from the TRL6 Business Model [2] in the operational layer, along with the description for each of them. These descriptions have been added in EATMA.

User in the Business Model	Node	Description
Sub-Regional Flow Manager (ANSP)	Sub-Regional Network Operations (Local)	Sub-Regional Network Operations performs the activities necessary to integrate and manage all the tasks related to the ATM Network at a Sub-Regional

Sub-Regional Flow Manager (Adjacent)	Sub-Regional Network Operations (Adjacent)	level (e.g. a collection of two ACCs or FAB), i.e. the dynamic, integrated management of air traffic and airspace including Air Traffic Services (ATS), Airspace Management (ASM) and Air Traffic Flow and Capacity Management (ATFCM) safely, economically and efficiently.
Sub-Regional Common Service Provider	Sub-Regional DCB Common Service Provision	Implemented by a commercial entity that provide the functions to generate the information necessary to support optimisation of Air Traffic Flows at a Sub-Regional level.
Regional Network Manager	Regional Network Operations	The objectives of the ATM Network Management Function (NMF) is to enable the optimum use of airspace and ensure that Airspace Users can operate preferred trajectories while allowing maximum access to airspaces and air navigation services. The NMF integrates and manages all the tasks related to the ATM Network, i.e. the dynamic, integrated management of air traffic and airspace including Air Traffic Services (ATS), Airspace Management (ASM) and Air Traffic Flow and Capacity Management (ATFCM) - safely, economically and efficiently - through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions. For all ATM phases, the NMF is based on Collaborative Decision-Making processes; the actors involved are different ones depending on the phases and the activities carried out, but collaborative actions and processes will always drive the result. The Network Management Function is truly performed at all geographical levels (regional, sub-regional, local) with a level of involvement and responsibilities depending on the activities and on the ATM phases. The following roles described in this chapter participate to this function.
ACC (Local) ACC (Adjacent)	En-Route ATS (Local) En-Route ATS (Adjacent)	Performs all the En-route and Approach ATS operations.
Airport (Local)	Airport Ops Support	Perform all the airport ops support activities, including analysis of airport resources, long term planning of infrastructures, coordination of airport slots, management of airport resources on the day of operation (gates, vehicles, stands, de-icing...), information sharing and CDM, etc. [RELATED ACTORS/ROLES] Airport Operator, Airport Slot Negotiator
	Aerodrome ATS	Performs all the aerodrome ATS operations.

		[RELATED ACTORS/ROLES] Runway controller, ground controller, etc.
Airspace User (AU)	Airspace User Ops Support (Civil)	Performs all the necessary activities to support AU ops, including the strategic and tactical planning of AU operations, participation to related CDM processes and UDPP, update of AOP with AU information, ground handling. [RELATED ACTORS/ROLES] Flight Schedule Planner, Airline Operations and Control Centre (AOCC), Wing Operations Centre (WOC), etc.
Military User (MIL)	Airspace User Ops Support (Military)	Performs all the necessary activities to support AU ops, including the strategic and tactical planning of AU operations, participation to related CDM processes and UDPP, update of AOP with AU information, ground handling. [RELATED ACTORS/ROLES] Flight Schedule Planner, Airline Operations and Control Centre (AOCC), Wing Operations Centre (WOC), etc.

Table 4: Nodes used for the operational architecture description

Figure 3 below depicts the interactions between the different Nodes, according to the information flows defined in the Business Model. These information flows are aggregated as Information Exchanges which carry Information Elements. Where possible, existing Information Elements in EATMA have been reused. A complete mapping is provided in Appendix B.

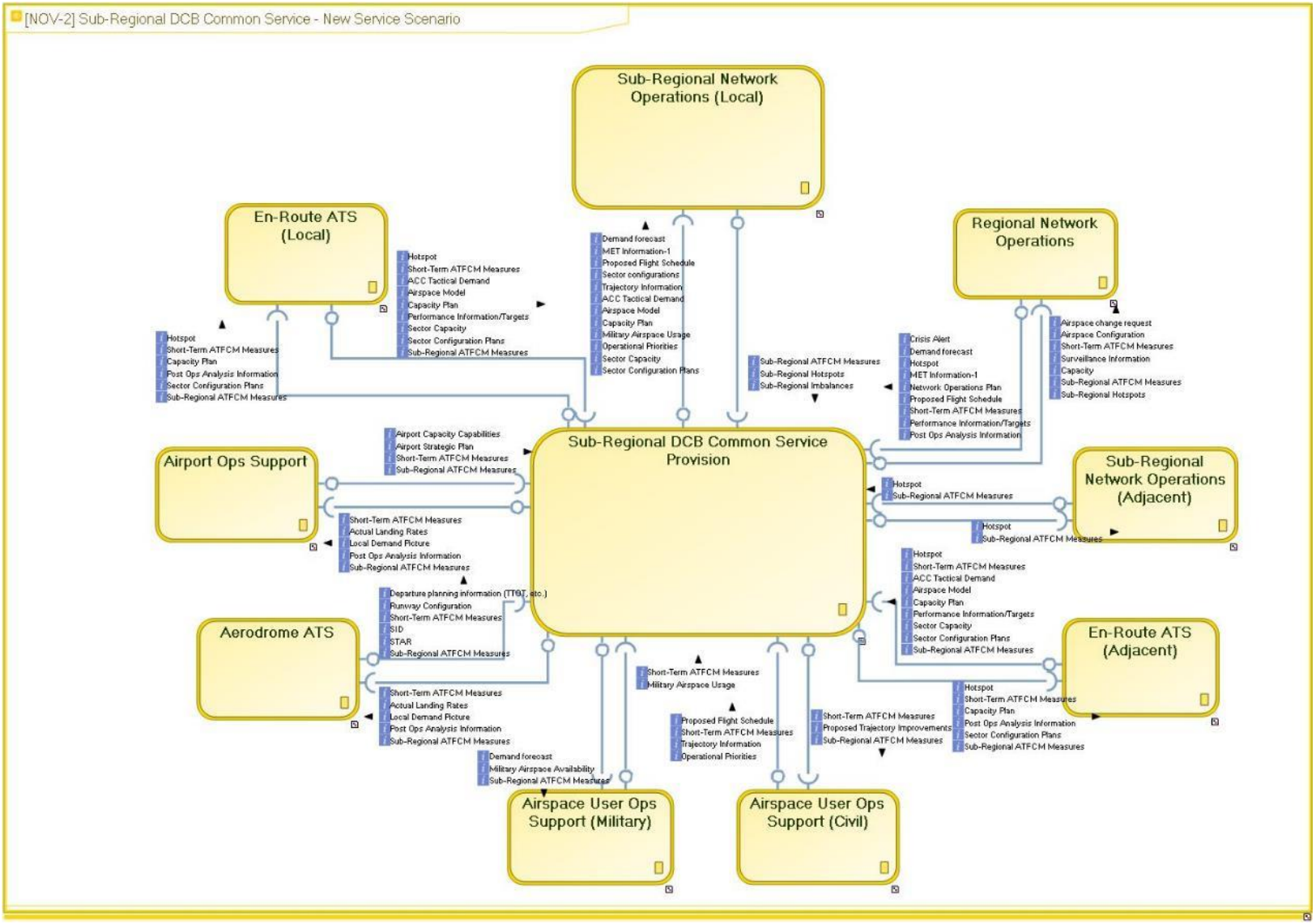

Figure 3: NOV-2 – Operational Node Context Diagram

4.5 System Architecture

Table 5 below summarizes the Capability Configurations used to represent the users from the TRL6 Business Model [2] in the system layer, along with the description for each of them. These descriptions have been added in EATMA.

User in the Business Model	Capability Configuration	Description
Sub-Regional Common Service Provider	Sub-Regional DCB Common Service Provision	Implemented by a commercial entity that provide the functions to generate the data necessary to support optimisation of Air Traffic Flows at a Sub-Regional level.
Sub-Regional Common Service Consumer	Sub-Regional ATFCM (Local)	Implemented by the ATS Service providers to support the local Capacity management functions and to optimise the Air Traffic Flows at local level in coordination with the Network Manager.
Sub-Regional Flow Manager (Adjacent)	Sub-Regional ATFCM (Adjacent)	Implemented by the ATS Service providers to support the local Capacity management functions and to optimise the Air Traffic Flows at local level in coordination with the Network Manager.
Regional NM	Regional ATFCM	Implemented by the Network Manager to address the balance between Traffic Demand and the Capacity to optimise Air Traffic Flows at regional level.
ACC (Local) ACC (Adjacent)	ER ACC (Local) ER ACC (Adjacent)	Implemented by the Civil and Military ATS ANSP in an Air Traffic Control Centre (En-Route)
Airport (Local)	Airport	Implemented by the civil and military Airport Operator at the airport to manage the airside operations that interface with the ATM at the airport.
	TWR	Implemented by the civil and military ATS ANSP in an Air Traffic Control Tower at an aerodrome.
Airspace User (AU)	Civil AU Operations Centre	Implemented by Civil Airspace Users realising manned or unmanned flight operations of civil aircraft (as defined by ICAO).
Military User (MIL)	State AU Operations Centre	Implemented by State Airspace Users (this term includes Military Airspace Users, Border Police Airspace Users, etc. and Military Aircraft Operators), which are performing all kind of manned or unmanned flight operations, in the management of their operations.

Table 5: Capability Configurations used for the system architecture description

Figure 4 shows the interactions between the different CCs. It should be noted that this figure aims to highlight those information flows from the NOV-2 that have been effectively realised by Services in

TRL6 phase. Among all the information flows identified in [2], a small number of them have been selected by the Solution partners as those that fit best with the scope of the planned Technical Validation Exercised in TRL6, by considering the timing and resource constraints.

Thus, three services have been identified and defined in TRL-6. These services are briefly described in the Table 6, while the complete logical definition can be found in [7], [8] and [9] respectively. These three services have been prototyped, implemented and used in two distinct technical validation exercises.

Service	Description	Provider (CC)	Consumer (CC)
HotpotDefinitionAndProposedSolution	Based on demand forecast provided by Regional NM and the local capacity plans, this service identifies hotspots for a number of Units (which constitute a Sub-Region) and distributes them via a Publish/Subscribe pattern. At later stage, the service will propose measures of three different types (Sector Configuration, Re-routing and Level Capping) to solve the hotspots.	Sub-Regional DCB Common Service Provision	ER ACC (Local) [via Sub-Regional (ATFCM)]
PostOperationsIndicators	The PostOperationsIndicators service provides indicators regarding the daily operations handled by the Air Traffic Centres and the Airports in a given Sub-Region. During the post-execution phase, the Sub-regional system will provide the assessment of the operational performance indicators previously identified within the sub-region in order to detect deviations from targets and analyse potential causes. The Sub-Regional Manager will send this information to the Network Manager who will analyse it to develop the KPI report including the analysis of the KPIs adherence after operations and to define corrective actions to achieve agreed targets, when necessary. These indicators correspond to: • Total traffic: Number of movements within an ATC Unit per day (includes the count of flights taking off from, landing or crossing in the ATC Unit). • Regulated Traffic: Amount of traffic with applied regulations within an ATC Unit per day.	Sub-Regional DCB Common Service Provision	Regional ATFCM [via Sub-Regional (ATFCM)]

	• Delayed Traffic: Amount of traffic that has been delayed within an ATC Unit per day. • Average Delay: Total delay divided by the total movements within an ATC Unit per day. • Maximum Delay: The largest number of minutes that a single flight has been delayed within an ATC Unit per day. • Total Delay: the sum of delay for all flights within an ATC Unit per day. This service will provide these indicators for historical data, with a minimum of 3 days of delay with respect to the current/actual day.		
SubRegionalDCBCOSER	The SubRegionalDCBCOSER Service allows the consumer to get information related to the Hotspots, the imbalances and flights identified at a sector of group of sectors belonging to the same Sub-Region, via a Request/Reply pattern. The SubRegionalDCBCOSER service also the consumer to get information related to the Special Use Areas (SUAs) that are relevant to the area of interest. The identification of imbalances is generated by using the local capacity plans and the demand forecast provided by the NM, and the imbalances can be identified by using different KPI (short-term flight entries, controller workload, sector occupancy, etc.).	Sub-Regional DCB Common Service Provision	ER ACC (Local) [via Sub-Regional (ATFCM)]

Table 6: New services identified and defined in TRL6

In order to provide a complete picture of the interactions at System level necessary to realise all the information exchanges, the reader can consult the NSV-1 diagram from the TRL6 High-Level Architecture description in the Appendix A.

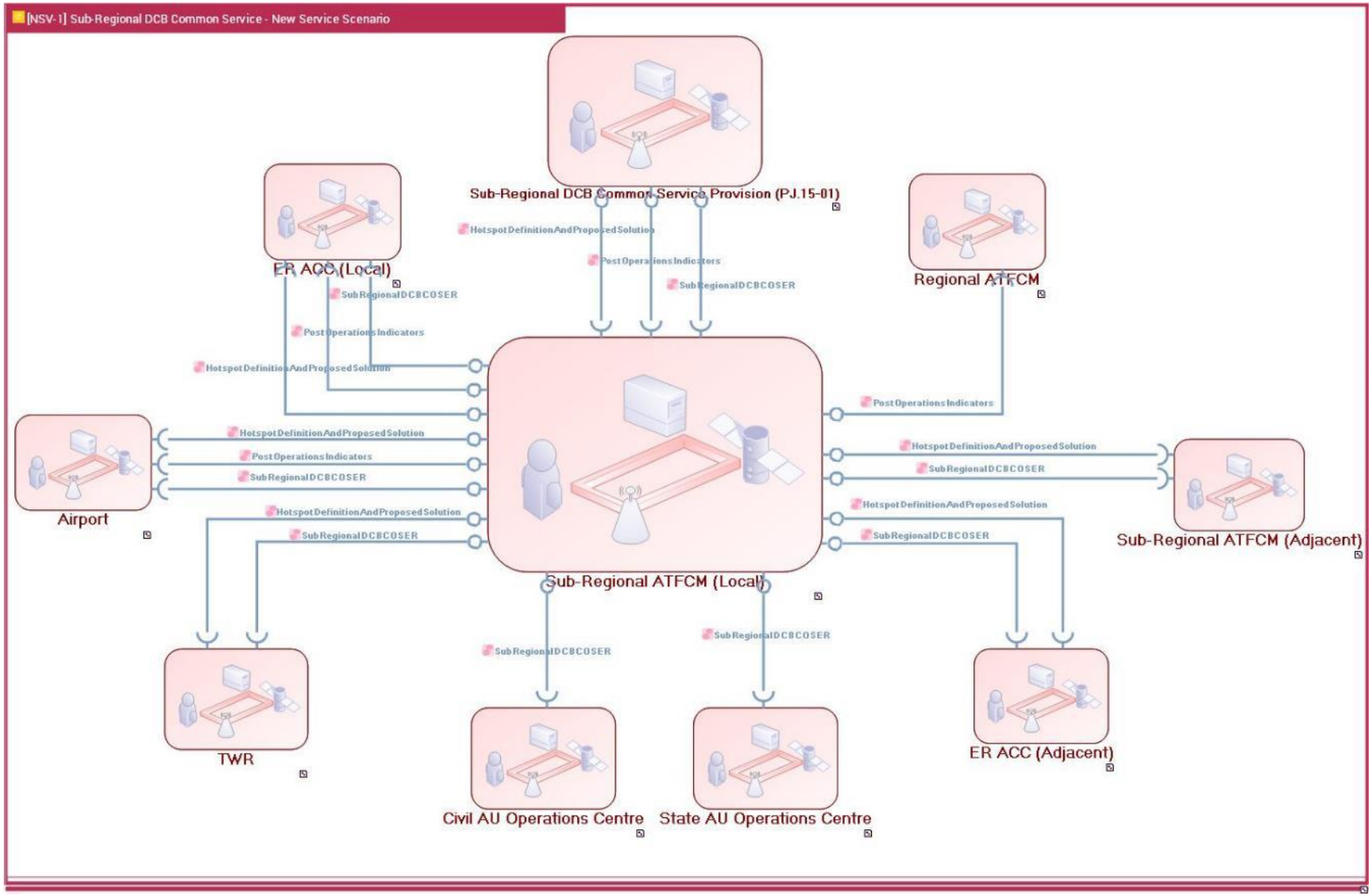

Figure 4: NSV-1 – Capability Configuration Context Diagram

5 Standardisation and Regulatory Needs

5.1 Regulatory Needs

There are no regulatory needs identified for the Sub-Regional DCB Common Service. The Sub-Regional DCB and Sub-Regional DCB Common Service is predominantly used in High capacity and high complexity airspace to enable an increase in capacity and a reduction in complexity. This means that it is unlikely at least initially that a Sub-Regional DCB Common Service would be deployed throughout the ECAC area.

The Business model discusses the time to deploy and it is assumed that not all ANSPs will deploy local systems that support Sub-Regional DCB at the same pace. Deployment speed will predominantly be governed by business need and the need to support growth in capacity. When considering deployment of local tools ANSPs should consider implementation of a Sub-Regional DCB common service to facilitate the sharing of data with their local stakeholders. Development of a standard (rather than regulation) would naturally promote adoption at a pace that aligns with the business need and the varying growth of traffic across Europe.

5.2 Standardisation Needs

The DCB common service as developed to support the PJ15-01 solution has used several standards in its creation. Eurocontrol B2B data was used in the common service, this uses aspects of FIXM and AIXM. The service used XML, HTTPS and SOAP, which are part of the Swim Yellow Profile.

There is a need for development of a standard to support deployment of Sub-regional DCB common services. When discussing the need for standardisation we need to understand the envelope for standardisation. PJ15-01 is an Enabling Infrastructure Solution and the definition of the solution predominantly resides in the Service architecture. The scope of the architecture related to the common services produced within PJ15-01 is shown in Figure 5 and Figure 6.

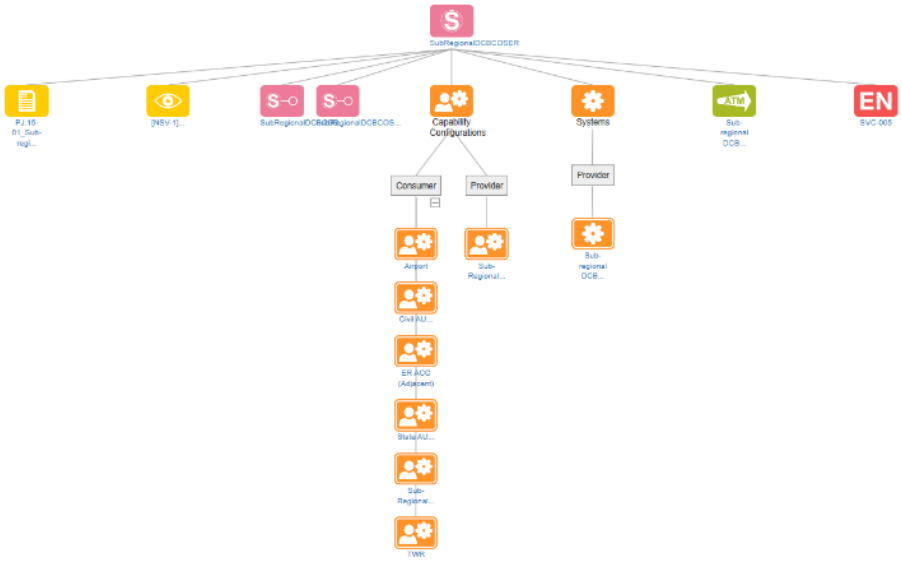

Figure 5: Sub-Regional DCB Common Service Architecture (SubRegionalDCBCOSER)

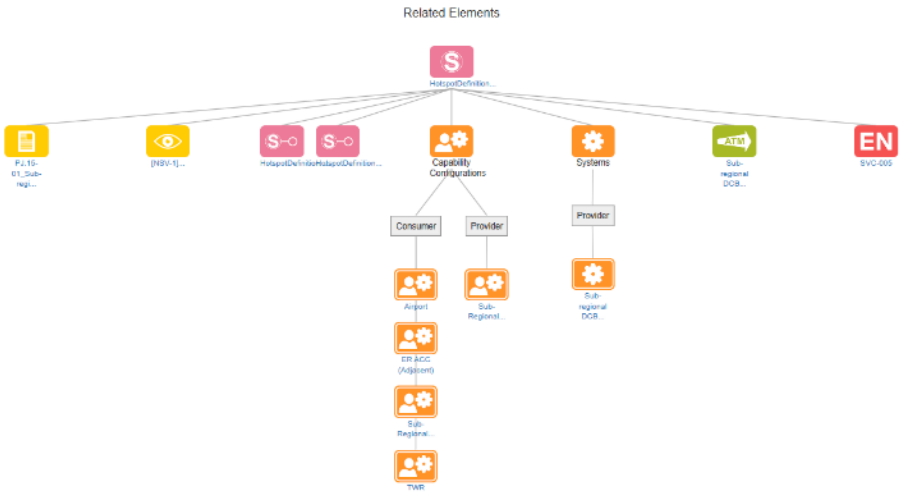

Figure 6: Sub-Regional DCB Common Service Architecture (HotspotDefinitionAndProposal)

The common service includes physical interfaces, the exchange of messages between different systems and constituents and require harmonising standards to ensure interoperability. There is also a need to support the allocation of specific performance requirements to different systems and constituents within and between stakeholder frameworks, in the case of the Sub-regional DCB common service we have concentrated on Quality of Service (QoS) service performance metrics. It is expected that the service would have a defined level of performance (Integrity, timeliness, availability, etc) and this would in part support the formation of any service contract between stakeholders.

In creating a Sub-regional DCB Common service the primary needs for standardisation stem from the need to reduce cost and the need to have a consistent information exchange and message content. Having a consistent information exchange and message content supports the operational procedures that the service needs to support.

Secondary standardisation needs relate to the inclusion of performance information related to timeliness, availability, integrity, continuity, etc.

By implementing standardised service interfaces, the information is made accessible and can be exchanged automatically. By avoiding having to use alternative data sources, which may be inconsistent and by avoiding human intervention potential data errors can be avoided.

By implementing a SWIM based information exchange through SWIM enabled systems, a seamless integration can be achieved. This integration avoids safety threats coming from inconsistencies, data errors and human error by automation and direct integration.

Information in support of the creation of an initial standard is contained within the 15-01 Sub-Regional DCB TRL6 HotspotDefinitionAndProposal SDD document [7] and the 15-01 Sub-Regional DCB TRL6 SubRegionalDCBCOSER SDD Document [9].

Note that Sub-Regional DCB is an extensive topic with many operational processes being developed by PJ09. Within PJ15-01 we were unable to create a service that would cover all the needs of a Sub-Regional DCB operation due to the scope of the subject matter. The SDD documents produced contain enough information to produce an initial standard, and it is expected that the service would be enhanced to cover more operational processes as and when the need arises. It is expected that any standard would have to be updated in response to any new needs.

6 References and Applicable documents

[1] SESAR B.04.05 D15 Common Service Foundation Methodology, Edition 00.02.01

[2] SESAR2020 PJ.15 D2.1.060 Sub-Regional DCB TRL6 Business Model, Edition 00.01.02

[3] SESAR2020 PJ.19 D2.1 Concept of Operations Edition 2017, Edition 01.00.00

[4] MEGA Web Access: https://www.srvs.nm.eurocontrol.int/mega_prod/hopex/megaauthentication.aspx

[5] https://www.eatmportal.eu/working/signin

[6] ICAO Doc 9854, Global Air Traffic Management Operational Concept, First Edition – 2005

[7] SESAR2020 PJ.15 D2.1.010 Sub-Regional DCB TRL6 HotspotDefinitionAndProposedSolution Service Description Document, Edition 00.01.00

[8] SESAR 2020 PJ.15 D2.1.090 Sub-Regional DCB TRL4 PostOperationsIndicators Service Description Document, Edition 00.01.00

[9] SESAR2020 PJ.15 D2.1.100 Sub-Regional DCB TRL6 SubRegionalImbalanceData Service Description Document, Edition 00.01.00

[10] EATMA V12

[11] PJ19: EATMA Guidance Material and Report (2017)

[12] PJ09 OSED-SPR-Interop – Part 1 (2019)

Appendix A

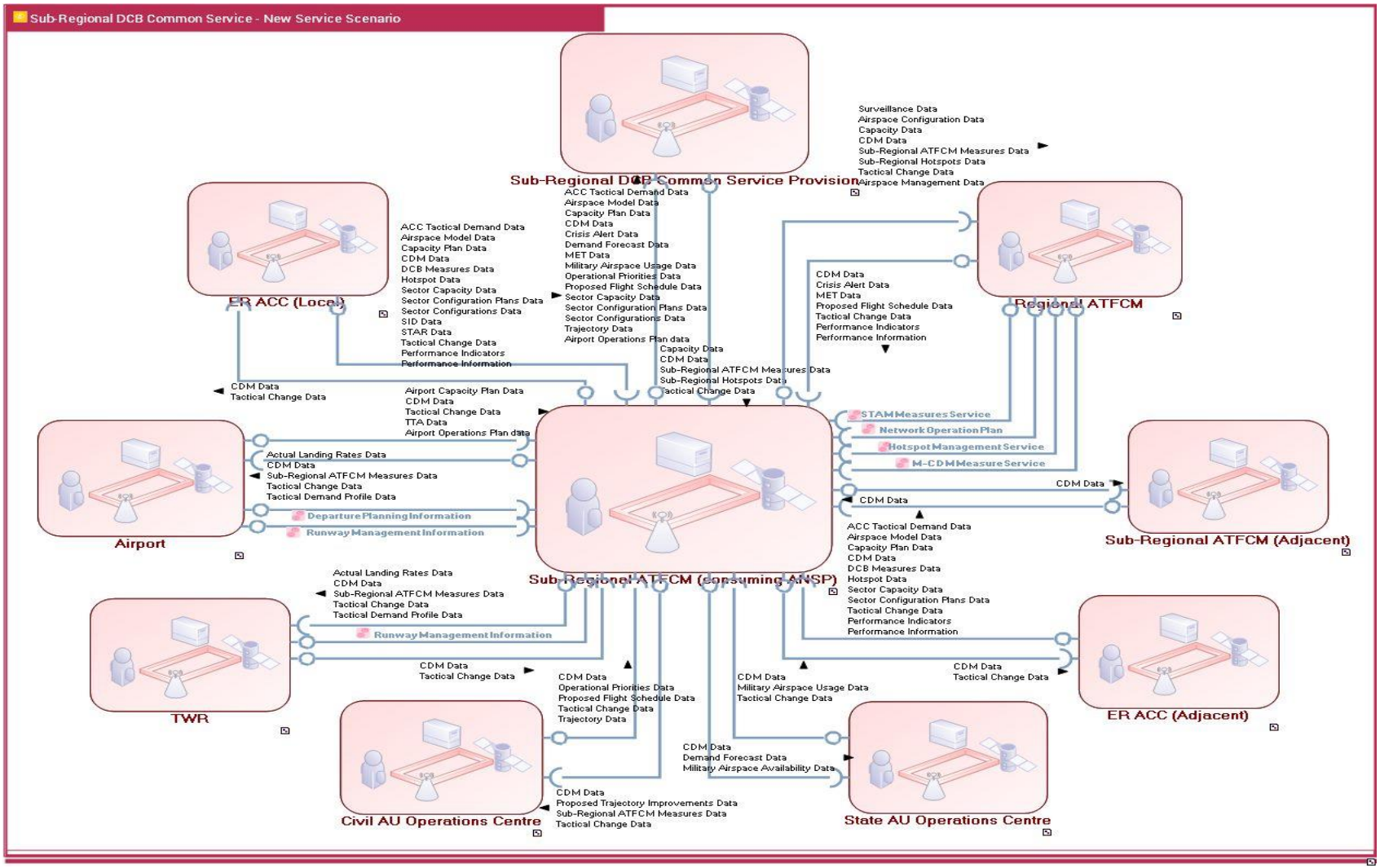

Figure 7: NSV-1 – Capability Configuration Context Diagram from TRL6 High-level Architecture description

Appendix B

Table 7 below presents the Information Elements used in the NOV-2 (Operational Node Context Diagram) and Data Elements used in the NSV-1 (Capability Configuration Context Diagram) to model the Information Flows from the Business Model [2]. When possible existing elements from EATMA have been reused. In those cases, the link to the description in the eATM Portal has been provided.

Information Flows validated in PJ15-01.

Information Flows not validated in PJ15-01.

Information Flow (in the Business Model	User		User	Information Element	Data Element
Hotspot	Sub Regional FM (Local)	← →	Sub Regional FM (Adjacent)	Hotspot	Hotspot Data
ATFCM Measures	Sub Regional FM (Local)	← →	Sub Regional FM (Adjacent)	Sub-Regional ATFCM Measures	Sub-Regional ATFCM Measures Data
Short-Term ATFCM Measures	Sub Regional FM (Local)	← →	Regional Network Manager	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
Sub-Regional ATFCM Measures	Sub Regional FM (Local)	→	Regional Network Manager	Sub-Regional ATFCM Measures	Sub-Regional ATFCM Measures Data
Sub-Regional Hotspots	Sub Regional FM (Local)	→	Regional Network Manager	Sub-Regional Hotspots	Sub-Regional Hotspots Data
Airspace Configuration (ACC, Airport)	Sub Regional FM (Local)	→	Regional Network Manager	Airspace Configuration	Airspace Configuration Data
Capacity	Sub Regional FM (Local)	→	Regional Network Manager	Capacity	Capacity Data
AFUA	Sub Regional FM (Local)	→	Regional Network Manager	Airspace change request	Airspace Management data
Surveillance	Sub Regional FM (Local)	→	Regional Network Manager	Surveillance Information	Surveillance Data
Regional ATFCM Measures	Sub Regional FM (Local)	←	Regional Network Manager	DCB measures	STAMMeasuresService (Service)
Regional Hotspots	Sub Regional FM (Local)	←	Regional Network Manager	Hotspot	HotspotManagementService (Service)

Regional ~~D~~emand	Sub Regional FM (Local)	←	Regional Network Manager	Demand forecast	Demand Forecast Data
Proposed Flight Schedule	Sub Regional FM (Local)	←	Regional Network Manager	Proposed Flight Schedule	Proposed Flight Schedule Data
Regional Performance	Sub Regional FM (Local)	←	Regional Network Manager	Performance Information/Targets	Performance Indicators Performance Information
Regional MET	Sub Regional FM (Local)	←	Regional Network Manager	MET Information	MET Data
Crisis	Sub Regional FM (Local)	←	Regional Network Manager	Crisis Alert (EATMA)	Crisis Alert Data
Network Management Operations Plan	Sub Regional FM (Local)	←	Regional Network Manager	Network Operations Plan	NetworkOperationPlan (Service)
Short-Term ATFCM Measures	Sub Regional FM (Local)	← →	ACC (Local)	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
ACC Tactical Demand	Sub Regional FM (Local)	←	ACC (Local)	ACC Tactical Demand	ACC Tactical Demand Data
Sector Configuration Plans	Sub Regional FM (Local)	← →	ACC (Local)	Sector Configuration Plans	Sector Configuration Plans Data
Sector Capacity	Sub Regional FM (Local)	←	ACC (Local)	Sector Capacity	Sector Capacity Data
Hotspot	Sub Regional FM (Local)	← →	ACC (Local)	Hotspot	SubRegionalImabalanceData (Service) HotspotDefinitionAndProposedSolution (Service)
Airspace Model	Sub Regional FM (Local)	←	ACC (Local)	Airspace Model	Airspace Model Data
Capacity Plan	Sub Regional FM (Local)	←	ACC (Local)	Capacity Plan	Capacity Plan Data
ATFCM Measures	Sub Regional FM (Local)	← →	ACC (Local)	Sub-Regional ATFCM Measures	HotspotDefinitionAndProposedSolution (Service)
Performance Information/Targets	Sub Regional FM (Local)	←	ACC (Local)	Performance Information/Targets	Performance Indicators Performance Information

Post Ops Analysis Data	Sub Regional FM (Local)	→	ACC (Local)	Post Ops Analysis Information	PostOperationasIndicators (Service)
Short	Sub Regional FM (Local)	← →	ACC (Adjacent)	CDM	CDM Data
Short-Term ATFCM Measures	Sub Regional FM (Local)	← →	ACC (Adjacent)	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
ACC Tactical Demand	Sub Regional FM (Local)	←	ACC (Adjacent)	ACC Tactical Demand	ACC Tactical Demand Data
Sector Configuration Plans	Sub Regional FM (Local)	←	ACC (Adjacent)	Sector Configuration Plans	Sector Configuration Plans Data
Sector Capacity	Sub Regional FM (Local)	←	ACC (Adjacent)	Sector Capacity	Sector Capacity Data
Hotspot	Sub Regional FM (Local)	←	ACC (Adjacent)	Hotspot	Hotspot Data
Airspace Model	Sub Regional FM (Local)	←	ACC (Adjacent)	Airspace Model	Airspace Model Data
Capacity Plan	Sub Regional FM (Local)	←	ACC (Adjacent)	Capacity Plan	Capacity Plan Data
ATFCM Measures	Sub Regional FM (Local)	←	ACC (Adjacent)	Sub-Regional ATFCM measures	Sub-Regional ATFCM Measures Data
Performance Information/Targets	Sub Regional FM (Local)	←	ACC (Adjacent)	Performance Information/Targets	Performance Indicators Performance Information
Post Ops Analysis Data	Sub Regional FM (Local)	→	ACC (Local)	Post Ops Analysis Information	Post Ops Analysis Data
Short-Term ATFCM Measures	Sub Regional FM (Local)	← →	Airport (Local)	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
Airport Capacity Capabilities	Sub Regional FM (Local)	←	Airport (Local)	Airport Capacity Capabilities	Airport Capacity Capabilities Data
Runway Configuration	Sub Regional FM (Local)	←	Airport (Local)	Runway Configuration	RunwayManagementInformation (Service)

SID	Sub Regional FM (Local)	←	Airport (Local)	SID	SID Data
STAR	Sub Regional FM (Local)	←	Airport (Local)	STAR	STAR Data
Departure Manager Information	Sub Regional FM (Local)	←	Airport (Local)	Departure planning information (TTOT, etc.)	DeparturePlanningInformation (Service)
Local Demand Picture	Sub Regional FM (Local)	→	Airport (Local)	Local Demand Picture	Local Demand Picture Data
ATFCM Measures	Sub Regional FM (Local)	← →	Airport (Local)	Sub-Regional ATFCM Measures	Sub-Regional ATFCM Measures Data
Actual Landing Rates	Sub Regional FM (Local)	← →	Airport (Local)	Actual Landing Rates	Actual Landing Rates Data
Airport Strategic Plan (incl. Performance Information/Targets)	Sub Regional FM (Local)	←	Airport (Local)	Airport Operations Plan	Airport Operations Plan data
Post Ops Analysis Data	Sub Regional FM (Local)	→	ACC (Local)	Post Ops Analysis Information	PostOperationasIndicators (Service)
Short-Term ATFCM Measures	Sub Regional FM (Local)	← →	Airspace User (AU)	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
Proposed Flight Schedule	Sub Regional FM (Local)	←	Airspace User (AU)	Proposed Flight Schedule	Proposed Flight Schedule Data
Trajectory Information	Sub Regional FM (Local)	←	Airspace User (AU)	Trajectory Information	Trajectory Data
Operational Priorities	Sub Regional FM (Local)	←	Airspace User (AU)	Operational Priorities	Operational Priorities Data
ATFCM Measures	Sub Regional FM (Local)	→	Airspace User (AU)	Sub-Regional ATFCM Measures	Sub-Regional ATFCM Measures Data
Proposed Trajectory Improvements	Sub Regional FM (Local)	→	Airspace User (AU)	Proposed Trajectory Improvements	Proposed Trajectory Improvements Data
Short-Term ATFCM Measures	Sub Regional FM (Local)	←	Military User (MIL)	Short-Term ATFCM Measures	Short-Term ATFCM Measures Data
MIL Airspace Availability	Sub Regional FM (Local)	→	Military User (MIL)	Military Airspace Availability	Military Airspace Availability Data

MIL Airspace Usage	Sub Regional FM (Local)	←	Military User (MIL)	Military Airspace Usage	Military Airspace Usage Data
Civil Demand	Sub Regional FM (Local)	→	Military User (MIL)	Demand forecast	Demand Forecast Data

Table 7: Mapping between the Information Flows in the Business Model and the Information and Data Elements used in the architecture description

Appendix C

C.1.1 Information Elements

Table 8 below presents the Information Elements used in the NOV-2 (Operational Node Context Diagram) to model the Information Flows from the Business Model [2]. When possible existing elements from EATMA have been reused. In those cases, the link to the description in the eATM Portal has been provided.

Note that the Information Elements listed in this appendix are the elements that could be exchanged via the Sub-regional DCB common service. Not all of the information exchanges have been validated as a part of the validation exercises.

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-101	LocalEnRouteATS SubRegionalNetworkOperations exchange	En-Route ATS (Local)	Sub-Regional Network Operations (Local)	• ACC Tactical Demand • Airspace Model • Capacity Plan • Hotspot • Performance Information/Targets • Sector Capacity • Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-102	SubRegionalNetworkOperations LocalEnRouteATS exchange	Sub-Regional Network Operations (Local)	En-Route ATS (Local)	• Capacity Plan • Hotspot • Post Ops Analysis Information • Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution PostOperationalIndicators
IER-15.01-HLA-201	SubRegionalNetworkOperations SubRegionalDCBCommonServiceProvision exchange	Sub-Regional Network Operations (Local)	Sub-Regional DCB Common Service Provision	• ACC Tactical Demand • Airspace Model • Capacity Plan • Demand Forecast • MET Information • Operational Priorities • Proposed Flight Schedule • Sector Capacity	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution PostOperationalIndicators

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
				• Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures	
IER-15.01-HLA-202	SubRegionalDCBCommonServiceProvision SubRegionalNetworkOperations exchange	Sub-Regional DCB Common Service Provision	Sub-Regional Network Operations (Local)	• Sub-Regional ATFCM Measures • Sub-Regional ATFCM Hotspots • Sub-Regional ATFCM Imbalances	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution PostOperationalIndicators
IER-15.01-HLA-301	RegionalNetworkOperations SubRegionalNetworkOperations exchange	Regional Network Operations	Sub-Regional Network Operations (Local)	• Crisis Alert • Demand Forecast • Airspace Model • MET Information • Hotspots • Network Operations Plan	PostOperationalIndicators

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
				• Performance Information/Targets • Post Ops Analysis Information • Short-Term ATFCM Measures	
IER-15.01-HLA-302	SubRegionalNetworkOperations RegionalNetworkOperations exchange	Sub-Regional Network Operations (Local)	Regional Network Operations	• Airspace Change Request • Airspace Configuration • Short-Term ATFCM Measures • Sub-Regional ATFCM Hotspots • Sub-Regional ATFCM Measures • Surveillance Information • Capacity	PostOperationalIndicators
IER-15.01-HLA-401	AdjacentSubRegionalNetworkOperations SubRegionalNetworkOperations exchange	Sub-Regional Network Operations (Adjacent)	Sub-Regional Network Operations (Local)	• Hotspot • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-402	SubRegionalNetworkOperations AdjacentSubRegionalNetworkOperations exchange	Sub-Regional Network Operations (Local)	Sub-Regional Network Operations (Adjacent)	• Hotspot • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution
IER-15.01-HLA-501	AdjacentEnRouteATS SubRegionalNetworkOperations exchange	En-Route ATS (Adjacent)	Sub-Regional Network Operations (Local)	• Hotspot • Short-Term ATFCM Measures • ACC Tactical Demand • Airspace Model • Capacity Plan • Sub-Regional ATFCM Measures • Performance Information/Targets • Sector Capacity • Sector Configuration Plans	SubRegionalDCBCOSER HotspotDefinitionAndProposedSolution

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-502	SubRegionalNetworkOperations AdjacentEnRouteATS exchange	Sub-Regional Network Operations (Local)	En-Route ATS (Adjacent)	• Hotspot • Short-Term ATFCM Measures • Capacity Plan • Performance Information/Targets • Sector Configuration Plans • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER
IER-15.01-HLA-601	CivilAirspaceUserOpsSupport SubRegionalNetworkOperations exchange	Airspace User Ops Support (Civil)	Sub-Regional Network Operations (Local)	• Short-Term ATFCM Measures • Proposed flight Schedule • Trajectory Information • Operational Priorities	SubRegionalDCBCOSER
IER-15.01-HLA-602	SubRegionalNetworkOperations CivilAirspaceUSerOpsSupport exchange	Sub-Regional Network Operations (Local)	Airspace User Ops Support (Civil)	• Short-Term ATFCM Measures • Proposed Trajectory Improvements • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-701	MilitaryAirspaceUserOpsSupport SubRegionalNetworkOperations exchange	Airspace User Ops Support (Military)	Sub-Regional Network Operations (Local)	• Short-Term ATFCM Measures • Military Airspace Use	SubRegionalDCBCOSER
IER-15.01-HLA-702	SubRegionalNetworkOperations MilitaryAirspaceUserOpsSupport exchange	Sub-Regional Network Operations (Local)	Airspace User Ops Support (Military)	• Demand Forecast • Military Airspace Availability • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER
IER-15.01-HLA-801	AerodromeATS SubRegionalNetworkOperations exchange	Aerodrome ATS	Sub-Regional Network Operations (Local)	• Departure Planning Information • Runway Configuration • Short-Term ATFCM Measures • SID • STAR • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
IER-15.01-HLA-802	SubRegionalNetworkOperations AerodromeATS exchange	Sub-Regional Network Operations (Local)	Aerodrome ATS	• Short-Term ATFCM Measures • Actual Landing Rates • Local Demand Picture • Post Ops Analysis Information • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAnd ProposedSolution
IER-15.01-HLA-901	AirportOpsSupport SubRegionalNetworkOperations exchange	Airport Ops Support	Sub-Regional Network Operations (Local)	• Airport Capacity Capabilities • Airport Strategic Plan • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures	SubRegionalDCBCOSER HotspotDefinitionAnd ProposedSolution
IER-15.01-HLA-902	SubRegionalNetworkOperations AirportOpsSupport exchange	Sub-Regional Network Operations (Local)	Airport Ops Support	• Short-Term ATFCM Measures • Actual Landing Rates • Local Demand Picture • Post Ops Analysis Information	SubRegionalDCBCOSER HotspotDefinitionAnd ProposedSolution

Identifier	Name	Issuer	Intended Addressees	Information Element	Service Identifier
				• Sub-Regional ATFCM Measures	

Table 8: PJ.15-01 Information Exchanges

C.1.2 Information Elements Exchange Requirements

This section describes the Information Exchange Requirements (IER). The IER are based around the Information Elements used in the NOV-2 (Operational Node Context Diagram) to describe the IER from the Business Model [2].

[REQ]

Identifier	IER-15.01-OSED-101
Title	En-Route ATS (local) to Sub-Regional Network Operations
Requirement	The En-Route ATS (Local) actor shall provide the following information to the Sub-Regional Network Operations actor: • ACC Tactical Demand • Airspace Model • Capacity Plan • Hotspot • Performance Information/Targets • Sector Capacity • Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures

Status	<Validated>
Rationale	Information is provided to allow the Sub-regional Manager to attain situational awareness of the En-Route ATS (local) capacity verses demand picture. Provides context for CDM activities. Local complexity is also used for context. Plan can include plan and options. Provides options for management of traffic to local performance targets.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	ACC Tactical Demand
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Performance Information/Targets
<SATISFIES>	<Information Exchange>	Sector Capacity
<SATISFIES>	<Information Exchange>	Sector Configuration Plans

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-102
Title	Sub-Regional Network Operations to En-Route ATS (local)
Requirement	The Sub-Regional Network Operations actor shall provide the following information to the En-Route ATS (Local) actor: • Capacity Plan • Hotspot • Post Ops Analysis Information • Sector Configuration Plans • Short-Term ATFCM Measures

	• Sub-Regional ATFCM Measures
Status	<Validated>
Rationale	Information provided to En-Route ATS (Local) will allow the actor to Provide a longer term view and trends and then strategies for optimisation.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Post Ops Analysis Information
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-201
Title	Sub-Regional Network Operations to Sub-Regional DCB Common Service Provision
Requirement	The Sub-Regional Network Operations actor shall provide the following information to Sub-Regional DCB Common Service Provision: • ACC Tactical Demand • Airspace Model • Capacity Plan • Demand Forecast

	• MET Information • Operational Priorities • Proposed Flight Schedule • Sector Capacity • Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures
Status	<in progress>
Rationale	Information is provided from the sub-regional operation to the service provider. This information facilitates all sub-regional service provision.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	ACC Tactical Demand
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Demand Forecast
<SATISFIES>	<Information Exchange>	MET Information

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Operational Priorities
<SATISFIES>	<Information Exchange>	Proposed Flight Schedule
<SATISFIES>	<Information Exchange>	Sector Capacity
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-202
Title	Sub-Regional DCB Common Service Provision to Sub-Regional Network Operations
Requirement	Sub-Regional DCB Common Service Provision shall provide the following information to Sub-Regional Network Operations actor: • ACC Tactical Demand • Airspace Model

	• Capacity Plan • Demand Forecast • MET Information • Operational Priorities • Proposed Flight Schedule • Sector Capacity • Sector Configuration Plans • Short-Term ATFCM Measures • Sub-Regional ATFCM Measures
Status	<in progress>
Rationale	Information is provided from the service provider to the sub-regional operation. This information facilitates all sub-regional operation activities.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	ACC Tactical Demand
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	Capacity Plan

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Demand Forecast
<SATISFIES>	<Information Exchange>	MET Information
<SATISFIES>	<Information Exchange>	Operational Priorities
<SATISFIES>	<Information Exchange>	Proposed Flight Schedule
<SATISFIES>	<Information Exchange>	Sector Capacity
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-301
Title	Regional Network Operations to Sub-Regional Network Operations
Requirement	Regional Network Operations actor shall provide the following information to Sub-Regional Network Operations actor:

	• Crisis Alert • Demand Forecast • Airspace Model • MET Information • Hotspots • Network Operations Plan • Performance Information/Targets • Post Ops Analysis Information • Short-Term ATFCM Measures
Status	<in progress>
Rationale	Provides NM information about environment and airspace configuration, Knowledge of Sub-regional information allows the Network to reconcile what we are asking for against other stakeholders and will facilitate implementation with reconciliation. Use as a trigger to engage in CDM and then update the plans as per information provided. Context of the hotspot could be local or external to the subregion (high level view of hotspots). Can be used to shortcut the CDM as both parties have a common picture of the situation and CDM will be based on that shared view.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Crisis Alert
<SATISFIES>	<Information Exchange>	Demand Forecast
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	MET Information
<SATISFIES>	<Information Exchange>	Hotspots
<SATISFIES>	<Information Exchange>	Network Operations Plan
<SATISFIES>	<Information Exchange>	Performance Information/Targets
<SATISFIES>	<Information Exchange>	Post Ops Analysis Information
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Network

[REQ]

Identifier	IER-15.01-OSED-302
Title	Sub-Regional Network Operations to Regional Network Operations
Requirement	Sub-Regional Network Operations actor shall provide the following information to Regional Network Operations actor: • Airspace Change Request • Airspace Configuration • Short-Term ATFCM Measures • Sub-Regional ATFCM Hotspots • Sub-Regional ATFCM Measures • Surveillance Information • Capacity
Status	<Validated>
Rationale	We update our plan to consider performance and KPI information. Use as a trigger to engage in CDM and then update the plans as per information provided. Context of the hotspot could be local or external to the subregion (high level view of hotspots). Can be used to shortcut the CDM as both parties have a common picture of the situation and CDM will be based on that shared view.

	Bilateral with outside ECAC area information, the demand data will include all relevant data internal and external to ECAC and provide a common view of demand. Common baseline for forecast is used to develop and update demand vs capacity plans and understand how STAM out of area is impacting the Sub-region. Network performance targets, which guide our targets and make sure that we are compatible and also understand the impact on the network if we don't comply. Information obtained is used to model outcomes.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Airspace Change Request
<SATISFIES>	<Information Exchange>	Airspace Configuration
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Hotspots
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Surveillance Information
<SATISFIES>	<Information Exchange>	Capacity
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Network

[REQ]

Identifier	IER-15.01-OSED-401
Title	Sub-Regional Network Operations (Adjacent) to Sub-Regional Network Operations
Requirement	Sub-Regional Network Operations (Adjacent) actor shall provide the following information to Sub-Regional Network Operations actor: • Hotspot • Sub-Regional ATFCM Measures
Status	<Validated>
Rationale	Information is provided to allow the Sub-regional Manager to attain situational awareness of the Sub-Regional Network Operations

	(Adjacent) capacity verses demand picture. Provides context for CDM activities. Local complexity is also used for context. Plan can include plan and options. Provides options for management of traffic to local performance targets. Information used to provide a CDM shortcut through a shared common view. Peer to peer information at the relevant level of detail is provided.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-402
Title	Sub-Regional Network Operations to Sub-Regional Network Operations (Adjacent)
Requirement	Sub-Regional Network Operations actor shall provide the following information to Sub-Regional Network Operations (Adjacent) actor: • Hotspot • Short-Term ATFCM Measures • ACC Tactical Demand • Airspace Model • Capacity Plan • Sub-Regional ATFCM Measures • Performance Information/Targets • Sector Capacity • Sector Configuration Plans
Status	<Validated>
Rationale	Information is provided to allow the Sub-regional Manager to attain situational awareness of the Sub-Regional Network Operations

	(Adjacent) capacity verses demand picture. Provides context for CDM activities. Local complexity is also used for context. Plan can include plan and options. Provides options for management of traffic to local performance targets. Information used to provide a CDM shortcut through a shared common view. Peer to peer information at the relevant level of detail is provided.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	ACC Tactical Demand
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<SATISFIES>	<Information Exchange>	Performance
<SATISFIES>	<Information Exchange>	Information/Targets

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Sector Capacity
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-501
Title	En-Route ATS (Adjacent) to Sub-Regional Network Operations
Requirement	En-Route ATS (Adjacent) actor shall provide the following information to Sub-Regional Network Operations actor: • Hotspot • Short-Term ATFCM Measures • ACC Tactical Demand • Airspace Model • Capacity Plan • Sub-Regional ATFCM Measures • Performance Information/Targets • Sector Capacity • Sector Configuration Plans

Status	<Validated>
Rationale	For use when resolving issues related to a temporary axis is required and would be similar to the ER local where information is provided to allow the Sub-regional Manager to attain situational awareness of the En-Route ATS (local) capacity verses demand picture. Provides context for CDM activities. Local complexity is also used for context. Plan can include plan and options. Provides options for management of traffic to local performance targets.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	ACC Tactical Demand
<SATISFIES>	<Information Exchange>	Airspace Model
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Performance Information/Targets
<SATISFIES>	<Information Exchange>	Sector Capacity
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-502
Title	Sub-Regional Network Operations to En-Route ATS (Adjacent)
Requirement	Sub-Regional Network Operations actor shall provide the following information to actor En-Route ATS (Adjacent): • Hotspot • Short-Term ATFCM Measures • Capacity Plan • Performance Information/Targets • Sector Configuration Plans • Sub-Regional ATFCM Measures
Status	<Validated>

Rationale	For use when resolving issues related to a temporary axis is required and would be similar to the ER local where information is provided to allow the Sub-regional Manager to attain situational awareness of the En-Route ATS (local) capacity verses demand picture. Provides context for CDM activities. Local complexity is also used for context. Plan can include plan and options. Provides options for management of traffic to local performance targets.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Hotspot
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Capacity Plan
<SATISFIES>	<Information Exchange>	Performance Information/Targets
<SATISFIES>	<Information Exchange>	Sector Configuration Plans
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-601
Title	Civil Airspace User Ops Support to Sub-Regional Network Operations
Requirement	Civil Airspace User Ops Support actor shall provide the following information to actor Sub-Regional Network Operations: • Short-Term ATFCM Measures • Proposed flight Schedule • Trajectory Information • Operational Priorities
Status	<in progress>
Rationale	Sharing of information between the Sub-region and Civil AU allows CDM through shared common view. Sharing of information (FF-ICE/FDCI, etc) gives each actor shared view and facilitates resolution of hotspots.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Proposed flight Schedule
<SATISFIES>	<Information Exchange>	Trajectory Information
<SATISFIES>	<Information Exchange>	Operational Priorities
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-602
Title	Sub-Regional Network Operations to Civil Airspace User Ops Support
Requirement	Sub-Regional Network Operations actor shall provide the following information to actor Civil Airspace User Ops Support: • Short-Term ATFCM Measures • Proposed Trajectory Improvements • Sub-Regional ATFCM Measures

Status	<In Progress>
Rationale	Sharing of information between the Sub-region and Civil AU allows CDM through shared common view. Sharing of information (FF-ICE/FDCI, etc) gives each actor shared view and facilitates resolution of hotspots.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Proposed Trajectory Improvements
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-701
Title	Military Airspace User Ops Support to Sub-Regional Network Operations
Requirement	Military Airspace User Ops Support actor shall provide the following information to actor Sub-Regional Network Operations: • Short-Term ATFCM Measures • Military Airspace Use
Status	<Validated>
Rationale	Related to CDM to agree to optimised airspace usage which may include TTO to SUA. Revision of SUA or airspace usage close to execution is also considered. Military Airspace User Ops may be included in the resolution of hotspots.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Military Airspace Use
<ALLOCATED_TO>	<Information Flow>	

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-702
Title	Sub-Regional Network Operations to Military Airspace User Ops Support
Requirement	Sub-Regional Network Operations actor shall provide the following information to the Military Airspace User Ops Support actor: • Demand Forecast • Military Airspace Availability • Sub-Regional ATFCM Measures
Status	<Validated>
Rationale	Related to CDM to agree to optimised airspace usage which may include TTO to SUA. Revision of SUA or airspace usage close to execution is also considered. Military Airspace User Ops may be included in the resolution of hotspots.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Demand Forecast
<SATISFIES>	<Information Exchange>	Military Airspace Availability
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)

[REQ]

Identifier	IER-15.01-OSED-801
Title	Aerodrome ATS to Sub-Regional Network Operations
Requirement	Aerodrome ATS actor shall provide the following information to the Sub-Regional Network Operations actor: • Departure Planning Information • Runway Configuration • Short-Term ATFCM Measures • SID • STAR • Sub-Regional ATFCM Measures

Status	<in progress>
Rationale	To arrive at an airport plan that is compatible with the sub-region, including planning phase into execution and execution.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Departure Planning Information
<SATISFIES>	<Information Exchange>	Runway Configuration
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	SID
<SATISFIES>	<Information Exchange>	STAR
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Airport (Large)

[REQ]

Identifier	IER-15.01-OSED-802
Title	Sub-Regional Network Operations to Aerodrome ATS
Requirement	Aerodrome ATS actor shall provide the following information to the Sub-Regional Network Operations actor: • Departure Planning Information • Runway Configuration • Short-Term ATFCM Measures • SID • STAR • Sub-Regional ATFCM Measures
Status	<in progress>
Rationale	To arrive at an airport plan that is compatible with the sub-region, including planning phase into execution and execution.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Departure Planning Information

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Runway Configuration
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	SID
<SATISFIES>	<Information Exchange>	STAR
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Airport (Large)

[REQ]

Identifier	IER-15.01-OSED-901
Title	Airport Ops Support to Sub-Regional Network Operations
Requirement	Airport Ops Support actor shall provide the following information to the Sub-Regional Network Operations actor: • Airport Capacity Capabilities • Airport Strategic Plan

	• Short-Term ATFCM Measures • Sub-Regional ATFCM Measures
Status	<in progress>
Rationale	To arrive at an airport plan that is compatible with the sub-region, including planning phase into execution and execution.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Airport Capacity Capabilities
<SATISFIES>	<Information Exchange>	Airport Strategic Plan
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Airport (Large)

[REQ]

Identifier	IER-15.01-OSED-902
Title	Sub-Regional Network Operations to Airport Ops Support
Requirement	Sub-Regional Network Operations actor shall provide the following information to the Airport Ops Support actor: • Short-Term ATFCM Measures • Actual Landing Rates • Local Demand Picture • Post Ops Analysis Information • Sub-Regional ATFCM Measures
Status	<in progress>
Rationale	To arrive at an airport plan that is compatible with the sub-region, including planning phase into execution and execution.
Category	<Operational>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.15.01
<SATISFIES>	<Information Exchange>	Short-Term ATFCM Measures
<SATISFIES>	<Information Exchange>	Actual Landing Rates

Relationship	Linked Element Type	Identifier
<SATISFIES>	<Information Exchange>	Local Demand Picture
<SATISFIES>	<Information Exchange>	Post Ops Analysis Information
<SATISFIES>	<Information Exchange>	Sub-Regional ATFCM Measures
<ALLOCATED_TO>	<Information Flow>	
<ALLOCATED_TO>	<Activity>	
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route (High Complexity)
<ALLOCATED_TO>	<Sub-Operating Environment>	Airport (Large)


DFS Deutsche Flugsicherung


ENAIRE


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NATS


THALES