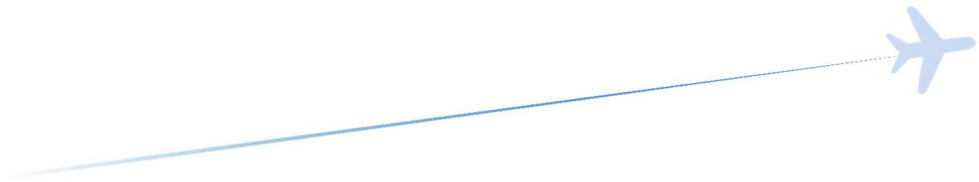

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DCB

PJ09 - COLLABORATIVE NETWORK MANAGEMENT FUNCTIONS

This Technical Specification is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 731730 under European Union's Horizon 2020 research and innovation programme.

Abstract

This Technical Specification presented here is part of PJ09 for Advanced DCB and documents the technical requirements for PJ09 Solution 3: Collaborative Network Management Functions.

Here, a variety of collaborative mechanisms are introduced, including a distributed decision-making system and a collaborative NOP.

This document aims to provide a consolidated set of technical requirements allowing these collaborative tools to reach the aforementioned advanced capabilities.

Specifically, it presents the technical architecture needed for this. Note that there are no significant changes from the baseline architecture.

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1 Executive summary

The major objective of the PJ09 Advanced DCB concept is to evolve the existing DCB process to a powerful distributed network management function. This takes full advantage of the SESAR Layered Collaborative Planning, Trajectory Management principles and SWIM Technology to improve the effectiveness of ATM resource planning and the network performance of the ATM system in Europe.

PJ09 Advanced DCB shall develop and validate the following three SESAR Solutions:

- PJ09-01 Network Prediction and Performance

- PJ09-02 Integrated Local DCB Processes

- PJ09-03 Collaborative Network Management Functions

The technical specifications as described here are for Solution PJ09.03: Collaborative Network Management. These include specification for:

- A variety of collaborative mechanisms
- A distributed decision-making system
- A collaborative NOP

This Technical Specification primarily covers the Function Block Demand and Capacity Balancing.

The technical requirements presented have made no significant changes to the baseline architecture.

2 Introduction

The Technical Specification is divided into three parts, matching the three solutions found in PJ09. This particular Technical Specification addresses Solution PJ09.03: Collaborative Network Management, the other Solutions are found in separate documents:

- Solution PJ09.01: Network Prediction and Performance

    - An improved Forecast Business Trajectory based on the quantification of uncertainties, probabilistic approaches, and enriched E/R (En-Route) and APT (Airport) information sharing. It will provide (in the 6hrs – 10 min time horizon) a better detection of network imbalances based on different methodologies (density count, complexity, interferences). As the granularity becomes finer along the timeline, the methodology moves to a quantitative approach and becomes more and more specific to an ANSP local environment. It implies to collect all these local predicted imbalance figures in order to provide a consolidated local imbalance figures at the network level.

    - The Advanced DCB provides capabilities to support the collaborative decision-making from the different stakeholder perspectives (Airspace Users, Airports, ANSPs and NM). A Stakeholder can express dynamically and precisely to the performance framework their individual needs that others stakeholders can try to accommodate. It moves the performance to a quantitative and dynamic (e.g. AUs will be able to express their non-linear cost) approach.
        - To guide the NMf decision-making to resolve the hotspots in nominal situations
        - To guide the NMf decision-making to recover critical situations at the network level (Resilience)

- Solution PJ09.02: Integrated Local DCB processes

    - Local DCB actors and Extended ATC Planning actors works within an INAP (Integrated Network and ATC Planning) providing the full capabilities to manage imbalances through assessment of evolving traffic situations and evaluations of opportunities, in order to apply the best performing option between the Dynamic Airspace Configuration, Flow Managements measures (synchronization, sequencing) and Trajectory measures.

    - The Complexity Reduction Service (CORSE) proposes a full set of methodologies and measures to cover the resolution of problems dealing with safety and optimisation issues to manage

traffic density, traffic organisation and traffic interferences in the E/R and Arrival/Departure phases.
A myriad of functions (ATC, ACC TMA, APT, AU) propose at the same time corrective short-term measures with overlaying horizons which can be affected by concurrent strategies. For this reason, the interaction between DCB and the other ATC, TMA and APT activities needs to be properly managed in order to avoid interfering concurrent actions.

- The management of Hotspot/OptiSpot resolution and more frequent Target-Time STAM in the planning and execution phase is supported by advanced capabilities (preparation, implementation, monitoring).

- The INAP function gives the opportunity to other actors (CFSP-APT, AU) to indicate which flight shall be given preference or Margins of Manoeuvre over which others according to business constraints and that will be fully taken into account within DCB decision-making mechanisms.

- The Target-Time Management: To manage the hotspot resolution, INAP or NM can constrain the Time of Entry of flights into the hotspot or the time on a specific waypoint (i.e. the COP, not necessarily being a coordination point between two sectors) with TTO (Target Time Over the congested E/R point) and TTA (Target Time of Arrival at congested Airport) in order to smooth the traffic. Because the Target Time (TTO/TTA) is managed in two different ways depending on whether the TTO/TTA has been prepared in the SBT elaboration and refinement or in the RBT revision processes it is propose to distinguish and to introduce :
  - TTO/TTA (Target Time Over/Target Time at the Arrival) for measures managed in the SBT elaboration phase
  - tTTO/tTTA (tactical Target Time Over/tactical Target Time at the Arrival)for measures managed in the RBT revision phase

- Solution PJ09.03: Collaborative Network Management
  - To reflect the variety of collaborative mechanisms, different generic models have been identified. It defines the roles, responsibilities, rules and procedures concerning the initiation, delegation, coordination, and implementation and monitoring to guide the DCB activities under the Network performance targets.

  - PJ09 considers two different approaches depending on whether we manage a normal or critical situations. These different contexts implies a clear splitting role of INAP and NM, and different local and network DCB mechanisms.
    - The Nominal context activates local optimizations without a global optimum. Local INAP actors will play the main role deciding the local solution to apply. In such a context, local methodologies (UDPP, AIMA, cop sequencer, ad-hoc STAM, ….) are used with a Constraint Reconciliation Mechanism in order to manage the local interfering constraints. The

resulting DCB solutions optimize the local business needs but are sub-optimum at the global level.

- The Critical context activates the global optimization. NM actor will play the main role deciding the solutions to apply at the global level. In such a context, one global methodology (CASA, CRO, Interactive Regulation, …) is used (global optimisation). The resulting DCB solution is an optimized solution at the global level. It supports the NM business needs to recover efficiently a global nominal situations.

- In such a distributed decision-making system, the local actors (ATC, ATS in TMA, APT…) have a significant increase in capabilities to apply local rules to build solutions adapted to their area of responsibility. It means that a myriad of local decision sources (ATC, ACC TMA, APT, AU) build local solutions generating possible interfering constraints. In order to manage these interfering constraints, at the network level the Constraint Reconciliation service will ensure the collection of the locally planned DCB Target-Time solutions to determine the global consistency and to arbitrate amongst the multiple constraints to apply. This arbitration is based on priority rules depending of the most important/critical problems (hotspot/optispot) to manage.

- The Collaborative NOP provides all the information to the NMf actors/functions to support the local management of DCB activities.
  - The provision of network consolidated imbalances figures
  - The provision of Spot information (Hotspot/OptiSpot)
  - The provision of what-if capabilities
  - The provision of what-else capabilities
  - The provision of Network information
  - The provision of AU Priorities and Preferences
  - The management of Hotspot
  - The management of DCB Measures

This technical document differs from the PJ09 OSED [4] which is in just one document. Occasionally, this can result in an awkward split of technical information between the 3 PJ09 Solution Technical Specification documents. This is unavoidable because of the interdependency between the Solutions and it is therefore recommended that the reader refers to all the Solutions' Technical Specification documents in combination.

Much of the introduction material is common to all solutions; however the formal EATMA derived parts and textual requirements in Section 4.2 concentrate on this specific solution. As such sections 3 onwards are customised for each technical specification part. These sections containing a subset of the requirements that describe, where appropriate functional and capabilities specifications, covering performance, physical characteristics, environmental and facility conditions under which the functional block(s) enabling a SESAR Solution has to perform, requirements to interfaces and data definitions, security specifications, design constraints, all adapted for that solution area.

At maturity level 2, there is a strong correlation between Operational and Technical requirements (often a one-to-one mapping). Also, the topic based division of the PJ09 technical specification material into the Solution documents uses the identification of topics for operational concepts as documented in the OSED [4].

The opinions expressed herein reflect the author's view only. Under no circumstances shall the SESAR Joint Undertaking be responsible for any use that may be made of the information contained herein.

2.1 Purpose of the document

This document provides the requirements specification, covering functional, non-functional and interface requirements related to SESAR Solution PJ09-03: Collaborative Network Management.

The goal is to identify high level technical artefacts and services with a view to contributing to the common architecture and understanding what needs to be provided by industry. This allows PJ09's technical needs to be consolidated and shared with others.

The SESAR Solution Development Life Cycle aims to structure and perform the work at project level and progressively increase SESAR Solution maturity, with the final objective of delivering a SESAR Solution data-pack for industrialisation and deployment. The PJ09 Technical specifications (TS/IRS) represent one of the key parts of this SESAR Solution data-pack for maturity level 2.

The PJ09 Technical Specifications address the "what" and not the "how", therefore they do not aim at specifying the physical design of the functional block (which remains for the industry), but the functional description and the necessary logical interfaces with other functional blocks. These TS/IRS documents are intended to form the basis for the development of industry standards for the systems or sub-systems in standardisation development organisations, for example EUROCAE. The overall target architecture will be made up of a set of domain level "systems" that will be further broken down into functional blocks based on performance requirements.

The target architecture is maintained in EATMA by PJ19 while the further breakdown is done in this TS/IRS for each ATM 'functional block' supporting SESAR Solution PJ09-03.

This Technical Specification document includes all impacted Functional Blocks identified at this stage.

The requirements included in TS/IRS satisfy the requirements captured at PJ09 SPR-INTEROP/OSED [4] in Solution 3 related topics and are associated with Functional blocks and Enablers (ENs) available in EATMA applicable version.

This Technical Specification also addresses the interface(s) related requirements (IRS) based on the OSED [4] topics considered in this version.

The PJ09 TS/IRS documents provide sufficient information to allow DCB related functional blocks to be further refined, designed and implemented either as separate functional blocks or as part of an integrated system while respecting the validated SESAR PJ09 Solution (whose detailed operational environment and operating methods are presented in the OSED [4]).

2.2 Scope

This is the TS/IRS for SESAR Solution PJ.09-03: Collaborative Network Management Functions. It is currently the final version produced after verification activities and validation exercises.

PJ09.03 is covering the below OIs with the aim to reach mentioned maturity levels at the end of SESAR2020 Wave 1.

OIs	Initial Maturity level	Target Maturity level at the end of Wave 1	OIs description
AUO-0108	V1	V2 (in R8)	Most Penalizing Delay based on reconciliation between DCB and Airport CDM
DCB-0103-B	V1	V2 (in R9)	Collaborative Network Operations Plan
DCB-0214	V1	V1 (V2, V3 in Wave 2)	DCB What-If Network Impact Assessment
DCB-0215	V1	V1 (V2, V3 in Wave 2)	Consolidation of imbalances and arbitration of Trajectory Management solutions

Table 1: PJ09 Solution 03 Maturity levels table

This final version of this TS/IRS is complete and fully aligned with Final version of the OSED [4] .

So, the complete set of Operational topics covered by this document includes:

Topic 9	Local Constraint Reconciliation & Global Optimization
Topic 10	Collaborative Framework
Topic 11	Collaborative NOP

Table 2: PJ09 Solution 03 Operational topic table

Note: Topics 1 – 8 are addressed in the PJ09 Solution 1 and PJ09 Solution 2 parts of the technical specification.

2.3 Intended readership

This document is aimed at the following stakeholders:

- PJ09 and PJ09.02 members
- The SJU and EUROCONTROL;
- The Transversal PJ22 project;
- The PJ07, PJ08, PJ04, PJ06, PJ01, PJ18

2.4 Background

This Technical Specification builds upon the work completed and documented in the technical specification D452 written for 13.02.03 [3]. Here, the goal of Demand and Capacity Balancing (DCB) for SESAR2020 is to accommodate ATFCM for “trajectory based operations”.

In SESAR1, 13.02.03 DCB Constraints to Airspace Users minimisations were introduced by establishing cooperation between En-Route Air Traffic Control centres, Airport operations and Airspace Users operations. This cooperation process is intended to improve efficiency in the use of ATC and flight resources.

The DCB local actors and the Airspace Users continuously share individual and local preferences during following flight phases:

- During cooperative Planning flight phase: rather than applying a penalizing regulation to a group of flights as a whole, an actor may target individual flights with DCB Constraints while knowing User preferred solution.
- During cooperative Execution flight phase: The delivery of flights into constrained/regulated areas will be improved both in En-Route and in Arrival areas.

For 13.02.03 a set of changes and enablers contributed to the overall technical solution and have been reformulated/built upon here:

- A better Demand Forecast

- An Enhanced Predicted Workload

- A seamless process to support a better layered planning
- New Roles & Responsibilities
- A Cooperative Process
- New Rules
- New mechanism to manage the reconciliation of multiple constraints
- New mechanism to manage the DCB Target-Time measures
- Capacity Measures integrated into DCB/dDCB
- Network Working Position
- Integrated Airport & Network View (AOP-NOP)
- Performance

Although this provides a background and work continues on from SESAR 1, this technical specification is self-standing and makes no further references to SESAR 1 artefacts. It is based solely on the operational concepts that are fully presented in the SESAR2020 OSED [4] .

2.5 Structure of the document

This document is based on the OSED [4] documentation which has been elaborated during the SESAR2020 programme. The technical specification is fully aligned with this OSED [4] , with this document being structured by topics. These topics are the same as those found in the OSED [4] .

2.6 Glossary of terms

Term	Definition	Source of the definition
AIR-REPORT	A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.	*ICAO Annex 3*
To be completed		

Table 3: Glossary

2.7 Acronyms and Terminology

Acronym	Definition
AIMA	Airport Impact Model Assessment
AOC	Aircraft Operations Centre
AOP	Airport Operations Plan
APP	Approach
APT	Airport
ATC	Air Traffic Control
ATM	Air Traffic Management
ATSU	Air Traffic Service Unit
AU	Airspace User
CI	Congestion Indicator
CFSP	Computerised Flight Plan Providers
CNS	Communication Navigation and Surveillance
CONOPS	Concept of Operations
CORSE	COmplexity Reduction SErvice
CR	Change Request

CTOT	Calculated Take Off Time
CWP	Controller Working Position
DCB	Demand Capacity Balancin
EAP	Extended ATC Planning
EATMA	European ATM Architecture
E-ATMS	European Air Traffic Management System
EC	Executive Controller
ERR	EnRoute
FCM	Flow and Capacity Management
FOC	Flight Operation Center
HPAR	Human Performance Assessment Report
ICI	Imbalance Confidence Index
INAP	Integrated Network Management and (Extended) ATC Planning
iNWP	Integrated Network Working Position
INTEROP	Interoperability Requirements
KPA	Key Performance Area
NM/NMOC	Network Manager
NOP	Network Operations Plan
NMF	Network Management Functions
OI	Operational Improvement
OPAR	Operational Performance Assessment Report
OSED	Operational Service and Environment Definition
PAR	Performance Assessment Report
PC	Planning Controller

PIRM	Programme Information Reference Model
RBT	Reference Business Trajectory
QoS	Quality of Service
SAC	Safety Criteria
SAR	Safety Assessment Report
SBT	Share Business Trajectory
SecAR	Security Assessment Report
SESAR	Single European Sky ATM Research Programme
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SPR	Safety and Performance Requirements
SWIM	System Wide Information Model
TDI	Trajectory Deviation Indicator
TS	Technical Specification
TTA	Target Time of Arrival
TTO	Target Time Over
UDPP	User defined preferences
WOC	Wing Operations Centre

Table 4: List of acronyms

3 SESAR Solution Impacts on Architecture Target Solution Architecture

3.1.1 SESAR Solution(s) Overview

PJ.09-03: Collaborative Network Management Functions

Collaborative Network Management Functions allow for network management based on transparency, performance targets and agreed control mechanisms. The solution enables a real-time visualisation of the evolving AOP/NOP planning environment (such as demand pattern and capacity bottlenecks) to support airspace user and local planning activities. Network Operations planning and execution is managed by an agreed set of rules and procedures (including what-if), guiding subsidiary DCB and UDPP measures under consideration of trade-offs and network performance targets. Collaborative 4D constraints management integrates AUs priorities and preferences, reconciliation of DCB measures with Airports, ACCs, AU and NM, relying on the Multiple Constraints Resolver process.

OI Step		OI description	Open CR
AUO-0108		Most Penalizing Delay based on reconciliation between DCB and Airport CDM	
	EN code	EN description	Open CR
	NIMS-52	Enhancement of ETFMS for including airport constraints	
DCB-0103-B		Collaborative NOP	
	EN code	EN description	Open CR
	AOC-ATM-10	Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory with dynamic routing	

	AOC-ATM-11	LOAs Integration in FOC trajectories	
	AOC-ATM-13	Participating of the FOC/ WOC in the airport triggered CDM process	
	AOC-ATM-20	Sharing of trajectory data between AOC/WOC and the ATM world using B2B web services	
	FOC-009	Improved trajectory planning through consideration of ground operation milestones and actual taxi time.	
	NIMS-12	Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots	
	NIMS-21b	Flight Planning extended with eFPL Distribution service	
	NIMS-22	Enhanced performance management sub-system	
	NIMS-25	Integration of Airport CDM data into Network DCB sub-system	
	PRO-095	Airline Operational Procedures for modifying RBT/ATV including agreed TTA to accommodate selected priorities	
	PRO-096	Airline Operational Procedures for modifying SBT/ATV including agreed TTA to accommodate selected priorities	
	PRO-098	FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	
	PRO-100	FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	
	SWIM-APS-04b	Consumption of G/G and initial A/G ASM-ATFCM Information Services on Wide Area communications	
	EN code	EN description	Open CR
	SWIM-APS-03b	Provision of G/G and initial Ground to Air ASM-ATFCM Information Services for Trajectory Based Operations	CR 02261 Update SWIM-APS-03b (PJ20-Steps)

	NIMS-13c	Full regional support of dDCB	CR 02964 Update NIMS-13c definition
DCB-0214		DCB What-if Network Impact Assessment	
	EN code	EN description	Open CR
	NIMS-12	Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots	
	NIMS-22	Enhanced performance management sub-system	
	PRO-095	Airline Operational Procedures for modifying RBT/ATV including agreed TTA to accommodate selected priorities	
	PRO-096	Airline Operational Procedures for modifying SBT/ATV including agreed TTA to accommodate selected priorities	
	PRO-098	FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	
	PRO-100	FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	
DCB-0215		Consolidation of imbalances and arbitration of Trajectory Management solutions	
	EN code	EN description	Open CR
	FOC-006	FOC flight lifecycle monitoring and situational awareness capabilities	
	NIMS-21b	Flight Planning extended with eFPL Distribution service	
	NIMS-25	Integration of Airport CDM data into Network DCB sub-system	

	NIMS-49	Multiple Constraint Resolver	
	PRO-098	FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	
	PRO-100	FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	
	EN code	EN description	Open CR
	NIMS-23	Capacity planning and scenario management equipped with tools integrating SB/MT information, to assist ATS in optimising the use of airport and airspace usable capacity	CR 02940 Update NIMS-23 definition
	NIMS-13c	Full regional support of dDCB	CR 02964 Update NIMS-13c definition
DCB-0217		DCB Support to FF-ICE	
	EN code	EN description	Open CR
	AOC-ATM-10	Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory with dynamic routing	
	ER APP ATC 82	Enhance EN/APP ACC to use eFPL data	
	NIMS-21b	Flight Planning extended with eFPL Distribution service	
	NIMS-46	Integrated local DCB working position	
	PRO-100	FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	
	SWIM-APS-04b	Consumption of G/G and initial A/G ASM-ATFCM Information Services on Wide Area communications	

	EN code	EN description	Open CR
	SWIM-APS-03b	Provision of G/G and initial Ground to Air ASM-ATFCM Information Services for Trajectory Based Operations	CR 02261 Update SWIM-APS-03b (PJ20-Steps)
	NIMS-61	Enhance the DCB functions to provide the DCB constraint data for a flight trajectory	CR 02615 Create NIMS-61 (PJ09-03 - DCB-0217)
	NIMS-58	Enhance the DCB functions to provide the enriched DCB data for a flight trajectory	CR 02616 Create NIMS-58 (PJ09-03 - DCB-0217)
	NIMS-23	Capacity planning and scenario management equipped with tools integrating SB/MT information, to assist ATS in optimising the use of airport and airspace usable capacity	CR 02940 Update NIMS-23 definition
	NIMS-13c	Full regional support of dDCB	CR 02964 Update NIMS-13c definition

Type	Element	EN Code	EN/CR Title	Coverage
		AOC-ATM-10	Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory with dynamic routing	
		AOC-ATM-13	Participating of the FOC/ WOC in the airport triggered CDM process	
		FOC-006	FOC flight lifecycle monitoring and situational awareness capabilities	
		FOC-009	Improved trajectory planning through consideration of ground operation milestones and actual taxi time.	
		NIMS-12	Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots	
FB	Demand and Capacity Balancing (PJ.07-01)			considered
FB	Demand and Capacity Balancing (PJ.09-03)			considered
FB	Traffic Demand Management (PJ.09-03)			considered

FB	Traffic Demand Management (PJ.18-02c)			considered
		NIMS-21b	Flight Planning extended with eFPL Distribution service	
FB	Traffic Demand Management (PJ.09-03)			considered
FB	Traffic Demand Management (PJ.18-02c)			considered
		NIMS-22	Enhanced performance management sub-system	
		NIMS-25	Integration of Airport CDM data into Network DCB sub-system	
		NIMS-49	Multiple Constraint Resolver	
0		PRO-095	Airline Operational Procedures for modifying RBT/ATV including agreed TTA to accommodate selected priorities	
1		PRO-096	Airline Operational Procedures for modifying SBT/ATV including agreed TTA to accommodate selected priorities	
2		PRO-098	FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	
3		PRO-100	FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	
		NIMS-23	CR 02940 Update NIMS-23 definition	
		NIMS-13c	CR 02964 Update NIMS-13c definition	

3.1.1.2 Deviations with respect to the SESAR Solution(s) definition

Enabler	Opt/Req	Deviation
NIMS-52_Enhancement of ETFMS for including airport constraints	Required	
AOC-ATM-10_Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory wi	Required	
AOC-ATM-11_LOAs Integration in FOC trajectories	Required	

AOC-ATM-13_Participating of the FOC/ WOC in the airport triggered CDM process	Required	
AOC-ATM-20_Sharing of trajectory data between AOC/WOC and the ATM world using B2B web services	Required	
FOC-009_Improved trajectory planning through consideration of ground operation milestones and actual taxi time.	Required	
NIMS-12_Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots	Required	
NIMS-21b_Flight Planning extended with eFPL Distribution service	Required	
NIMS-22_Enhanced performance management sub-system	Required	
NIMS-25_Integration of Airport CDM data into Network DCB sub-system	Required	
PRO-095_Airline Operational Procedures for modifying RBT/ATV including agreed TTA to accommodate selected priorities	Required	
PRO-096_Airline Operational Procedures for modifying SBT/ATV including agreed TTA to accommodate selected priorities	Required	
PRO-098_FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	Required	
PRO-100_FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	Required	
SWIM-APS-04b_Consumption of G/G and initial A/G ASM-ATFCM Information Services on Wide Area communications	Required	
SWIM-APS-03b_Provision of G/G and initial Ground to Air ASM-ATFCM Information Services for Trajectory Based Operations	Required	
NIMS-13c_Full regional support of dDCB	RequiredOptional	
NIMS-12_Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots	Required	

NIMS-22_Enhanced performance management sub-system	Required	
PRO-095_Airline Operational Procedures for modifying RBT/ATV including agreed TTA to accommodate selected priorities	Required	
PRO-096_Airline Operational Procedures for modifying SBT/ATV including agreed TTA to accommodate selected priorities	Required	
PRO-098_FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	Required	
PRO-100_FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	Required	
FOC-006_FOC flight lifecycle monitoring and situational awareness capabilities	Required	
NIMS-21b_Flight Planning extended with eFPL Distribution service	Required	
NIMS-25_Integration of Airport CDM data into Network DCB sub-system	Required	
NIMS-49_Multiple Constraint Resolver	Required	
PRO-098_FCM Procedures for optimising network usage and identifying opportunities for traffic smoothing	Required	
PRO-100_FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	Required	
NIMS-23_Capacity planning and scenario management equipped with tools integrating SB/MT information, to assist ATS in optimising the use of airport and airspace usable capacity	Required	
NIMS-13c_Full regional support of dDCB	Required Optional	
AOC-ATM-10_Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory wi	Optional	
ER APP ATC 82_Enhance EN/APP ACC to use eFPL data	Optional	
NIMS-21b_Flight Planning extended with eFPL Distribution service	Optional	
NIMS-46_Integrated local DCB working position	Required	

PRO-100_FCM procedures to allocate, monitor and update 4D targets for ATFCM purposes	Optional	
SWIM-APS-04b_Consumption of G/G and initial A/G ASM-ATFCM Information Services on Wide Area communications	Required	
SWIM-APS-03b_Provision of G/G and initial Ground to Air ASM-ATFCM Information Services for Trajectory Based Operations	Required	
NIMS-61_Enhance the DCB functions to provide the DCB constraint data for a flight trajectory	Required	
NIMS-58_Enhance the DCB functions to provide the enriched DCB data for a flight trajectory	Required	
NIMS-23_Capacity planning and scenario management equipped with tools integrating SB/MT information, to assist ATS in optimising the use of airport and airspace usable capacity	Required	
NIMS-13c_Full regional support of dDCB	Required Optional	

3.1.1.3 Relevant Use Cases

Operational Use Case	Description
[NOV-5] Network prediction in pre-tactical/tactical day and Airport planning	Network prediction information is calculated and distribute for use by the various DCB actors
[NOV-5] Hotspot Arrival Management using TTA prepared in the RBT Revision process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the RBT revision for arrival management

[NOV-5] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the SBT elaboration for arrival management
[NOV-5] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation	Hotspot Arrival Management using TTA prepared in the SBT Elaboration process (as described individually) with APOC Full Delegation. Full Delegation concerns the full transfer of responsibility and authority of the Spot resolution from INAP to another actor
[NOV-5] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation	Hotspot Arrival Management using TTA prepared in the SBT Elaboration process (as described individually) with APOC Limited Delegation Limited Delegation concerns the limited transfer of responsibility and authority, during a determined timeframe, of the Spot resolution from INAP to another actor. At the end of the delegation, the actor proposes a solution to INAP. INAP is accountable for the outcome and implements the DCB solution.
[NOV-5] Hotspot En-Route Management using TTA prepared in the RBT Revision process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the RBT revision for En-Route Management
[NOV-5] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the SBT elaboration for En-Route Management
[NOV-5] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy	Optispot Arrival Management using TTA prepared in the RBT Revision process (optispot is a simple variant of hotspot as described individually) with Extended AMAN Autonomy
[NOV-5] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy	Optispot Arrival Management using TTA prepared in the SBT Elaboration process (optispot is a simple variant of hotspot as described individually) with APOC Full Autonomy Full Autonomy means in charge and accountable for the outcome and implements the DCB solution.

[NOV-5] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation	Optispot Arrival Management using TTA prepared in the SBT Elaboration process (optispot is a simple variant of hotspot as described individually) with APOC Full Delegation Full Delegation concerns the full transfer of responsibility and authority of the Spot resolution from INAP to another actor. The actor in charge is accountable for the outcome and implements the DCB solution.
[NOV-5] AU Flight Delay Criticality Indicator	Input and subsequent usage of the Flight Delay Criticality Indicator
[NOV-5] AU Flight Delay Criticality Indicator for STAM En Route	Input and subsequent usage of the Flight Delay Criticality Indicator – specific case for STAM en-route
[NOV-5] Constraint Optimisation	Use case detailing how multiple constraints from different actors are optimised
[NOV-5] Constraint Reconciliation	Use case detailing how multiple constraints from different actors are reconciled
[NOV-5] Enriched DCB information for AUs	Use of the Flight Planning functionality to transfer DCB related information.
[NOV-5] STAM AU Counter Proposal	Specific use case detailing how AU counter proposals are taken into account during DCB measure preparation

System Process	Description
[NSV-4] AU Flight Delay Criticality Indicator	Input and subsequent usage of the Flight Delay Criticality Indicator
[NSV-4] AU Flight Delay Criticality Indicator for STAM En Route	Input and subsequent usage of the Flight Delay Criticality Indicator – specific case for STAM en-route
[NSV-4] Constraint Optimisation	Use case detailing how multiple constraints from different actors are optimised
[NSV-4] Constraint Reconciliation	Use case detailing how multiple constraints from different actors are reconciled
[NSV-4] Enriched DCB information for AUs	Use of the Flight Planning functionality to transfer DCB related information.
[NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the RBT revision for arrival management

[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the SBT elaboration for arrival management
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation	Hotspot Arrival Management using TTA prepared in the SBT Elaboration process (as described individually) with APOC Full Delegation. Full Delegation concerns the full transfer of responsibility and authority of the Spot resolution from INAP to another actor
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation	Hotspot Arrival Management using TTA prepared in the SBT Elaboration process (as described individually) with APOC Limited Delegation Limited Delegation concerns the limited transfer of responsibility and authority, during a determined timeframe, of the Spot resolution from INAP to another actor. At the end of the delegation, the actor proposes a solution to INAP. INAP is accountable for the outcome and implements the DCB solution.
[NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the RBT revision for En-Route Management
[NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process	At any time in the D-1 to 20 min timeframe, NM and INAP actors can elaborate and revise a DCB Measures. The DCB Measure is managed according to different status (draft, proposed, for coordination, coordinated, for implementation implemented, abandoned). The DCB measure is prepared in the frame of the SBT elaboration for En-Route Management
[NSV-4] Network prediction in pre-tactical/tactical day and Airport planning	Network prediction information is calculated and distribute for use by the various DCB actors
[NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy	Optispot Arrival Management using TTA prepared in the RBT Revision process (optispot is a simple variant of hotspot as described individually) with Extended AMAN Autonomy
[NSV-4] Optispot Arrival Management using TTA prepared in	Optispot Arrival Management using TTA prepared in the SBT Elaboration process (optispot is a simple variant of hotspot as described individually) with APOC Full Autonomy

the SBT Elaboration process with APOC Full Autonomy	Full Autonomy means in charge and accountable for the outcome and implements the DCB solution.
[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation	Optispot Arrival Management using TTA prepared in the SBT Elaboration process (optispot is a simple variant of hotspot as described individually) with APOC Full Delegation Full Delegation concerns the full transfer of responsibility and authority of the Spot resolution from INAP to another actor. The actor in charge is accountable for the outcome and implements the DCB solution.
[NSV-4] STAM AU Counter Proposal	Specific use case detailing how AU counter proposals are taken into account during DCB measure preparation

3.1.1.4 Applicable standards and regulations

3.1.2 Capability Configurations required for the SESAR Solution

[CC] AOP-NOP Integration			Network	
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Civil AU Operations Centre (PJ.09-03)			Airspace User Ops Support; Flight Deck;	
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;

[CC] Collaborative Framework	Network

CC	Op Env	Capability	Node	Stakeholder
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Civil AU Operations Centre (PJ.09-03)			Airspace User Ops Support; Flight Deck;	
ER ACC (PJ.09-03)			Air Traffic Flow and Capacity Management; Airspace Management; Airspace Organisation; En-Route/Approach ATS;	Air Navigation Service Provider;
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;
Sub-Regional/Local ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Air Navigation Service Provider;

[CC] Collaborative NOP			Network	
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Civil AU Operations			Airspace User Ops Support;	

Centre (PJ.09-03)			Flight Deck;	
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;
Sub-Regional/Local ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Air Navigation Service Provider;

[CC] Constraint Optimisation		Network		
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;

Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;

[CC] Constraint Reconciliation		Network		
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Airport (PJ.09-03)			Airport Ops Support; Airport Vehicle; Network Operations;	Airport Operator;
Civil AU Operations Centre (PJ.09-03)			Airspace User Ops Support; Flight Deck;	
Civil AU Operations Centre (PJ.09-03)			Airspace User Ops Support; Flight Deck;	
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;

Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;
Sub-Regional/Local ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Air Navigation Service Provider;
Sub-Regional/Local ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Air Navigation Service Provider;

[CC] FF-ICE		Network		
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Civil AU Operations Centre (PJ.09-03)			Airspace User Ops Support; Flight Deck;	
Regional ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Network Manager;
Sub-Regional/Local ATFCM (PJ.09-03)		Air Traffic Flow Management; Crisis Management;	Air Traffic Flow and Capacity Management;	Air Navigation Service Provider;

3.2 Changes imposed by the SESAR Solution on the baseline Architecture

Enabler	Element type	Element name	Impact	Change
NIMS-12	Demand Capacity Balancing equipped with a tool to identify and arbitrate multiple imbalance and hotspots			
	FB	Demand and Capacity Balancing (PJ.09-03)		
	FB	Traffic Demand Management (PJ.09-03)		
	Function	Assess Traffic Demand with ATFCM Situation		
	Function	Assess Trajectory (What-If)		
	Function	Book Opportunity		
	Function	Provide ATFCM Situation		
	Function	Provide Rerouting Opportunity (Propose Routes)		
	Function	Validate and Integrate EFPL in Traffic Demand		
NIMS-21b	Flight Planning extended with eFPL Distribution service			
	Function	Validate and Integrate EFPL in Traffic Demand	Update	
NIMS-46	Integrated local DCB working position			
	Function	Provide Network Impact Assessment		
	Function	Update NOP Plan		
NIMS-61 (CR)	Enhance the DCB functions to provide the DCB constraint data for a flight trajectory			
	Function	Assess Traffic Demand with ATFCM Situation	Update	
NIMS-58 (CR)	Enhance the DCB functions to provide the enriched DCB data for a flight trajectory			
	Function	Assess Traffic Demand with ATFCM Situation	Update	

4 Technical Specifications

4.1 Functional architecture overview

Functions required to perform needed Operational Activities can be allocated to Resources of a different type: Human Role, Infrastructure System or Functional Block.

Role	Functional Block	Function
[NSV-4] Network prediction in pre-tactical/tactical day and Airport planning		
	Traffic Demand Management (PJ.09-03)	Compute Traffic Demand; Replace Predicted Flight with Actual Flight Plan; Validate and Integrate EFPL in Traffic Demand;
[NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation		

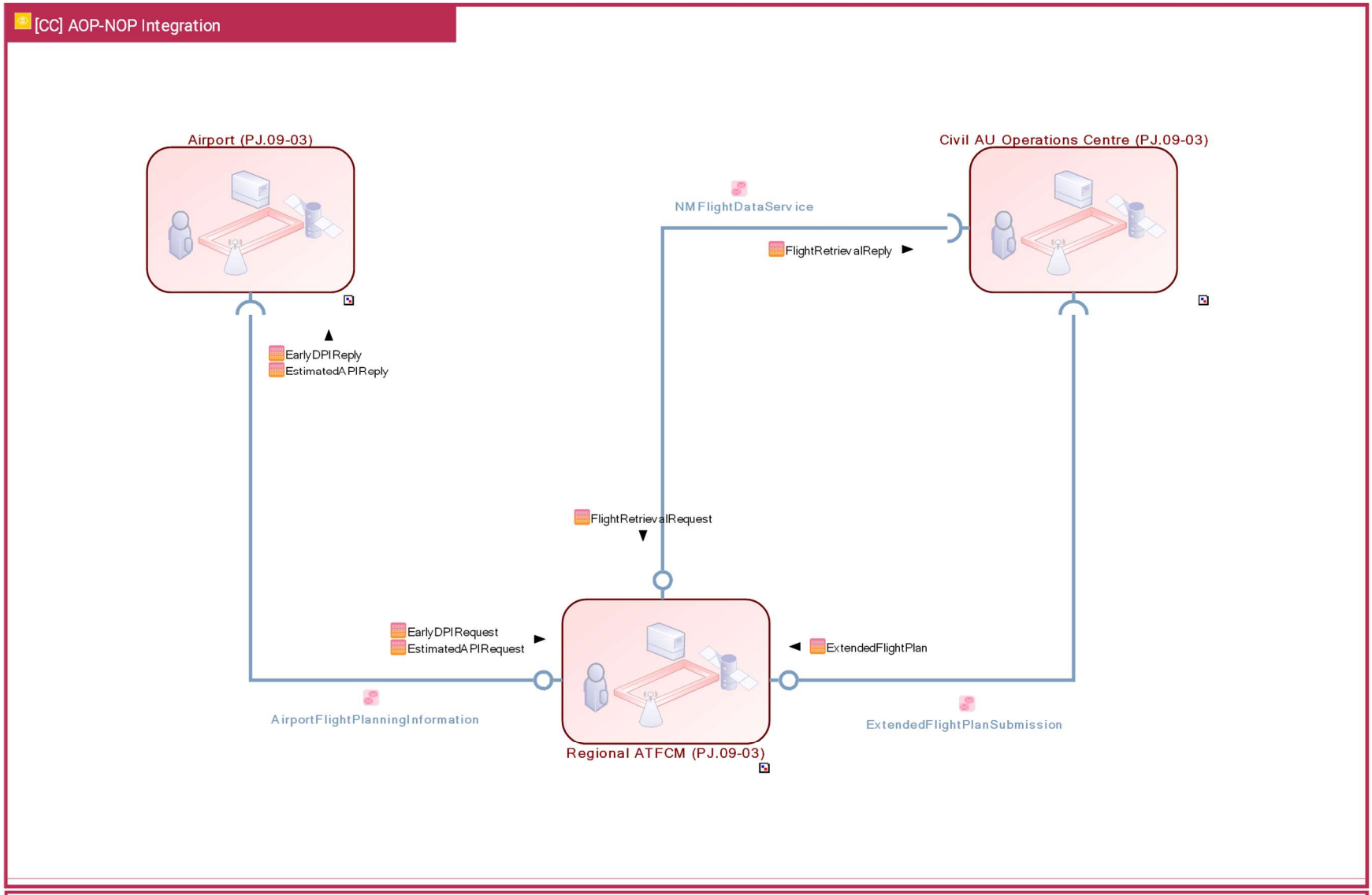
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Reconcile Constraints; Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share DCB Measure; Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share DCB Measure;

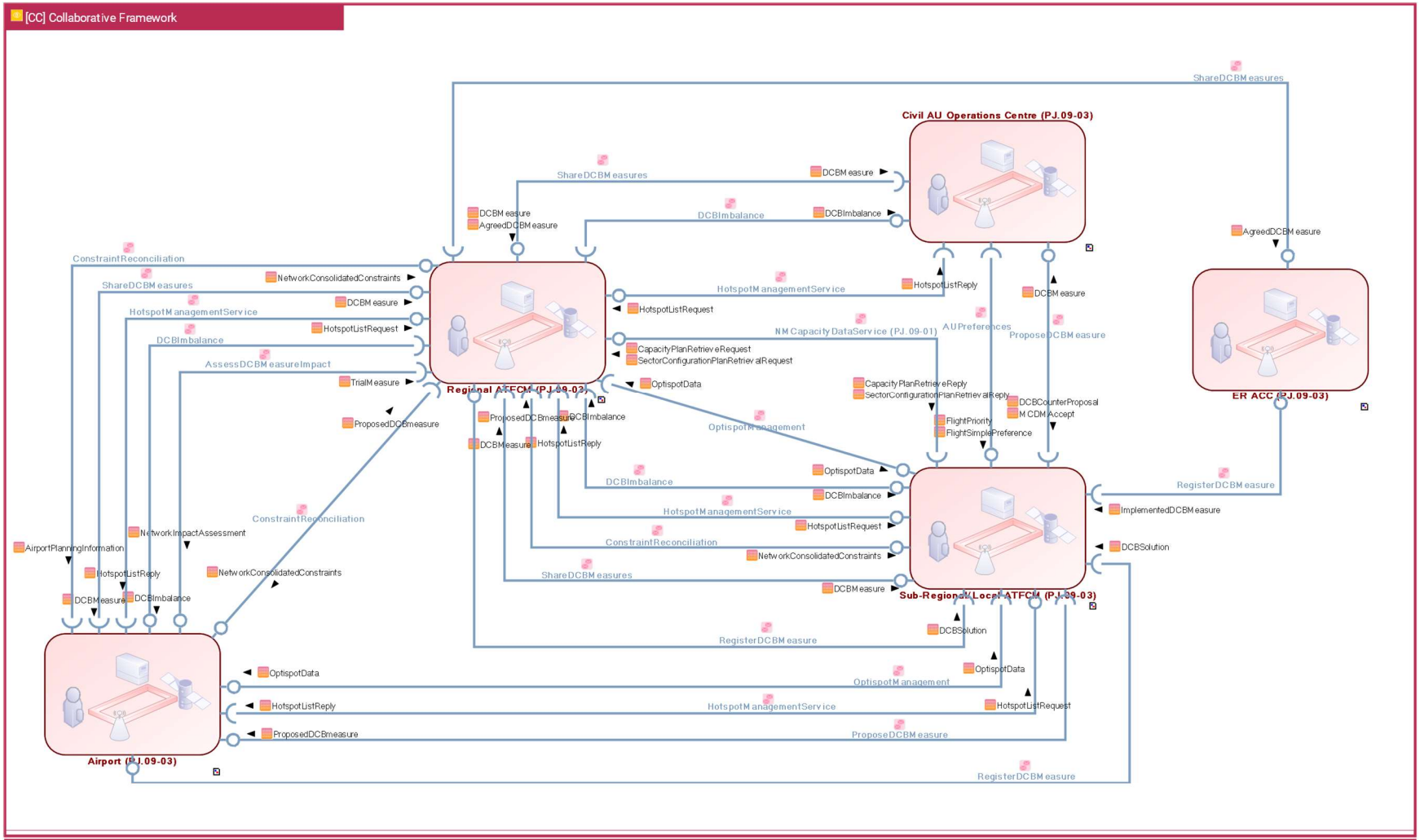
		Share Hotspot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share Optispot with Stakeholders;
		Analyse Traffic Situation; Detect local DCB Imbalance;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances; Provide Network Impact Assessment; Reconcile Constraints; Share Optispot with Stakeholders;
		Analyse Traffic Situation; Detect local DCB Imbalance;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation		
	Demand and Capacity Balancing (PJ.09-03)	Detect DCB Imbalance; Provide consolidated Local and Regional DCB imbalances;

		Reconcile Constraints; Share Optispot with Stakeholders;
	Network Operations Plan Management (PJ.09-03)	Update NOP Plan;
[NSV-4] AU Flight Delay Criticality Indicator		
	Demand and Capacity Balancing (PJ.09-03)	Check Network impact on excluding flight from regulation; NMOC excludes selected flight from regulation; Provide Network Impact Assessment;
	Network Operations Plan Management (PJ.09-03)	Check compliancy and Update FDCI rules; Update NOP Plan;
[NSV-4] AU Flight Delay Criticality Indicator for STAM En Route		
	Demand and Capacity Balancing (PJ.09-03)	Provide Network Impact Assessment;
	Network Operations Plan Management (PJ.09-03)	Check compliancy and Update FDCI rules; Update NOP Plan;
	Traffic Demand Management (PJ.09-03)	Monitor Flights; Validate and Integrate EFPL in Traffic Demand;
[NSV-4] Constraint Optimisation		
	Demand and Capacity Balancing (PJ.09-03)	Accept Issued and Exempted Flights; Adjust DCB Solution; Create Mathematical Optimisation Problem; Create resulting slot list; Implement DCB Solution; Solve Mathematical Optimisation

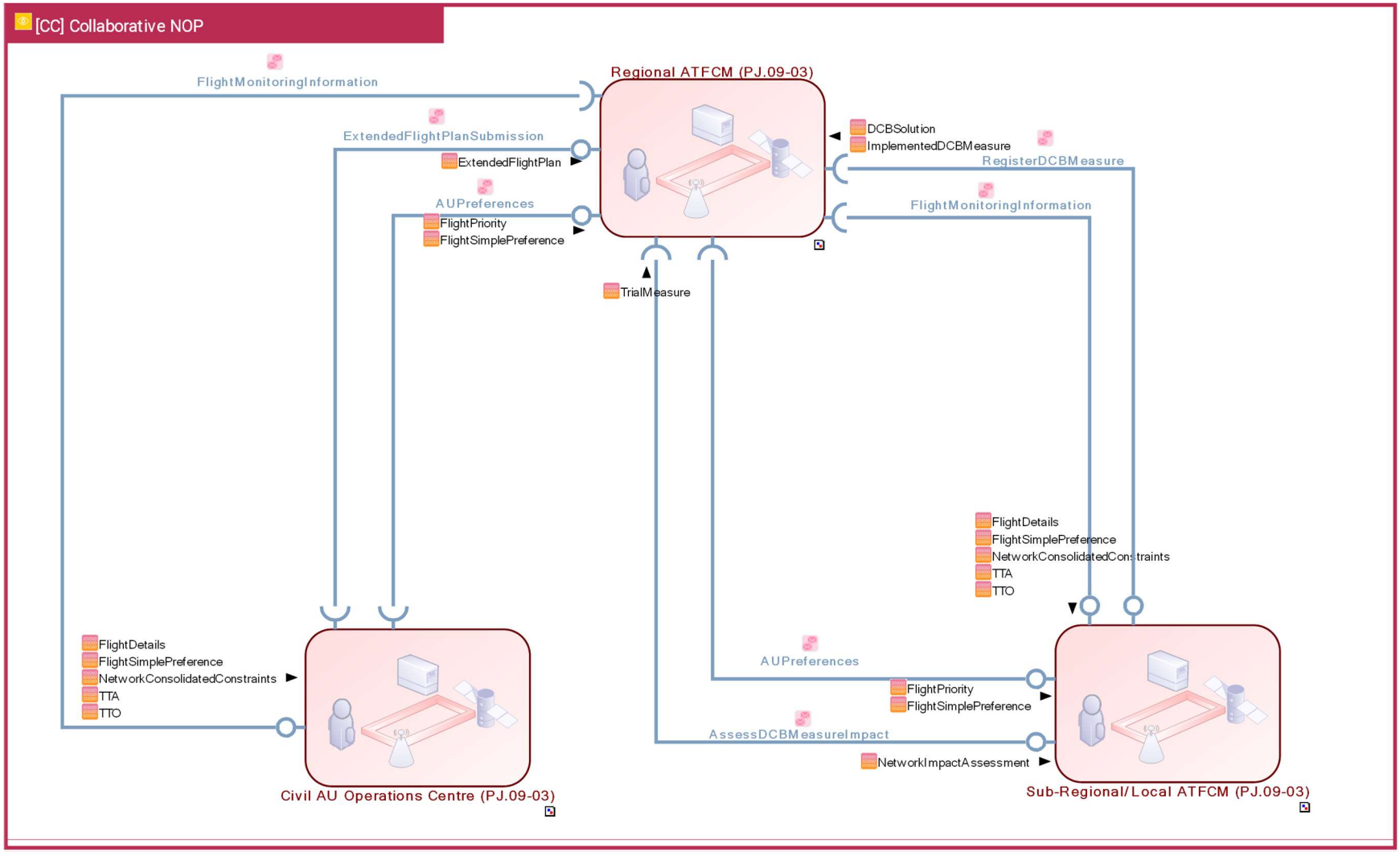
		Problem;
[NSV-4] Constraint Reconciliation		
	Demand and Capacity Balancing (PJ.09-03)	Apply Priority Rules Mechanism; Consolidate DCB Measures; Identify Concurrent DCB Measures;
	Network Operations Plan Management (PJ.09-03)	Share Network Consolidated Constraint;
[NSV-4] Enriched DCB information for AUs		
	Demand and Capacity Balancing (PJ.09-03)	Assess Trajectory (What-If); Book Opportunity; Provide ATFCM Situation; Provide Rerouting Opportunity (Propose Routes);
	Traffic Demand Management (PJ.09-03)	Assess Traffic Demand with ATFCM Situation; Validate and Integrate EFPL in Traffic Demand;
[NSV-4] STAM AU Counter Proposal		
	Demand and Capacity Balancing (PJ.09-03)	Assess Trajectory (What-If); Book Counter-Proposal; Find Rerouting Opportunities (What-Else);
	Network Operations Plan Management (PJ.09-03)	Publish DCB Measures and Flights; Update NOP Plan;

4.1.1 Resource Connectivity Model


[CC] AOP-NOP Integration
Airport (PJ.09-03)
Civil AU Operations Centre (PJ.09-03)
NMFlightDataService
FlightRetrievalReply
EarlyDPIReply
EstimatedAPIReply
FlightRetrievalRequest
EarlyDPIRequest
EstimatedAPIRequest
ExtendedFlightPlan
AirportFlightPlanningInformation
ExtendedFlightPlanSubmission
Regional ATFCM (PJ.09-03)
[NSV-4] Network prediction in pre-tactical/tactical day and Airport planning [Airport (PJ.09-03), Civil AU Operations Centre (PJ.09-03), Traffic Demand Management (PJ.09-03)]



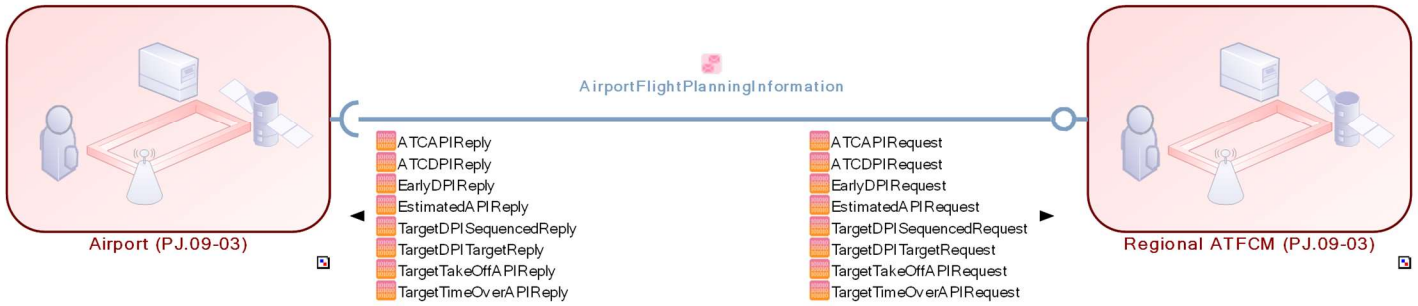
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy [Demand and Capacity Balancing (PJ.09-03), Exetended AMAN, LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process [AU, Demand and Capacity Balancing (PJ.09-03), INAP, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process [ATC, AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
[NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process [ATC, AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]



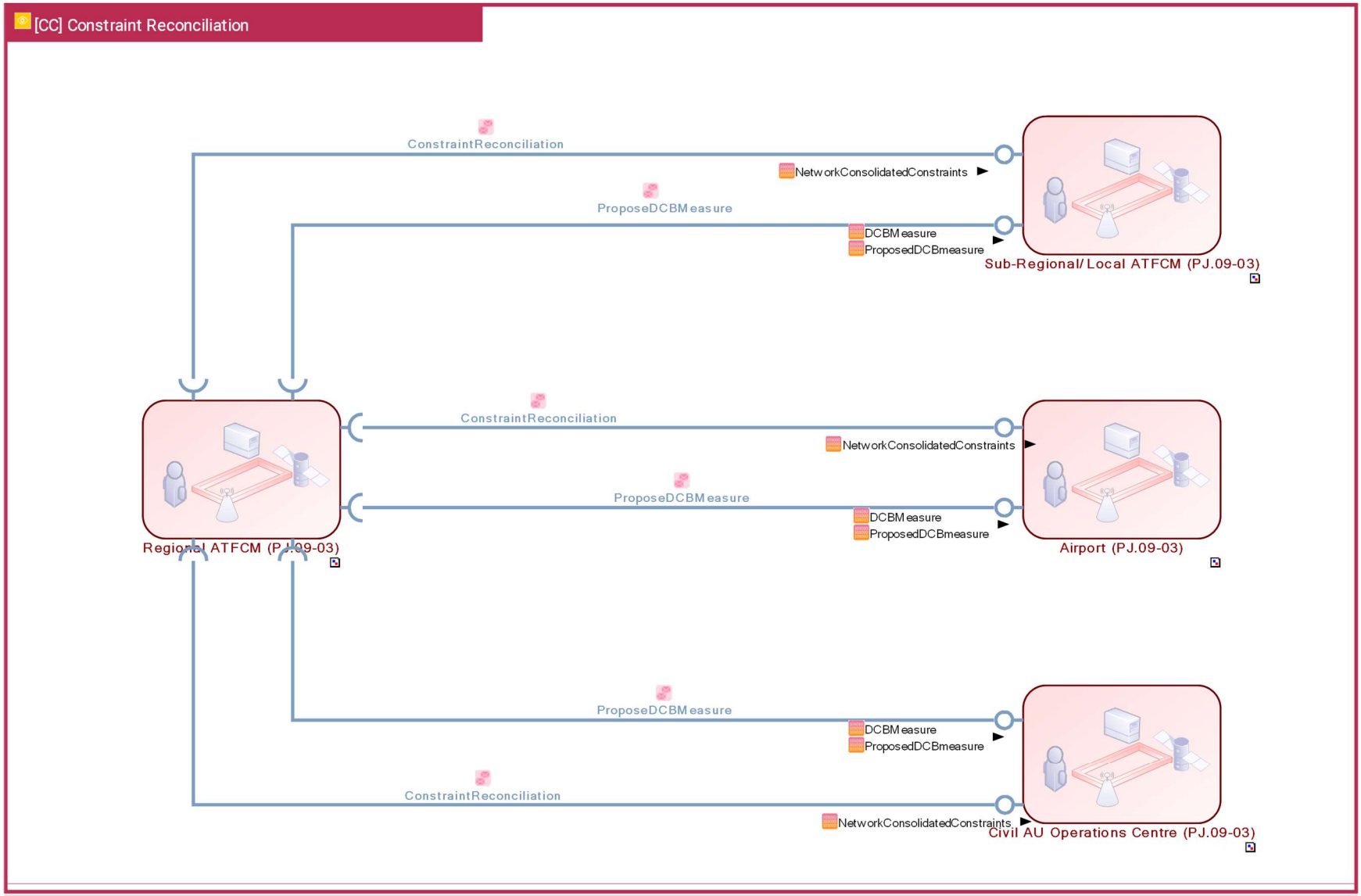
[NSV-4] AU Flight Delay Criticality Indicator [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]

[NSV-4] AU Flight Delay Criticality Indicator for STAM En Route [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03), Traffic Demand Management (PJ.09-03)]

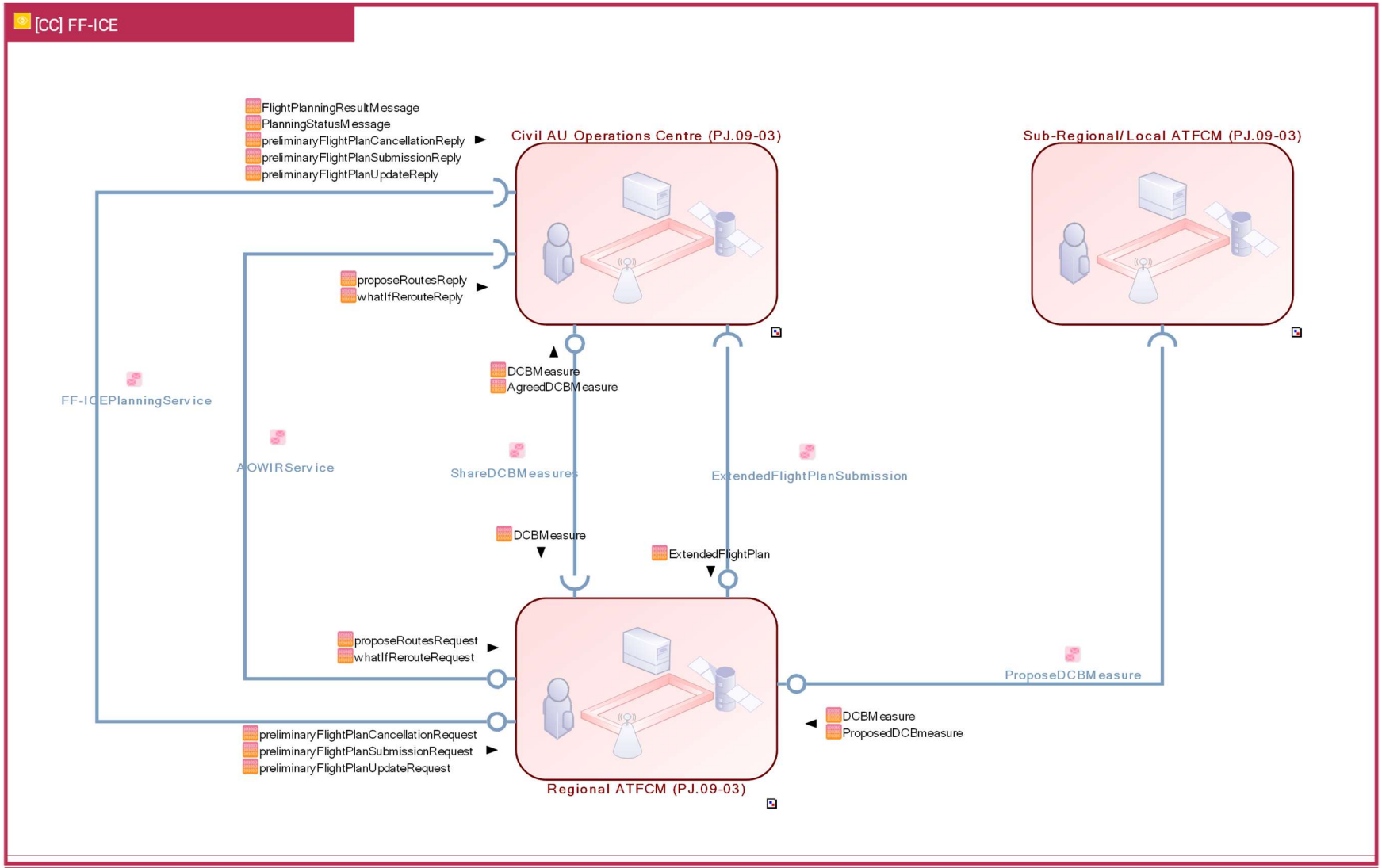
[CC] Constraint Optimisation



[NSV-4] Constraint Optimisation [Airport (PJ.09-03), Demand and Capacity Balancing (PJ.09-03)]



[NSV-4] Constraint Reconciliation [Airport (PJ.09-03), Civil AU Operations Centre (PJ.09-03), Demand and Capacity Balancing (PJ.09-03), Network Operations Plan Management (PJ.09-03), Sub-Regional/Local ATFCM (PJ.09-03)]

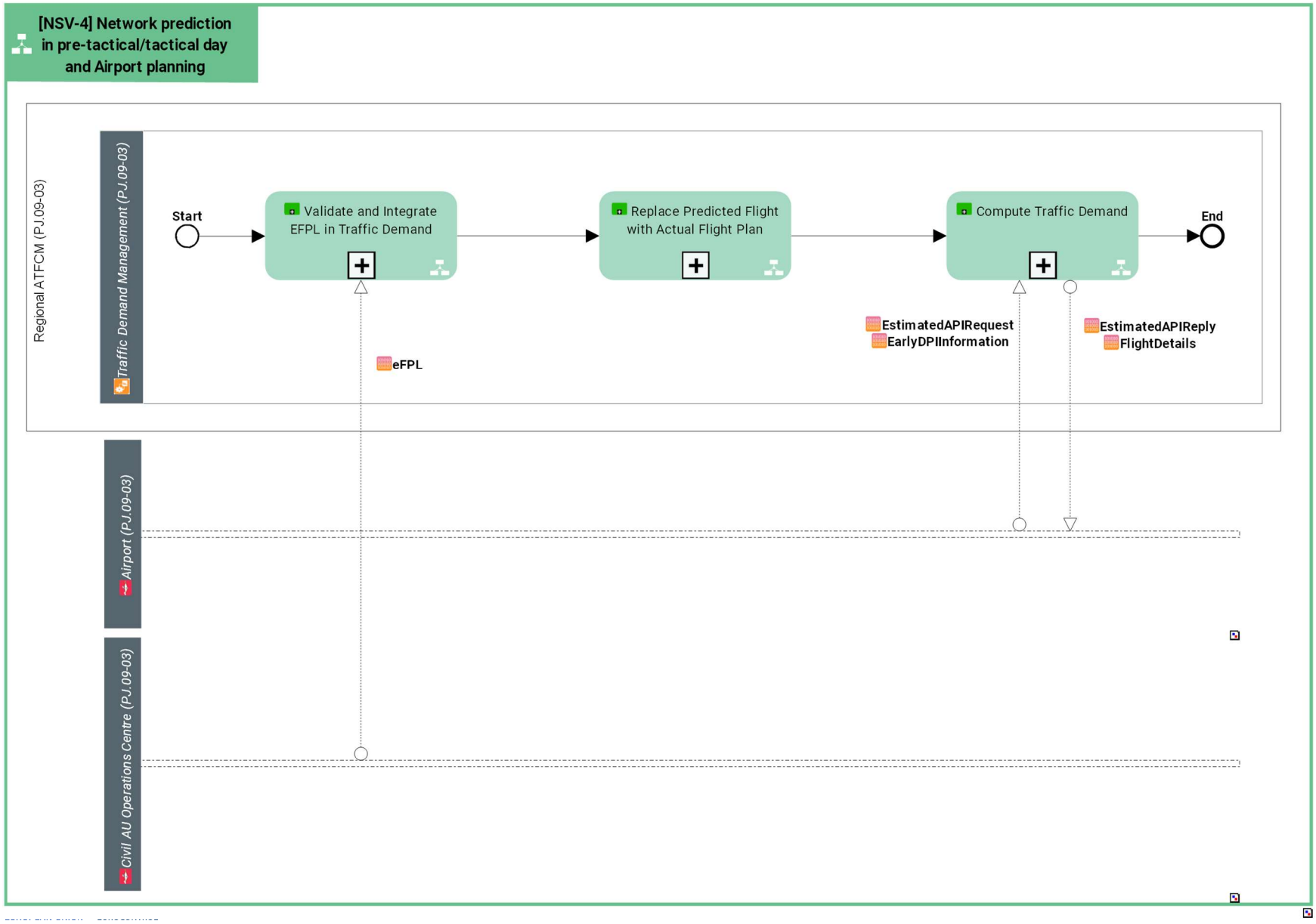


[NSV-4] Enriched DCB information for AUs [AU, Demand and Capacity Balancing, Demand and Capacity Balancing (PJ.09-03), Traffic Demand Management (PJ.09-03)]

[NSV-4] STAM AU Counter Proposal [Civil AU Operations Centre (PJ.09-03), Demand and Capacity Balancing (PJ.09-03), Network Operations Plan Management (PJ.09-03), Sub-Regional/Local ATFCM (PJ.09-03)]

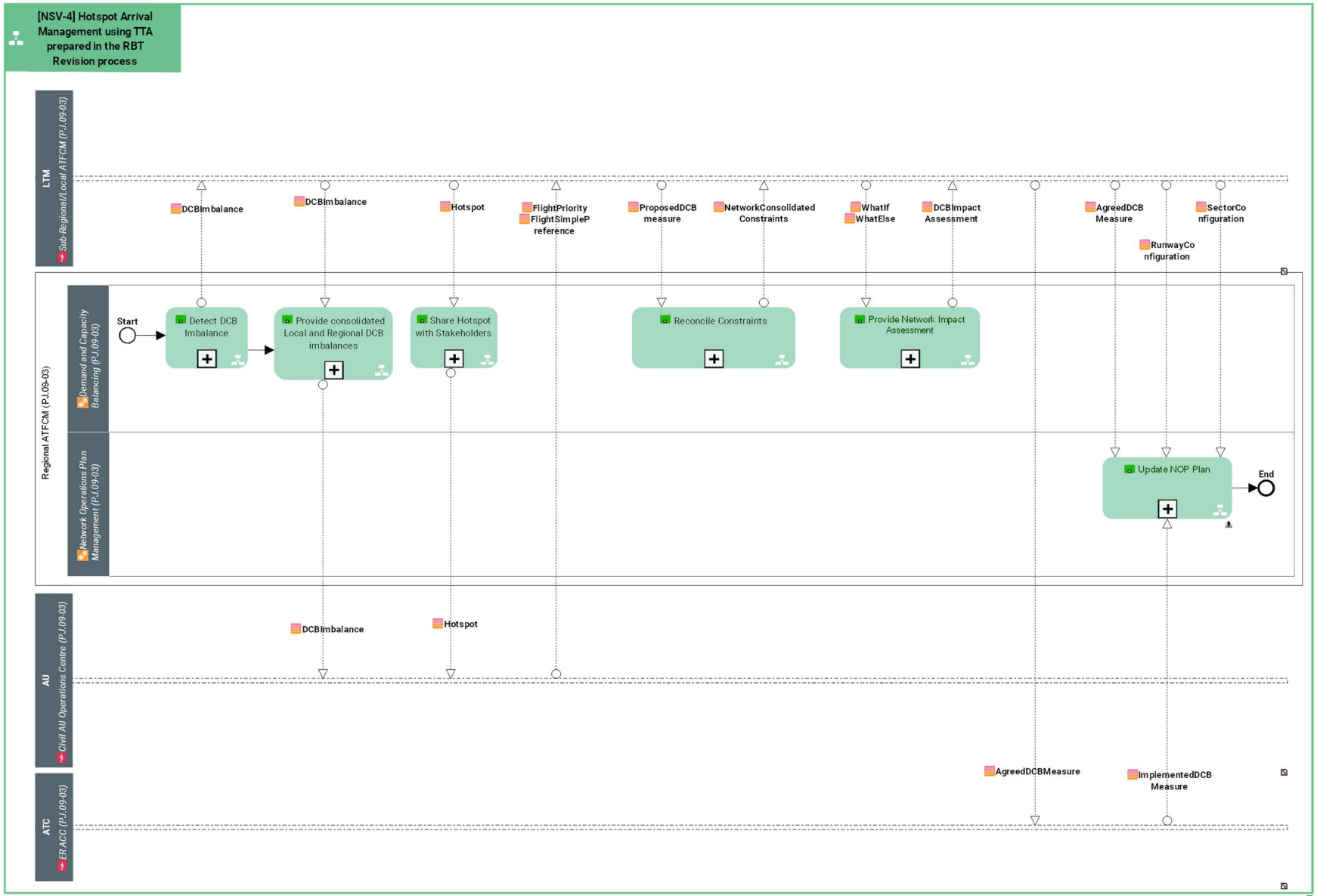
4.1.2 Resource Orchestration view

4.1.2.1 [NSV-4] Network prediction in pre-tactical/tactical day and Airport planning


[NSV-4] Network prediction in pre-tactical/tactical day and Airport planning
Regional ATFCM (PJ.09-03)
Traffic Demand Management (PJ.09-03)
Start
Validate and Integrate EFPL in Traffic Demand
Replace Predicted Flight with Actual Flight Plan
Compute Traffic Demand
End
eFPL
EstimatedAPIRequest
EarlyDPIInformation
EstimatedAPIReply
FlightDetails
Airport (PJ.09-03)
Civil AU Operations Centre (PJ.09-03)

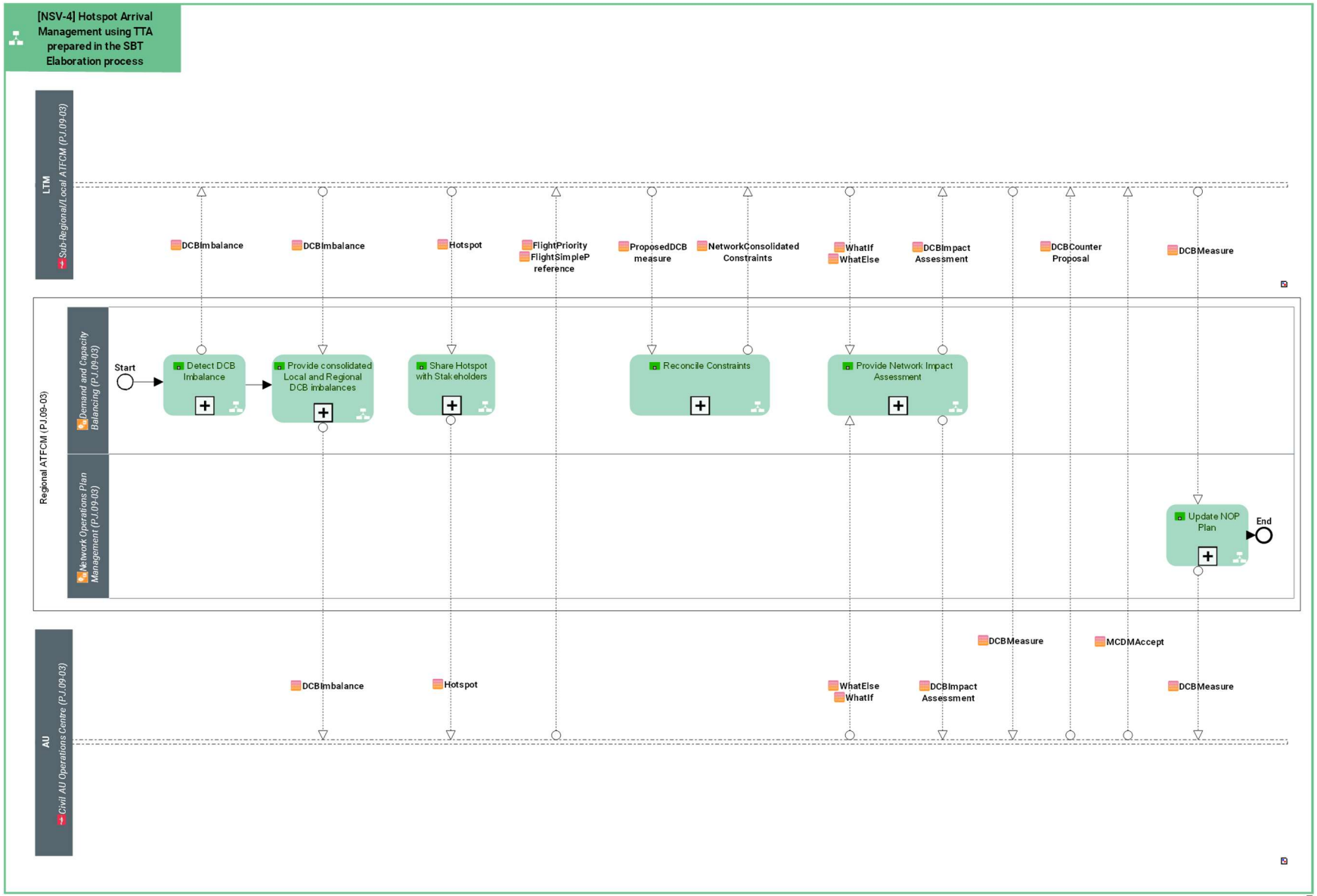
Function	Description
Compute Traffic Demand	Predicts the traffic demand based on flight trajectories and airspace configuration.
Replace Predicted Flight with Actual Flight Plan	Replaces the predicted traffic demand (based on flight trajectories and airspace configuration) with actual Flight Plan data as provided by AU
Validate and Integrate EFPL in Traffic Demand	Validates Flight Plan data as provided by AU and integrates this into Traffic Demand database

4.1.2.2 [NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process


[NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
FlightPriority
FlightSimpleP reference
ProposedDCB measure
NetworkConsolidated Constraints
WhatIf
WhatElse
DCBImpact Assessment
AgreedDCB Measure
SectorCo nfiguration
RunwayCo nfiguration
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Reconcile Constraints
Provide Network Impact Assessment
Network Operations Plan Management (PJ.09-03)
Update NOP Plan
End
AU
Civil AU Operations Centre (PJ.09-03)
DCBImbalance
Hotspot
AgreedDCBMeasure
ImplementedDCB Measure
ATC
ER ACC (PJ.09-03)

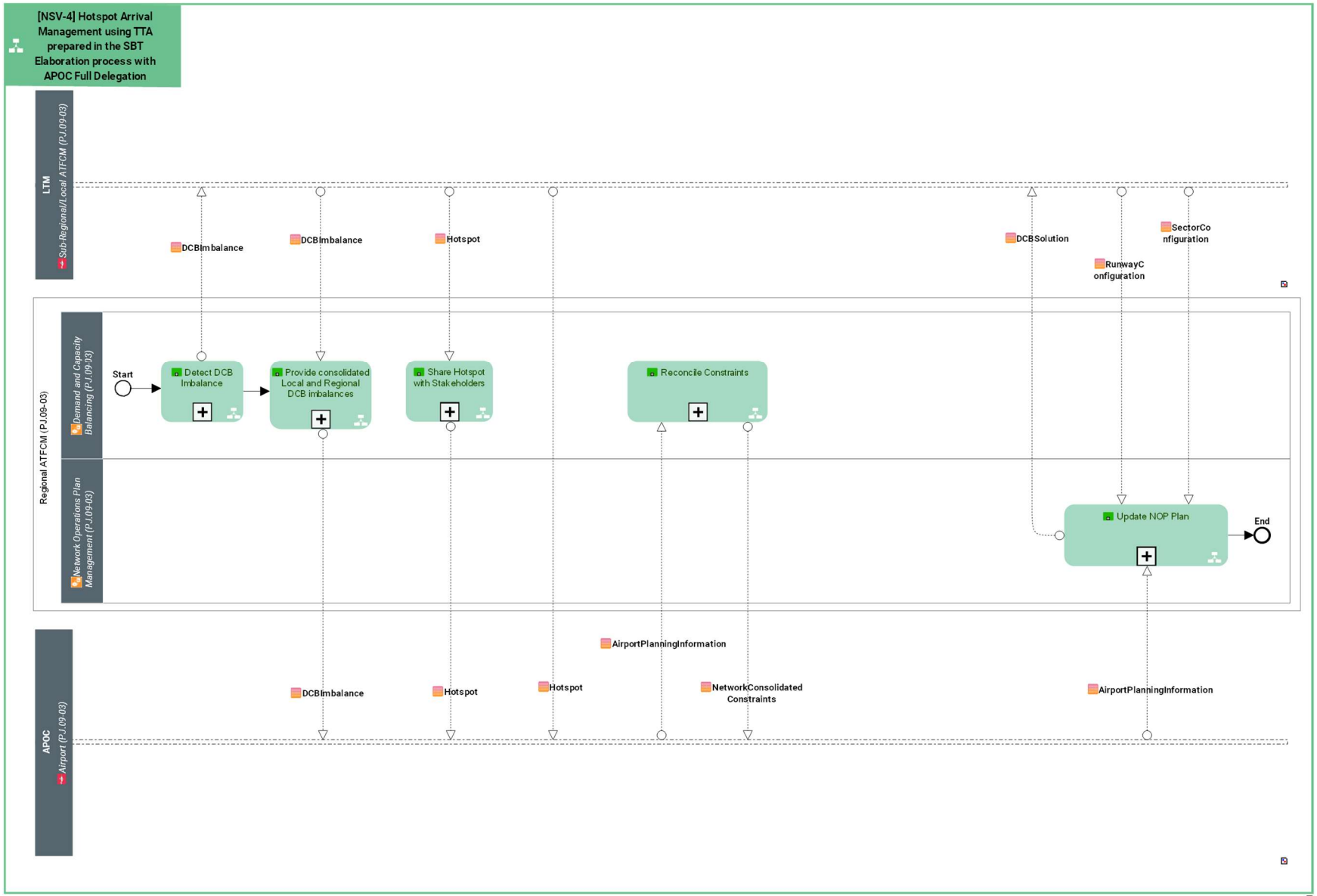
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.

4.1.2.3 [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process


[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
FlightPriority
FlightSimpleP reference
ProposedDCB measure
NetworkConsolidated Constraints
WhatIf
WhatElse
DCBImpact Assessment
DCBCounter Proposal
DCBMeasure
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Reconcile Constraints
Provide Network Impact Assessment
Network Operations Plan Management (PJ.09-03)
Update NOP Plan
End
AU
Civil AU Operations Centre (PJ.09-03)
DCBImbalance
Hotspot
DCBMeasure
MCDMAccept
WhatElse
WhatIf
DCBImpact Assessment
DCBMeasure

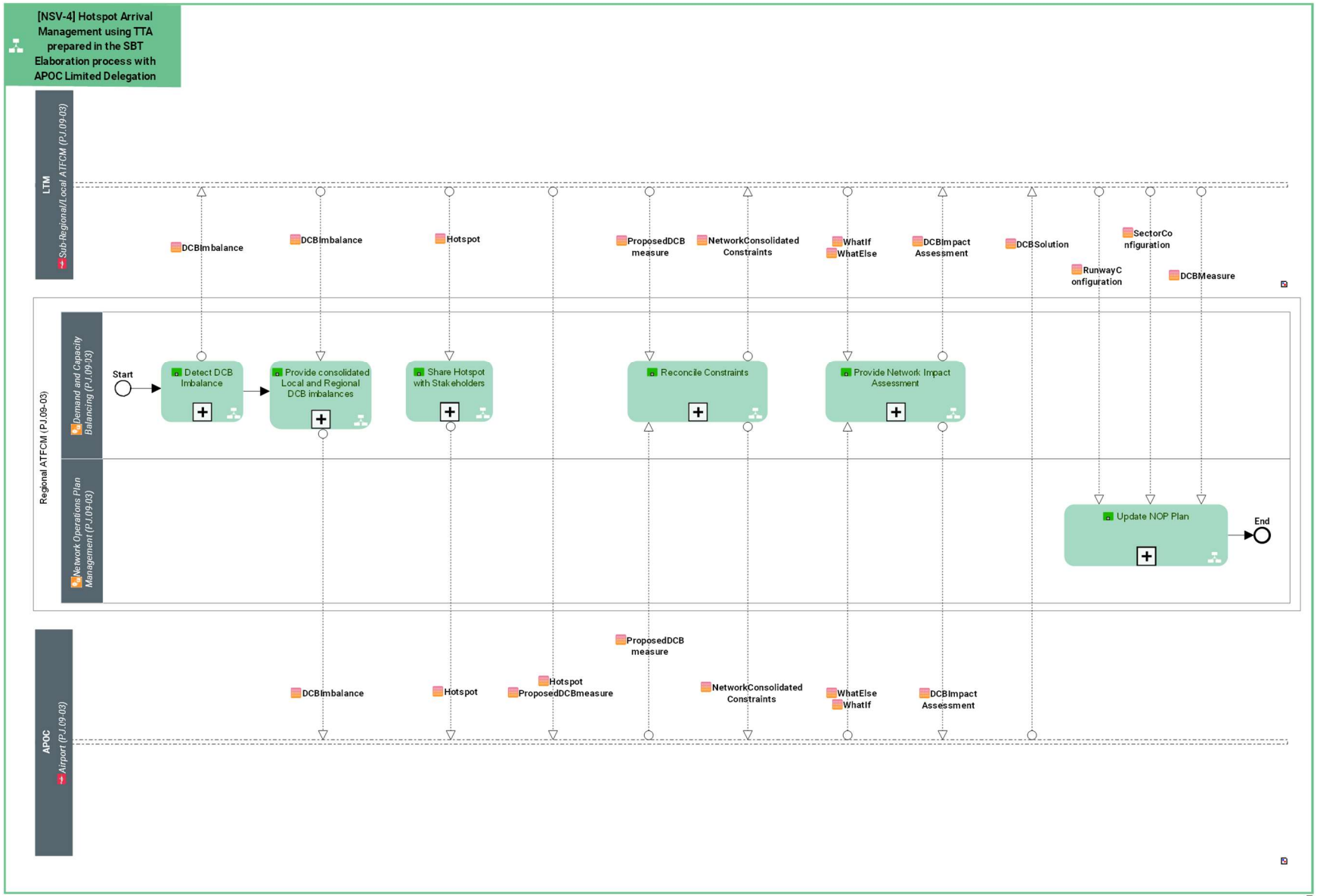
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.4 [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation


[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
DCBSolution
RunwayConfiguration
SectorConfiguration
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Reconcile Constraints
Update NOP Plan
End
APOC
Airport (PJ.09-03)
AirportPlanningInformation
DCBImbalance
Hotspot
Hotspot
NetworkConsolidated Constraints
AirportPlanningInformation

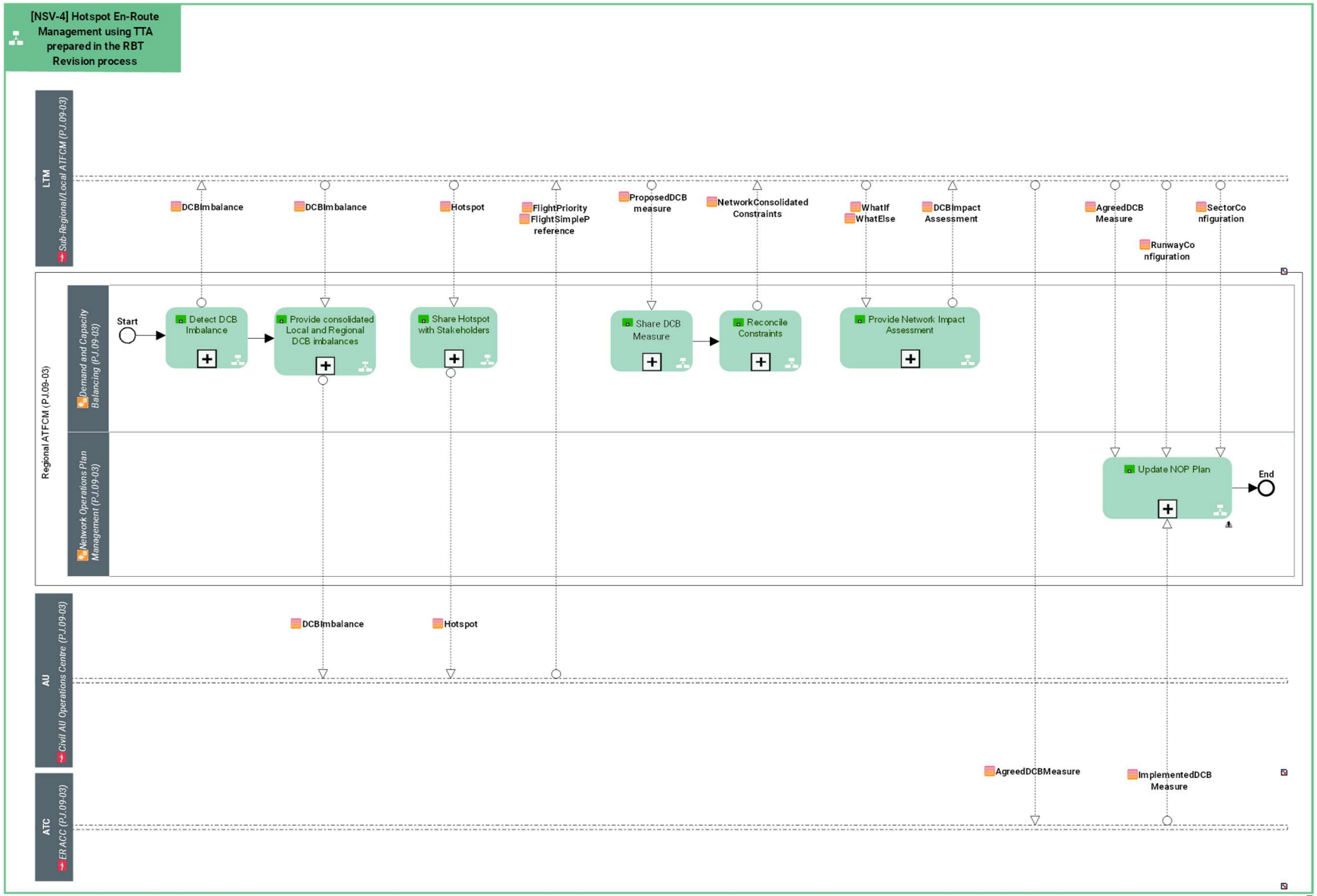
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.5 [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation


[NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
ProposedDCB measure
NetworkConsolidated Constraints
WhatIf
WhatElse
DCBImpact Assessment
DCBSolution
SectorConfiguration
RunwayConfiguration
DCBMeasure
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Reconcile Constraints
Provide Network Impact Assessment
Network Operations Plan Management (PJ.09-03)
Update NOP Plan
End
APOC
Airport (PJ.09-03)
DCBImbalance
Hotspot
Hotspot
ProposedDCBmeasure
ProposedDCB measure
NetworkConsolidated Constraints
WhatElse
WhatIf
DCBImpact Assessment

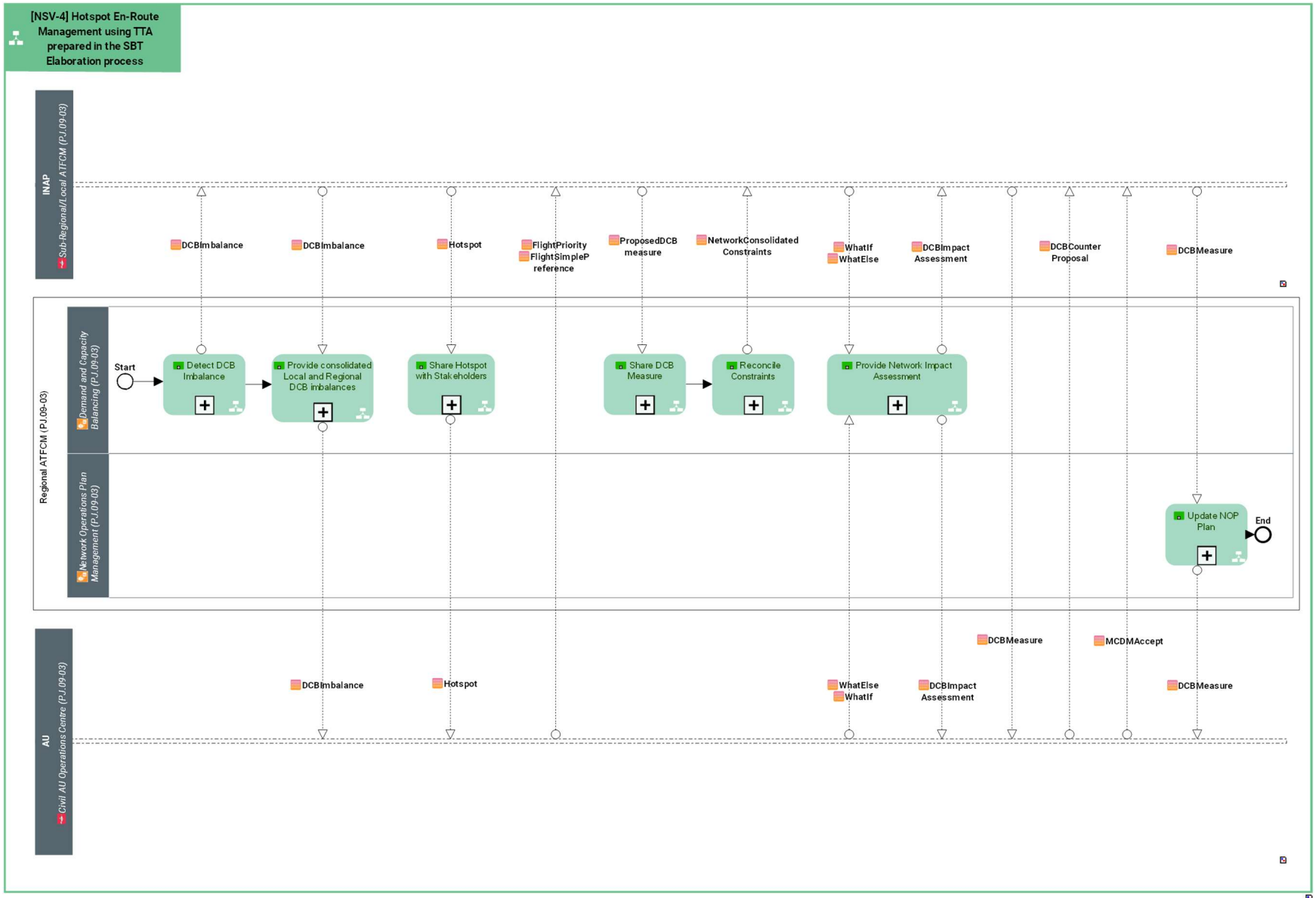
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.6 [NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process


[NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
FlightPriority
FlightSimpleP reference
ProposedDCB measure
NetworkConsolidated Constraints
WhatIf
WhatElse
DCBImpact Assessment
AgreedDCB Measure
SectorCo nfiguration
RunwayCo nfiguration
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Share DCB Measure
Reconcile Constraints
Provide Network Impact Assessment
Network Operations Plan Management (PJ.09-03)
Update NOP Plan
End
AU
Civil AU Operations Centre (PJ.09-03)
DCBImbalance
Hotspot
AgreedDCBMeasure
ImplementedDCB Measure
ATC
ER ACC (PJ.09-03)

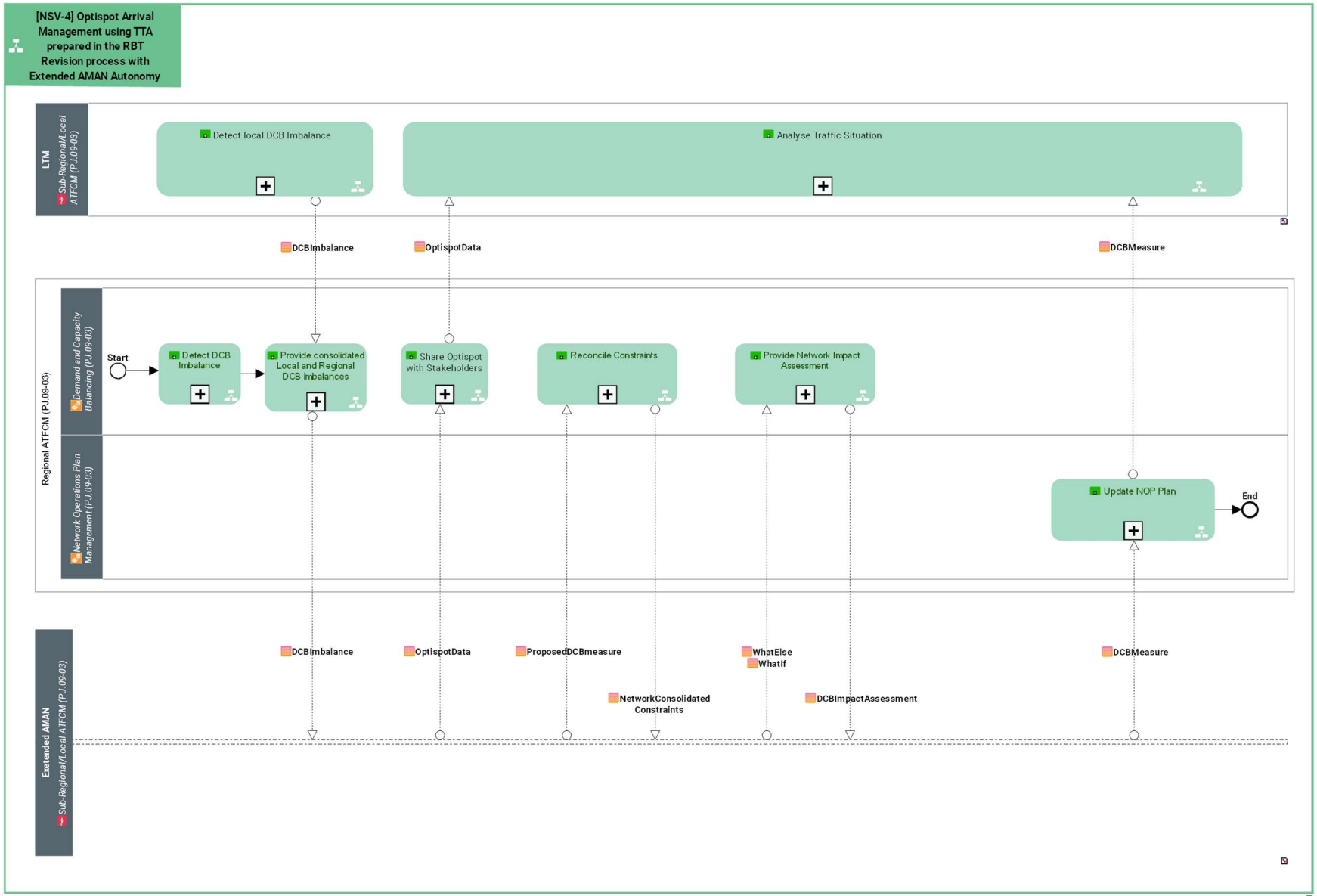
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share DCB Measure	After initial local impact assessment and before implementation whenever possible, EAP shares the proposed/draft EAP DCB Measure with Regional ATFCM via the NOP, for partners' visibility and feedback, according to CDM process.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.

4.1.2.7 [NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process


[NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process
INAP
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
DCBImbalance
Hotspot
FlightPriority
FlightSimpleP reference
ProposedDCB measure
NetworkConsolidated Constraints
WhatIf
WhatElse
DCBImpact Assessment
DCBCounter Proposal
DCBMeasure
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Hotspot with Stakeholders
Share DCB Measure
Reconcile Constraints
Provide Network Impact Assessment
Network Operations Plan Management (PJ.09-03)
Update NOP Plan
End
AU
Civil AU Operations Centre (PJ.09-03)
DCBImbalance
Hotspot
DCBMeasure
MCDMAccept
WhatElse
WhatIf
DCBImpact Assessment
DCBMeasure

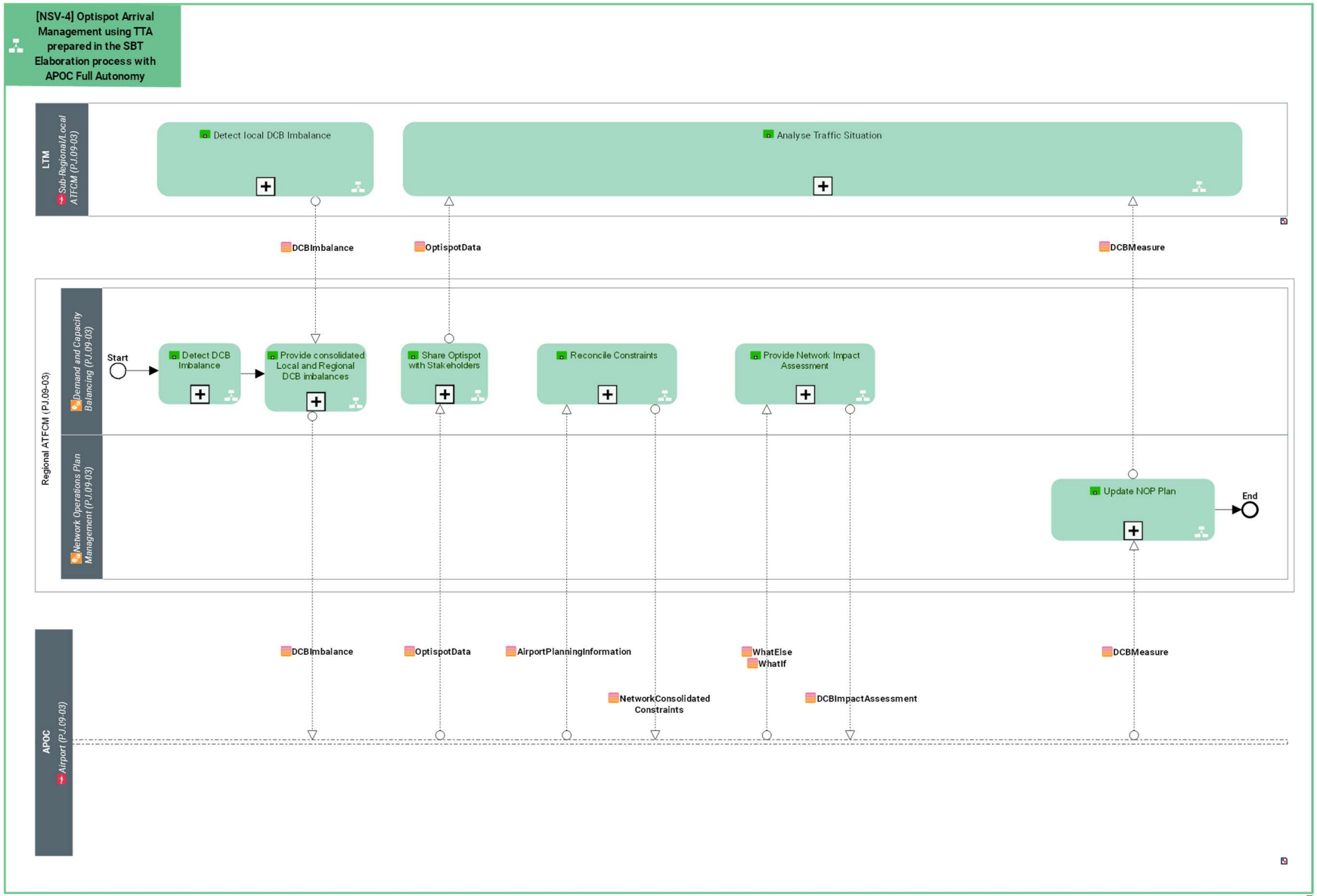
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share DCB Measure	After initial local impact assessment and before implementation whenever possible, EAP shares the proposed/draft EAP DCB Measure with Regional ATFCM via the NOP, for partners' visibility and feedback, according to CDM process.
Share Hotspot with Stakeholders	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.8 [NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy


[NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
Detect local DCB Imbalance
Analyse Traffic Situation
DCBImbalance
OptispotData
DCBMeasure
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Optispot with Stakeholders
Reconcile Constraints
Provide Network Impact Assessment
Update NOP Plan
End
Extended AMAN
Sub-Regional/Local ATFCM (PJ.09-03)
DCBImbalance
OptispotData
ProposedDCBmeasure
NetworkConsolidated Constraints
WhatElse
WhatIf
DCBImpactAssessment
DCBMeasure

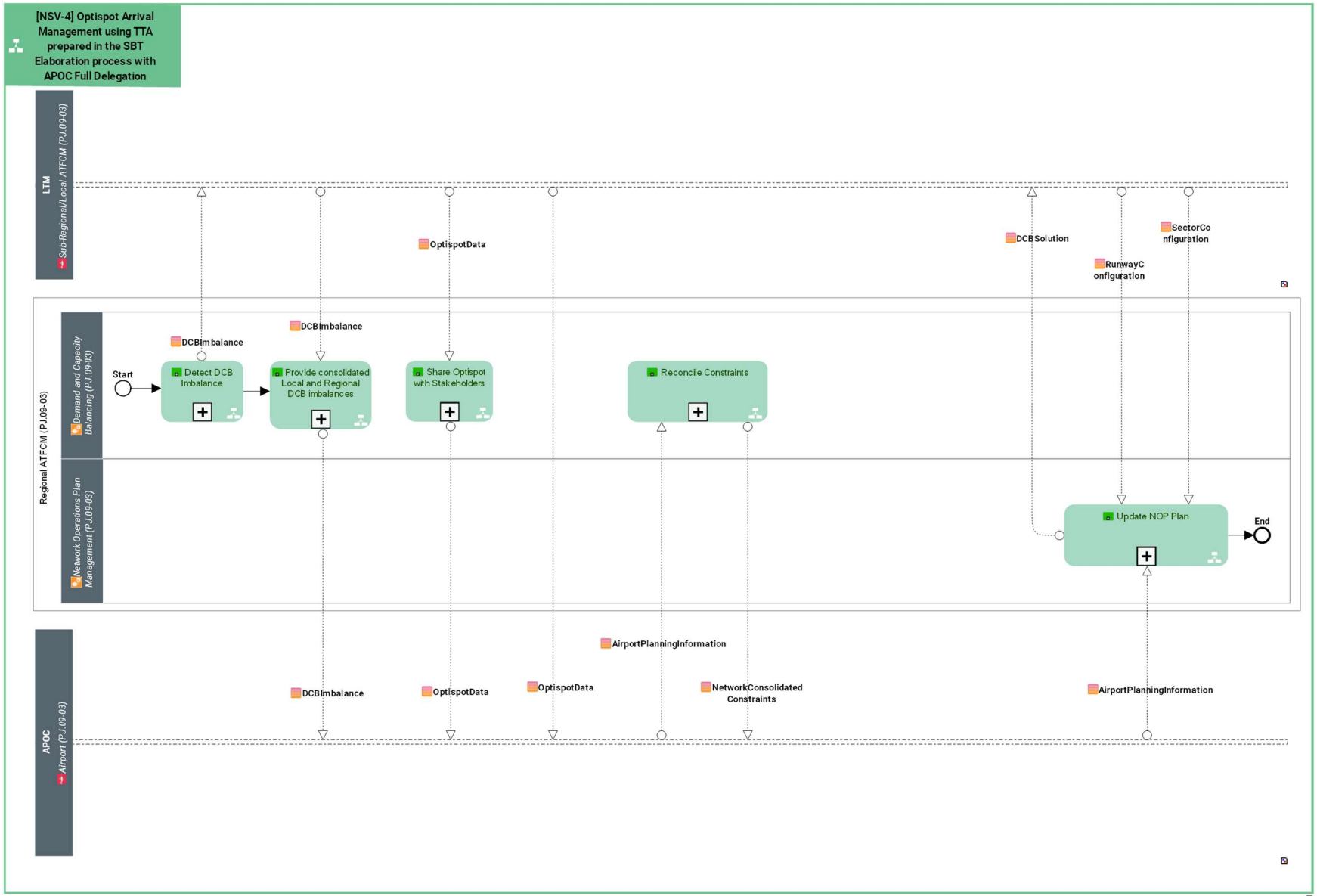
Function	Description
Analyse Traffic Situation	INAP analyses the situations of the delegated hotspot management
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Detect local DCB Imbalance	INAP function analyses the local imbalance figures (complexity, ….).
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Optispot with Stakeholders	The local Optispots are collected by the Collaborative NOP and accessible by NMf actors
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.9 [NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy


[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy
LTM
Sub-Regional/Local ATFCM (P.J.09-03)
Detect local DCB Imbalance
Analyse Traffic Situation
DCBImbalance
OptispotData
DCBMeasure
Regional ATFCM (P.J.09-03)
Demand and Capacity Balancing (P.J.09-03)
Network Operations Plan Management (P.J.09-03)
Start
Detect DCB Imbalance
Provide consolidated Local and Regional DCB imbalances
Share Optispot with Stakeholders
Reconcile Constraints
Provide Network Impact Assessment
Update NOP Plan
End
APOC
Airport (P.J.09-03)
DCBImbalance
OptispotData
AirportPlanningInformation
NetworkConsolidated Constraints
WhatElse
WhatIf
DCBImpactAssessment
DCBMeasure

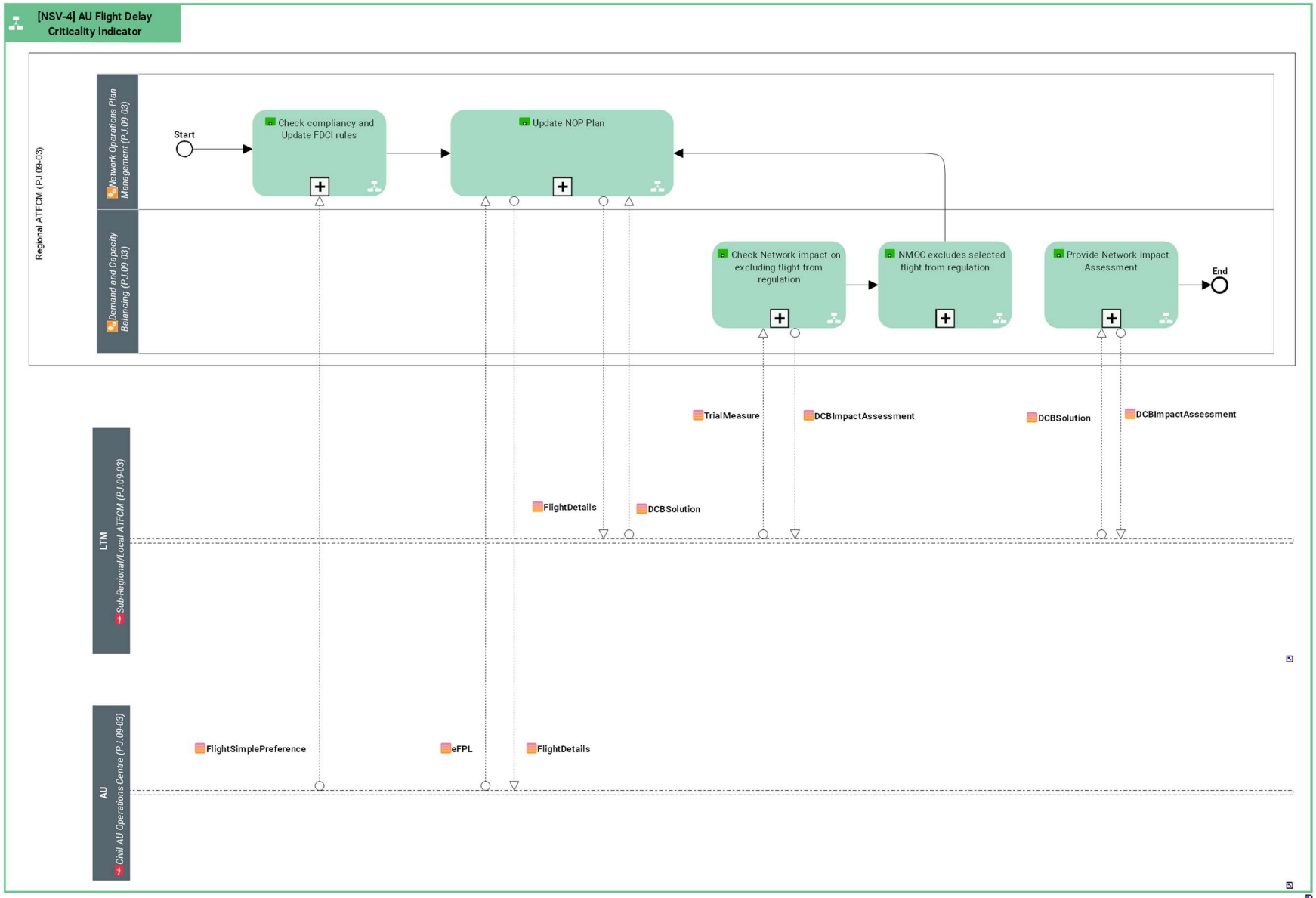
Function	Description
Analyse Traffic Situation	INAP analyses the situations of the delegated hotspot management
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Detect local DCB Imbalance	INAP function analyses the local imbalance figures (complexity, ….).
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Optispot with Stakeholders	The local Optispots are collected by the Collaborative NOP and accessible by NMf actors
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.10 [NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation


[NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
OptispotData
DCBSolution
RunwayConfiguration
SectorConfiguration
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Start
DCBImbalance
Detect DCB Imbalance
DCBImbalance
Provide consolidated Local and Regional DCB imbalances
Share Optispot with Stakeholders
Reconcile Constraints
Update NOP Plan
End
APOC
Airport (PJ.09-03)
AirportPlanningInformation
DCBImbalance
OptispotData
OptispotData
NetworkConsolidated Constraints
AirportPlanningInformation

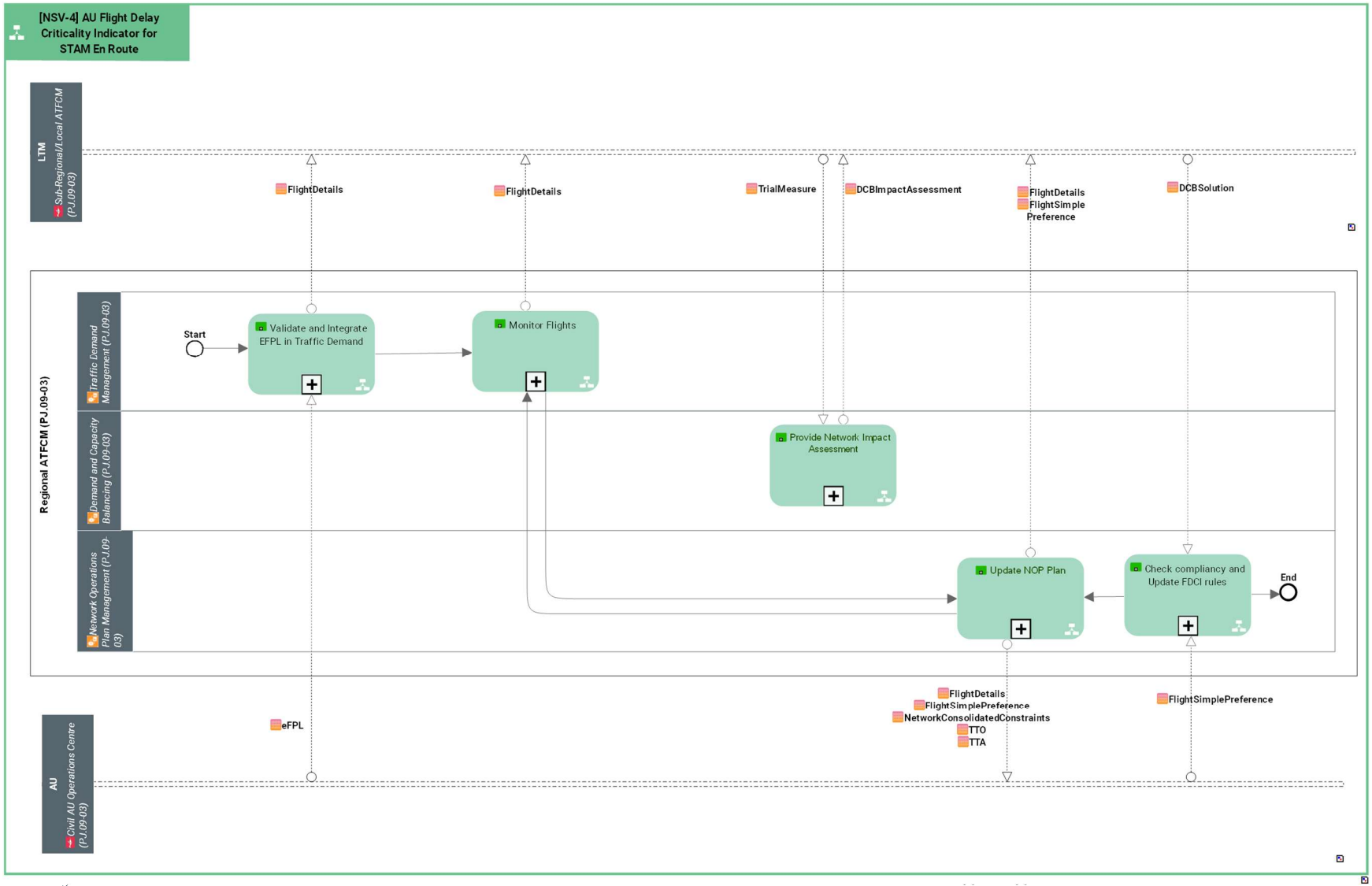
Function	Description
Detect DCB Imbalance	The Local Traffic Manager and/or the Flow Manager monitor the balance between demand and capacity in real time by analysing entry and occupancy counts and associated workload values, and comparing them respectively with situational traffic capacity values and occupancy traffic monitoring values.
Provide consolidated Local and Regional DCB imbalances	This function collects the local imbalance figures and provide a network imbalance consolidated view.
Reconcile Constraints	The local hotspots are collected by the Collaborative NOP and accessible by NMf actors.
Share Optispot with Stakeholders	The local Optispots are collected by the Collaborative NOP and accessible by NMf actors
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.11 [NSV-4] AU Flight Delay Criticality Indicator


[NSV-4] AU Flight Delay Criticality Indicator
Regional ATFCM (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Check compliancy and Update FDCI rules
Update NOP Plan
Check Network impact on excluding flight from regulation
NMOC excludes selected flight from regulation
Provide Network Impact Assessment
End
TrialMeasure
DCBImpactAssessment
DCBSolution
DCBImpactAssessment
FlightDetails
DCBSolution
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
FlightSimplePreference
eFPL
FlightDetails
AU
Civil AU Operations Centre (PJ.09-03)

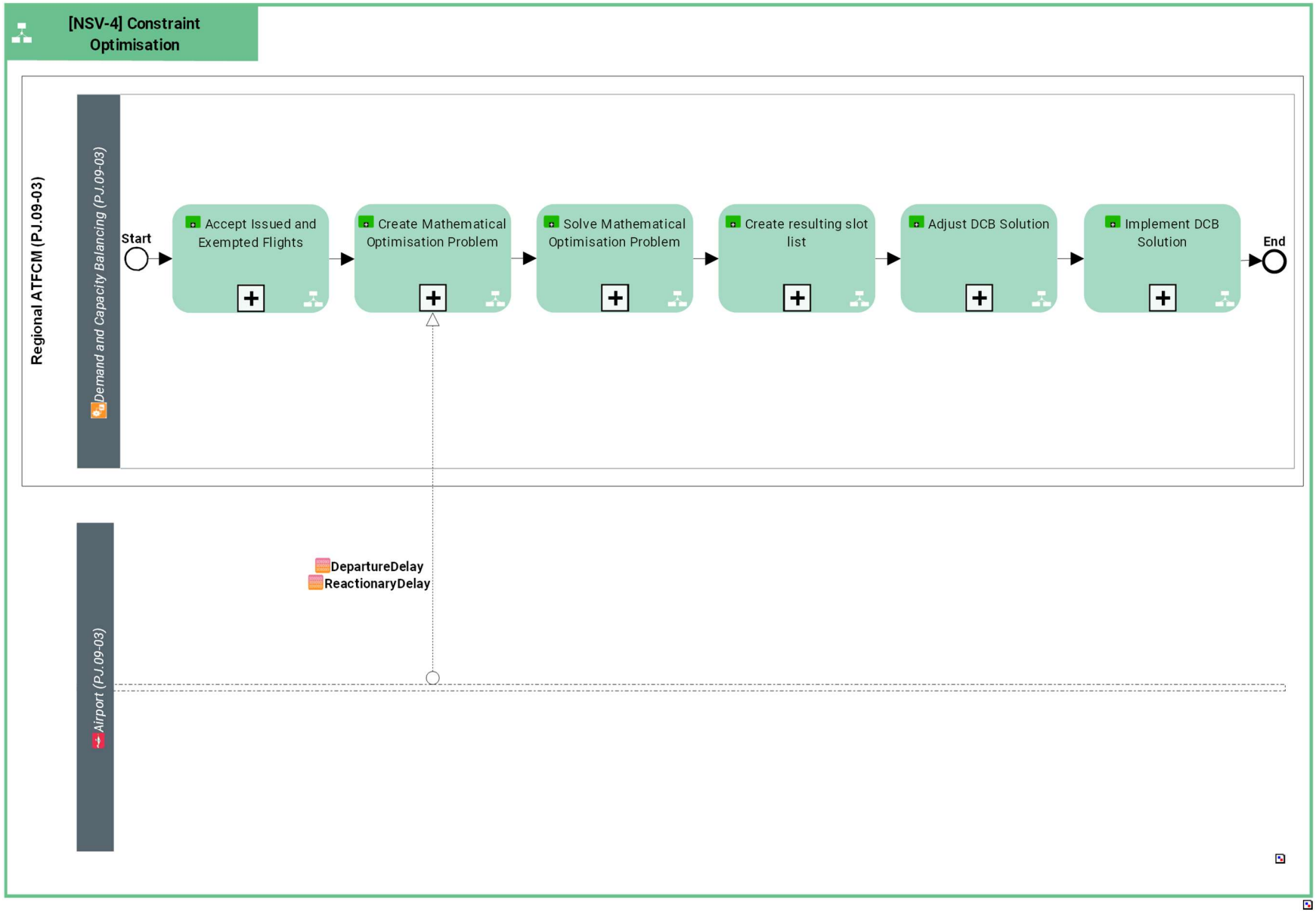
Function	Description
Check compliancy and Update FDCI rules	The FDCI is check, validated then used to update the AU wishes
Check Network impact on excluding flight from regulation	Network impact assessment based on the removal of a flight from a regulation
NMOC excludes selected flight from regulation	After an acceptable Network Impact assessment, NMOC enacts the flight removal (from regulation)
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.2.12 [NSV-4] AU Flight Delay Criticality Indicator for STAM En Route


[NSV-4] AU Flight Delay Criticality Indicator for STAM En Route
LTM
Sub-Regional/Local ATFCM (PJ.09-03)
FlightDetails
FlightDetails
TrialMeasure
DCBImpactAssessment
FlightDetails
FlightSimple Preference
DCBSolution
Regional ATFCM (PJ.09-03)
Traffic Demand Management (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Start
Validate and Integrate EFPL in Traffic Demand
Monitor Flights
Provide Network Impact Assessment
Update NOP Plan
Check compliancy and Update FDCI rules
End
eFPL
FlightDetails
FlightSimplePreference
NetworkConsolidatedConstraints
TTO
TTA
FlightSimplePreference
AU
Civil AU Operations Centre (PJ.09-03)

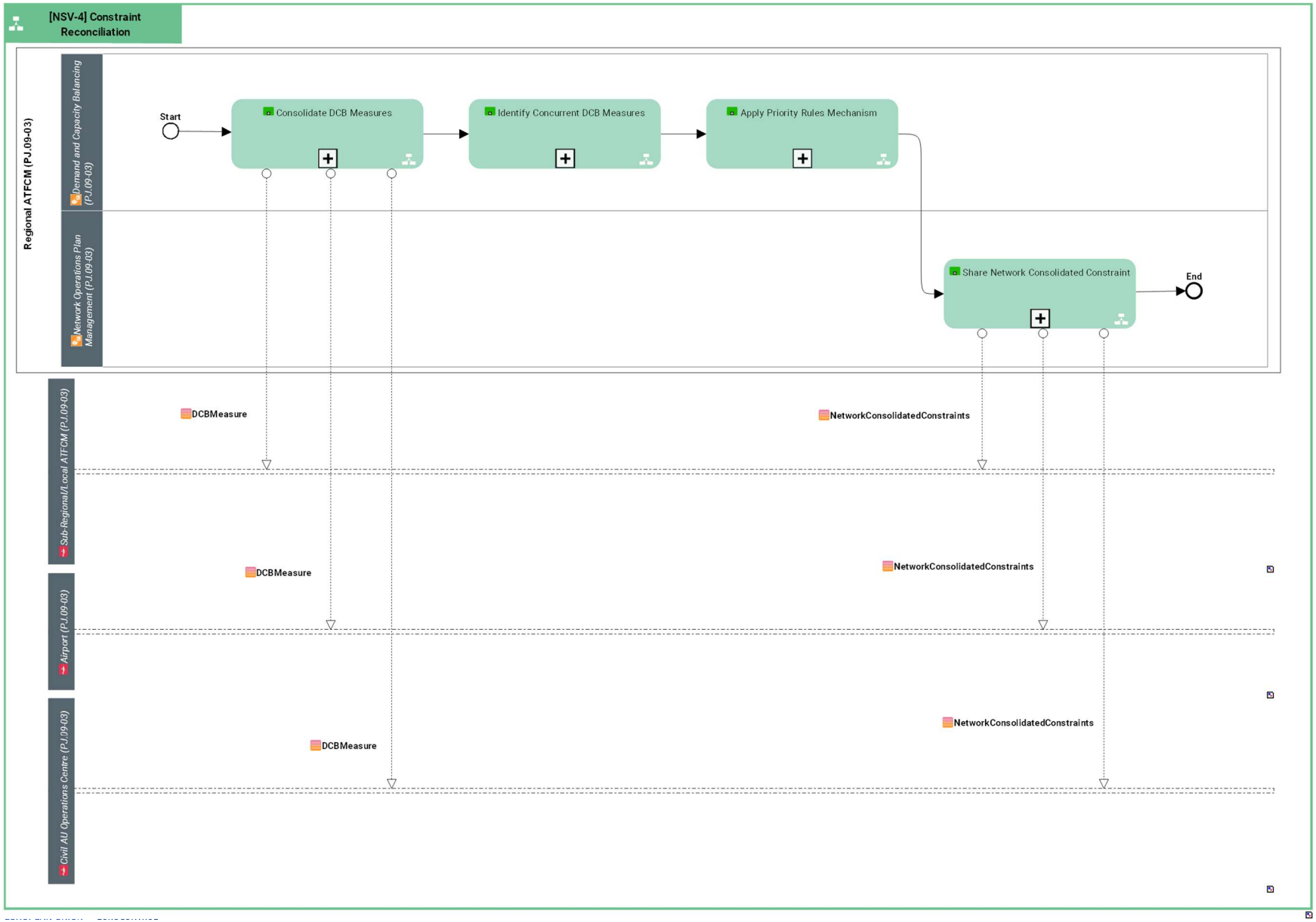
Function	Description
Check compliancy and Update FDCI rules	The FDCI is check, validated then used to update the AU wishes
Monitor Flights	INAP monitors the tTTO/tTTA adherence.
Provide Network Impact Assessment	This function provides the impact assessment (what-if) at the network level.
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.
Validate and Integrate EFPL in Traffic Demand	Validates Flight Plan data as provided by AU and integrates this into Traffic Demand database

4.1.2.13 [NSV-4] Constraint Optimisation


[NSV-4] Constraint Optimisation
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Accept Issued and Exempted Flights
Create Mathematical Optimisation Problem
Solve Mathematical Optimisation Problem
Create resulting slot list
Adjust DCB Solution
Implement DCB Solution
End
DepartureDelay
ReactionaryDelay
Airport (PJ.09-03)

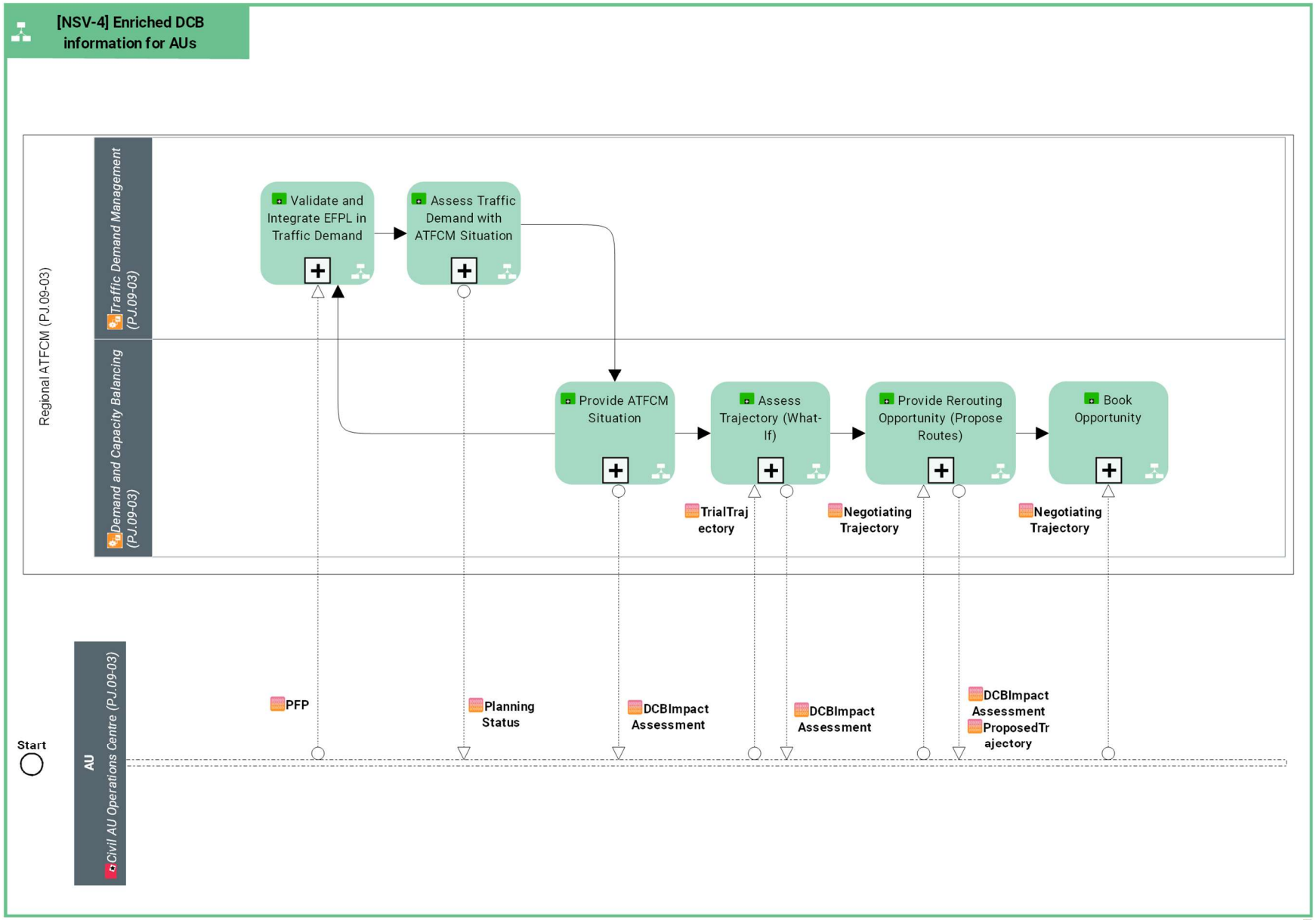
Function	Description
Accept Issued and Exempted Flights	Issued and exempted flights are taken as is, not changed.
Adjust DCB Solution	The DCB solution is adjusted if necessary.
Create Mathematical Optimisation Problem	All flights, which are not issued or exempted, participate in optimization. Flight variables are created and mapped to slots according to timeover and sliding ten tolerance rule. Slot constraints make sure that at each slot serves max one flight.
Create resulting slot list	The solution from the optimization problem is translated into RNEST flights which receive ATM delay and slots according to solution.
Implement DCB Solution	Implement the DCB Solution.
Solve Mathematical Optimisation Problem	Optimisation problem is solved to find solution which has one active variable per flight, fulfilling slot constraints and minimizing cost (minimizing primary and reactionary delay).

4.1.2.14 [NSV-4] Constraint Reconciliation


[NSV-4] Constraint Reconciliation
Regional ATFCM (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Start
Consolidate DCB Measures
Identify Concurrent DCB Measures
Apply Priority Rules Mechanism
Share Network Consolidated Constraint
End
Sub-Regional/Local ATFCM (PJ.09-03)
Airport (PJ.09-03)
Civil AU Operations Centre (PJ.09-03)
DCBMeasure
DCBMeasure
DCBMeasure
NetworkConsolidatedConstraints
NetworkConsolidatedConstraints
NetworkConsolidatedConstraints

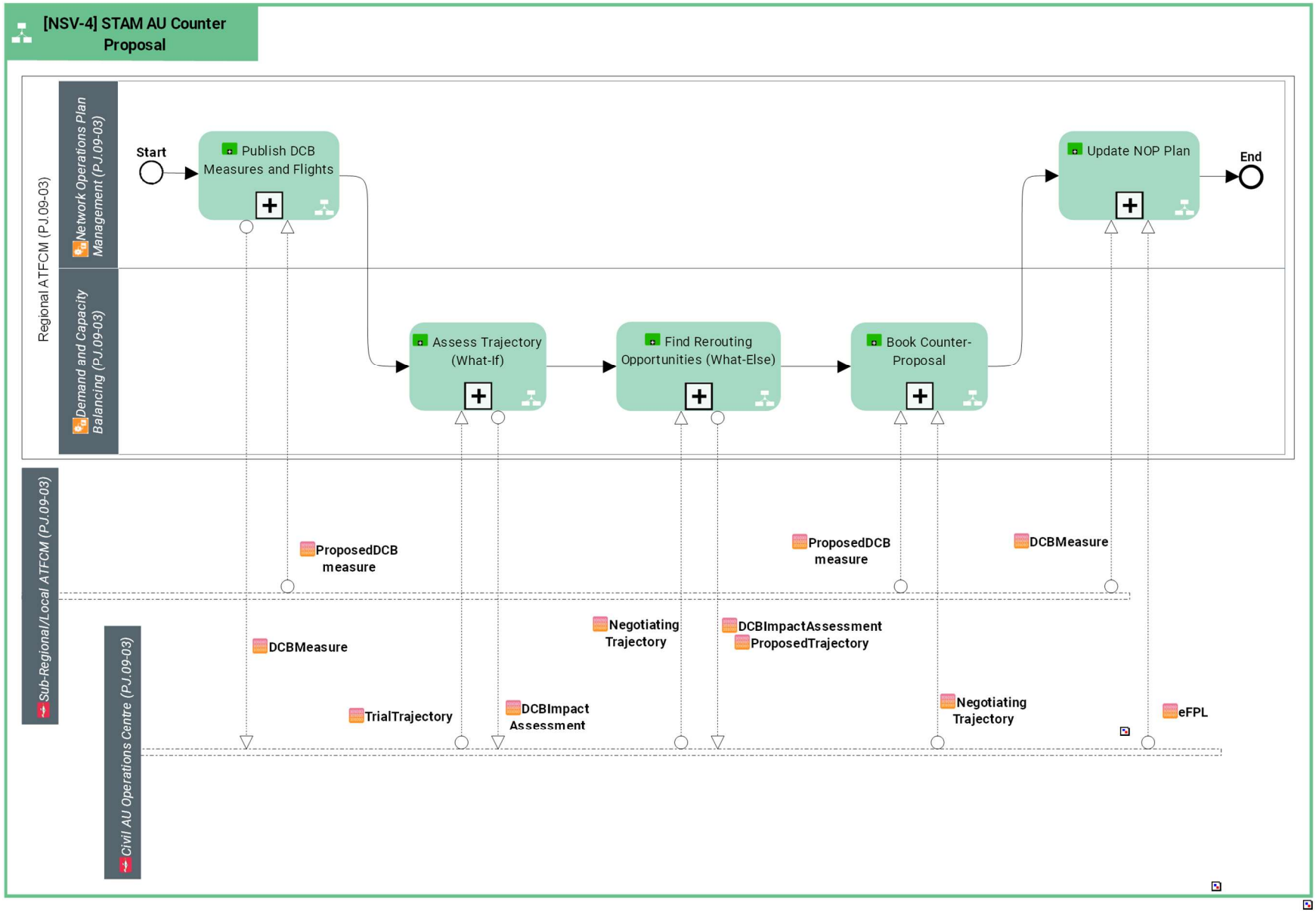
Function	Description
Apply Priority Rules Mechanism	Thus function determines the eligible constraint according to the 'Most Important Problem' rules. It generates the NCC (Network Consolidated Constraint)
Consolidate DCB Measures	This function collects all the proposed DCB constraints from local NMf actors.
Identify Concurrent DCB Measures	This function determine concurrent and interfering DCB constraints proposed by local NMf actors.
Share Network Consolidated Constraint	The proposed DCB constraints are collected by the Collaborative NOP and accessible by NMf actors

4.1.2.15 [NSV-4] Enriched DCB information for AUs


[NSV-4] Enriched DCB information for AUs
Regional ATFCM (PJ.09-03)
Traffic Demand Management (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Validate and Integrate EFPL in Traffic Demand
Assess Traffic Demand with ATFCM Situation
Provide ATFCM Situation
Assess Trajectory (What-If)
Provide Rerouting Opportunity (Propose Routes)
Book Opportunity
TrialTrajectory
Negotiating Trajectory
Negotiating Trajectory
Start
AU
Civil AU Operations Centre (PJ.09-03)
PFP
Planning Status
DCBImpact Assessment
DCBImpact Assessment
DCBImpact Assessment
ProposedTrajectory

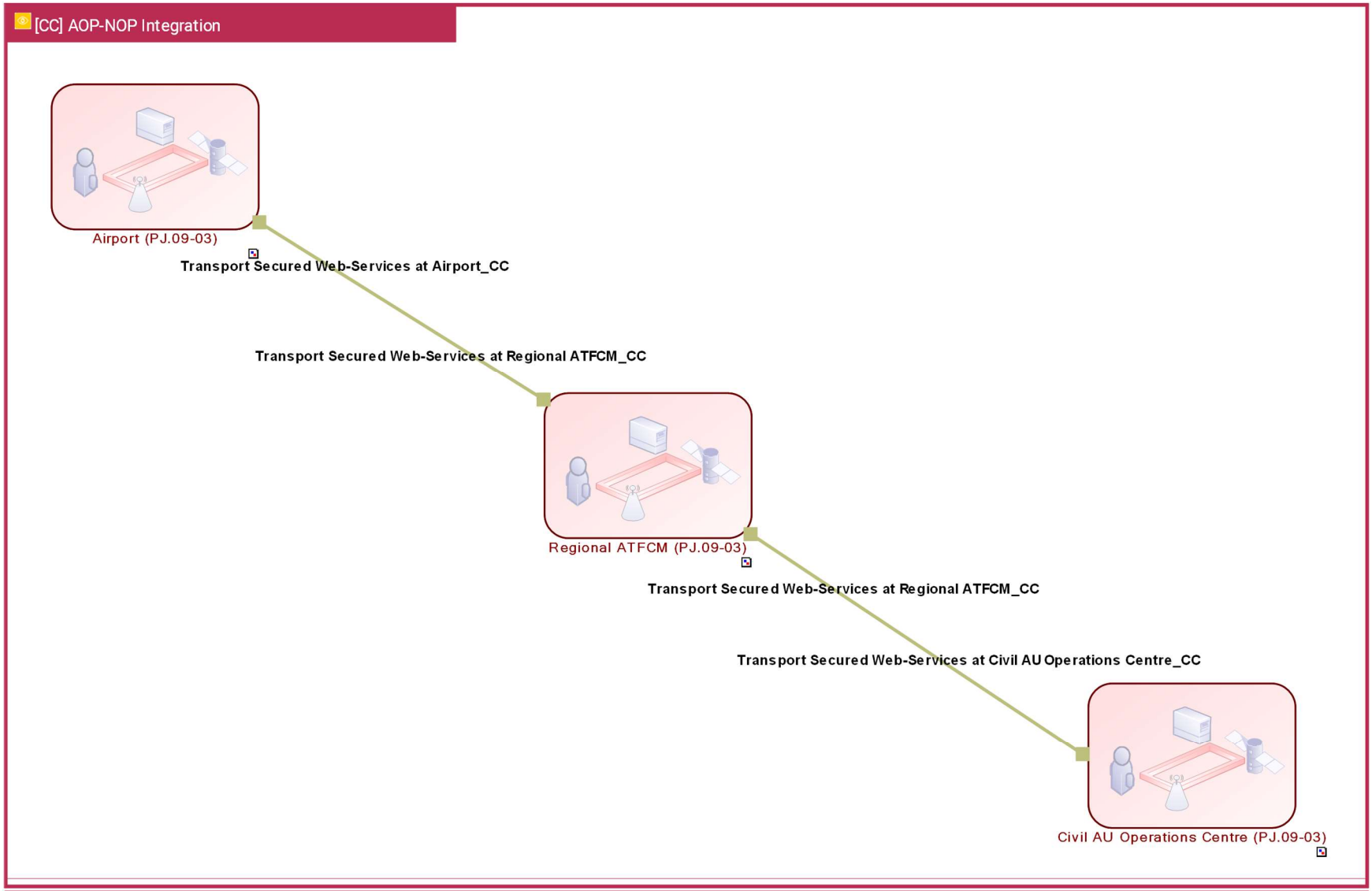
Function	Description
Assess Traffic Demand with ATFCM Situation	The Regional ATFCM assesses the traffic demand versus available capacity. This function is triggered · When a scheduled time arrives, then the system re-assesses the filed flight plans with the constraints applicable at the scheduled time. · When there is a new airspace constraint · When there is a new filed flight plan or an update to a filed flight plan
Assess Trajectory (What-If)	Assess a trajectory against the known DCB constraints, without changing the traffic demand picture with this trajectory. Report on the DCB constraints and enriched DCB data applicable through the trajectory.
Book Opportunity	Select rerouting opportunity is being reserved by the AU for maximum 30 minutes (needing to be confirmed by an updated eFPL to be send by the AU).
Provide ATFCM Situation	The regional ATFCM compiles the known ATM constraints at a specific time.
Provide Rerouting Opportunity (Propose Routes)	Calculate alternative trajectories by taking into account the input trajectory parameters and Airspace User constraints to respect.
Validate and Integrate EFPL in Traffic Demand	Validates Flight Plan data as provided by AU and integrates this into Traffic Demand database

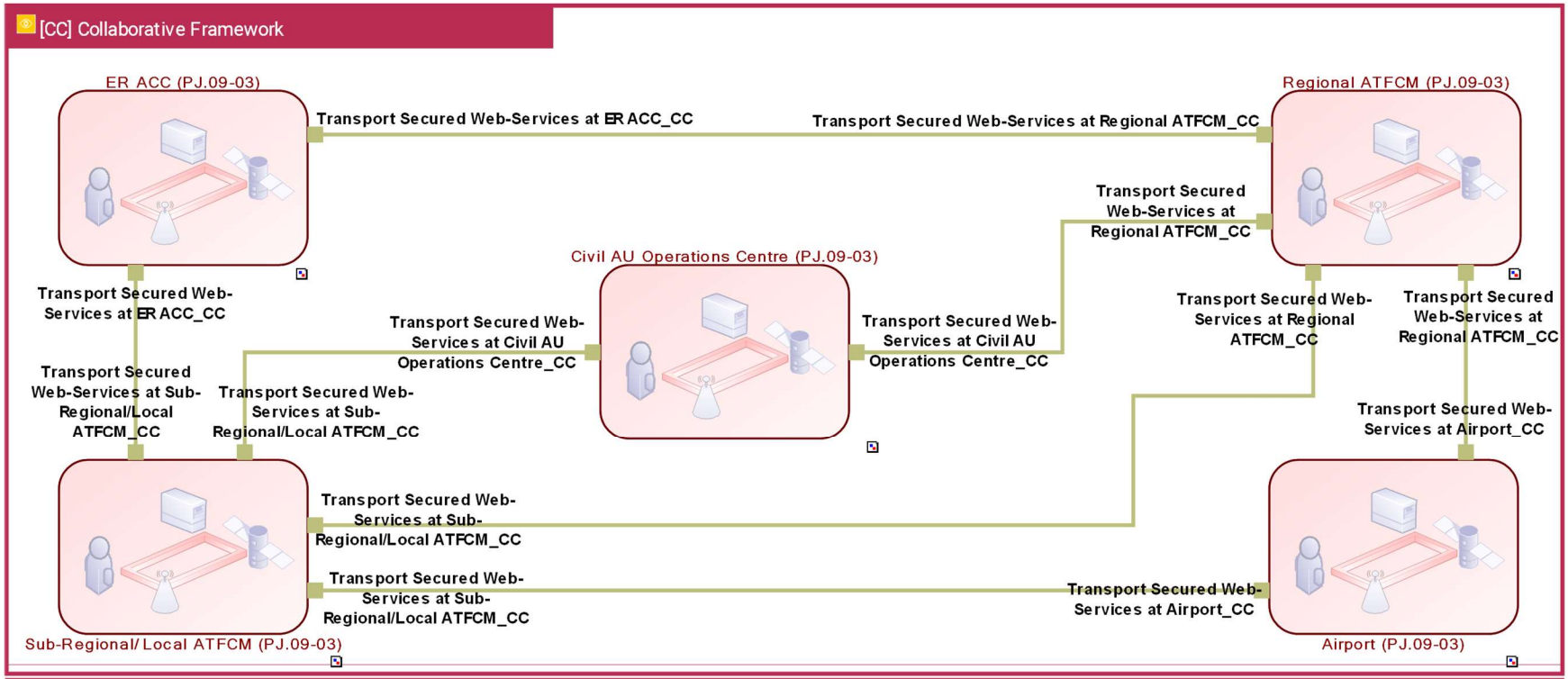
4.1.2.16 [NSV-4] STAM AU Counter Proposal


[NSV-4] STAM AU Counter Proposal
Regional ATFCM (PJ.09-03)
Network Operations Plan Management (PJ.09-03)
Demand and Capacity Balancing (PJ.09-03)
Start
Publish DCB Measures and Flights
Assess Trajectory (What-If)
Find Rerouting Opportunities (What-Else)
Book Counter-Proposal
Update NOP Plan
End
Sub-Regional/Local ATFCM (PJ.09-03)
Civil AU Operations Centre (PJ.09-03)
ProposedDCB measure
DCBMeasure
TrialTrajectory
DCBImpact Assessment
Negotiating Trajectory
DCBImpactAssessment
ProposedTrajectory
ProposedDCB measure
Negotiating Trajectory
DCBMeasure
eFPL

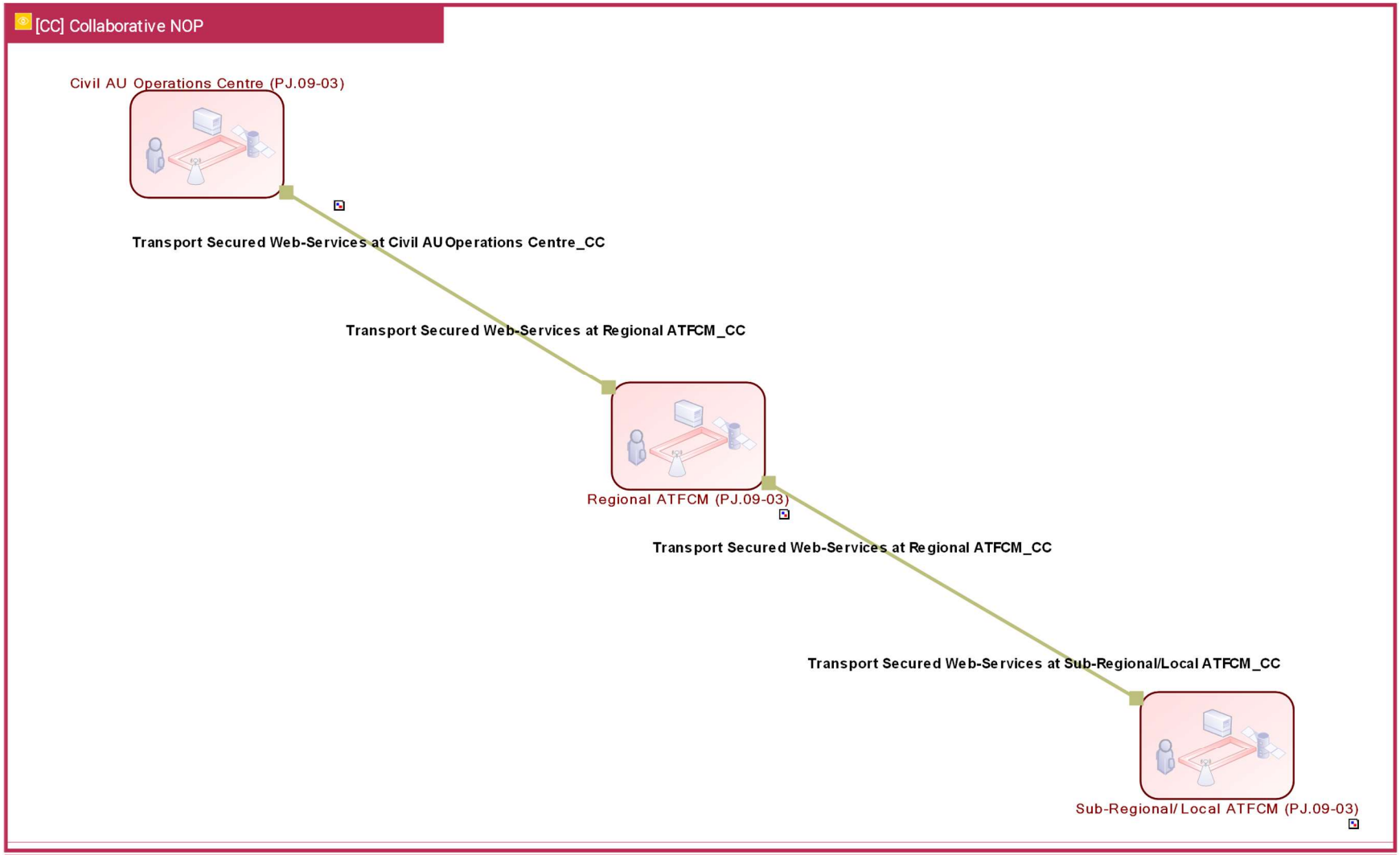
Function	Description
Assess Trajectory (What-If)	Assess a trajectory against the known DCB constraints, without changing the traffic demand picture with this trajectory. Report on the DCB constraints and enriched DCB data applicable through the trajectory.
Book Counter-Proposal	When AU deems the opportunity acceptable, he reserves this opportunity in the network tactical system (to be confirmed in the next 30 minutes)
Find Rerouting Opportunities (What-Else)	Regional ATFCM provides rerouting alternatives to AU submitted negotiating trajectory with corresponding DCB Impact Assessments.
Publish DCB Measures and Flights	NOP shares the DCB measures and impacted flights with stakeholders
Update NOP Plan	Once the EAP DCB Solution has been successfully coordinated, it becomes an Agreed Solution, and EAP sends it to the NOP, to feed and update the NOP Plan, to be shared with partners.

4.1.3 Infrastructure connectivity model


[CC] AOP-NOP Integration
Airport (PJ.09-03)
Transport Secured Web-Services at Airport_CC
Transport Secured Web-Services at Regional ATFCM_CC
Regional ATFCM (PJ.09-03)
Transport Secured Web-Services at Regional ATFCM_CC
Transport Secured Web-Services at Civil AU Operations Centre_CC
Civil AU Operations Centre (PJ.09-03)
[NSV-4] Network prediction in pre-tactical/tactical day and Airport planning [Airport (PJ.09-03), Civil AU Operations Centre (PJ.09-03), Traffic Demand Management (PJ.09-03)]

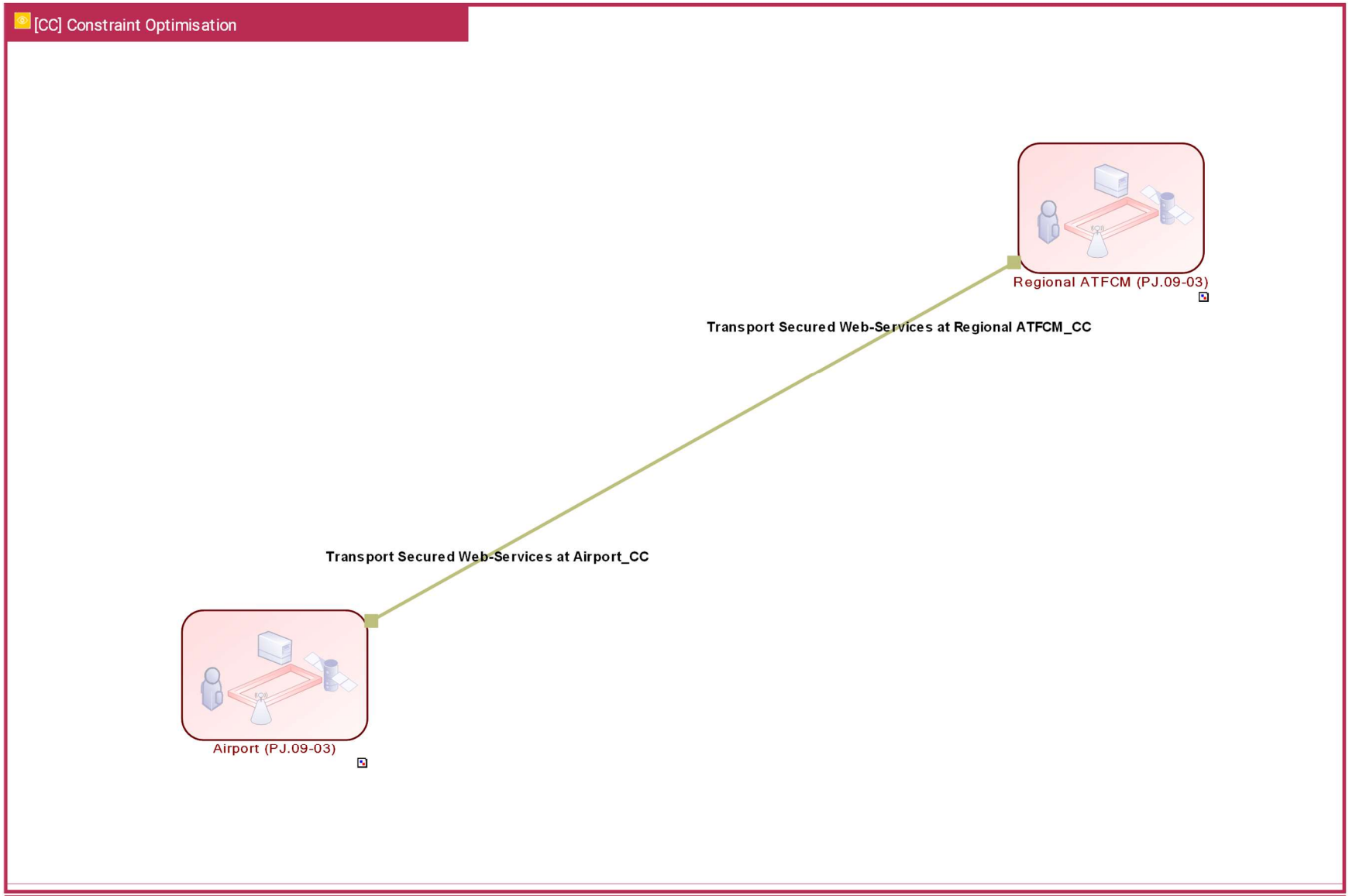


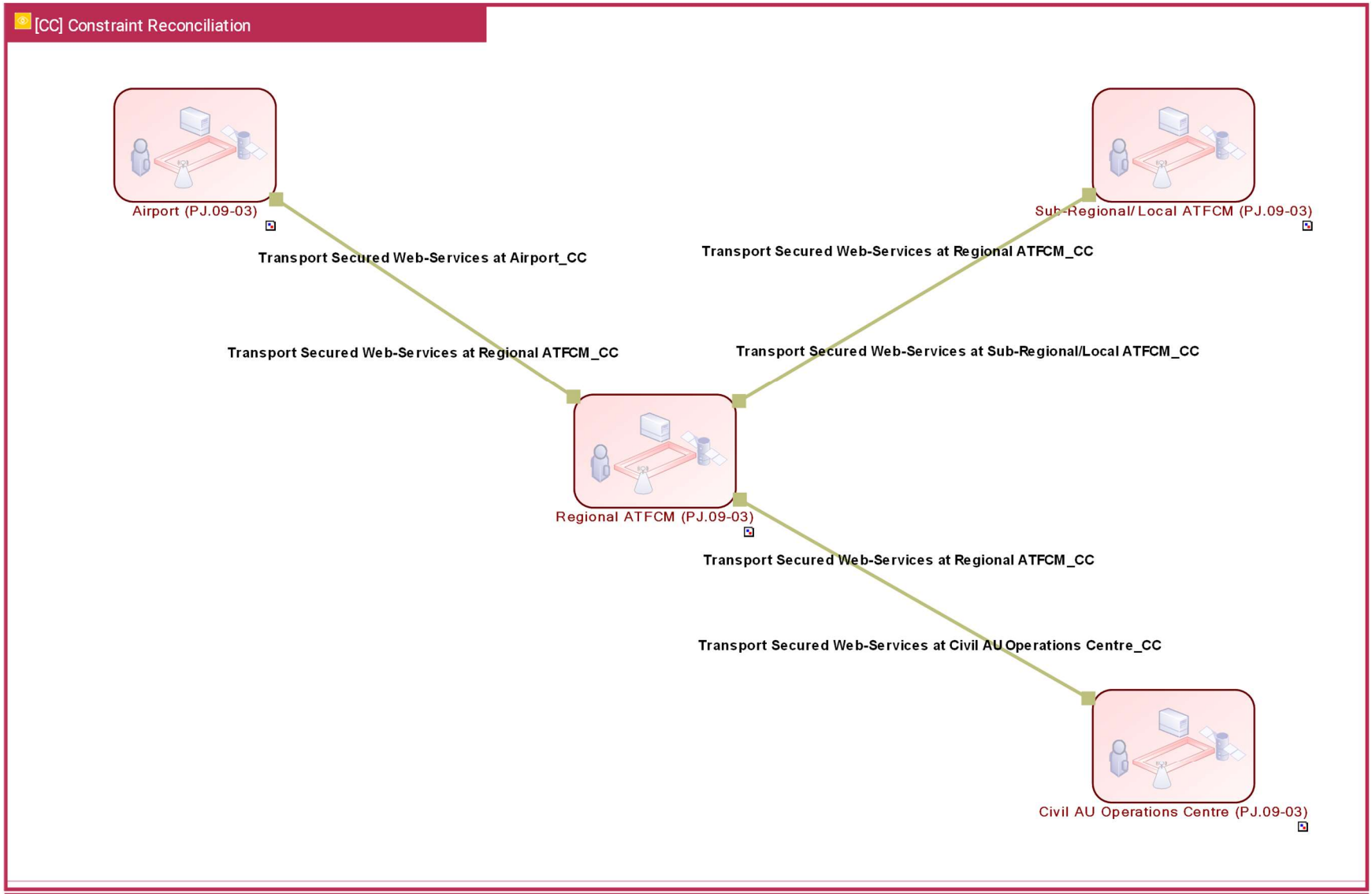
- [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Limited Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Delegation [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Optispot Arrival Management using TTA prepared in the RBT Revision process with Extended AMAN Autonomy [Demand and Capacity Balancing (PJ.09-03), Exetended AMAN, LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Optispot Arrival Management using TTA prepared in the SBT Elaboration process with APOC Full Autonomy [APOC, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Hotspot En-Route Management using TTA prepared in the SBT Elaboration process [AU, Demand and Capacity Balancing (PJ.09-03), INAP, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Hotspot Arrival Management using TTA prepared in the RBT Revision process [ATC, AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Hotspot Arrival Management using TTA prepared in the SBT Elaboration process [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]
- [NSV-4] Hotspot En-Route Management using TTA prepared in the RBT Revision process [ATC, AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]

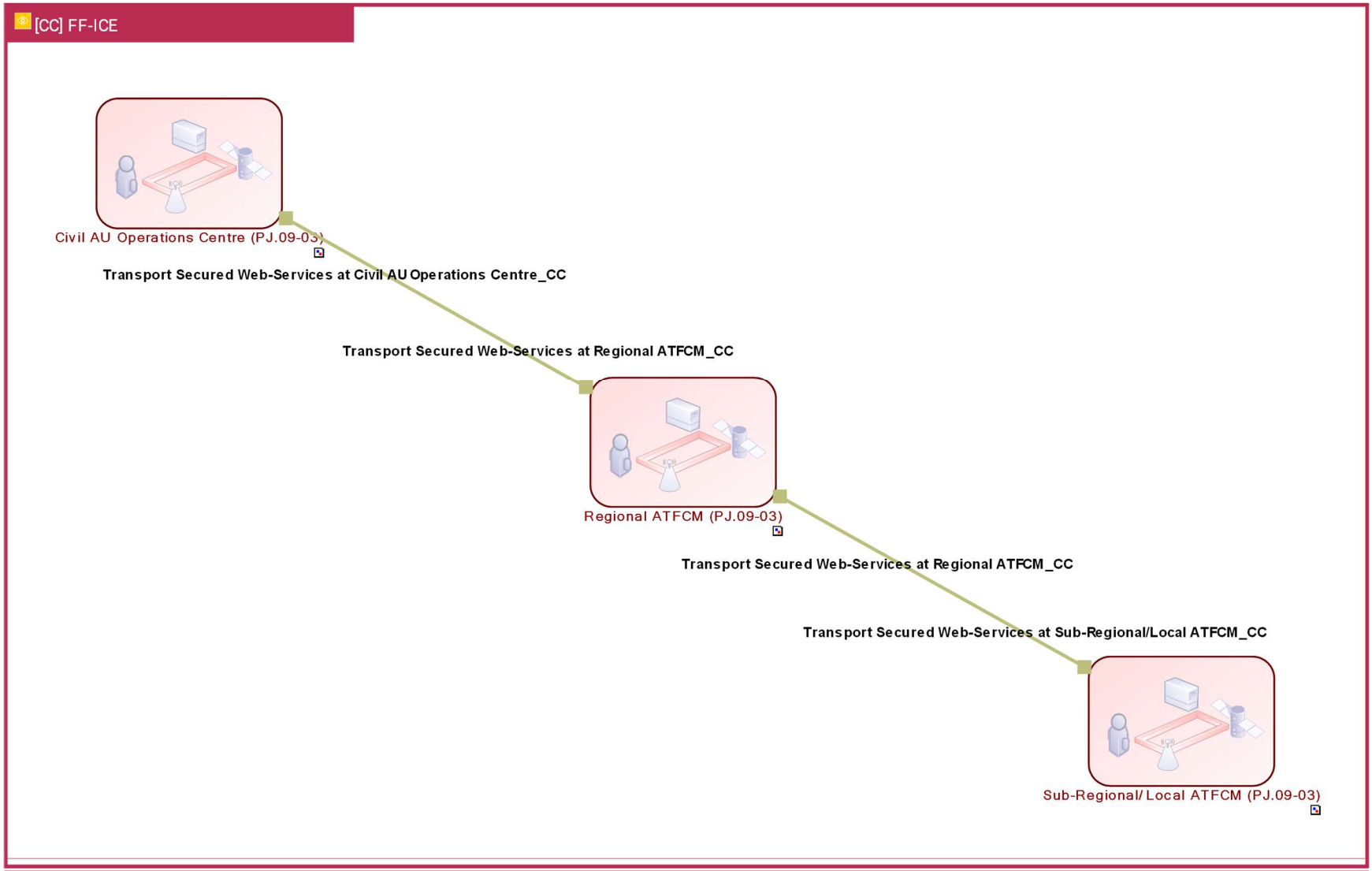


[NSV-4] AU Flight Delay Criticality Indicator [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03)]

[NSV-4] AU Flight Delay Criticality Indicator for STAM En Route [AU, Demand and Capacity Balancing (PJ.09-03), LTM, Network Operations Plan Management (PJ.09-03), Traffic Demand Management (PJ.09-03)]


[CC] Constraint Optimisation
Regional ATFCM (PJ.09-03)
Transport Secured Web-Services at Regional ATFCM_CC
Transport Secured Web-Services at Airport_CC
Airport (PJ.09-03)
[NSV-4] Constraint Optimisation [Airport (PJ.09-03), Demand and Capacity Balancing (PJ.09-03)]


[CC] Constraint Reconciliation
Airport (PJ.09-03)
Sub-Regional/Local ATFCM (PJ.09-03)
Transport Secured Web-Services at Airport_CC
Transport Secured Web-Services at Regional ATFCM_CC
Transport Secured Web-Services at Regional ATFCM_CC
Transport Secured Web-Services at Sub-Regional/Local ATFCM_CC
Regional ATFCM (PJ.09-03)
Transport Secured Web-Services at Regional ATFCM_CC
Transport Secured Web-Services at Civil AU Operations Centre_CC
Civil AU Operations Centre (PJ.09-03)
[NSV-4] Constraint Reconciliation [Airport (PJ.09-03), Civil AU Operations Centre (PJ.09-03), Demand and Capacity Balancing (PJ.09-03), Network Operations Plan Management (PJ.09-03), Sub-Regional/Local ATFCM (PJ.09-03)]



[NSV-4] Enriched DCB information for AUs [AU, Demand and Capacity Balancing, Demand and Capacity Balancing (PJ.09-03), Traffic Demand Management (PJ.09-03)]

[NSV-4] STAM AU Counter Proposal [Civil AU Operations Centre (PJ.09-03), Demand and Capacity Balancing (PJ.09-03), Network Operations Plan Management (PJ.09-03), Sub-Regional/Local ATFCM (PJ.09-03)]

4.1.4 Service view

4.1.4.1 Service description

Service	Service description
AirportFlightPlanningInformation	The AirportFlightPlanningInformation service supports the AOP-NOP integration concept by providing the concerned stakeholders with capabilities for exchanging extended DPI and API information in support of network operations planning to enhance predictability.
ExtendedFlightPlanSubmission	The Submission service supports the Airspace User to: - request the validation of an Extended Flight Plan (FPL) message before its submission; - request the submission of Extended FPL/Extended Modification/Extended Delay message; - request the cancellation of an Extended Flight Plan; to the Network Manager and supports the Network Manager to: - send the reply of the validation request (ACK, REJ) to the Airspace User; - send the reply of the submission request (ACK, MAN, REJ) to the Airspace User; - send the status of a specific flight plan to the Airspace User and ATC units. The status may be “Suspended” or “De-suspended”.
NMFlightDataService	The NMFlightData service is used to query and retrieve information on existing flight plans and flights.
HotspotManagementService	The Hotspot Management service supports the Short-Term ATFCM Measures (STAM) concept by providing the concerned stakeholders with capabilities for managing Hotspots in support of network demand and capacity balancing.
NMCapacityDataService (PJ.09-01)	The NMCapacityData service enables the retrieval and update methods for Airspace capacities.
ExtendedFlightPlanSubmission	The Submission service supports the Airspace User to: - request the validation of an Extended Flight Plan (FPL) message before its submission; - request the submission of Extended FPL/Extended Modification/Extended Delay message; - request the cancellation of an Extended Flight Plan; to the Network Manager and supports the Network Manager to: - send the reply of the validation request (ACK, REJ) to the Airspace User; - send the reply of the submission request (ACK, MAN, REJ) to the Airspace User; - send the status of a specific flight plan to the Airspace User and ATC units. The status may be “Suspended” or “De-suspended”.

AirportFlightPlanningInformation	The AirportFlightPlanningInformation service supports the AOP-NOP integration concept by providing the concerned stakeholders with capabilities for exchanging extended DPI and API information in support of network operations planning to enhance predictability.
AOWIRService	The service proposes possible reroutes and the DCB impact of a trajectory with flight planning and enhanced DCB information. It allows the consumer to: - request and assess the validity of available alternative trajectories proposed by the provider with their DCB impact - request the validity and DCB impact of one of the consumer''s trajectories
ExtendedFlightPlanSubmission	The Submission service supports the Airspace User to: - request the validation of an Extended Flight Plan (FPL) message before its submission; - request the submission of Extended FPL/Extended Modification/Extended Delay message; - request the cancellation of an Extended Flight Plan; to the Network Manager and supports the Network Manager to: - send the reply of the validation request (ACK, REJ) to the Airspace User; - send the reply of the submission request (ACK, MAN, REJ) to the Airspace User; - send the status of a specific flight plan to the Airspace User and ATC units. The status may be “Suspended” or “De-suspended”.
FF-ICEPlanningService	The Planning Service enables a CDM process between the eAU and the eASP(s) concerning the intended operation of a flight. The operational need for this service is expressed by the following purpose statements: · Assist the operator in determining the optimal route/trajectory for a flight by identifying the operational environment and ATM constraints applicable to the flight as proposed. · Enable ATM service providers to obtain an earlier, more detailed and more accurate assessment of the anticipated traffic demand. To cover such needs, the Planning Service provides the following functionalities: · The ability to submit a preliminary flight plan and associated messages (Update, Cancel) and to provide the appropriate response messages (Submission Response, Planning Status) REF: FIXM Implementation Guidance V2.0 Note: The service definition is out of scope of SESAR. SESAR solutions enhance the service definition. Therefore, this definition covers only what is relevant for the scope of the solution as well as what the solution adds to the service.

4.1.4.2 Service Provisioning

Interaction	Consumer CC	Consumer System	Provider CC	Provider System
ExtendedFlightPlanSubmission	Civil AU Operations Centre (PJ.09-03)	Civil AU Flight Operations Centre (FOC);	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
ProposeDCBMeasure	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
AirportFlightPlanningInformation	Airport (PJ.09-03)	Airport Airside Operations; Airport Operations Centre;	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
AirportFlightPlanningInformation	Airport (PJ.09-03)	Airport Airside Operations; Airport Operations Centre;	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
ProposeDCBMeasure	Regional ATFCM (PJ.09-03)		Airport (PJ.09-03)	
ProposeDCBMeasure	Regional ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
NMFlightDataService	Civil AU Operations Centre (PJ.09-03)	Civil AU Flight Operations Centre (FOC);	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
ConstraintReconciliation	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
ConstraintReconciliation	Regional ATFCM (PJ.09-03)		Airport (PJ.09-03)	
ConstraintReconciliation	Regional ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
FlightMonitoringInformation	Regional ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
ExtendedFlightPlanSubmission	Civil AU Operations Centre (PJ.09-03)	Civil AU Flight Operations Centre (FOC);	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
ExtendedFlightPlanSubmission	Civil AU Operations Centre (PJ.09-03)	Civil AU Flight Operations Centre (FOC);	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
AssessDCBMeasureImpact	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
ShareDCBMeasures	Regional ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
ProposeDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		Regional ATFCM (PJ.09-03)	
AUPreferences	Civil AU Operations Centre (PJ.09-03)		Regional ATFCM (PJ.09-03)	

Interaction	Consumer CC	Consumer System	Provider CC	Provider System
RegisterDCBMeasure	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
FlightMonitoringInformation	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
AUPreferences	Civil AU Operations Centre (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
ProposeDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
DCBImbalance	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
HotspotManagementService	Civil AU Operations Centre (PJ.09-03)	Civil AU Flight Operations Centre (FOC);	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
ShareDCBMeasures	Civil AU Operations Centre (PJ.09-03)		Regional ATFCM (PJ.09-03)	
DCBImbalance	Regional ATFCM (PJ.09-03)		Civil AU Operations Centre (PJ.09-03)	
ShareDCBMeasures	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
HotspotManagementService	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);	Sub-Regional/Local ATFCM (PJ.09-03)	ATFCM;
AUPreferences	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
ConstraintReconciliation	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
OptispotManagement	Regional ATFCM (PJ.09-03)		Sub-Regional/Local ATFCM (PJ.09-03)	
HotspotManagementService	Airport (PJ.09-03)	Airport Airside Operations; Airport Operations Centre;	Sub-Regional/Local ATFCM (PJ.09-03)	ATFCM;
ProposeDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		Airport (PJ.09-03)	
OptispotManagement	Sub-Regional/Local ATFCM (PJ.09-03)		Airport (PJ.09-03)	
RegisterDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		ER ACC (PJ.09-03)	
AssessDCBMeasureImpact	Regional ATFCM (PJ.09-03)		Airport (PJ.09-03)	
NMCapacityDataService (PJ.09-01)	Sub-Regional/Local ATFCM (PJ.09-03)		Regional ATFCM (PJ.09-03)	

Interaction	Consumer CC	Consumer System	Provider CC	Provider System
DCBImbalance	Regional ATFCM (PJ.09-03)		Airport (PJ.09-03)	
ConstraintReconciliation	Airport (PJ.09-03)		Regional ATFCM (PJ.09-03)	
ShareDCBMeasures	Airport (PJ.09-03)		Regional ATFCM (PJ.09-03)	
ConstraintReconciliation	Regional ATFCM (PJ.09-03)		Airport (PJ.09-03)	
HotspotManagementService	Airport (PJ.09-03)	Airport Airside Operations; Airport Operations Centre;	Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
RegisterDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		Airport (PJ.09-03)	
ShareDCBMeasures	Regional ATFCM (PJ.09-03)		ER ACC (PJ.09-03)	
RegisterDCBMeasure	Sub-Regional/Local ATFCM (PJ.09-03)		Regional ATFCM (PJ.09-03)	
AOWIRService	Civil AU Operations Centre (PJ.09-03)		Regional ATFCM (PJ.09-03)	ATFCM (PJ.09-03);
FF-ICEPlanningService	Civil AU Operations Centre (PJ.09-03)		Regional ATFCM (PJ.09-03)	

4.1.4.3 Service Realization

4.1.4.3.1 Interaction AirportFlightPlanningInformation

Service Interface Definition	
ProvidedAirportFlightPlanningInformation	
Standard	**MEP, Security Configuration, Interface Bindings**
AirportFlightPlanningInformationInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795

	REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.2 Interaction ExtendedFlightPlanSubmission

Service Interface Definition	
FlightPlanCoordinator	
Standard	**MEP, Security Configuration, Interface Bindings**
FlightPlanCoordinatorInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

Service Interface Definition
FlightStatusConsumer

Service Interface Definition
FlightStatusProvider

4.1.4.3.3 Interaction NMFlightDataService

Service Interface Definition	
ProvidedNMFlightData	
Standard	**MEP, Security Configuration, Interface Bindings**
NMFlightDataInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration:

	Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.4 Interaction AssessDCBMeasureImpact

4.1.4.3.5 Interaction AUPreferences

4.1.4.3.6 Interaction ConstraintReconciliation

4.1.4.3.7 Interaction ConstraintReconciliation

4.1.4.3.8 Interaction ConstraintReconciliation

4.1.4.3.9 Interaction DCBImbalance

4.1.4.3.10 Interaction DCBImbalance

4.1.4.3.11 Interaction DCBImbalance

4.1.4.3.12 Interaction HotspotManagementService

Service Interface Definition	
ProvidedHotspotManagement	
Standard	**MEP, Security Configuration, Interface Bindings**
ProvidedHotspotManagement.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.13 Interaction HotspotManagementService

Service Interface Definition	
ProvidedHotspotManagement	
Standard	**MEP, Security Configuration, Interface Bindings**
ProvidedHotspotManagement.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.14 Interaction HotspotManagementService

Service Interface Definition	
ProvidedHotspotManagement	
Standard	**MEP, Security Configuration, Interface Bindings**
ProvidedHotspotManagement.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.15 Interaction HotspotManagementService

Service Interface Definition
ProvidedHotspotManagement

Standard	MEP, Security Configuration, Interface Bindings
ProvidedHotspotManagement.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.16 Interaction NMCapacityDataService (PJ.09-01)

Service Interface Definition	
ProvidedNMCapacityData	
Standard	**MEP, Security Configuration, Interface Bindings**
NMCapacityDataInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.17 Interaction OptispotManagement

4.1.4.3.18 Interaction OptispotManagement

4.1.4.3.19 Interaction ProposeDCBMeasure

4.1.4.3.20 Interaction ProposeDCBMeasure

4.1.4.3.21 Interaction RegisterDCBMeasure

4.1.4.3.22 Interaction RegisterDCBMeasure

4.1.4.3.23 Interaction RegisterDCBMeasure

4.1.4.3.24 Interaction ShareDCBMeasures

4.1.4.3.25 Interaction ShareDCBMeasures

4.1.4.3.26 Interaction ShareDCBMeasures

4.1.4.3.27 Interaction ShareDCBMeasures

4.1.4.3.28 Interaction AssessDCBMeasureImpact

4.1.4.3.29 Interaction AUPreferences

4.1.4.3.30 Interaction AUPreferences

4.1.4.3.31 Interaction ExtendedFlightPlanSubmission

Service Interface Definition	
FlightPlanCoordinator	
Standard	**MEP, Security Configuration, Interface Bindings**
FlightPlanCoordinatorInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

Service Interface Definition
FlightStatusConsumer

Service Interface Definition

FlightStatusProvider

4.1.4.3.32 Interaction FlightMonitoringInformation

4.1.4.3.33 Interaction FlightMonitoringInformation

4.1.4.3.34 Interaction RegisterDCBMeasure

4.1.4.3.35 Interaction AirportFlightPlanningInformation

Service Interface Definition	
ProvidedAirportFlightPlanningInformation	
Standard	**MEP, Security Configuration, Interface Bindings**
AirportFlightPlanningInformationInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

4.1.4.3.36 Interaction ConstraintReconciliation

4.1.4.3.37 Interaction ConstraintReconciliation

4.1.4.3.38 Interaction ConstraintReconciliation

4.1.4.3.39 Interaction ProposeDCBMeasure

4.1.4.3.40 Interaction ProposeDCBMeasure

4.1.4.3.41 Interaction ProposeDCBMeasure

4.1.4.3.42 Interaction AOWIRService

System Port: Transport Secured Web-Services at Regional ATFCM (PJ.07-01)_CC

Protocol Stack	Protocol

System Port: Transport Secured Web-Services at Civil AU Operations Centre (PJ.07-01)_CC

Protocol Stack	Protocol

4.1.4.3.43 Interaction ExtendedFlightPlanSubmission

Service Interface Definition	
FlightPlanCoordinator	
Standard	**MEP, Security Configuration, Interface Bindings**
FlightPlanCoordinatorInterface.Transport Secured Web-Services	MEPs Supported: SRR PSPUSH PSPULL Security Configuration: Interface Binding Traceability: REQ-14.01.04-TS-0901.0790 REQ-14.01.04-TS-0901.0795 REQ-14.01.04-TS-0901.0304 REQ-14.01.04-TS-0901.0305 REQ-14.01.04-TS-0901.0325

Service Interface Definition
FlightStatusConsumer

Service Interface Definition
FlightStatusProvider

4.1.4.3.44 Interaction FF-ICEPlanningService

4.1.4.3.45 Interaction ProposeDCBMeasure

4.1.4.3.46 Interaction ShareDCBMeasures

4.2 Functional and non-Functional Requirements

4.2.1 Functional Requirements

This section presents the functional requirements organized by topic.

4.2.1.1 Local Constraint Reconciliation & Global Optimization Constraint Reconciliation

[REQ]

Identifier	REQ-09.03-TS-CR.010
Title	Collection of local DCB target time solution
Requirement	Reconciliation shall collect TTO/TTA information (tTTO:tTTA are not concerned) to determine concurrent and interfering Target-Time measure in the planning phase.
Status	<in progress>
Rationale	The collection of all the TTO/TTA is necessary to determine the network global level of consistency and is a pre-requisite to allow the identification of flight trajectories affected by interfering DCB constraints.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0001
<ALLOCATED_TO>	<Function>	Consolidate DCB Measures
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.020
Title	Network Consolidated Constraint

Requirement	After receiving Target-Time request from NMf actors, reconciliation shall determine and disseminate the eligible Target-Time
Status	<in progress>
Rationale	NMf actors will be able to send a Target-Time request to the NM system and receive a NCC (Network Consolidated Constraint) reply from NM indicating the eligible Target Time that can be proposed.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0010
<ALLOCATED_TO>	<Function>	Create Proposed DCB Measure
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.030
Title	Network Consolidated Constraint Update
Requirement	The NCC information shall be continously re-assessed and disseminated to the affected NMf actors.
Status	<in progress>
Rationale	NMf actors need to receive updated NCC (Network Consolidated Constraint) corresponding to their Target-Time request until a defined cut-off time.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0011
<ALLOCATED_TO>	<Function>	Share Network Consolidated Constraint
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC

< ALLOCATED_TO >	<Enabler>	NIMS-12c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.040
Title	Network Consolidated Constraint
Requirement	Reconciliation shall provide proposed NCC (Network Consolidated Constraint) information to support the DCB solution
Status	<in progress>
Rationale	NMf actors need to take into account the proposed NCC (Network Consolidated Constraint) to build their DCB solution.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0012
<ALLOCATED_TO>	<Function>	Assess Network Constraint
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
< ALLOCATED_TO >	<Enabler>	NIMS-12c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.050
Title	Identification of demand
Requirement	Reconciliation shall determine which flight trajectories are affected by multiple interfering constraints
Status	<in progress>

Rationale	Interfering DCB constraints at the network level is a potential source of performance issues. By identifying the flight trajectories affected by interfering DCB constraints, the Constraint reconciliation service will be able to apply the necessary corrective measures (i.e. DCB rules principles) to ensure safety is preserved at the network level.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0020
<ALLOCATED_TO>	<Function>	Identify Concurrent DCB Measures
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.060
Title	Provision of Network Consolidated Constraint (NCC)
Requirement	Reconciliation shall provide a Network Consolidated Constraint (NCC) based on target time proposals
Status	<in progress>
Rationale	The Network Consolidated Constraint (NCC) allows the local-DCB actors to be informed about the Network situation by a network consolidated target-time reply based on their target-time proposal request.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0030
<ALLOCATED_TO>	<Function>	Share Network Consolidated Constraint
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.070
Title	Elaboration of the Network Consolidated Constraint (NCC)
Requirement	Reconciliation shall determine the Network Consolidated Constraint (NCC) based on the categorization of identified DCB “spots” and by applying the DCB priority rules mechanism.
Status	<in progress>
Rationale	The Network Consolidated Constraint (NCC) determines the eligible constraint based on two main principles: • The categorization of identified DCB “Spot” • The introduction of priority rules to manage conflicting DCB measures depending on the nature of the related DCB “Spot” (i.e. hotspot, optispot)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0040
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.080
Title	Identification of the Most Important Problem (MIP)
Requirement	Reconciliation shall determine the Most Important Problem (MIP) over the identified DCB spots for trajectories concerned by interfering DCB constraints.
Status	<in progress>

Rationale	The categorization of DCB spots introduces the notion of the Most Important Problem (MIP) that prioritizes the level of criticality. Four main categories of DCB spots have been identified, starting from the most important: • CrisisSpot • CriticalSpot • HotSpot • OptiSpot
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0050
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.090
Title	Application of the DCB rule mechanism
Requirement	Reconciliation shall apply the correct DCB-rule mechanism depending the nature of the DCB spots (e.g. hotspot, optispot …) identified along the concerned trajectories.
Status	<in progress>
Rationale	A DCB Target-Time measure associated to a Spot Category inherits of the MIP attribute. It implies that a planned DCB measure for a most important DCB spot will always take priority over a DCB measure for a less important DCB spot. Rules and principles have to be defined in order to manage conflicting measures: • Between different DCB spot category (extra-category priority) • Within a same DCB spot category (intra-category priority)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0060
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.100
Title	Management of DCB-rules (extra-category priority)
Requirement	Reconciliation shall manage conflicting DCB measures between different DCB spot category (extra-category priority)
Status	<in progress>
Rationale	Across the network, a flight trajectory can be subject at the same time by DCB constraints related to different nature of DCB spots. Rule principles between each of them shall be defined and applied in order to take into account the level of criticality of the concerned DCB spots.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0070
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.110
Title	Management of DCB-rules (intra-category priority)
Requirement	The DCB-rule mechanism shall manage conflicting DCB measures within a same DCB spot category (intra-category priority)
Status	<in progress>
Rationale	In case of a flight trajectory that is subjected at the same time by DCB constraints related to the same nature of DCB spot. Rule principles applicable to the nature of the DCB spot shall be used.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0080
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.120
Title	Best effort principle
Requirement	Reconciliation shall apply the best-effort principle to manage between DCB Hotspots and DCB Optispots conflicting constraints
Status	<in progress>
Rationale	The Best Effort priority rule considers the Hotspot measures as a higher priority than the OptiSpot measures but uses the mechanism of no-slot-before to look for the first slot available for the OptiSpot measures. Because the Constraint Reconciliation Service is continuously recalculating the situation, this first slot available for the OptiSpot measure can be: • Overruled by Hotspot measures • Pushed further than the requested target-time or earliest available slot provided. • Improved in the limit of the requested target-time

Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0090
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.130
Title	Most Penalizing Constraint principle
Requirement	shall apply the Most Penalizing Constraint (MPC) principle to manage conflicting constraints between DCB Hotspots
Status	<in progress>
Rationale	The MPC rule is based on the Most Penalizing Mechanism (MPR) developed and implemented within Network Manager CASA system. The MPC is a target-time measure that applies the most penalizing delay on a trajectory in a declared hotspot. In the case where the Constraint Reconciliation Service for the same SBT collects several Target-Time proposals associated to HotSpot, the Network Consolidated Constraint reply to the requesters is equal to the MPC.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRM.0100
<ALLOCATED_TO>	<Function>	Apply Priority Rules Mechanism
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.140
Title	Network Consolidated Regulations
Requirement	Slot allocation updates shall be based on active regulations and corresponding rates.
Status	<in progress>
Rationale	All anticipated, pre-tactical and tactical regulations shall be made available in order to regularly update slot allocations
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRO.0010
<ALLOCATED_TO>	<Function>	Reg data availability
<ALLOCATED_TO>	<role>	Regional ATFCM
<ALLOCATED_TO>	<role>	Local ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.150
Title	Slot Features
Requirement	Reconciliation should guarantee uniform slot planning.
Status	<in progress>
Rationale	Slots and correlated planning features (allocation windows, granularity, etc.) should be designed according to comparable standards
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRO.0020

<ALLOCATED_TO>	<Function>	Slot Planning Features
<ALLOCATED_TO>	<role>	Regional ATFCM
<ALLOCATED_TO>	<role>	Local ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CR.160
Title	Operational Computation
Requirement	For the dynamic slot allocation process, time granularity of the CRO initiation process should be based on a CRO computation time minimum.
Status	<in progress>
Rationale	Operational Computation, depending on the technological environment, should be able to provide slot allocation solutions within a demanded time period
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-CRO.0030
<ALLOCATED_TO>	<Function>	Computation Time
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

4.2.1.2 Collaborative Framework

[REQ]

Identifier	REQ-09.03-TS-CF.010
Title	Collaborative Participation of Actors
Requirement	The DCB Collaborative Framework shall provide a mechanism to support the collaborative elaboration of DCB solutions accommodating the business needs of different local actors.
Status	<in progress>
Rationale	The DCB Collaborative Framework must facilitate the participation of AU, APT, NM and INAP to the Collaborative Decision-making mechanisms providing transparency and feedback of the impact of DCB activities on their operations.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0010
<ALLOCATED_TO>	<Function>	Provide Consolidated Local and regional DCB Imbalances
<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<Function>	Reconcile Constraint
<ALLOCATED_TO>	<Function>	Update the NOP
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.020
Title	Provisions to Support the Collaborative Framework (consolidated imbalances)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of network consolidated imbalances figures.
Status	<in progress>

Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Provide Consolidated Local and regional DCB Imbalances
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.030
Title	Provisions to Support the Collaborative Framework (Share Hotspot)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of Hotspot and Optispot information
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.040
Title	Provisions to Support the Collaborative Framework (what-if)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of what-if capabilities to simulate alternate SBT/RBT based on Performance Indicators
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.050
Title	Provisions to Support the Collaborative Framework (what-else)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of what-else capabilities to propose alternate SBT/RBT based on Performance Indicators
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020

<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.060
Title	Provisions to Support the Collaborative Framework (Multiple Target Time Constraint)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of Multiple Target Time Constraint information
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Reconcile Constraint
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.070
Title	Provisions to Support the Collaborative Framework (AU Priorities and Preferences)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the provision of AU Priorities and Preferences
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.

Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Update the NOP
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.080
Title	Provisions to Support the Collaborative Framework (Hotspots)
Requirement	The DCB Collaborative Framework shall support the decision-making based on the management of Hotspots
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders
<ALLOCATED_TO>	<Function>	Update the NOP
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.090
Title	Provisions to Support the Collaborative Framework (DCB Measures)

Requirement	The DCB Collaborative Framework shall support the decision-making based on the management of DCB Measures
Status	<in progress>
Rationale	A set of NM Services need to be provided to support the elaboration of local DCB solutions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0020
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Update the NOP
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.100
Title	Limited Delegation of Responsibility to Resolve Spot
Requirement	The DCB Collaborative Framework shall support the limited delegation of responsibility and authority to resolve a Spot (Hotspot, Optispot) for a limited duration (with time-out)
Status	<in progress>
Rationale	The limited delegation of responsibility allows INAP to delegate to another actor the responsibility for hotspot resolution (concerning the DCB solution design). At the time-out, INAP will receive the proposed DCB solution from the delegated actor. INAP will analyze the proposed solution and will implement it.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0030

<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.110
Title	Full Delegation of Responsibility to Resolve Spot
Requirement	The DCB Collaborative Framework shall support the full delegation of responsibility and authority to resolve a Spot (Hotspot, Optispot)
Status	<in progress>
Rationale	The full delegation of responsibility allows INAP to delegate to another actor the delegation of a hotspot resolution from the DCB solution design until the implementation of DCB measures.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0040
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.120
Title	Full Autonomy to Resolve Spot
Requirement	The DCB Collaborative Framework shall support the full autonomy of responsibility and authority to identify and resolve Spot (Hotspot, Optispot)

Status	<in progress>
Rationale	The full autonomy allows INAP to delegate to another actor the responsibility to identify imbalance and hotspot, to manage the hotspot resolution from the DCB solution design until the implementation of DCB measures.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0041
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
<ALLOCATED_TO>	<role>	INAP
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.130
Title	DCB Measure Simple Coordination
Requirement	The DCB Collaborative Framework shall support the DCB Measure coordination between actors based on a simple mode (accept/reject)
Status	<in progress>
Rationale	A coordination mechanism is needed to allow INAP to propose and negotiate the DCB measure with another actor (who can accept or reject it).
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0050
<ALLOCATED_TO>	<Function>	Coordinate DCB Solution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c

<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.140
Title	DCB Measure Complex Coordination
Requirement	The DCB Collaborative Framework shall support the DCB Measure coordination between actors based on a counter-proposal
Status	<in progress>
Rationale	A more complex coordination mechanism is needed to allow INAP to propose and negotiate DCB measures with another actor (who can accept, reject, and make counter-proposal).
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0060
<ALLOCATED_TO>	<Function>	Coordinate DCB Solution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.150
Title	DCB Measure Implementation delegation
Requirement	The DCB Collaborative Framework shall support the delegation of the DCB Measure implementation
Status	<in progress>

Rationale	An actor is allowed to delegate the implementation of DCB measures to another actor (i.e. INAP to ATC).
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0070
<ALLOCATED_TO>	<Function>	Implement DCB Solution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	ATC
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.160
Title	Spot Management Status
Requirement	The DCB Collaborative Framework shall support the spot Management states: • PROPOSED : Spot is capture in a private mode • INTENT : Spot is notified to the Collaborative NOP • CANCELED : Spot is cancelled • CLEARED : Spot is resolved • DELEGATED : Spot is delegated
Status	<in progress>
Rationale	The Hotspot/Optispot will be managed according to its different states.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0080
<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders

<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.170
Title	

Requirement	The DCB Collaborative Framework shall support the DCB Measure Management states:
	• DRAFT : Measure is prepared in a private mode
	• PROPOSED : Measure is proposed and notified to the Collaborative NOP
	• FOR COORDINATION : Measure is proposed for coordination
	  ○ Simple coordination (accept/reject)
	  ○ Complex coordination (counter-proposal)
	• COORDINATED : Measure is coordinated
	• FOR IMPLEMENTATION : Measure is proposed for implementation
	  ○ Implementation without accept/reject
	  ○ Implementation with accept/reject (INAP-ATC link)
	• IMPLEMENTED : Measure is implemented
	• ABANDONED : Measure is abandoned
	• FINISHED : Measure has been executed and is terminated

Status	<in progress>
Rationale	The DCB measures will managed according to its different states
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0090

<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.180
Title	DCB Measure Re-implementation
Requirement	The DCB Collaborative Framework shall allow the re-implemention of a DCB measure
Status	<in progress>
Rationale	In the case of a revised RBT, the INAP actor should be able to re-implement a DCB solution, i.e. DCB measure initially implemented in the SBT elaboration phase, then re-implemented with a new target in the RBT revision phase
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0100
<ALLOCATED_TO>	<Function>	Prepare DCB Solution
<ALLOCATED_TO>	<role>	INAP
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-CF.190
Title	Efficient HMI to support the Collaborative Framework
Requirement	The technical solution shall provide an efficient HMI to support the Collaborative Framework
Status	<in progress>

Rationale	The Coordination support tool is very complex as it needs to support the multiple actor exchange, plus multiple states of hotspot/optispot and DCB measures.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-COL.0110
<ALLOCATED_TO>	<Function>	Provide Consolidated Local and regional DCB Imbalances
<ALLOCATED_TO>	<Function>	Share Hotspot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<Function>	Reconcile Constraint
<ALLOCATED_TO>	<Function>	Update the NOP
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

4.2.1.3 Collaborative NOP

[REQ]

Identifier	REQ-09.03-TS-NOP.010
Title	Enhanced integration of AOP-NOP
Requirement	The NOP shall cover an enhanced integration of airports and network resulting in more data – but relevant data - exchange and in a timely and automated manner, named rolling data exchange.
Status	<in progress>
Rationale	The authorized user will be able to access enhanced integrated AOP-NOP for all time phases

Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-AOP1.0010
<ALLOCATED_TO>	<Function>	Consolidate Traffic Demand
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-25
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.020
Title	Enhanced integration of AOP-NOP Data
Requirement	The NOP shall be able to provide the AOP-NOP data SID, STAR and TTA data to better align AU 4d trajectory with AOP and NOP and increase predictability.
Status	<in progress>
Rationale	The authorized user will be able to access enhanced integrated AOP-NOP for all time phases
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-AOP1.0010
<ALLOCATED_TO>	<Function>	Consolidate Traffic Demand
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-25
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.030
Title	Network view - Airports constraints & associated impacts
Requirement	The NOP shall accept Event Planning Information and Contingency Plan that contains elements like the event kind, probability, area or process of airport impacted, expected recovery scenario and possible aircraft type restrictions.
Status	<in progress>
Rationale	This information will allow NOP to establish the network impacts of a sudden or planned capacity changes or reductions due to the event. Authorized user will have access to major changes or constraints at any airport of the European ATM network. Airspace Users would be able to anticipate any changing conditions as early as possible
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-AOP1.0060
<ALLOCATED_TO>	<Function>	Confirm Traffic Demand Prediction
<ALLOCATED_TO>	<Function>	Monitor/Update Airport Operation Plan
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-25
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.040
Title	Network view - Airports constraints & associated impacts sharing
Requirement	The NOP shall share the airport event planning, the constraints and the network impact.
Status	<in progress>
Rationale	Authorized user will have access to major changes or constraints at any airport of the European ATM network. Airspace Users would be able to anticipate any changing conditions as early as possible

Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-AOP1.0060
<ALLOCATED_TO>	<Function>	Confirm Traffic Demand Prediction
<ALLOCATED_TO>	<Function>	Monitor/Update Airport Operation Plan
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-25
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.050
Title	Network view - military exercises status and associated impacts
Requirement	The NOP shall provide access to the planned Military exercises, allowing Airspace Users to be informed of the network associated impacts and act accordingly.
Status	<in progress>
Rationale	Authorized user will have access to the planned military exercises at any specified time period (during long/mid term planning) and the estimated impact on traffic.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-ASM1.0020
<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-23

<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.060
Title	Network view - dDCB measures and associated impacts
Requirement	The NOP shall provide access to the dDCB measures being coordinated and applied in the specified area, their status at any moment in time, and the impacted traffic demand (and related trajectories).
Status	<in progress>
Rationale	Timely access to dDCB actions is required, access to dDCB actions being prepared (re-routing proposals) and executed may be available, to facilitate airspace users' management of trajectories and to help LTMs/NM ensuring consistency of actions/decisions across the network. There is a need of a mean offering a network view of the DCB measures, constraints, planned actions and associated impacts.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-DCB1.0040
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.070
Title	Network view - consolidated imbalance situation

Requirement	Authorized users shall have access a consolidated network view allowing them to assess the imbalance situation at a network level. To support such a capability, an imbalance repository is developed to collect all the local imbalances figures from ANSPs.
Status	<in progress>
Rationale	Authorized user will have access to an imbalance repository providing a consolidated network imbalance view.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-DCB1.0070
<ALLOCATED_TO>	<Function>	Provide Consolidated DCB Imbalances
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.080
Title	Network view – imbalance repository
Requirement	To support the consolidated network view, the NOP shall maintain an imbalance repository collecting and combining all of the local imbalances figures from ANSPs.
Status	<in progress>
Rationale	Authorized user will have access to an imbalance repository providing a consolidated network imbalance view.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-DCB1.0070
<ALLOCATED_TO>	<Function>	Provide Consolidated DCB Imbalances
<ALLOCATED_TO>	<role>	INAP

<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-DCB1.0080
Title	Network forecast - confidence factor
Requirement	The authorized user shall have access to a confidence factor with each predicted workload methodologies (count, complexity). This shall be part of all the forecast management tools (input/output).
Status	<in progress>
Rationale	Authorized users can find a confidence factor attached to each forecast. For example, prediction will be provided with an imbalance confidence index indicating the level of certainty of the prediction
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-DCB1.0080
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<Function>	Provide Probabilistic Imbalance Methodologies
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.100
Title	Spots - Resolution delegation
Requirement	The NOP shall allow the delegation of a Spot resolution, with 3 different levels: o Full Autonomy: full delegation of responsibility and authority to manage a Spot; o Full Delegation: full transfer of responsibility and authority of the resolution. The actor-2 in charge remains accountable of outcome and implementation. o Limited Delegation: the actor-2 proposes a solution to the actor-1
Status	<in progress>
Rationale	The authorized user will be able to delegate the responsibility to resolve safety spots or areas of optimisation opportunities using a NOP service.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0015
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.110
Title	WhatIf service

Requirement	The NOP shall allow users to evaluate the impact on the Network situation (NOP data, indicators, KPI) when providing new elements, supporting impact assessment.
Status	<in progress>
Rationale	The NOP WhatIf evaluates the efficiency of the solution selected for example by the INAP actors. Associated with Network impact analysis service, it enables ATM stakeholders to evaluate the impact onto the network performance of any planned decision, prior to final decisions. Authorized users will be able to query the NOP with simulation data or scenarios (what-if) integrating usage of KPIs and trends to assess the impact on the network and support their collaborative decision making.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0016
<ALLOCATED_TO>	<Function>	Assess Trajectory (What-if)
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.120
Title	WhatElse service
Requirement	The NOP shall provide support for collaborative decision making (by all stakeholders at different timeframes), giving extended availability of KPIs and trends to be used jointly with WhatElse mechanisms.
Status	<in progress>
Rationale	The NOP WhatElse confronts the solutions with their environment, e.g.: constraints, network status and performance. Authorized user will have access to these WhatElse mechanisms integrating usage of KPIs and trends to support their collaborative decision making.

Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0017
<ALLOCATED_TO>	<Function>	Provide Rerouting Opportunities (What-Else)
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.140
Title	Network view - Integration (Dynamic Airspace and AFUA)
Requirement	The NOP shall support an increased integration of Air Traffic Flow and Capacity Management (ATFCM), Airspace Management (ASM) and Air Traffic Control (ATC) processes
Status	<in progress>
Rationale	Authorized user (civil and military users) will be able to access an extended common situational awareness into the NOP (Dynamic Airspace and AFUA)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0040
<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP

<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.150
Title	Network view - Extended common situational awareness (Dynamic Airspace and AFUA)
Requirement	The NOP shall provide a common situational awareness with accurate traffic predictions and imbalance confidence indexes for both civil and military users.
Status	<in progress>
Rationale	Authorized user (civil and military users) will be able to access an extended common situational awareness into the NOP (Dynamic Airspace and AFUA)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0040
<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.160
Title	Network view - Historical common situational awareness (Dynamic Airspace and AFUA)

Requirement	The NOP shall provide access to Historical data and an accurate traffic forecast, using automated tools allowing to reach an optimal airspace configuration in line with performance targets.
Status	<in progress>
Rationale	Authorized user (civil and military users) will be able to access an extended common situational awareness into the NOP (Dynamic Airspace and AFUA)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0040
<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.170
Title	Network view - Dynamic mobile areas (DMA) (Dynamic Airspace and AFUA)
Requirement	The NOP shall maintain Dynamic mobile areas (DMA) to support the request of Military Airspace demand. (4D data sets are used for mission trajectory exchange with the NOP).
Status	<in progress>
Rationale	Authorized user (civil and military users) will be able to access an extended common situational awareness into the NOP (Dynamic Airspace and AFUA)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0040

<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-23
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.180
Title	Network view – Traffic Load prediction (Dynamic Airspace and AFUA)
Requirement	The NOP shall evolve to offer real time traffic load prediction, integrating the dynamic changes in ATC sector changes and pattern. (It will be based on the latest known traffic prediction and predicted workload information).
Status	<in progress>
Rationale	Authorized user (civil and military users) will be able to access an extended common situational awareness into the NOP (Dynamic Airspace and AFUA)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN1.0040
<ALLOCATED_TO>	<Function>	Share Traffic Demand
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<Function>	Share DCB Measures
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
< ALLOCATED_TO >	<Enabler>	NIMS-23
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.190
Title	NOP support to information exchange in unplanned events/crisis situation
Requirement	The NOP shall support crisis situations, providing the necessary information exchanges and planning adjustments and sharing to support prompt recovery and return to normal operations.
Status	<in progress>
Rationale	The authorized user will be able to use the NOP in crisis situations or during unplanned events as a support for information exchanges and planning adjustments and sharing.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-GEN2.0100
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.200
Title	Network Performance - Access to real time awareness
Requirement	The NOP shall provide Real time awareness of network performance via KPIs at local, sub-regional and regional levels, including indication of trends and divergence from targets.
Status	<in progress>

Rationale	Authorized user will have access to real time awareness of network performance via KPIs at local, sub-regional and regional levels, including indication of trends and divergence from targets.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0010
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-12
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.210
Title	Network Performance – Targets for real time awareness
Requirement	The NOP shall capture Operational network performance targets and objectives (by the Network Manager in collaboration with other ATM stakeholders) as used in Long term planning.
Status	<in progress>
Rationale	Authorized user will have access to real time awareness of network performance via KPIs at local, sub-regional and regional levels, including indication of trends and divergence from targets.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0010
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU

<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.220
Title	Network Performance - Access for Analysis
Requirement	The NOP shall provide full access to network performance monitoring data in the Post-OPS phase.
Status	<in progress>
Rationale	The authorized user will be able to analyse the Network performances indicators provided by the NOP.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0020
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.230
Title	Network Performance - Alerting/Warning
Requirement	The NOP shall provide alerts (email, warning) and warnings when a Network performance indicator is passing a predetermined threshold for any indicator
Status	<in progress>
Rationale	The authorized user will be able to setup alerts or warnings based on any Network performance indicator via NOP services.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0030
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.240
Title	Network Performance - Indicators generation
Requirement	The NOP shall calculate the Network Performance indicators and make the results available into the NOP.
Status	<in progress>
Rationale	The authorized user will be able to access the real time value of the Network Performance indicators.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0040
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<Function>	Provide Network States
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.250
Title	WhatBest
Requirement	The NOP shall offer the extended availability of KPIs and trends to be used jointly with WhatBest mechanisms to support collaborative decision making by all stakeholders at different timeframes.
Status	<in progress>
Rationale	Authorized user will have access to WhatBest mechanisms integrating usage of KPIs and trends to support their collaborative decision making.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0050
<ALLOCATED_TO>	<Function>	Provide Rerouting Opportunities (What-Else)
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-22
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.260
Title	WhatBest solutions
Requirement	The NOP WhatBest shall looks for solutions that have less impact on their environment, e.g.: less constraints, less cases affected, improved network status and improved performance.
Status	<in progress>
Rationale	Authorized user will have access to WhatBest mechanisms integrating usage of KPIs and trends to support their collaborative decision making.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-PRF1.0050
<ALLOCATED_TO>	<Function>	Provide Rerouting Opportunities (What-Else)
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.270
Title	Access to Consolidated Imbalances
Requirement	The DCB Collaborative NOP shall maintain consolidated imbalances figures
Status	<in progress>
Rationale	NMf actors will be able to access the information of the consolidated network imbalance
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0010
<ALLOCATED_TO>	<Function>	Provide Consolidated DCB Imbalances
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.280
Title	Access to Spot Information
Requirement	The DCB Collaborative NOP shall maintain Hotspot and Optispot information
Status	<in progress>
Rationale	The NMf actors will be able to access the Hotspot and Optispot information
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0020
<ALLOCATED_TO>	<Function>	Share Spot with Stakeholders
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.290
Title	Access to DCB Measure Information
Requirement	The DCB Collaborative NOP shall maintain the DCB Measures
Status	<in progress>
Rationale	The NMf actors will have access to the the DCB Measures
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0030
<ALLOCATED_TO>	<Function>	Share DCB Measure
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.300
Title	Access to What-if Capabilities
Requirement	The DCB Collaborative NOP shall provide what-if capabilities

Status	<in progress>
Rationale	The NMf actors will have access to the what-if capabilities
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0040
<ALLOCATED_TO>	<Function>	Assess Trajectory (What-if)
<ALLOCATED_TO>	<Function>	Provide Network Impact Assessment
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.310
Title	Access to What-Else Capabilities
Requirement	The DCB Collaborative NOP shall provide what-else capabilities
Status	<in progress>
Rationale	The NMf actors will be able to access to the what-else capabilities
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0050
<ALLOCATED_TO>	<Function>	Provide Rerouting Opportunities (what-Else)
<ALLOCATED_TO>	<role>	INAP

<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-NOP.320
Title	Access to NCC
Requirement	The DCB Collaborative NOP shall provide Multiple Target Time Constraint information, i.e. Network Consolidated Constraint (NCC)
Status	<in progress>
Rationale	The NMf actors will have access to Multiple Target Time Constraint information, i.e. Network Consolidated Constraint (NCC)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-NPP.0060
<ALLOCATED_TO>	<Function>	Reconcile Constraint
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<role>	Regional ATFCM
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	

4.2.1.1 Services

[REQ]

Identifier	IER-09.03-TS-001
Title	XCDM_DelegationCreation
Requirement	A XCDM_DelegationCreation service shall allow the delegation of responsibility to manage the resolution of any hotspot. The flights concerned by the delegation can be specified or not.
Status	<in progress>
Rationale	A NMF actor can request a delegation of responsibility to an other delegated actor to manage the hotspot resolution. The flights concerned by the delegation are specified as well as the modalities of the delegation. The delegated NMf actor can implemn or reject the delegation request
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-001
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	HotspotManagementService OptispotManagement

[REQ]

Identifier	IER-09.02-TS-002
Title	XCDM_DelegationCreation2

Requirement	A XCDM_DelegationCreation Service shall allow the delegation of responsibility to manage the resolution of any hotspot including on-going proposed DCB Measures.
Status	<in progress>
Rationale	A LTM actor can request a delegation of responsibility to an other EAP actor to manage the hotspot resolution. The delegated NMf actor can accept or reject the delegation request
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-002
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	HotspotManagementService OptispotManagement

[REQ]

Identifier	IER-09.03-TS-005
Title	XCDM_DelegationUpdate
Requirement	A XCDM_DelegationUpdate service shall be available to allow INAP to update the delegation status : update the collaboration mode or cancel a delegation
Status	<in progress>
Rationale	INAP can update the delegation mode or cancel a delegation. The delegated NMf actor will acknowledge the delegation update.
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-005
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<Function>	Delegate Hotspot Resolution
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	HotspotManagementService OptispotManagement

[REQ]

Identifier	IER-09.03-TS-007
Title	MCDM_StateUpdate
Requirement	A MCDM_StateUpdate service shall allow the INAP actor to request a delegation of DCB Measures implementation of DCB Measures to ATC.
Status	<in progress>
Rationale	An INAP actor can request a delegation of DCB Measures implementation to an ATC actor. The ATC can accept or reject. NOTE : MCDM has been developed in SESAR1. In wave2, the delegation of implementation from INAP to ATC has been added.
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-007
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<Function>	Implement DCB Measure
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	ProposeDCBMeasure RegisterDCBMeasure

[REQ]

Identifier	IER-09.03-TS-008
Title	MCDM_StateUpdate2
Requirement	A MCDM_StateUpdate service shall allow an INAP actor to initiate a coordination including a counter-proposal mechanism.
Status	<in progress>
Rationale	An NMf actor can request a delegation of implementation to an ATC actor. A NMf actor can request a complex coordination with an other NMf actor. The ATC actor can accept/reject the implemenation request. The NMf actor can reply (counter-proposal, accept, reject) to the complex coordination request (STAMMeasures counter-proposal).
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-008
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<Function>	Coordinate DCB Measure
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	ProposeDCBMeasure RegisterDCBMeasure

[REQ]

Identifier	IER-09.03-TS-100
Title	CRM_GetNCC
Requirement	A CRM_GetNCC service shall allow the NMF actor to propose a Target-Time to NM and return a Network Consolidated Constraint from NM.
Status	<in progress>
Rationale	A NMF actor can request a Target-Time proposal (including Target Window) to the NIMS/ConstraintReconciliation system).

	The NIMS/ConstraintReconciliation sends a reply to inform about the Network Consolidated Constraint (elligible Target Time). Note : The elligible Target Time is processed according to the Constraint Reconciliation priority rules.
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-100
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<Function>	Reconcile Constraints
< ALLOCATED_TO >	<Enabler>	NIMS-13c
<ALLOCATED_TO>	<Service>	ConstraintReconciliation

[REQ]

Identifier	IER-09.03-TS-102
Title	CRM_GetContext
Requirement	A CRM_GetContext service shall allow an NMF actor to access multiple constraints information affecting a flight or a list of flights in an hotspot.
Status	<in progress>
Rationale	A NMF actor can request the context of multiple constraints for flights included in a hotspot to the NIMS/ConstraintReconciliation system. The NIMS/ConstraintReconciliation sends a reply to inform about the context of multiple constraints for a flight.
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-102

<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<Function>	Reconcile Constraints
< ALLOCATED_TO >	<Enabler>	NIMS-49
<ALLOCATED_TO>	<Service>	ConstraintReconciliation

[REQ]

Identifier	IER-09.03-TS-400
Title	EnrichedInformation
Requirement	An EnrichedInformation service shall allow an NMf actors to setup and retrieve enriched DCB information associated to a flight
Status	<in progress>
Rationale	NMf actors shall setup and retrieve enriched DCB information associated to a flight (AU Preference, Margins of Manoeuvre, Congestion Indicator)
Category	<Functional> <IER>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	IER-09.03-OSED-400
<ALLOCATED_TO>	<role>	INAP
<ALLOCATED_TO>	<role>	APOC
<ALLOCATED_TO>	<role>	AU
<ALLOCATED_TO>	<Function>	Compute Traffic Demand
< ALLOCATED_TO >	<Enabler>	NIMS-21b
<ALLOCATED_TO>	<Service>	NMFlightDataService ExtendedFlightPlanSubmission

4.2.2 Non-Functional Requirements

[REQ]

Identifier	REQ-09.03-TS-SAF.00014
Title	Time out alert
Requirement	LTM/EAP shall be provided with a time-out alert notifying the end of the limited delegation
Status	<in progress>
Rationale	Safety requirement
Category	<Non Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-SAF.00014
< ALLOCATED_TO >	<Enabler>	
<ALLOCATED_TO>	<Service>	

[REQ]

Identifier	REQ-09.03-TS-SAF.00015
Title	Delegation conditions
Requirement	Local ATFCM shall provide to APOC the conditions for the delegation of hotspot resolution
Status	<in progress>
Rationale	Safety requirement
Category	<Non Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
< ALLOCATED_TO >	<SESAR Solution>	PJ.09-03
<SATISFIES>	<ATMS Requirement>	REQ-09.03-OSED-SAF.00015
< ALLOCATED_TO >	<Enabler>	
<ALLOCATED_TO>	<Service>	

5 Implementation Options

None

6 Assumptions

None

7 References and Applicable Documents

7.1 Applicable Documents

Content Integration

B.04.01 D138 EATMA Guidance Material

EATMA Community pages

[1] SESAR ATM Lexicon

Content Development

B4.2 D106 Transition Concept of Operations SESAR 2020

System and Service Development

08.01.01 D52: SWIM Foundation v2

08.01.01 D49: SWIM Compliance Criteria

08.01.03 D47: AIRM v4.1.0

08.03.10 D45: ISRM Foundation v00.08.00

B.04.03 D102 SESAR Working Method on Services

B.04.03 D128 ADD SESAR1

B.04.05 Common Service Foundation Method

Performance Management

B.04.01 D108 SESAR 2020 Transition Performance Framework

B.04.01 D42 SESAR2020 Transition Validation

B.05 D86 Guidance on KPIs and Data Collection support to SESAR 2020 transition.

16.06.06-D68 Part 1 –SESAR Cost Benefit Analysis – Integrated Model

16.06.06-D51-SESAR_1 Business Case Consolidated_Deliverable-00.01.00 and CBA

Method to assess cost of European ATM improvements and technologies, EUROCONTROL (2014)

ATM Cost Breakdown Structure_ed02_2014

Standard Inputs for EUROCONTROL Cost Benefit Analyses

16.06.06_D26-08 ATM CBA Quality Checklist

16.06.06_D26_04_Guidelines_for_Producing_Benefit_and_Impact_Mechanisms

Validation

03.00 D16 WP3 Engineering methodology

Transition VALS SESAR 2020 - Consolidated deliverable with contribution from Operational Federating Projects

[2] European Operational Concept Validation Methodology (E-OCVM) - 3.0 [February 2010]

System Engineering

SESAR Requirements and V&V guidelines

Safety

SESAR, Safety Reference Material, Edition 4.0, April 2016

SESAR, Guidance to Apply the Safety Reference Material, Edition 3.0, April 2016

SESAR, Final Guidance Material to Execute Proof of Concept, Ed00.04.00, August 2015

SESAR, Resilience Engineering Guidance, May 2016

Human Performance

16.06.05 D 27 HP Reference Material D27

16.04.02 D04 e-HP Repository - Release note

Environment Assessment

SESAR, Environment Reference Material, alias, “Environmental impact assessment as part of the global SESAR validation”, Project 16.06.03, Deliverable D26, 2014.

ICAO CAEP – “Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes” document, Doc 10031.

Security

16.06.02 D103 SESAR Security Ref Material Level

16.06.02 D137 Minimum Set of Security Controls (MSSCs).

16.06.02 D131 Security Database Application (CTRL_S)

7.2 Reference Documents

ED-78A GUIDELINES FOR APPROVAL OF THE PROVISION AND USE OF AIR TRAFFIC SERVICES SUPPORTED BY DATA COMMUNICATIONS.[1]

[3] SESAR1 Project 13.02.03 Technical specification (D452)

[4] SESAR PJ09S03 OSED Version 00.02.00

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-END OF DOCUMENT-