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Abstract

The PJ.07-W2-38 solution provides the functional architecture, and functional and non-functional requirements for the two OIs in scope.

AUO-0219 Use of Use of Enriched DCB Information and Enhanced What-Ifs to Improve AU Flight Planning

The following are in the described in the technical specifications:

- Protection hotspot data definition
- The new and modified Civil AU Operations Centre flight planning functions to use the
 - DCB data
 - Protection hotspot data
- The new or modified Regional ATFCM functions to provide and use the
 - Protection hotspot data
 - Protection hotspot impact on a flight plan
- The new or modified Local ATFCM functions to provide and use the
 - Protection hotspot data
 - Protection hotspot impact on a flight plan
- The Regional ATFCM post-operational reports

AUO-0208 Use of Simple AU Preferences (Proactive FDCI) in DCB Processes

The following are described in the technical specifications:

- Proactive FDCI data definition
- The new or modified Civil AU Operations Centre functions to provide and use the proactive FDCI data
- The new or modified Regional ATFCM functions to use and disseminate the proactive FDCI data
- The new or modified Local ATFCM functions to use the proactive FDCI data
- The Local and Regional ATFCM post-operational reports

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1 Executive summary

The PJ.07-W2-38 solution elaborates the technical architecture, functional and non-functional requirements, and enablers for the following two Operational Improvements as described in the PJ.07-W2-38 OSIED/INTEROP.

The specifications consist of the following elements per OI.

OI: AUO-0219 Use of Use of Enriched DCB Information and Enhanced What-Ifs to Improve AU Flight Planning

- Related data definitions and exchanges between Regional ATFCM, Local ATFCM and Civil AU Operations Centre systems.
- Regional ATFCM functions to
 - Provide the enriched DCB data for a flight plan
 - Monitor and provide the flights infringing protection hotspots
 - Monitor and provide the unplanned flights for a traffic volume
 - Produce the post-operational reports
- Local ATFCM functions to
 - Provide the protection hotspot data
 - Use the infringing flights data
 - Use the unplanned flight data
- Civil AU Operations Centre functions to
 - Integrate the flight plan correlated enriched DCB data into their flight planning
 - Integrate the enhanced AOWIR functions into their flight planning

OI: AUO-0208 Use of Simple AU Preferences in DCB Processes

- Related data definitions and exchanges between Regional ATFCM, Local ATFCM and Civil AU Operations Centre systems.
- Regional ATFCM functions to
 - Monitor and provide the proactive FDCI flights data
 - Automatically create reactive FDCI for a proactive FDCI flight
 - Produce the post-operational reports
- Local ATFCM functions to
 - Use the proactive FDCI flight data
 - Produce the post-operational reports
- Civil AU Operations Centre functions to
 - Provide the proactive FDCI flight data
 - Monitor the proactive FDCI flights

2 Introduction

2.1 Purpose of the Document

This document provides the technical architecture and specifications, covering functional, and non-functional requirements related to SESAR Solution PJ.07-W2-38.

2.2 Scope

This document provides the technical architecture and specifications, covering functional and non-functional requirements related to SESAR Solution PJ.07-W2-38.

2.3 Intended readership

Airspace User: For understanding the system functions, level of automation and human machine interactions.

Network Manager: For understanding and deploying the enablers, system functions, level of automation and human machine interactions.

ANSP: For understanding and deploying the enablers, system functions, level of automation and human machine interactions.

CFSP: For understanding and deploying the enablers, system functions, level of automation and human machine interactions.

2.4 Background

2.4.1 SESAR 2020 Wave 1

This technical specification document is the continuation of the SESAR 2020 Wave 1 PJ.07-W2-38 technical specifications (ref [8]) document.

At the end of Wave 1, the specifications related to 'Enriched DCB information' reached TRL4.

In 2019, the Network Manager deployed the AOWIR B2B service enhanced via the Wave 1 solution (with some limitations) which is in use by certain AUs/CFSPs.

The specifications related to 'AU simple preferences' reached TRL6 for Reactive-FDCI and deployed by the Network Manager. This specification continues to develop the AU simple preferences for the Proactive-FDCI, as described in the OSED.

2.4.2 Services Approach

The Wave 1 solution initially targeted supporting the FF-ICE implementation program and to support the definition of flow management information related to a flight to be provided by certain FF-ICE/1 advanced services (planning service, trial service). For that reason, the FF-ICE services were initially modified in the Wave 1 technical specifications.

Since FF-ICE/1 advanced services were not available even as prototype in the Wave 1 timeframe, the validation activities relied upon evolutions of existing NM services - like AOWIR - and a mock-up – Planta – using NM B2B services. As a result, the SESAR Wave 1 validation supported both the definition of future FF-ICE services – FF-ICE planning service – and the evolutions of current NM services (e.g., AOWIR, Flight Information Service)

In Wave 2, a similar approach is followed. The TS outcome will be supporting both definition of future FF-ICE services – FF-ICE planning service – and the evolutions of current NM services (e.g., AOWIR, Flight Information Service).

Therefore, this technical specification covers the data identification, functions, and timing of the data exchanges, but not SWIM services.

2.4.3 S2020 Wave 2 Validation Exercises

The PJ.07-W2-38 solution produced an Initial Technical Specifications document (ref [9]). Based on these specifications the prototypes were developed and the solution team conducted four validation exercises.

These technical specifications document is an update of the architecture and requirements expressed in the Initial technical specifications document, updated according to the validation exercises conclusions.

2.5 Structure of the Document

There are two OIs in the scope of the solution. They can be described and deployed independently. To ease the use of this document, the sections 4.1 and 4.2 are structured accordingly.

The section 4.1 is structured per NSV-4 functional use case for which each one corresponds to the one or more operational use cases of each OI.

The section 4.2 containing the functional and non-functional requirements is structured per OI.

For the rest, please see Table of Contents.

2.6 Glossary of Terms

Term	Definition	Source
4D Trajectory	A four-dimensional (x, y, z, and time) trajectory of an aircraft from gate-to-gate, at the level of fidelity required for attaining the agreed ATM system performance levels.	Draft FF-ICE Manual ref. [11]
DCB Constraint Data	The DCB constraint data consists of the ATFCM Regulation, ATFCM Delay and STAM (cherry picking) that is applicable to a trajectory.	This document
eFPL	The flight plan including any associated updates as filed by an operator or a designated representative for use by ATS units. It is often referred to as an ATS flight plan.	Draft FF-ICE Manual ref. [11]



	<p>Note 1. — When the word “message” is used as a suffix to this term, it denotes the content and format of the filed flight plan data as transmitted.</p> <p>Note 2.—FPL refers to a filed flight plan message as described in PANS-ATM Appendix 3. eFPL refers to a filed flight plan message as described in PANS-ATM chapter 17.</p>	
Enriched DCB Information	In addition to DCB Constraints and DCB Trajectory Measures, information provided to the AU to give awareness of DCB information along the trajectory. This includes hotspot information, provisional CTOT/TT (CTOT/TT information before officially published). (Resolution and protection) and traffic volume load.	PJ07-W2-38 OSD ref. [6]
Enriched DCB Data	The enriched DCB data consists of the Hotspot data that is applicable to a trajectory.	This document
Negotiating 4D Trajectory	<p>A 4D trajectory proposed by airspace user or eASP as a potential agreed 4D trajectory.</p> <p>Explanation: For trajectory planning purposes, multiple trajectories may be required. However, each participant would be allowed only one negotiating 4D trajectory at a time, which represents their most recent proposal in the negotiation. These trajectories may not necessarily be a gate-to-gate trajectory. These trajectories are intended to be transitory</p>	Draft FF-ICE Manual ref. [11]
Preliminary Flight Plan	The flight plan submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan for use by ATS units.	Draft FF-ICE Manual ref. [11]
Provisional Delay	<p>The indicative and non-final ATFCM delay incurred by a flight subject to a CASA regulation before the time at which the slot is issued 2 hours before EOBT. This delay may vary because of, for instance, slot revision which re-assigns the slots dynamically in function of the changing traffic demand.</p> <p>or</p> <p>The indicative and non-final ATFCM delay caused by a CASA Regulation providing an approximate and non-final delay a flight would incur in the context of AOWIR; but which is not guaranteed to be neither the eventual nor the final ATFCM delay incurred when the flight plan is submitted to confirm the reroute.</p>	Network Manager
Protection Hotspot	Hotspot associated to a traffic volume usually close to saturation to protect an airspace from undesired rerouted flights and prevents the application of DCB measures (e.g., ATFCM regulation, cherry picking measures). This is a new kind of hotspot.	PJ07-W2-38 OSD ref. [6]
Resolution Hotspot	Hotspot associated to an overloaded traffic volume and for which the FMP plan to apply DCB measures (cherry-picking/STAM measures principally) to solve the overload. This type of hotspot is	PJ07-W2-38 OSD ref. [6]



	not new. They were introduced some years ago as part of the STAM concept and are progressively implemented.	
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Table 1: Glossary

2.7 Data Definitions

This section contains the data elements definitions used in the system process diagrams, functional and non-functional requirements. These definitions are available in EATMA.

Data Element	Definition
agreedTrajectory	<p>The current 4D trajectory that is agreed between the airspace user and the ASP after collaboration, or imposition of pre-collaborated rules.</p> <p>Explanation: The agreed trajectory is the trajectory that the airspace user agrees to fly. There is only one agreed 4D trajectory for any given flight at any time. As the ATM system has unpredictable or uncontrollable events and to allow flexibility, it is likely that it will be necessary to renegotiate trajectories. The agreed 4D trajectory therefore reflects the most recent instance (that is the current) agreement.</p> <p>Reference: FF-ICE Manual Draft Version 0.8 for ATMRPP Review, 2017-12-22</p>
ATFCMDelay	The delay calculated by the Network Manager, after applying all the ATFCM measures to the flight trajectory.
ATFCMRegulation	Reduced capacity declaration on an airspace element for a limited time.
avoidHotspot	The hotspot identifier(s) to be avoided.
avoidRegulation	The regulation identifier(s) to be avoided.
cancelFlightDelayCriticality	Critical flight identifier expressed as ADEP, ADES and EOBT.
CTOT	Calculated Take Off Time expressed in hours and minutes.
desiredTrajectory	<p>The current 4D trajectory that is requested and generated by the airspace user with knowledge of the ATM systems' configuration and published restrictions. [ICAO FF-ICE Manual 0.96]</p> <p>It is the trajectory as filed by the AU to NM. As such, it expresses the trajectory determined by the AU that best meet its needs while complying with the published ATM constraints. It is not the AU preferred trajectory, which ideally would be completely unconstrained in all dimensions as if being alone in the sky. [In the European context]</p>
flightDelayCriticalityAutoRFDCl	Identifier indicating whether an eHelpdesk ticket shall be created automatically for the critical flight when the pre-defined conditions are met.
flightDelayCriticalityMaximumDelay	Maximum delay in minutes that can be tolerated by the critical flight.

flightDelayCriticalityReason	One of the predefined reasons for the flight criticality declaration. The possible values are published by NMF.
flightDelayCriticalityStatus	State of the flight criticality, active or cancelled.
flightDelayCriticalityUnderworkBy	Identifier of the actor who is actually working on investigating for a solution for the critical flight.
infringerFlight	Flight keys of a flight identified as infringer.
negotiatingTrajectory	A 4D trajectory proposed by airspace user or eASP as a potential agreed 4D trajectory. [ICAO FF-ICE Manual 0.96]
networkImpactAssessmentResult	The impact of the trajectory or a regulation on the network situation, expressed in terms of crossed traffic volumes, regulations, etc.; calculated by NM.
planningStatus	The flight plan status expressed as CONCUR, NON_CONCUR, and NEGOTIATE for a flight plan at the request time.
protectionHotspot	The traffic volume identifier and a duration in terms of date and time of the protection hotspot. If the hotspot exists then it is the hotspot identifier.
provisionalDelay	The delay calculated provisionally in terms of minutes.
rerouteProposal (RRP)	Reroute proposal for an individual flight created by NMF to balance traffic load in a certain airspace, expressed as Route for a specific flight and a validity expressed in time.
resolutionHotspot	The traffic volume identifier and a duration in terms of date and time of the resolution hotspot. If the hotspot exists then it is the hotspot identifier.
slotImprovementRequestForCriticalFlight	An eHelpdesk 'slot improvement request' with the flight keys: ADEP, ADES, EOBT.

Table 2: Data Elements Definitions

2.8 Acronyms and Terminology

Term	Definition
AOWIR	Aircraft Operator What If Reroute
ATFCM	Air Traffic and Flow Capacity Management
ATM	Air Traffic Management
AU	Airspace User
B2B	Business To Business
CC	Capability Configuration
DCB	Demand and Capacity Balancing
DLA	Flight Delay Message

EATMA	European ATM Architecture
EAUP	European Airspace Use Plan
FF-ICE	Flight and Flow — Information for a Collaborative Environment
FMP	Flow Management Position
FOC	Flight Operations Centre
IRS	Interface Requirements Specification
LTM	Local Traffic Manager
MCP	Mandatory Cherry Picking
NM	Network Manager
NMF	Network Management Function
NSV	NAF System View
PFP	Preliminary Flight Plan
RRP	Re-Route Proposal
SESAR	Single European Sky ATM Research Programme
STAM	Short Term ATFCM Measure
SWIM	System Wide Information Model
TS	Technical Specification

Table 3: Acronyms and terminology

3 SESAR Solution Impacts on Architecture

3.1 Target Solution Architecture

3.1.1 SESAR Solution(s) Overview

PJ.07-W2-38: Enhanced integration of AU trajectory definition and network management processes (CR 07008 Update solution PJ.07-W2-38 (PJ.07-W2-38))

The objective of this Key R&D activity is to reduce the impact of ATM planning on Airspace Users' costs of operations, by providing them a better access to ATM resource management and allowing them to better cope with ATM constraints. This **shall** improve Airspace Users flight planning and network management through improved FOC participation into the ATM network collaborative processes.

AUO-0208	Use of Simple AU Preferences in DCB Processes	CR 06649 Update AUO-0208 (PJ.07-W2-38)
EN code	EN description	Open CR
NIMS-72	Enhance NM flight planning and DCB functions to integrate the proactive flight criticality data	
AOC-ATM-28	Enhance AU flight planning systems to integrate the proactive flight criticality data	
NIMS-78	Enhance local ATFCM system to integrate the proactive flight criticality data.	
AUO-0219	Use of Enriched DCB Information and Enhanced What-Ifs to Improve AU Flight Planning	CR 06650 Update AUO-0219 (PJ.07-W2-38)
EN code	EN description	Open CR
HUM-019	New task to analyse the DCB impact and decide on the next action for the flight plan	
NIMS-61	Enhance the regional DCB functions to provide the DCB constraint data for a flight trajectory	
NIMS-58	Enhance the regional DCB functions to provide the enriched DCB data for a flight trajectory	
AOC-ATM-24	Integration of the DCB constraint data to the flight planning functions	
AOC-ATM-26	Integration of the enriched DCB constraint data to the flight planning functions	
NIMS-77	Enhanced local DCB traffic monitoring functions	

Table 4: SESAR Solution PJ.07-W2-38 Scope and Related Functional Blocks/Roles & Enablers

3.1.1.1 Deviations with respect to the SESAR Solution(s) Definition

None

3.1.1.2 Relevant Use Cases

Operational Use Case	Description
[NOV-5] AU usage of Enriched DCB Information (D)	This use case describes the submission of a PFP/eFPL for a scheduled IFR flight operating within the ECAC area, after the publication of the EAUP and ATFCM Daily Plan for D Day. This covers the tactical phase, but also in current operations a part of the pre-tactical phase. This use case is triggered when the AU prepares and submits a PFP to the Network Operations, after the publication of the EAUP and ATFCM Daily Plan for D day.
[NOV-5] P-FDCI use to identify the costly regulations	This UC describes the use of P-FDCI by NO (Regional or Local) to identify the costly regulations, which are those with a high number of P-FDCI flights. Network Operations (Regional) will identify regulations with high number of P-FDCI flights and coordinate with concerned Network Operation (local) actors (or vice versa for locally monitoring FMPs) to coordinate and agree the better mitigation measures
[NOV-5] P-FDCI use when a flight is pre-regulated	This UC describes the use of P-FDCI by NO (Regional or Local) for flights that are pre-regulated, i.e. that received a provisional delay.
[NOV-5] P-FDCI use when solving a small overload by MCP	This UC describes the use of P-FDCI by NO (Regional or Local) to take a better decision through Mandatory Cherry Picking (MCP) measure.

Table 5: Operational Use Cases in Scope

System Process	Description
[NSV-4] AU Usage of enriched DCB data	This system process describes the functions and data exchanges for the functional blocks belonging to Regional ATFCM, Local ATFCM and FOC capability configurations for the exchange and use related to the enriched DCB data during the flight planning phase.
[NSV-4] Flight delay criticality use in demand and capacity management	This system process describes the data exchanges between the functional blocks belonging to Regional ATFCM, FOC, EN ACC and APP ACC capability configurations for the exchange and use of the Proactive FDCI and related data.

Table 6: Technical Use Cases in Scope

3.1.1.3 Applicable Standards and Regulations

The PJ.07-W2-38 solution relies on the Network Manager SWIM Yellow Profile services and the specifications contribute to the FF-ICE/1 implementation guidelines and the European FF-ICE services implementation via the Network Manager PPFDE program.

3.1.2 Capability Configurations Required for the SESAR Solution

[NSV-1] AU Usage of Enriched DCB Data				
CC	Op Env	Capability	Node	Stakeholder

Civil AU Operations Centre (PJ.07-W2-38)	En-Route; NET-Network; Terminal Airspace;	Air Traffic Demand Provision (airspace); Collaborative Trajectory Planning; Messaging;	Airspace User Operations;	Civil Flight Operations Centre;
Regional ATFCM (PJ.07-W2-38)	NET-Network;	Air Traffic Demand Provision (airspace); Air Traffic Flow Management; Airspace Capacity Information Provision (incl. Capacity Changes); Collaborative Network Management; Collaborative Trajectory Planning; Messaging;	Network Operations;	Network Manager;
Sub-Regional/Local ATFCM (PJ.07-W2-38)	En-Route; NET-Network; Terminal Airspace	Air Traffic Flow Management; Airspace Capacity Information Provision (incl. Capacity Changes); Collaborative Network Management; Collaborative Trajectory Planning; Messaging;	Air Traffic Flow and Capacity Management;	Civil ATS Approach Service Provider; Civil ATS En-Route Service Provider;

Table 7: Capability Configurations required for the AU Usage of Enriched DCB Data

[NSV-1] Proactive FDCI				
CC	Op Env	Capability	Node	Stakeholder
Civil AU Operations Centre (PJ.07-W2-38)	En-Route; NET-Network; Terminal Airspace;	Air Traffic Demand Provision (airspace); Collaborative Trajectory Planning; Messaging;	Airspace User Operations;	Civil Flight Operations Centre;
Regional ATFCM (PJ.07-W2-38)	NET-Network;	Air Traffic Demand Provision (airspace); Air Traffic Flow Management; Airspace Capacity Information Provision (incl. Capacity Changes); Collaborative Network Management; Collaborative Trajectory Planning; Messaging;	Network Operations;	Network Manager;

Sub-Regional/Local ATFCM (PJ.07-W2-38)			Air Traffic Flow and Capacity Management;	Civil ATS Approach Service Provider; Civil ATS En-Route Service Provider;
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Table 8: Capability Configurations required for the Proactive FDCI

3.2 Changes imposed by the SESAR Solution on the Baseline Architecture

Enabler	Element type	Element name	Impact
HUM-019	New task to analyse the DCB impact and decide on the next action for the flight plan		
	Role	Flight Dispatcher (PJ.07-W2-38)	Update
AOC-ATM-24 (CR)	Integration of the DCB constraint data to the flight planning functions		
	Function	Alert Flight Dispatcher	Introduce
	Function	Assess Trajectory and Impact	Update
	Function	Monitor Flights	Update
	Function	Request Route Proposals	Update
	Function	Request What If Reroute	Update
NIMS-61 (CR)	Enhance the regional DCB functions to provide the DCB constraint data for a flight trajectory		
	Function	Assess Traffic Demand with ATFCM Situation	Update
	Function	Assess Trajectory (What-If)	Update
	Function	Provide Rerouting Option (Propose Routes)	Update
	Function	Validate flight plan	Update
NIMS-58 (CR)	Enhance the regional DCB functions to provide the enriched DCB data for a flight trajectory		
	Function	Assess Traffic Demand with ATFCM Situation	Update
	Function	Assess Trajectory (What-If)	Update
	Function	Integrate flight plan in Traffic Demand	Update
	Function	Provide Rerouting Option (Propose Routes)	Update
	Function	Validate flight plan	Update
AOC-ATM-26 (CR)	Integration of the enriched DCB constraint data to the flight planning functions		
	Function	Alert Flight Dispatcher	Introduce
	Function	Assess Trajectory and Impact	Update
	Function	Monitor Flights	Update
	Function	Request Route Proposals	Update
	Function	Request What If Reroute	Update
NIMS-77 (CR)	Enhanced local DCB traffic monitoring functions		
	Function	Apply DCB Measure	Update
	Function	Assess Traffic Situation	Update
	Function	Define/update protection hotspot	Introduce

NIMS-72 (CR)	Enhance NM flight planning and DCB functions to integrate the proactive flight criticality data		
	Function	Assess Traffic Demand with ATFCM Situation	Update
	Function	Investigate improvement for delayed critical flight	Update
AOC-ATM-28 (CR)	Enhance AU flight planning systems to integrate the proactive flight criticality data		
	Function	Monitor Flights	Update
	Function	Prioritise flights of the day	Update
NIMS-78 (CR)	Enhance local ATFCM system to integrate the proactive flight criticality data.		
	Function	Assess Traffic Demand with ATFCM Situation	Update
	Function	Investigate a solution for a critical flight	Introduce

Table 9: Technical changes described by the SESAR Solution PJ.07-W2-38

4 Technical Specifications

4.1 Functional Architecture Overview

4.1.1 Resource Connectivity View – [NSV-1] AU Usage of Enriched DCB Data

This connectivity diagram describes the capability configurations and data exchanges for the AU usage of the enriched DCB information use case related system processes.

Since the SWIM services are out of the scope of the solution, only capability configurations are described, not the interactions between them.

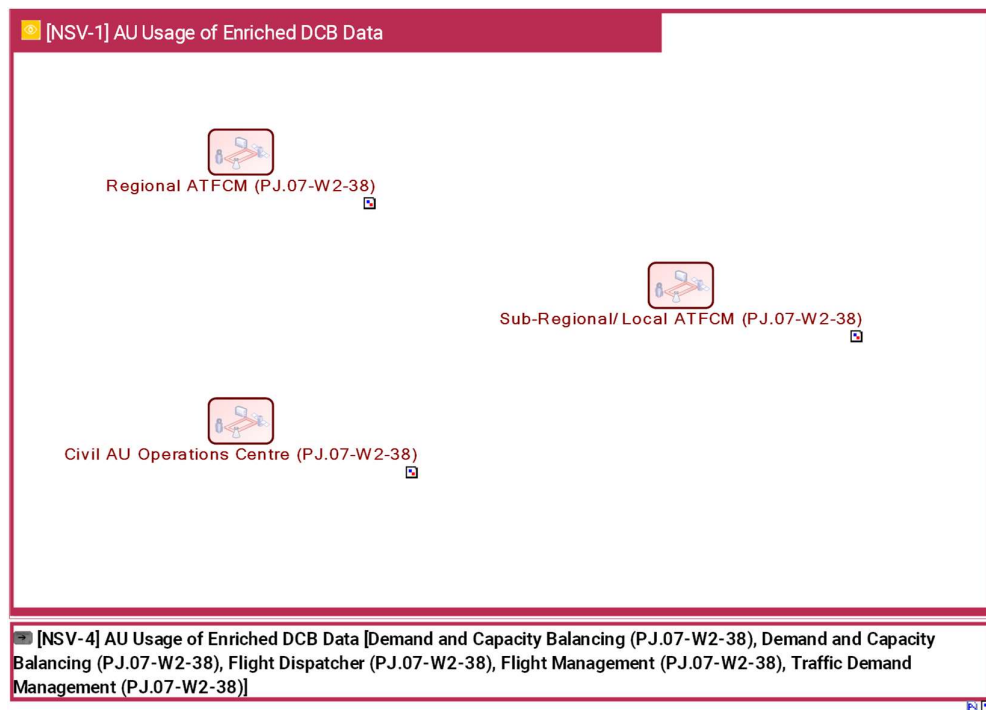


Figure 1 [NSV-1] AU Usage of Enriched DCB Data

4.1.1.1 Resource Infrastructure view

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.1.1.2 Resource Orchestration view

4.1.1.2.1 [NSV-4] AU Usage of enriched DCB data

This system process describes the functions and data exchanges for the functional blocks belonging to Regional ATFCM, Local ATFCM and FOC capability configurations for the exchange and use related to the enriched DCB data during the flight planning phase.

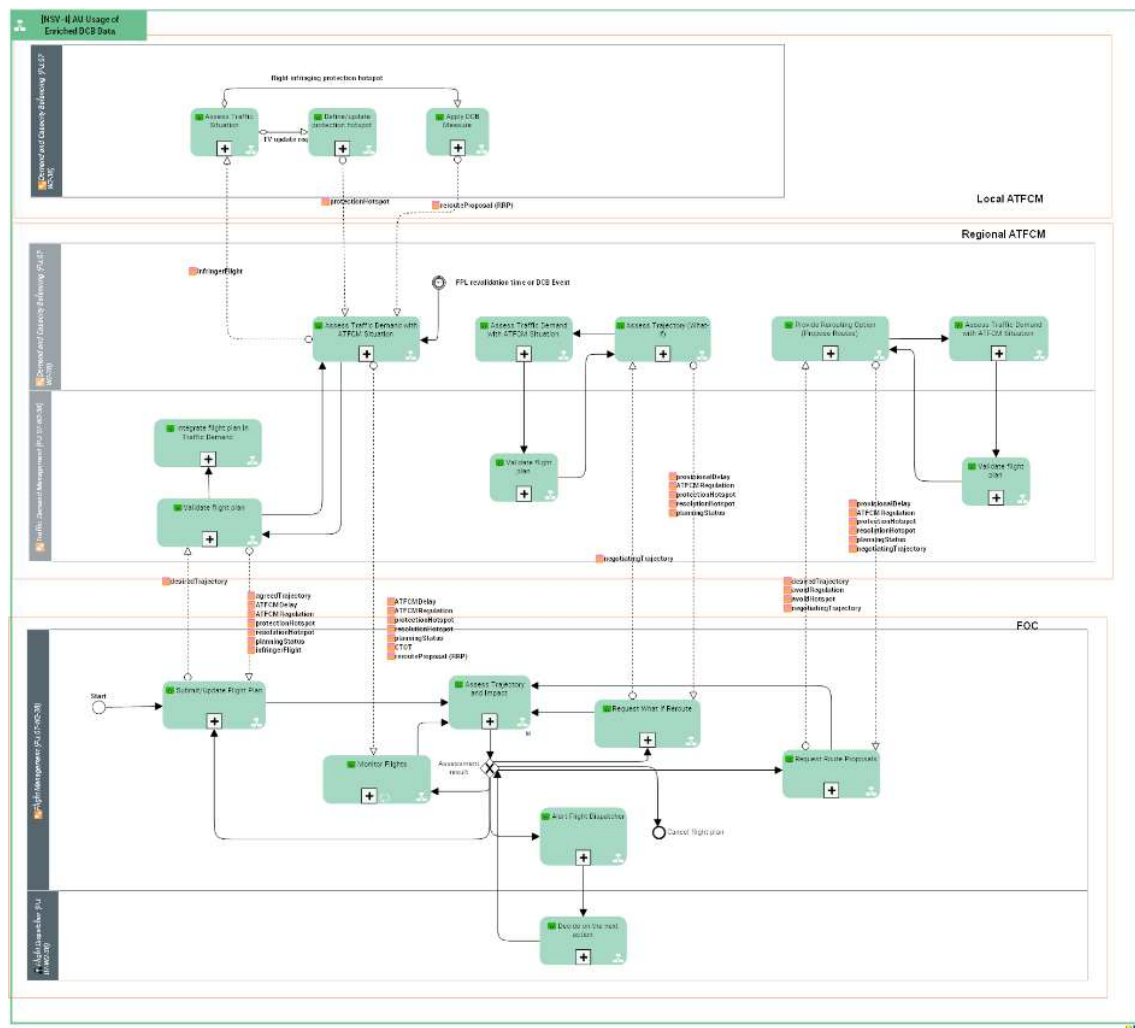


Figure 2 [NSV-4] AU Usage of enriched DCB data

Role	Functional Block	Function
	Demand and Capacity Balancing (PJ.07-W2-38)	Assess Traffic Demand with ATFCM Situation; Assess Trajectory (What-If); Provide Rerouting Option (Propose Routes);
	Demand and Capacity Balancing (PJ.07-W2-38)	Apply DCB Measure; Assess Traffic Situation; Define/update protection hotspot;
Flight Dispatcher (PJ.07-W2-38)		Decide on the next action;

	Flight Management (PJ.07-W2-38)	Alert Flight Dispatcher; Assess Trajectory and Impact; Monitor Flights; Request Route Proposals; Request What If Reroute; Submit/Update Flight Plan;
	Traffic Demand Management (PJ.07-W2-38)	Integrate flight plan in Traffic Demand; Validate flight plan;

Table 10: Roles, functional blocks, and functions in [NSV-4] AU Usage of enriched DCB data

Function	Description
Assess Trajectory and Impact	Compute an "Airline satisfaction index" based on the parameters defined by the AU.
Alert Flight Dispatcher	When the system cannot take a decision automatically by using the airline satisfaction index, the system alerts the flight dispatcher to take an action.
Apply DCB Measure	Apply and disseminate the DCB measure for a traffic volume or for a specific flight.
Assess Traffic Demand with ATFCM Situation	Assess the traffic demand versus available en-route and terminal capacity, DCB constraints; calculate (Regional) or monitor (Local) the departure slots and delays.
Assess Traffic Situation	Obtain a view of the traffic load over a given period.
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.
Decide on the next action	Analyse the DCB impact data and the flight trajectory and decide for the next step.
Define/update protection hotspot	Define or modify the definition of the protection hotspot and disseminate.
Integrate flight plan in Traffic Demand	Integrate the valid PFP or eFPL in the traffic demand picture. The result of this integration is available through the NOP interfaces.
Monitor Flights	Monitor the modification of ATFCM data as well as of flight data for each flight plan submitted to the Regional ATFCM.
Provide Rerouting Option (Propose Routes)	Calculate alternative trajectories by considering the input trajectory parameters and Airspace User constraints to respect.

Request Route Proposals	Request route proposals by optionally providing a trajectory portion and constraints to be respected, and receive the reply.
Request What If Reroute	Request what-if impact analysis by providing a new trajectory and constraints to be respected, and receive the reply.
Submit/Update Flight Plan	Update the flight plan data and send to Regional ATFCM.
Validate flight plan	Validate the Preliminary Flight Plan (PFP) or Filed Flight Plan (eFPL) according to the syntax and semantic rules defined, as well as against the known airspace constraints.

Table 11: Function descriptions of [NSV-4] AU Usage of enriched DCB data

4.1.2 Resource Connectivity View – [NSV-1] Proactive FDCI

This connectivity diagram describes the capability configurations and data exchanges for the Flight Delay Criticality when a flight is pre-regulated use case related system processes.

Since the SWIM services are out of the scope of the solution, only capability configurations are described, not the interactions between them.

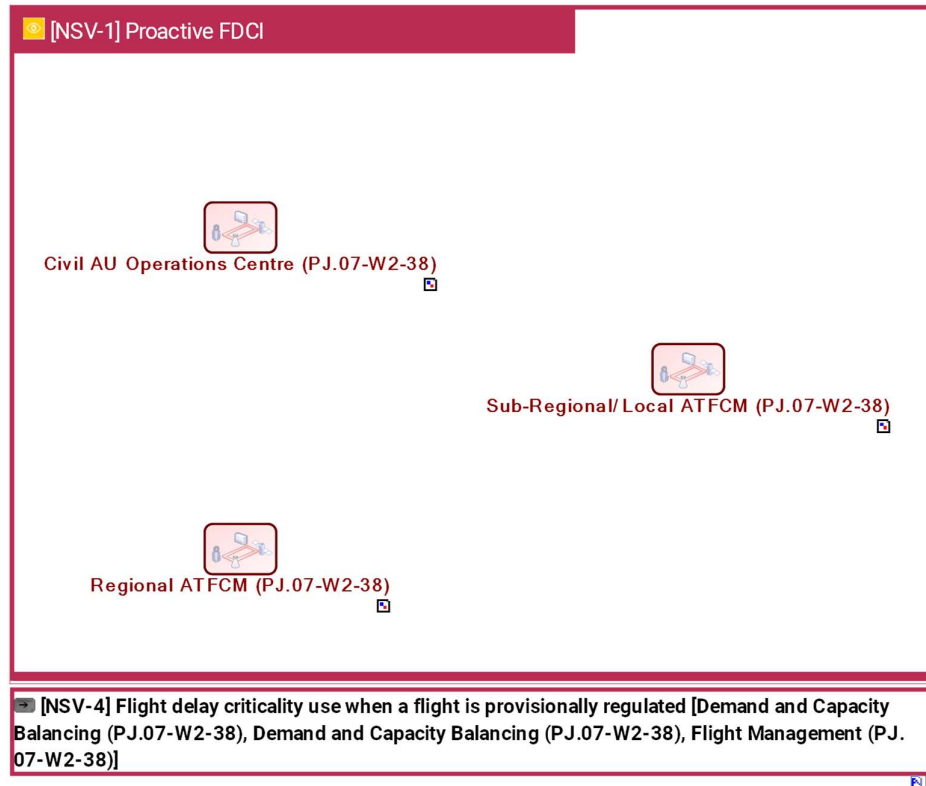


Figure 3 [NSV-1] Proactive FDCI

4.1.2.1 Resource Infrastructure view

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.1.2.2 Resource Orchestration View

4.1.2.2.1 [NSV-4] Flight delay criticality use in demand and capacity management

This system process describes the data exchanges between the functional blocks belonging to Regional ATFCM, FOC, EN ACC and APP ACC capability configurations for the exchange and use of the Proactive FDCI and related data.

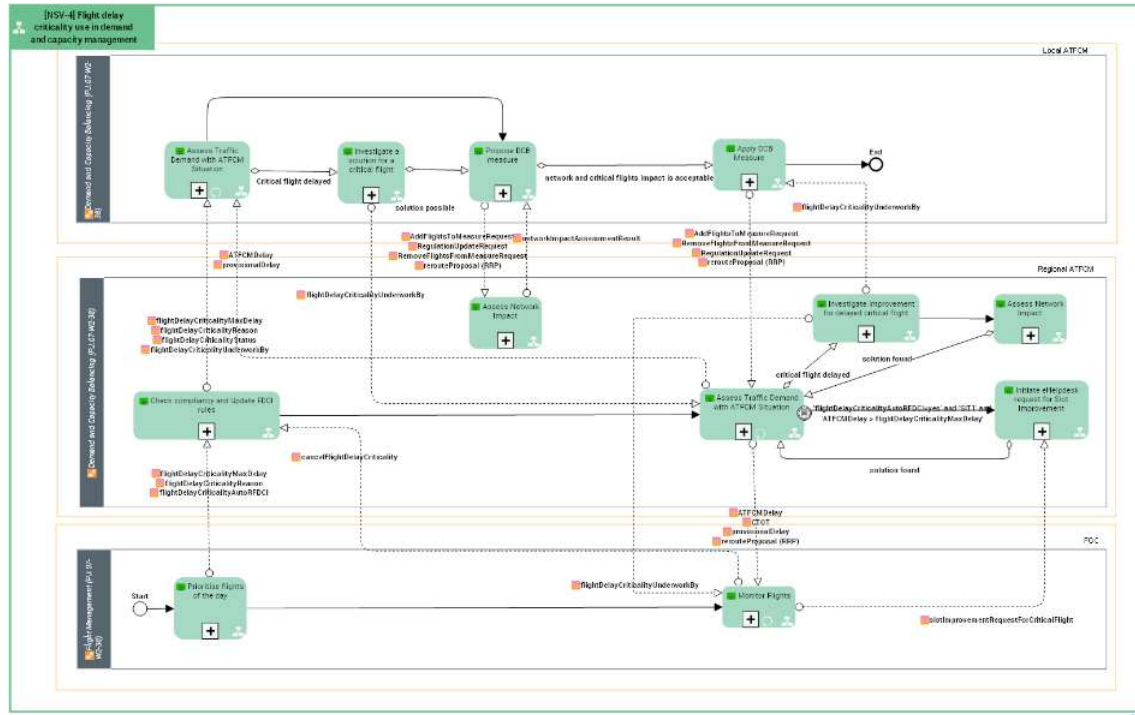


Figure 4 [NSV-4] Flight delay criticality use in demand and capacity management

Role	Functional Block	Function
	Demand and Capacity Balancing (PJ.07-W2-38)	Apply DCB Measure; Assess Traffic Demand with ATFCM Situation; Investigate a solution for a critical flight; Propose DCB measure;
	Demand and Capacity Balancing (PJ.07-W2-38)	Assess Network Impact; Assess Traffic Demand with ATFCM Situation; Check compliancy and Update FDCI rules; Initiate eHelpdesk request for Slot Improvement; Investigate improvement for delayed critical flight;

	Flight Management (PJ.07-W2-38)	Monitor Flights; Prioritise flights of the day;
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Table 12: Roles, functional blocks, and functions in [NSV-4] Flight delay criticality use in demand and capacity management

Function	Description
Apply DCB Measure	Apply and disseminate the DCB measure for a traffic volume or for a specific flight.
Assess Network Impact	Assess what the modification to a trajectory will cause at the network level
Assess Traffic Demand with ATFCM Situation	Assess the traffic demand versus available en-route and terminal capacity, DCB constraints; calculate (Regional) or monitor (Local) the departure slots and delays.
Check compliancy and Update FDCI rules	The FDCI is check, validated then used to update the AU wishes.
Investigate a solution for a critical flight	Investigate to find an improvement for a critical flight is impacted in the airspace of responsibility, by using its maximum delay and criticality reason attributes.
Initiate eHelpdesk request for Slot Improvement	Create an eHelpdesk ticket for 'slot improvement' for the critical flight.
Investigate improvement for delayed critical flight	Investigate to find an improvement for a critical flight is impacted in the airspace of responsibility, by using its maximum delay and criticality reason attributes.
Monitor Flights	Monitor the modification of ATFCM data as well as of flight data for each flight plan submitted to the Regional ATFCM.
Prioritise flights of the day	Allocate FDCI values to the flight plans.
Propose DCB measure	Formulate and communicate the DCB measure proposal.

Table 13: Function descriptions of [NSV-4] Flight delay criticality use in demand and capacity management

4.1.3 Resource Composition

4.1.3.1 ATFCM (PJ.07-W2-38) (Local ATFCM)

Supports the regional, sub-regional and local Air Traffic Flow and Capacity Management functions.

4.1.3.1.1 Composition

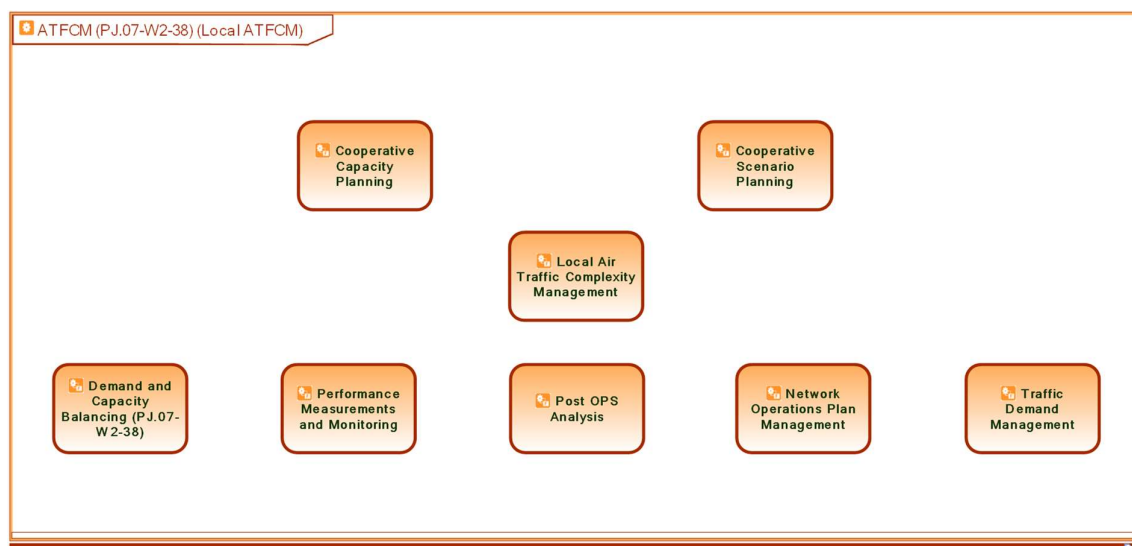


Figure 5 ATFCM (PJ.07-W2-38) (Local ATFCM) Composition

4.1.3.1.2 System Interfaces Diagram

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.1.3.2 ATFCM (PJ.07-W2-38) (Regional ATFCM)

Supports the regional, sub-regional and local Air Traffic Flow and Capacity Management functions.

4.1.3.2.1 Composition

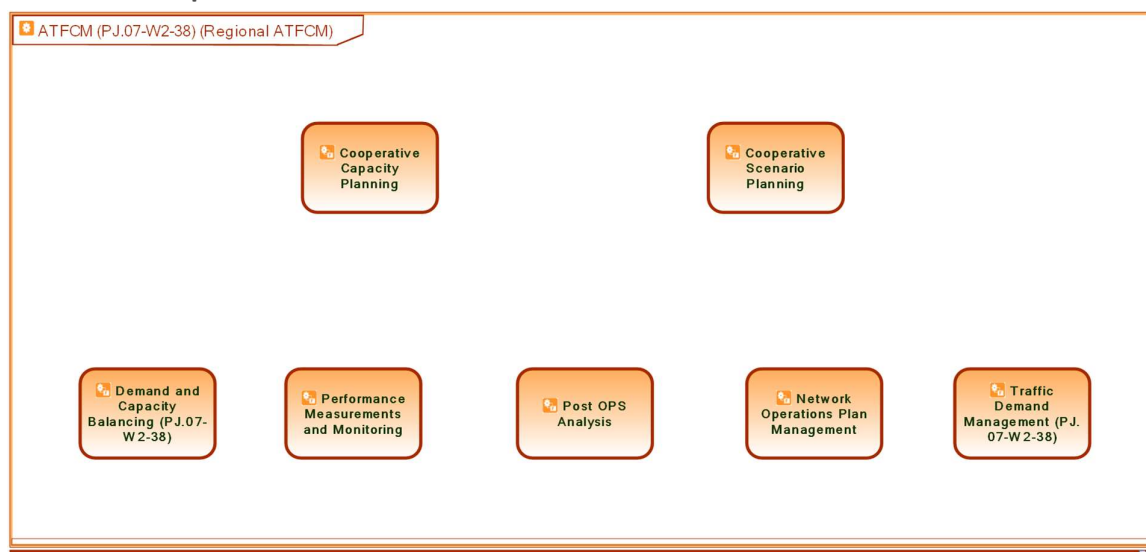


Figure 6 ATFCM (PJ.07-W2-38) (Regional ATFCM) Composition

4.1.3.2.2 System Interfaces Diagram

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.1.3.3 Civil AU Flight Operations Centre (FOC) (PJ.07-W2-38)

Supports Airspace Users performing manned or unmanned flight operations of civil aircraft (as defined by ICAO).

The FOC Technical System represents the 'Flight Operations' domain as part of the whole operations of the Airspace User. The domain 'Flight Operations' covers all activities that deal with the flights operated by the Airspace Users. These activities refer to the medium- and short-term planning and the execution phases of the flights.

4.1.3.3.1

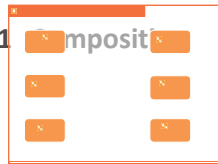


Figure 7 Civil AU Flight Operations Centre (FOC) (PJ.07-W2-38) Composition

4.1.3.3.2 System Interfaces Diagram

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.1.4 Service view

Since the services and system interfaces are out of these technical specifications, this section is empty.

4.2 Functional and non-Functional Requirements

4.2.1 AUO-0219 Use of Enriched DCB Information and Enhanced What-If to Improve AU Flight Planning

4.2.1.1 Functional Requirements

4.2.1.1.1 Local ATFCM

[REQ]

Identifier	REQ-07-W2-38-TS-LTM.003
Title	Declaration of a protection hotspot
Requirement	The Local ATFCM shall provide to the Regional ATFCM the protection hotspot when validated by the LTM
Status	<Validated>
Rationale	After assessment of the potential protection hotspot, LTM could declare it for dissemination.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0005
<ALLOCATED_TO>	<Enabler>	NIMS-77

[REQ]

Identifier	REQ-07-W2-38-TS.LTM.0004
Title	Display infringer flight
Requirement	The Local ATFCM shall display flight infringing the protection hotspot.
Status	<Validated>
Rationale	To inform LTM of the flight infringing the protection hotspot for the best candidate for MCP.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0008 REQ-07.38-SPRINTEROP-OP03.0002
<ALLOCATED_TO>	<Enabler>	NIMS-77

[REQ]

Identifier	REQ-07-W2-38-TS.LTM.0005
Title	Display of unplanned flights
Requirement	The Local ATFCM shall indicate unplanned flights in the traffic monitoring HMIs.

Status	<In Progress>
Rationale	To inform LTM of the unplanned flights
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0004 REQ-07.38-SPRINTEROP-OP01.0009
<ALLOCATED_TO>	<Enabler>	NIMS-77

4.2.1.1.2 Regional ATFCM

The additional specifications for implementation expected to be available via the NM B2B services documentation and release notes.

4.2.1.1.2.1 Enriched DCB Data Provision

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0004
Title	The flight planning functions provide the enriched DCB data
Requirement	The Regional ATFCM flight planning functions shall provide the protectionHotspot and resolutionHotspot data that is applicable to the submitted PFP or eFPL.
Status	<In Progress>
Rationale	To extend the flight planning functions with the DCB impact in the NM area.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0001 REQ-07.38-SPRINTEROP-OP01.0003
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0005
Title	AOWIR what-if reroute function provides enriched DCB data
Requirement	The AOWIR what-if reroute function shall provide the protectionHotspot and resolutionHotspot data that is applicable to the Negotiating 4D Trajectory.

Status	<Validated>
Rationale	To extend the AOWIR functions with the DCB impact data in the NM area.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0006
Title	AOWIR propose routes function provides the enriched DCB data
Requirement	The AOWIR service propose routes function shall provide the protectionHotspot and resolutionHotspot data that is applicable to the trajectory proposed in return as negotiatingTrajectory.
Status	<Validated>
Rationale	To extend the AOWIR functions with the DCB impact data in the NM area.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58 NIMS-61

4.2.1.1.2.2 Demand and Capacity Balancing Functions

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0011
Title	Protection Hotspot management function
Requirement	The Regional ATFCM shall provide functions to create, query, update and cancel a protectionHotspot.
Status	<Validated>
Rationale	To enable the EN and APP ACCs to declare traffic volumes marked to be avoided by the airspace users, and the AUs to query the hotspot definitions.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0005
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0012
Title	Unplanned flight identification
Requirement	The Regional ATFCM system shall mark a flight 'unplanned' for a traffic volume, when the AU submits the eFPL or changes the eFPL which causes increase or decrease in the traffic volume occupancy count, less than 2 hours before EOBT of the eFPL, when the change has occurred due to CHG or refile.
Status	<In Progress>
Rationale	To understand the impact of the AU re-routings.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0009
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0014
Title	Unplanned flights notification
Requirement	The Regional ATFCM shall notify the subscribed EN and APP ACCs about the unplanned flights recorded for a traffic volume.
Status	<In progress>
Rationale	To report on the network stability
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0004
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0015
Title	Flight infringing protection hotspot identification
Requirement	<p>The Regional ATFCM shall monitor the traffic volumes where a protectionHotspot is defined, and when a flight plan update (except for DLA, RRP and NMF proposals) causes a flight addition to the traffic volume's occupancy count within the duration of the protectionHotspot, then it shall</p> <ul style="list-style-type: none"> • Display this data in all NMOC HMIs • Provide the infringerFlight data to the FOC • Notify the subscribed EN and APP ACCs about this flight as 'infringer flight'.
Status	<Validated>
Rationale	To help the FMP's in prioritising the flights when solving a capacity problem
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0006 REQ-07.38-SPRINTEROP-OP01.0007 REQ-07.38-SPRINTEROP-OP03.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0151
Title	Flight infringing protection hotspot for NMOC
Requirement	The Regional ATFCM shall include the infringerFlight indicator in the network impact assessment function results.
Status	<Validated>
Rationale	When applying or proposing an RRP, the NMOC needs to know if the flight will become an infringer.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0006 REQ-07.38-SPRINTEROP-OP03.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58

4.2.1.1.2.3 AOWIR Functions

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0016
Title	AOWIR propose routes function accepts avoidRegulation and avoidHotspot as AU trajectory constraint
Requirement	The Regional ATFCM system shall be able to receive one or more regulation or hotspot identifiers when using the Regional ATFCM propose routes function, to generate routes avoiding these regulations and hotspots.
Status	<Validated>
Rationale	To enable the AU user to request for route proposals that avoid one or more regulations or hotspots.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58 NIMS-61

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0017
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Title	AOWIR propose routes and what-if reroute functions return protection hotspot and infringer data
Requirement	The Regional ATFCM system shall indicate when the route generated by the propose routes or the route provided in the what-if reroute function crosses a protection hotspot, i.e., infringes a protectionHotspot.
Status	<Validated>
Rationale	The AU needs to be informed if the new route will be treated as infringer when submitted.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0007
<ALLOCATED_TO>	<Enabler>	NIMS-58

4.2.1.1.3 Civil AU Operations Centre

4.2.1.1.3.1 Flight Plan Monitoring

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0003
Title	Monitoring submitted PFP/eFPL against enriched DCB data
Requirement	The “Civil AU FOC” shall monitor the consistency of submitted PFP/eFPL against changes in the ATFCM situation via enriched DCB data. “Enriched DCB data” includes protectionHotspot and resolutionHotspot
Status	<In Progress>
Rationale	The AU monitors enriched DCB data potentially impacting submitted PFP/eFPL.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0003
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

4.2.1.1.3.2 Decision Support

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0005
------------	--------------------------

Title	Customize the assessment of the impact of constraints on submitted PFP/eFPL or Negotiating Trajectories
Requirement	<p>The “Civil AU FOC” shall enable the AU to customize the assessment of the impact of constraints on a submitted PFP/eFPL or, in the context of a “what-if reroute”, of a negotiating trajectory.</p> <p>This customization can be done by</p> <ul style="list-style-type: none"> Identifying the parameters to be considered as impacting the PFP-eFPL (e.g., delay, flight level, ...) For each parameter, defining threshold above which the impact must be considered as non-acceptable (e.g., maximum delay of 10min)
Status	<In Progress>
Rationale	The AU shall have the possibility to customize the impact assessment.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0005
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0008
Title	Airline satisfaction index
Requirement	<p>The “Civil AU FOC” shall enable the AU to calculate an airline satisfaction index.</p> <p>The airline satisfaction index is a cumulative score based on the customization options defined by the AU (<i>e.g., comparing provisional delay with the delay threshold – pass [1]/fail [0]</i>).</p>
Status	<In Progress>
Rationale	<p>The airline satisfaction index shall help identifying situations in which the impact of constraints is not automatically acceptable and requires further attention from the flight dispatcher.</p> <p>It was the purpose of the IR activity to elaborate this requirement. We intended to work on it at the beginning of Wave 2, but we could not go further. Hence the requirement is still in progress state.</p>
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38

<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0005
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0006
Title	Assess the impact of constraints on submitted PFP/eFPL or Negotiating Trajectories against the customization defined by the AU.
Requirement	The “Civil AU FOC” shall assess the impact of constraints on a submitted PFP/eFPL or, in the context of a “what-if reroute”, a negotiating trajectory, by using the airline satisfaction index.
Status	<In Progress>
Rationale	The system shall support the flight dispatcher in the assessment of the validity of submitted PFP/eFPL given the ongoing impacting constraints.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002 REQ-07.38-SPRINTEROP-OP03.0005
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0007
Title	Alerting the Flight Dispatcher in case of a non-acceptable impact on a PFP/eFPL
Requirement	The “Civil AU FOC” shall alert the “Flight Dispatcher” in case of a non-acceptable impact on a PFP/eFPL. The definition of the non-acceptable impact is based on the customization defined by the AU.
Status	<In Progress>
Rationale	The system alerts the Flight Dispatcher when a PFP/eFPL is no longer acceptable or efficient for the AU.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

4.2.1.1.3.3 AOWIR

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0010
Title	“What-if reroute” PFP/eFPL as a Negotiating 4D Trajectory
Requirement	Upon decision of the Flight Dispatcher, the “Civil AU FOC” shall support the creation of an alternative PFP/eFPL, as negotiatingTrajectory, to submit it through the “AOWIR” service and get in return the enriched DCB data when applicable.
Status	<Validated>
Rationale	The AU tries to find an alternative PFP/eFPL through a “what-if reroute” function to propose to the Flight Dispatcher.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	HUM-019 AOC-ATM-24 AOC-ATM-26

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0011
Title	“Propose routes” PFP/eFPL as a Proposed Trajectory
Requirement	Upon decision of the Flight Dispatcher, the “Civil AU FOC” shall request the proposal for an alternative PFP/eFPL and get in return a negotiatingTrajectory, with the associated enriched DCB data through the “AOWIR” function.
Status	<Validated>
Rationale	The Flight Dispatcher can decide to request an alternative PFP/eFPL, through a “propose routes” function.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

4.2.1.1.3.4 Flight Plan Update

[REQ]

Identifier	REQ-07-W2-38-TS-FOC.0014
Title	Update of an existing submitted PFP/eFPL
Requirement	Upon decision of the Flight Dispatcher, the “Civil AU FOC” shall be able to revise a “submitted PFP/eFPL”, through the submission of an eFPL update.
Status	<Validated>
Rationale	The Flight Dispatcher can decide to update a submitted PFP/eFPL, to take the DCB constraints into account.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0002
<ALLOCATED_TO>	<Enabler>	HUM-019 AOC-ATM-24 AOC-ATM-26

4.2.1.2 Post Operations Reporting Requirements

4.2.1.2.1 General

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0001
Title	Enriched DCB Information Related Data in Post Operations Reporting
Requirement	The flight data related to the enriched DCB information provided in the post operations reports shall contain at least: <ul style="list-style-type: none"> • Callsign • ADEP • ADES • EOBT
Status	<Validated>
Rationale	To uniquely identify the flight in the post operations reports
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
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<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0011
<ALLOCATED_TO>	<Enabler>	NIMS-58

4.2.1.2.2 Regional ATFCM

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0002
Title	Infringer Flights Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data</p> <ul style="list-style-type: none"> List of infringer flights per AU, per ACC, and ECAC area Average ATFCM delay of infringer flights / Average ATFCM delay of non-infringer flights per AU, per ACC of the MCP, and ECAC area
Status	<Validated>
Rationale	To measure the protection hotspot impact on the AU operations.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0011
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0003
Title	Unplanned Flights Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per ACC and ECAC area</p> <ul style="list-style-type: none"> List of unplanned flights per TV Number of unplanned flights per TV Number of off-loads flights per TV
Status	<Validated>
Rationale	To measure the AU using the enriched DCB information (via rerouting) in flight planning impact on the Local ATFCM operations.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0011
<ALLOCATED_TO>	<Enabler>	NIMS-58

[REQ]

Identifier	REQ-07-W2-38-TS-POS.000
Title	Protection Hotspots Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily and per ACC</p> <ul style="list-style-type: none"> • List of Protection Hotspots • Number of Protection Hotspots • List of ATFCM measure (e.g., regulation, Cherry picking) activated following the publication of a protection hotspot • List of flights and their delays in a protection hotspot • Average ATFCM delay of infringers/Average ATFCM delay of non-infringer in a protection hotspot
Status	<Validated>
Rationale	To measure the impact of protection hotspots on the Network and Local ATFCM operations.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP01.0011
<ALLOCATED_TO>	<Enabler>	NIMS-58

4.2.1.3 Security Requirements

The security requirements cannot be validated on an exercise platform. It is recommended to validate and implement them during the deployment process.

The requirements in this section are worded following the SecRAM methodology (ref. [4]).

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0001
Title	Regional ATFCM DCB data available via authorisation
Requirement	The Regional ATFCM shall ensure that the enriched DCB data is provided to the users via the authorisation and authentication mechanisms which are already in place in current operations.
Status	<In Progress>
Rationale	The data provided by the Regional ATFCM must be to the users who are cleared and authorised to have access.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC01.0001
<ALLOCATED_TO>	<Enabler>	NIMS-58 NIMS-61

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0002
Title	Regional ATFCM DCB data protection and integrity
Requirement	The Regional ATFCM shall protect and ensure the integrity of the enriched DCB constraint data.
Status	<In Progress>
Rationale	The data kept by the Regional ATFCM must be trustable and maintained at the original level of quality.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC01.0002
<ALLOCATED_TO>	<Enabler>	NIMS-58 NIMS-61

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0003
Title	FOC DCB data protection and integrity
Requirement	The FOC shall protect and ensure the integrity of the enriched DCB data.
Status	<In Progress>
Rationale	The data kept by the Airspace User must be trustable and maintained at the original level of quality.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC01.0003
<ALLOCATED_TO>	<Enabler>	AOC-ATM-24 AOC-ATM-26

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0004
Title	Local ATFCM DCB data protection and integrity

Requirement	The Local ATFCM shall protect and ensure the integrity of the unplanned flights, infringing flights and protectionHotspot related data.
Status	<In Progress>
Rationale	The data kept by the Local ATFCM must be trustable and maintained at the original level of quality.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC01.0004
<ALLOCATED_TO>	<Enabler>	NIMS-76

4.2.2 AUO-0208 Use of Simple AU Preferences in DCB Processes

4.2.2.1 P-FDCI Definition

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0001
Title	Proactive FDCI Definition
Requirement	<p>The Proactive FDCI data shall consist of</p> <ul style="list-style-type: none"> • flightDataCriticalityReason • maxATFCMDelay • automaticRFDCI • status: active, cancelled • underworkBy
Status	<Validated>
Rationale	To enable the exchange and automation of a proactive FDCI
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0001 REQ-07.38-SPRINTEROP-OP02.0012
<ALLOCATED_TO>	<Enabler>	NIMS-72 AOC-ATM-28 NIMS-78

4.2.2.2 Functional Requirements

4.2.2.2.1 Local ATFCM

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0002
Title	Proactive FDCI Data Display
Requirement	The Local ATFCM shall display Proactive FDCI flight data, with all attributes, received by the Regional ATFCM, in all traffic monitoring HMIs.
Status	<Validated>
Rationale	The LTM must consider priority flights for hotspot resolution
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0022 REQ-07.38-SPRINTEROP-OP02.0023 REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	NIMS-78

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0021
Title	Local ATFCM Proactive FDCI Data underworkBy update
Requirement	<p>The Local ATFCM should update the P-FDCI underworkBy attribute and send this data to Regional ATFCM</p> <ul style="list-style-type: none"> • When an FMP picks up the P-FDCI flight to investigate an improvement on it • When an FMP finish working on the P-FDCI flight
Status	<In Progress>
Rationale	To ease coordination within NMF actors to avoid having several operators working on the same flight.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0018
<ALLOCATED_TO>	<Enabler>	NIMS-78

4.2.2.2.2 Regional ATFCM

The additional specifications for implementation expected to be available via the NM B2B services documentation and release notes.

4.2.2.2.1 Proactive FDCI Processing

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0003
Title	Proactive FDCI Submission, Update and Cancel after flight plan submission
Requirement	The Regional ATFCM shall enable the Civil FOC system provide the Proactive FDCI data, via the FlightCriticalityUpdate service until the slot is issued for the flight plan.
Status	<Validated>
Rationale	To enable the exchange and modifications to the proactive FDCI data
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0002 REQ-07.38-SPRINTEROP-OP02.0004 REQ-07.38-SPRINTEROP-OP02.0015 REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0031
Title	Proactive FDCI Submission, Update and Cancel before flight plan submission
Requirement	The Regional ATFCM shall enable the Civil FOC system provide the Proactive FDCI data for the flight plans which are not yet submitted to NM.
Status	<In Progress>
Rationale	To enable the exchange and of proactive FDCI before flight plan submission
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0003
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0032
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Title	Local ATFCM update underworkBy to Regional ATFCM
Requirement	The Regional ATFCM shall enable the Local ATFCM update the P-FDCI flight's underworkBy status.
Status	<In Progress>
Rationale	To ease coordination within NMF actors to avoid having several operators working on the same flight.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0018
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0004
Title	Proactive FDCI Data Dissemination
Requirement	The Regional ATFCM shall publish up-to-date Proactive FDCI flight data, including its status via query/reply and publish/subscribe mechanisms.
Status	<Validated>
Rationale	The FMPs need to be informed in case a priority flight will need to be monitored by them or when applying a STAM, and ensure transparency.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0041
Title	Proactive FDCI Data for the NMOC
Requirement	The Regional ATFCM shall display up-to-date Proactive FDCI flight data, including all attributes to the Regional ATFCM Operators in the regulations and flights monitoring HMIs.

Status	<Validated>
Rationale	The NMOC need to be informed in case there is a delayed priority flight, and critical flights in the regulations, which did not reach SIT1 yet.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0019 REQ-07.38-SPRINTEROP-OP02.0020 REQ-07.38-SPRINTEROP-OP02.0021 REQ-07.38-SPRINTEROP-OP02.0023 REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0042
Title	Proactive FDCI Data underwork status change
Requirement	<p>The Regional ATFCM shall update the P-FDCI underworkBy attribute</p> <ul style="list-style-type: none"> • When an NMOC operator starts or finishes on the flight. • When an eHelpDesk slot improvement request type of ticket is opened and closed
Status	<In Progress>
Rationale	To ease coordination within NMF actors to avoid having several operators working on the same flight; as well as avoiding conflict with the eHelpDesk ticket resolution.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0018 bis
<ALLOCATED_TO>	<Enabler>	NIMS-72

4.2.2.2.2 Automatic Reactive FDCI Creation

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0006
Title	Automatic Reactive FDCI Creation

Requirement	<p>The Regional ATFCM system shall automatically issue an eHelpdesk 'Slot Improvement' request for a Proactive FDCI flight, when all the following conditions are met:</p> <ul style="list-style-type: none"> • The AU preference or the Proactive FDCI's automatic reactive FDCI creation attribute is yes • The SIT1 is reached, i.e., the slot is issued • The flight's ATFCM delay is larger than Proactive FDCI's maxATFCMDelay
Status	<Validated>
Rationale	To trigger NMOC acting on a delayed critical flight
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0014 REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	NIMS-72

4.2.2.2.2.3 Proactive FDCI Quota

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0007
Title	Proactive FDCI Quota
Requirement	The Regional ATFCM system shall apply a quota check when a P-FDCI data is submitted for a flight plan, as a percentage of total number of flights submitted per AU within the day, with a minimum of 5; and provide the value in the response to the P-FDCI submission.
Status	<Validated>
Rationale	To monitor the NMF workload
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0009 REQ-07.38-SPRINTEROP-OP02.0010
<ALLOCATED_TO>	<Enabler>	NIMS-72

4.2.2.2.3 Civil AU Operations Centre

4.2.2.2.3.1 Proactive FDCI Submission

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0008
Title	Creation of a Proactive FDCI
Requirement	<p>Upon decision of the Flight Dispatcher, the “Civil AU FOC” shall have the functions to declare P-FDCI for</p> <ul style="list-style-type: none"> • One flight • Several flights <p>Daily, provided that the flight plans are submitted to NM.</p>
Status	<Validated>
Rationale	To enable the AU to submit a Proactive FDCI for a given flight to the Regional ATFCM.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0009
Title	Submission of a Proactive FDCI
Requirement	The “Civil AU FOC” shall have the function to submit, update and cancel Proactive FDCI data for Flight Plan to the Regional ATFCM via the B2B web services.
Status	<Validated>
Rationale	To enable the AU to submit P-FDCI(s) to the Regional ATFCM.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0001
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

4.2.2.3.2 Proactive FDCI Monitoring

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0010
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Title	Monitoring submitted Proactive FDCI against a new ATFCM constraints
Requirement	Upon the reception of a new ATFCM constraint, the “Civil AU FOC” CC shall have the capability to identify if this constraint affects a critical flight, i.e., affects a flight linked to a Proactive FDCI and for which the delay is out of the tolerance window.
Status	<Validated>
Rationale	To enable the AU to identify if a critical flight is impacted by an ATFCM constraint.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0001
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0011
Title	Alerting the Flight Dispatcher in case of constraint affecting a critical flight
Requirement	The “Civil AU FOC” CC shall have the capability to inform the “Flight Dispatcher” in case of ATFCM constraint (“DCB data” and “enriched DCB data”) affecting a flight linked to a Proactive FDCI.
Status	<In Progress>
Rationale	The system informs the Flight Dispatcher when a critical flight is impacted by an ATFCM constraint.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP03.0005
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0012
Title	Monitoring Proactive FDCI submission
Requirement	The “Civil AU FOC” CC shall have the capability to monitor the number of Proactive FDCIs that have been submitted continuously during the day.
Status	<Validated>

Rationale	To keep the P-FDCI submissions to the maximum that can be managed
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0009
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0121
Title	Monitoring Automatic R-FDCI creation
Requirement	The “Civil AU FOC” CC shall have the capability to alert the flight dispatcher when a P-FDCI flight with automatic transfer option selected is about to become an R-FDCI, x minutes before the R-FDCI submission. X minutes is a parameter set by the AU.
Status	<In Progress>
Rationale	To help the decision making
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0013
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

4.2.2.2.3.3 Proactive FDCI Update

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0013
Title	Update a Proactive FDCI for a given flight
Requirement	Upon decision of the Flight Dispatcher (e.g., following a change of an internal constraint), the “Civil AU FOC” CC shall have the capability to update any attribute of a Proactive FDCI declaration through the submission of a new Proactive FDCI for a given flight.
Status	<Validated>
Rationale	To enable the AU to update a Proactive FDCI for a given flight to the Regional ATFCM.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0004 REQ-07.38-SPRINTEROP-OP02.0015
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

[REQ]

Identifier	REQ-07-W2-38-TS-PFD.0014
Title	Cancellation of a Proactive FDCI for a given flight
Requirement	Upon decision of the Flight Dispatcher (e.g., following a change of an internal constraint), the “Civil AU FOC” CC shall have the capability to cancel a Proactive FDCI for a given flight.
Status	<Validated>
Rationale	To enable the AU to cancel a Proactive FDCI for a given flight to the Regional ATFCM.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0004
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

4.2.2.3 Post Operations Reporting Requirements

4.2.2.3.1 General

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0001
Title	P-FDCI Related Data in Post Operations Reporting
Requirement	<p>The P-FDCI data provided in the post operations reports shall contain at least:</p> <ul style="list-style-type: none"> • Callsign • ADEP • ADES • EOBT • flightDelayCriticalityReason • flightDelayCriticalityMaxDelay • flightDelayCriticalityAutoRFDCI • flightDelayCriticalityStatus

	<ul style="list-style-type: none"> Regulated Sector profile
Status	<Validated>
Rationale	To uniquely identify the flight and the P-FDCI data in the reports
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

4.2.2.3.2 Regional ATFCM

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0002
Title	P-FDCI Submission Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU and ECAC area</p> <ul style="list-style-type: none"> List of P-FDCI flights including the cancelled P-FDCIs Number of P-FDCI submissions Percentage of the number of P-FDCI submissions on the number of flights
Status	<Validated>
Rationale	To measure the volume of P-FDCI declarations, and check if it is manageable.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0003
Title	P-FDCI Flight Delay Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily</p> <ul style="list-style-type: none"> Evolution of delay on a P-FDCI flight until EOBT, all delay values (provisional delay and subsequent ATFCM delay values allocated) for each P-FDCI flight, per AU

	<ul style="list-style-type: none"> • Saved (or diff) Delay in minutes for P-FDCI flights per AU and ECAC area
Status	<Validated>
Rationale	To evaluate the impact of the P-FDCI information on the ATFCM delay, i.e., if the delayed critical flights receive improvement and to what extent.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0004
Title	Positively Treated P-FDCI Flights Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily</p> <ul style="list-style-type: none"> • List of P-FDCI flights positively treated per AU, per ACC and ECAC area • Number of P-FDCI flights positively treated per AU, per ACC and ECAC area • Delay in minutes saved per flight positively treated per AU, and ECAC area • Number of P-FDCI flights improved within their time tolerance per AU, and ECAC area • Percentage of the number of P-FDCI flights positively treated on the number of flights per AU, per ACC and ECAC area • Percentage of the number of P-FDCI flights positively treated on the number of P-FDCI submissions per AU, per ACC and ECAC area • Number of accepted and applied RRP on P-FDCI flights per AU, per ACC and ECAC area • Number of regulation exclusions on P-FDCI flights per AU, per ACC and ECAC area • Number of force slots on P-FDCI flights per AU, per ACC and ECAC area
Status	<Validated>
Rationale	To evaluate the impact of the P-FDCI information on the ATFCM delay, i.e., if the delayed critical flights receive improvement and to what extent.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
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<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0006
Title	P-FDCI Flights not positively treated Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU and ECAC area</p> <ul style="list-style-type: none"> • List of P-FDCI flights not positively treated • Number of P-FDCI flights not positively treated • Percentage of the number of P-FDCI flights not positively treated on the number of flights • Percentage of the number of P-FDCI flights not positively treated on the number of P-FDCI submissions <p>A P-FDCI flight is considered as not positively treated when the final delay for this flight is higher than the delay threshold.</p>
Status	<Validated>
Rationale	To evaluate the impact of the P-FDCI information on the ATFCM delay, i.e., which the delayed critical flights do not receive any improvement and to what extent.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0007
Title	P-FDCIs transferred to R-FDCIs Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU, and ECAC area</p> <ul style="list-style-type: none"> • List of P-FDCI flights transferred to R-FDCI • Number of P-FDCI flights transferred to R-FDCI • Percentage of the number of P-FDCI flights transferred to R-FDCI on the number of flights
Status	<Validated>

Rationale	To understand to what extent the P-FDCI flights do not receive expected improvement, which then leads to AU creating an R-FDCI request.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0008
Title	P-FDCIs with automatic transfer to R-FDCIs setting Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU, and ECAC area</p> <ul style="list-style-type: none"> • List of P-FDCI flights with auto-transfer=Y • Number of P-FDCI flights with auto-transfer=Y • Percentage of number of P-FDCI flights with auto-transfer=Y on the number of flights • Percentage of number of P-FDCI flights with auto-transfer=Y on the number of P-FDCI submissions
Status	<Validated>
Rationale	To evaluate the usage of automatic R-FDCI creation for the P-FDCI flights.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0009
Title	P-FDCIs manually transferred to R-FDCIs Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU, and ECAC area</p> <ul style="list-style-type: none"> • List of P-FDCI flights manually transferred to R-FDCI • Number of P-FDCI flights manually transferred to R-FDCI

	<ul style="list-style-type: none"> Percentage of the number of P-FDCI flights manually transferred to R-FDCI on the number of P-FDCI submissions
Status	<Validated>
Rationale	To understand to what extent the P-FDCI flights do not receive expected improvement, which then leads to AU creating an R-FDCI request.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0010
Title	P-FDCIs transferred to R-FDCIs by the AU Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU, and ECAC area</p> <ul style="list-style-type: none"> List of P-FDCI flights transferred to R-FDCI by the AU Number of P-FDCI flights transferred to R-FDCI by the AU Percentage of the number of P-FDCI flights transferred to R-FDCI by the AU on the number of P-FDCI submissions
Status	<Validated>
Rationale	To understand to what extent the P-FDCI flights do not receive expected improvement, which then leads to AU having to create an R-FDCI request.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0011
Title	P-FDCI Quota Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily</p> <ul style="list-style-type: none"> Number of P-FDCI flights per day (including cancelled ones), per AU The percentage of P-FDCI declarations over the total number of flights per day, per AU, and ECAC area

	<ul style="list-style-type: none"> P-FDCI quota status in a day, per AU
Status	<Validated>
Rationale	To monitor that the number of P-FDCI flights are manageable by the Regional and Local Network Management.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0012
Title	P-FDCI Events Post Operations Reporting
Requirement	<p>The Regional ATFCM shall calculate and publish the following data daily, per AU and ECAC area</p> <ul style="list-style-type: none"> List of P-FDCI cancellations, and updates Number of P-FDCI cancellations, and updates Percentage of the number of P-FDCI cancellations and updates on the number of P-FDCI submissions List of events for P-FDCI (Declaration, Modifications, Cancellation) with <ul style="list-style-type: none"> Timestamp Time difference = EOBT minus Event Time
Status	<Validated>
Rationale	To monitor the P-FDCI information stability
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-72

4.2.2.3.3 Local ATFCM

[REQ]

Identifier	REQ-07-W2-38-TS-POS.0005
Title	Positively Treated P-FDCI Flights Post Operations Reporting

Requirement	<p>The Local ATFCM shall calculate, publish, and provide to Regional ATFCM, the following data daily</p> <ul style="list-style-type: none"> List of P-FDCI flights positively treated, where the treatment is not known by Regional ATFCM, per AU, and per ACC Number of P-FDCI flights positively treated, where the treatment is not known by Regional ATFCM, per AU, and per ACC <p>A P-FDCI flight is considered as positively treated when the final delay for this flight is lower than the delay threshold.</p>
Status	<Validated>
Rationale	To evaluate the impact of the P-FDCI information on the ATFCM delay, i.e., if the delayed critical flights receive improvement and to what extent, and for Regional ATFCM to synthesise for the ECAC area.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-OP02.0024
<ALLOCATED_TO>	<Enabler>	NIMS-78

4.2.2.4 Security Requirements

The security requirements cannot be validated on an exercise platform. It is recommended to validate and implement them during the deployment process.

The requirements in this section are worded following the SecRAM methodology (ref. [4]).

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0001
Title	Regional ATFCM P-FDCI data available via authorisation
Requirement	The Regional ATFCM shall ensure that the P-FDCI data is provided to the users via the authorisation and authentication mechanisms which are already in place in current operations.
Status	<In Progress>
Rationale	The data provided by the Regional ATFCM must be to the users who are cleared and authorised to have access.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC02.0001
<ALLOCATED_TO>	<Enabler>	NIMS-58 NIMS-61

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0005
Title	Regional ATFCM Proactive FDCI data protection and integrity
Requirement	The Regional ATFCM shall protect and ensure the integrity of the Proactive FDCI data.
Status	<In Progress>
Rationale	The data kept by the Regional ATFCM must be trustable and maintained at the original level of quality.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC02.0002
<ALLOCATED_TO>	<Enabler>	NIMS-72

[REQ]

Identifier	REQ-07-W2-38-TS-SEC.0005
Title	Local ATFCM Proactive FDCI data protection and integrity
Requirement	The Local ATFCM shall protect and ensure the integrity of the Proactive FDCI data.
Status	<In Progress>
Rationale	The data kept by the Local ATFCM must be trustable and maintained at the original level of quality.
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC02.0002
<ALLOCATED_TO>	<Enabler>	NIMS-76

[REC]

Identifier	REQ-07-W2-38-TS-SEC.0006
Title	FOC Proactive FDCI data protection and integrity
Requirement	The FOC shall protect and ensure the integrity of the Proactive FDCI data.
Status	<In Progress>

Rationale	The data kept by the Airspace User must be trustable and maintain the original level of quality.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-W2-38
<SATISFIES>	<ATMS Requirement>	REQ-07.38-SPRINTEROP-SC02.0003
<ALLOCATED_TO>	<Enabler>	AOC-ATM-28

4.3 Deleted Requirements

The requirements in this section are deleted following the validation exercises outcome.

[REQ]

Identifier	REQ-07-W2-38-TS-DCB.0009
Title	Enriched DCB Data Notification
Requirement	The Regional ATFCM shall notify the AUs who subscribed to the flight plan data when there is a change in the protectionHotspot and resolutionHotspot data related to a flight plan.
Status	<Deleted>
Rationale	The AU needs to be informed on the changes to the enriched DCB data on the flight plan <i>This requirement is deleted because this data is relevant only when the AU is rerouting.</i>
Category	<Functional>

[REQ]

Identifier	REQ-07-W2-38-TS-LTM.0001
Title	Potential Protection Hotspot
Requirement	The Local ATFCM shall display the potential protection hotspot, characterised by Traffic Volume above the sustain level or above a defined complexity level
Status	<deleted >
Rationale	To inform LTM of a potential protection hotspot. <i>This function is a standard feature for any FMP tool. It is not introduced via this solution. Therefore, the requirement is deleted.</i>
Category	<Functional>

[REQ]

Identifier	REQ-07-W2-38-TS-LTM.0002
Title	Evolution of the Traffic
Requirement	The Local ATFCM should display a tendency in the potential protection hotspot, characterised by the tendency during the last minutes of the traffic or the complexity
Status	<deleted >
Rationale	Optional requirement, to inform LTM of the tendency to support the assessment of the traffic situation <i>This function is a standard feature for any FMP tool. It is not introduced via this solution. Therefore, the requirement is deleted.</i>
Category	<Functional>

5 Recommendation for Implementation

None

6 Assumptions

N/A

7 References and Applicable Documents

7.1 Applicable Documents

Content Integration

- [1] B.04.01 D138 EATMA Guidance Material, Edition 9.0
- [2] EATMA Community pages, <https://ost.eurocontrol.int/sites/eatmac/default.aspx>
- [3] SESAR ATM Lexicon, <https://ext.eurocontrol.int/lexicon/index.php/SESAR>
- [4] SecRAM 2.0 Security Risk Assessment methodology for SESAR 2020, Edition: 00.00.02, Edition Date: 25 September 2017

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- [5] SESAR 2020 Requirements and Validation Guidelines

7.2 Reference Documents

- [6] D2.1.008 - PJ.07-W2-38-V3 - Final OSED/SPR - Part I, Edition 00.00.05, 30 Nov 2022
- [7] D92 Step 1 EFPL in NM Systems Technical Specification, Edition 00.01.01, 30 May 2016
- [8] SESAR 2020 PJ.07 D2.2.020 TS/IRS, Edition 00.01.00, 30 Sep 2019
- [9] SESAR 2020 PJ.07-W2-38 - V3 - Initial TS/IRS, Edition 00.01.00, 2 Mar 2021
- [10] ATMRPP/2-WP/718 AIR TRAFFIC MANAGEMENT REQUIREMENTS AND PERFORMANCE PANEL (ATMRPP), SECOND MEETING, Montreal, Canada, 14 to 18 November 2016, draft working paper
- [11] FF-ICE Manual Draft Version 0.96 for ATMRPP Review, draft
- [12] FPFDE Implementation Guidelines Volume 1, Edition 00 01 01 (FF-ICE/1), Aug 2017
- [13] FF-ICE1/R1 Extended Release Notes - Release NM 24.0, Edition 1.0, 28 Feb 2020

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