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PJ.04-W2 TAM

S2020 SOLUTION 28.1 TS IRS

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Abstract

This document describes the final version of the Technical Specification for the project PJ.04 - TAM (Total Airport Management) produced under SESAR 2020 PJ.04-W2-28.1 "Regional network integrated airports (target V3 finalised)". These requirements are based on the 54SESAR Solution PJ.04-W2-28.1 SPR-INTEROP/OSED for V3 - Part I document and are aligned with each of the Validation Exercise described in PJ.04-W2-28.1 Validation Report. The document contains all of the updated requirements produced since the beginning of the project, including the EATMA architecture modifications of the technical artefacts for covering the solution. The maturity of the TS is V3. The OIs included in this solution are described in the document.

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1 Executive summary

This Technical Specifications document provides the requirements specification, covering functional, non-functional and interface requirements related to this Solution and represents one of the key parts of this SESAR Solution data-pack. The document has been created using the SE-DMF and EATMA tools.

The technical system called 'Airport Operations Centre' satisfies the following Operational Improvements (OI) related to the Solution:

- AO-0824. Network Connected Regional Airports

In order to satisfy the technical aspects related to the operational functionalities defined by the previous Operational Improvement, several enablers have been identified. In this way, some change requests have been created so as to introduce those enablers in the Integrated Roadmap. The latest applicable dataset, DS23, includes the proposed change requests.

To support V3 validation activities according to the different groups of airports, an update the Light Airport Operations Plan Management functional block have been included as a part to the 'Airport Operations Centre' technical system:. This update corresponds to *AIRPORT-03c Light Airport Operation Plan (AOP) management tool (for regional airports)* Enabler

Additionally, other enablers have been created or updated for fully supporting the RNI (Regional Network Integration) concept at regional airports. The solution identifies also the following enablers:

- *AERODROME-ATC-114: Update of the Aerodrome ATC system to align with RNI airport operations*
- *HUM-058: Tower Ground Controller role updated for RNI concept of operations*
- *HUM-059: Flight Crew role updated for RNI concept of operations*
- *HUM-036: Ground Handling Agent role updated for RNI concept of operations*

Additional information about the EN and OI is described in section 3.3.1

According to the deployment scenario, the validated requirements related to Regional Airport Network-Integrated correspond to airports from Group 2.

The system requirements have been traced to operational, performance and interoperability requirements captured in the SESAR Solution PJ.04-W2-28.1 SPR-INTEROP/OSED for V3 - Part I, and updated consequently according to V3 validation activities as described in PJ.04-W2-28.1 Validation Report.

This solution will be highly complemented by the other two solutions included in the PJ.04-W2:

- PJ.04-W2-28.2 - Regional Airport(s) Collaborative management: This Solution will investigate the development of a lite-APOC for regional airports based on enhanced process automation and data sharing. In addition, the connection of a group of regional airports together for joint performance setting and monitoring from a single location will be developed.

- PJ.04-W2-28.3 - Connected large airports: This Solution specifically focuses on AOP/NOP data exchange including associated quality requirements.

2 Introduction

The Technical Specification document contains requirements on architecture, functions and capabilities of the technical systems enabling SESAR PJ.04-W2-28.1 validation targets. Specifications for the technical architecture, functional blocks, capabilities and technical requirements, physical characteristics, data definitions, interfaces, environmental conditions will be given in this document and harmonized with the EATMA through proper technical modelling activities.

2.1 Purpose of the document

This document provides the requirements specification, covering functional, non-functional and interface requirements related to SESAR PJ.04-W2-28.1 and represents one of the key parts of this SESAR Solution data-pack.

This document is intended as a standardized “logical blueprint” shared across SESAR partners, with the purpose of describing the functional essence of this SESAR Solution. As such, it does not pre-empt implementation decisions taken by industries willing to deploy a SESAR solution package. This TS should provide sufficient information so as to allow the functional block (or parts of it in which the project is working) to be designed and implemented either as separate functional block or as part of an integrated system, depending upon the design choice, for V&V activity within the Programme and ultimately for industrialization, standardization and deployment.

Technical requirements in this specification are derived from the concept documents delivered in this Solution. Evidence of this derivation is provided by means of requirement tracing. Also, relations with the SESAR EATMA elements (OIs and ENs) and functional blocks are specified.

Also, as part of the architectural view, the interfaces between the various capabilities configurations are described in a logical way, thus leading to the definition of interface requirements (IRS). The document can be therefore also assumed as a starting point for defining SESAR-compliant industrial standards by proper Standard Setting bodies and International Industry standard Organizations.

The architectural description will be decomposed into systems and functional blocks according to shared design decisions and performance targets in the Solution Team. PJ19 will federate and consolidate all architecture contribution by each solution at the system level, leaving the single solutions to drill down into the functional and performance details for functional blocks.

2.2 Scope

This is the Technical Specification for PJ.04-W2-28.1 for the V3 phase, once validation exercise 2811 has been performed and their validation results analysed and consolidated.

This TS/IRS covers functional, non-functional and interface requirements related to SESAR PJ.04-W2-28.1

2.3 Intended readership

This document is relevant to the following readers:

Project number	Output description
PJ.04-01 Members	To further develop, elaborate and align all aspects of the project in close cooperation with solution 1 team members
PJ.04-02 Members	To further develop and align all aspects of the project in close cooperation with solution 2 partners
PJ.04-28.1 Members	To further develop and align all aspects of the project in close cooperation with solution PJ.04-W2-28.1 partners
PJ.04-28.2 Members	To further develop and align all aspects of the project in close cooperation with solution 28.2 partners
PJ.04-28.3 Members	To further develop and align all aspects of the project in close cooperation with solution 28.3 partners
PJ.07 Members	Share view on concept such as APOC (Airport Operations Centre), AOP (Airport Operation Plan), Landside CDM, and DCB.
PJ.09 Members	Share view on AOP-NOP integration and DCB processes on the V3 validation exercise that will be conducted jointly with PJ09.03.
PJ.19 Members	Responsible for managing the content integration process to ensure the needed coherency (in terms of operational concept, architecture) between the different SESAR 2020 projects
PJ.22 Members	Responsible for System Engineering Data Management
SESAR JU	Governance and Progress Assessment
International Organizations	(Standard setting Bodies, International Airport Associations, ICAO, etc…) can be interested in the standardization of functionalities and services specified in this document, and therefore plan to define specifications which could become industry standards

Table 1 Intended readership

2.4 Background

Previous work performed on the new operating method as described within this document was done under the auspices of SESAR1 PJ.04-01. Details on the concept description can be found in:

- SESAR Solution PJ.04-01 TS/IRS [37]

In SESAR W1, PJ04.01 involved several OI's:

- AO-0801-B: Collaborative Airport Planning Interface (AOP fully integrated with NOP)
- AO-0802-B: A-CDM process enhanced through integration of landside (passenger and baggage) process outputs

- AO-0821:Post-Operations Analysis support solutions and reporting capabilities
- AO-0824: Network-connected Regional Airports

With the new SESAR programme structure, PJ.04 has now been divided into different solutions (28.1, 28.2, 28.3, 29.1...) so only AO-0824 related content has been taken as main background for this PJ04-W2-28.1 TS/IRS.

At the same time, Solution PJ.04-01 'Enhanced Collaborative Airport Performance Planning and Monitoring' was built on the work performed in SESAR1 specifically in relation to SESAR Solution #21 ('Airport Operations Plan and AOP-NOP Seamless Integration'). The principal focus of Solution #21 was on the Airport Operations Plan (AOP) leading to improve stakeholder situational awareness through common information sharing and an improved integration of airports into the overall ATM network through the exchange of information between the AOP and the Network Operations Plan (NOP).

2.5 Structure of the document

The document has the following structure:

- Chapter 1 and Chapter 2 of this document provides a high-level description of the document, indexes, glossary, acronyms, dependencies and other short introductory information
- Chapter 3 describes how the SESAR Target Architecture is affected by this Solution
- Chapter 4 highlights all the technical modelling and architectural aspects in terms of resources, functions and services, finally providing a detailed description of functional and performance-related requirements. Based on these logical specifications
- Chapter 5 outlines a number of possible design decisions, local constraints, deployment options which can help understanding how the Solution can be put into real operations
- Chapter 6 presents the baseline technical assumptions on which the entire specifications rely
- Chapter 7 presents references
- Appendix A give a detailed view on the functionalities offered as "service" in this solution, both from their operational purpose and from their technical details

2.6 Glossary of terms

Term	Definition	Source of the definition
Advanced ATC Tower Airport (AAT)	Airports that have no plans to implement the A-CDM process but still wish to integrate into the ATM network may do so as an Advanced ATC TWR Airport. Such an Airport may provide a reduced set of DPI messages with a reduced set of advantages (compared to CDM Airports). An Advanced ATC TWR Airport provides Target Take-Off-Time (TTOT) estimations as well as Variable Taxi-Times (VTTs) and SIDs to the NMOC. These are provided from the moment that the aircraft leaves the blocks.	Advanced ATC TWR Implementation Guide Edition Nº 1.6
Adverse conditions	Any event within the operational envelope of the airport, which has a significant negative impact on operational performance unless appropriate actions are organised. Note: This definition encompasses adverse weather conditions. In most cases, the airport capacity will be affected. However, other Key Performance Areas may also be impacted (e.g. the predictability of operations may decrease). The consequence of adverse conditions at an airport may be arrival and departure delays and / or flight cancellations. In many cases, the ATM Network will also suffer from the disruption.	ATM Lexicon
Aircraft stand	An aircraft stand is the parking position on the apron and thus is part of the “airside” of an airport. It needs to be distinguished between aircraft stands and terminal gates. The gates are usually located inside the terminal building and belong to the landside. A gate change not necessarily implies a change of the aircraft stand and vice versa.	ATM lexicon

Term	Definition	Source of the definition
Airport Collaborative Decision Making (Airport CDM)	Airport Collaborative Decision Making is the concept which aims at improving Air Traffic Flow and Capacity Management (ATFCM) at airports by reducing delays, improving the predictability of events and optimising the utilisation of resources. Implementation of Airport CDM allows each Airport CDM Partner to optimise their decisions in collaboration with other Airport CDM Partners, knowing their preferences and constraints and the actual and predicted situation. The decision making by the Airport CDM Partners is facilitated by the sharing of accurate and timely information and by adapted procedures, mechanisms and tools. The Airport CDM concept is divided in the following Elements: Information Sharing Milestone Approach Variable Taxi Time Pre-departure Sequencing Adverse Conditions Collaborative Management of Flight Updates	EUROCONTROL IP1 A-CDM Implementation Manual
Airport Operations Centre (APOC)	A platform / operational structure which pro-actively manages the performance of present and short-term airport operations, giving relevant airport stakeholders a common operational overview of the airport, and allowing them to communicate, coordinate and collaboratively decide on their progress.	ATM Lexicon
Airport Operations Plan (AOP)	The AOP (Airport Operations Plan) is the single, common and collaboratively agreed rolling plan used by all involved stakeholders whose purpose is to provide common situational awareness. It requires individual stakeholders to make changes within their own sphere of operations. The AOP interacts with a number of services, systems and also external stakeholders (e.g. Network).	ATM Lexicon

Term	Definition	Source of the definition
A-SMGCS	A system providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions within the aerodrome visibility operational level (AVOL) while maintaining the required level of safety.	ICAO Doc 9830: Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual
ATFCM	A service complementary to Air Traffic Control (ATC), the objective of which is to ensure an optimum flow of air traffic to or through areas within which traffic demand at times exceeds the available capacity of the ATC system.	EUROCONTROL, CFMU (2002), Air Traffic Flow Management Operations: ATFM Users Manual, Edition 8.0, 18.3.2002
Demand Capacity Balancing (DCB)	Local DCB: Integrated Local DCB (Demand and Capacity Balancing) Processes see the seamless integration of local network management with extended ATC planning and arrival management activities in short-term and execution phases. It represents the core functionality for the Integrated Network ATM Planning (INAP) process through an enhanced Local DCB tool set. The solution will improve the efficiency of ATM resource management, as well as the effectiveness of complexity resolutions by closing the gap between local network management and extended ATC planning. Network DCB	SOL PJ09.02
Departure Manager (DMAN)	A planning system to improve departure flows at one or more airports by calculating the Target Take-Off Time (TTOT) and Target Start Up Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account.	SESAR Concept of Operations Step 2 Edition 2014 (Ed. 01.01.00)

Term	Definition	Source of the definition
DPI	The purpose of the Departure Planning Information (DPI) message is to supply the NMOC with flight data related updates that are made available by DCB tools, sequencing tools (e.g. DMAN), ANI-, CDM-, RNI- or ADV ATC TWR Airport systems. The main data elements to be received via the DPI message are: - An accurate estimation of the take-off time - The taxi-time (EXOT) - The SID - TOBT & TSAT At CDM airports where the Aircraft Type and Registration are verified, the DPI message can also contain updates of: - The aircraft type - The aircraft registration These DPI messages are described in more detail in Reference [61].	DPI Implementation Guide Edition Nº 2.3
Information Service	An information service is a service delivering information or data to actors and/or systems without transformation of the underlying data. Information services can include filtering and/or combining of information. They are the only responsible for system data exchange, they can be considered as interfaces among systems.	OFA 5.1.1, Section 1.6
Network Operations Plan (NOP)	A set of information and actions derived and reached collaboratively both relevant to, and serving as a reference for, the management of the Pan-European network in different timeframes for all ATM stakeholders, which includes, but is not limited to, targets, objectives, how to achieve them, anticipated impact.	ATM Lexicon

Term	Definition	Source of the definition
Operational Service	An operational service is a product of a sequence of operational processes on request of an actor to another actor who will execute the service with clear identification of an output. A service is offered by an operational entity, (i.e. an organisational actor (e.g. ANSP (Air navigation Services Provider)) or a human actor (e.g. ATCO (Air Traffic Controller)). There are several levels of operational service, depending on the level of granularity required. At lower level an operational service can be supported by: Information service(s) to carry out information needed by the operational service without transforming the information, and/or Application service(s) to use this information in order to provide an output via automation / computation, i.e. with transformation of the information	OFA 5.1.1, Section 1.6
Regional Network Integrated Airport	Currently the integration of airports into the ATM Network is achieved through either the A-CDM concept or the Advanced Tower concept. A third category of airport (regional airports) is proposed where a reduced set of CDM milestones is implemented and calculated in a quasi-automatic fashion - reducing the need for Airline / Ground Handler inputs. Such an approach relies on the stability and predictability of taxi-times which is considered as feasible in such airports. This will be a way to simplify the work needed to manually update CDM milestones, and also to enable the connection of regional airport to NMOC.	Operational Improvement AO-0824

Term	Definition	Source of the definition
SWIM (System Wide Information Management)	The aim of SWIM (System Wide Information management) is to provide information users with relevant and commonly understandable information. This information should be of the right quality, provided at the right time and delivered to the right place, so enabling the concept of net-centric ATM operations. This is achieved through the following SWIM principles: Separation of information provision/consumption Loosely system coupling Open Standards Service oriented architecture	SESAR SWIM Fact Sheet 01/2016

Table 2: Glossary

2.7 Acronyms and Terminology

Acronym	Definition
ACARS	Aircraft Communications Addressing and Reporting System
A-CDM	Airport Collaborative Decision Making
ACGT	Actual Commence of Ground Handling Time
ADD	Architecture Description Document
A-DPI	ATC (Air Traffic Control) Departure Planning Information
AFTN	Aeronautical Fixed Telecommunications Network
AFS	Aeronautical Fixed Service
AIBT	Actual In-Block Time
AIRM	ATM Information Reference Model
ALDT	Actual Landing Time
AMAN	Arrival Manager
AMHS	Aeronautical Message Handling System
ANSP	Air Navigation Service Provider

AO	Airport Operator
AOBT	Actual Off-Block Time
AOC	Airlines Operations Centre
AODB	Airport Operational DataBase
AOP	Airport Operations Plan
APOC	Airport Operations Centre
APT	Airport
ASBT	Actual Start of Boarding Time
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications Network
ATOT	Actual Take-Off Time
ATS	Air Traffic Services
ATV	Airport Transit View
AU	Airspace user
B2B	Business to business
CBA	Cost Benefit Analysis
CC	Capability Configuration
CDM	Collaborative Decision Making
C-DPI	Cancel Departure Planning Information
CIA	Confidentiality, Integrity, Availability
CIDIN	Common ICAO Data Interchange Network
CNL	Cancelled
CNS	Communication Navigation and Surveillance

COM	Communications
CR	Change Request
CTOT	Calculated Take-Off time
CUTE	Common Use Terminal Equippment
DCB	Demand and Capacity Balancing
DMAN	Departure Manager
DPI	Departure Planning Information
E-ATM	European ATM Architecture
EATMA	European ATM Architecture
E-ATMS	European Air Traffic Management System
E-DPI	Early Departure Planning Information
EFD	ETFMS Flight Data
EIBT	Estimated In-Block Time
ELDT	Estimated Landing Time
EN	Enabler
ENV	Environment
EOBT	Expected Off-Block Time
E-OCVM	European Operational Concept Validation Methodology
ETFMS	Enhanced Tactical Flow Management System
EXIT	Estimated Taxi-In Time
EXOT	Estimated Taxi-Out Time
FUM	Flight Update Message
GH	Ground Handler
GND	Ground
HMI	Human Machine Interface
HTTP	Hypertext Transfer Protocol
ICAO	International Civil Aviation Organization

ICD	Interface Control Document
IEC	International Electrotechnical Commission
IFPS	Initial Flight Plan Processing System
INAP	Integrated Network ATM Planning
IRS	Interface Requirements Specification
INTEROP	Interoperability Requirements
IP	Internet Protocol
IPS	Intrusion Prevention System
ISO	International Organization for Standardization
ISRM	Information Services Reference Model
ISS	Information Sharing System
KPI	Key Performance Indicator
LBST	Last Boarding Start Time
MEP	Multiple Entry Point
MSSC	Minimum Set of Security Controls
NAF	NATO Architecture Framework
NI	Network Integrated
NM	Network Manager
NMOC	Network Manager Operations Centre
NOP	Network Operations Plan
NOV	NAF Operational View
NSV	NAF System View
OCVM	Operational Concept Validation Methodology
OFA	Operational Focus Areas
OI	Operational Improvement
OPS	Operational
OSED	Operational Service and Environment Definition

PAX	Passenger
PDI	Performance Driver Indicator
PDM	Pre-Departure Manager
PI	Performance Indicator
PRED	Predictability
RBT	Reference Business / Mission Trajectory
RNI	Regional Network Integrated
SAR	Safety Assessment Report
SBT	Shared Business Trajectory
SDD	Service Description Document
SEQ	Sequenced
SESAR	Single European Sky ATM Research Programme
SID	Standard Instrumental Departure
SJU	SESAR Joint Undertaking
SOAP	Simple Object Access Protocol
SOBT	Scheduled Off-Block Time
SOL	Solution
SPR	Safety and Performance Requirements
SRR	Security Readiness Review
SWIM	System Wide Information Management
TADCB	Target Landing Times
TCP	Transfer of control point
TOBT	Target Off-Block Time
TRL	Technology Readiness Level
TS	Technical Specification
TSAT	Target Start Up Approval Time
TTA	Target Time of Arrival

TTOT	Target Take-Off Time
TWR	Tower
UC	Use Case
UDPP	User Driven Priority Process
VALP	Validation Plan
VALR	Validation Report
V&V	Validation and Verification
WP	Work Package
XBTD	Expected Boarding Time Duration
XTTA	Expected Turn-round Time

Table 3: Acronyms and terminology

3 SESAR Solution Impacts on Architecture

3.1 Target Solution Architecture

3.1.1 SESAR Solution(s) Overview

PJ.04-W2-28.1: Connected regional airports

Currently the integration of airports into the ATM Network is achieved through either the A-CDM concept or the Advanced Tower concept. A third category of airport (regional network-integrated (RNI) airports) is proposed where a reduced set of CDM milestones is implemented and calculated in a quasi-automatic fashion - reducing the need for Airline / Ground Handler inputs. Such an approach relies on the stability and predictability of taxi-times which is considered as feasible in such airports.
This Solution is aiming at improving the connectivity between regional airports and the Network Manager Operations Center (NMOC) thanks to the provision of DPI messages based on target times. Ground handler workload is reduced as a result of automatic determination of the aircraft-ready time (TOBT) based on the aircraft event-based milestones and the status of the passenger boarding provided by the local airport system.
The overall expected benefits relate to Predictability, Flexibility and Efficiency for all airport stakeholders.

OI Step		OI description	Open CR
AO-0824		Regional network-integrated airports (RNI)	CR 07084 Update AO-0824 (following PJ.04-W2-28.1 V3 gate)
	EN code	EN description	Open CR
	AERODROME-ATC-114	Update of the Aerodrome ATC system to align with RNI airport operations	CR 07080 Create AERODROME-ATC-114 (following PJ.04-W2-28.1 V3 gate)
	HUM-058	Tower Ground Controller role updated for RNI concept of operations	CR 07081 Create HUM-058 (following PJ.04-W2-28.1 V3 gate)
	HUM-059	Flight Crew role updated for RNI concept of operations	CR 07082 Create HUM-059 (following PJ.04-W2-28.1 V3 gate)
	PJ.04-W2-28.1	Connected regional airports	CR 07083 Update PJ.04-W2-28.1 (following V3 gate)

	AIRPORT-03c	Light Airport Operational Plan (AOP) Management Tool (for RNI airports)	CR 07085 Update AIRPORT-03c (following PJ.04-W2-28.1 V3 gate)
	HUM-036	Ground Handling Agent role updated for RNI concept of operations	CR 07086 Update HUM-036 (following PJ.04-W2-28.1 V3 gate)

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

The deviations with respect SESAR solution definition has been already integrated in the SESAR SOL PJ.04-1, so no further deviations are included in this TS/IRS Document

3.1.1.2 Relevant Use Cases

Operational Use Case	Description
[NOV-5][RNI.01] DPI Provision at ATC Flight Plan Activated (Milestone 1)	The RNI airport shall send automatically an E-DPI (Early) Message to NMOC at EOBT-3h with EOBT, EXOT, SID, Aircraft Type, Registration, TTOT (=EOBT+EXOT). The transmission of an E-DPI Message confirms to NMOC that an airport slot and flight plan for a particular flight has been correlated in accordance with local rules at the airport.
[NOV-5][RNI.02] DPI Provision at Take Off from Outstation (Milestone 3)	When a flight inbound to the RNI airport takes off from the outstation (status = 'airborne'), an initial TOBT shall be calculated based on the latest time between EOBT and ELDT+EXIT+XTTA as soon as ELDT becomes available through the first FUM message.
[NOV-5][RNI.03a] DPI Provision at Ground Handling Started without PDM (Milestone 6 to 9)	This UC covers the case where no DMAN exists at the airport, but it may exist or not a PDS. For flights that are on a normal turn-round (SOBT-AIBT), Actual Commencement of Ground Handling Time (ACGT) = AIBT. Use of SOBT and EOBT caters for the case of aircraft on a 'long' turnaround such as a night stop. ACGT = MAX(SOBT,EOBT) - XTTA. SOBT is the scheduled off-block time, EOBT the latest estimated off-block time and XTTA is derived from the RNI database for the flight in question.
[NOV-5][RNI.03b] DPI Provision at Ground Handling Started with PDM (Milestone 6 to 9)	This UC covers the case where a DMAN is in operations at the airport. For flights that are on a normal turn-round (SOBT-AIBT), Actual Commencement of Ground Handling Time (ACGT) = AIBT. Use of SOBT and EOBT caters for the case of aircraft on a 'long' turnaround such as a night stop. ACGT = MAX(SOBT,EOBT) - XTTA. SOBT is the scheduled off-block time, EOBT the latest estimated off-block time and XTTA is derived from the RNI database for the flight in question.

[NOV-5][RNI.04] DPI Provision at TSAT Issued (Milestone 10 and 11)	The RNI airport sends automatically a T-DPI-s (Sequenced) Message to NMOC at TOBT-40' with TTOT calculated with TSAT (output from the pre-departure sequence) and EXOT. The inputs for the Pre-departure Sequence are the TOBT+Taxi-Time (EXOT) (for non-regulated flights), the CTOT (for regulated flights) and any Airport constraints. The output of the Pre-Departure Sequence is the TSAT.
[NOV-5][RNI.05] DPI Provision at Off-Block (Milestone 15)	The time (AOBT) the aircraft pushes back/vacates the parking position, an ATC DPI message is sent to NMOC, which is also informed if TTOT changes by more than the agreed tolerance.
[NOV-5][RNI.06] DPI Provision of DPI for cancelled flight	The DPI process is interrupted (information such as TTOT, TOBT, etc... previously sent is no longer valid) due to: -Flight Cancellation -TSAT or TOBT expiration

Table 4 Relevant Use Cases

System Process	Description
[NSV-4][RNI.01] DPI Provision at ATC Flight Plan Activated (Milestone 1)	This System Process implements the Use Case [UC-RNI.01] DPI Provision at ATC Flight Plan Activated (Milestone 1)
[NSV-4][RNI.02] DPI Provision at EOBT - 2 hr (Milestone 2) (DELETE)	This System Process implements the Use Case [UC-RNI.02] DPI Provision at EOBT - 2 hr (Milestone 2)
[NSV-4][RNI.02] DPI Provision at Take Off from Outstation (Milestone 3)	This System Process implements the Use Case [UC-RNI.03] DPI Provision at Take Off from Outstation (Milestone 3)
[NSV-4][RNI.03a] DPI Provision at Ground Handling Started without PDM (Milestone 6 to 9)	This System Process implements the Use Case [UC-RNI.03a] DPI Provision at Ground Handling Started (Milestone 8)
[NSV-4][RNI.03b] DPI Provision at Ground Handling Started with PDM (Milestone 6 to 9)	This System Process implements the Use Case [UC-RNI.03b] DPI Provision at Ground Handling Started (Milestone 8)
[NSV-4][RNI.04] DPI Provision at TSAT Issued (Milestone 10 and 11)	This System Process implements the Use Case [UC-RNI.04] DPI Provision at TSAT Issued (Milestone 10)
[NSV-4][RNI.05] DPI Provision at Off-Block (Milestone 15)	This System Process implements the Use Case [UC-RNI.05] DPI Provision at Off-Block (Milestone 15)
[NSV-4][RNI.06] DPI Provision of DPI for cancelled flight	This System Process implements the Use Case [UC-RNI.06] DPI Provision of DPI for cancelled flight

Table 5 System processes

3.1.1.3 Applicable standards and regulations

Several existing standards ensure the interoperability of the technical systems that will be developed by the industrial partners to implement the concept and the functionality of the solution. Further, by having the standard in place, a set of data elements with defined quality are considered to be available. Below a (non-exhaustive) overview of the applicable standards and regulations is provided.

3.1.1.3.1 A-CDM

There is currently no implementing rule for A-CDM (yet) but there is a European Standard (ETSI EN 303 212) “Airport Collaborative Decision Making (A-CDM); Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004”

In addition, several EUROCAE (European Organisation for Civil Aviation Equipment) documents (European Standards) of relevance are:

- ED-141 System Requirements Document 49
- ED-145 Interface Definition Document 50
- ED-146 Test and Validation Document 51

These are considered to ensure interoperability between technical system enablers, when adhered to.

3.1.1.3.2 RNI: Regional Network Integrated Airports

Regarding DPI implementation, the level of connection to the Network Manager for RNI (Regional Network Integrated) airports stands between Advanced ATC TWR airports and A-CDM airports. For this reason, this document update should include a specific (low-level) description of how the DPIs for RNI airports are derived.

PJ.04-W2-28.1 will need to take account the update of EUROCONTROL DPI implementation guide to cover RNI airports defined under the standard STD-116

3.1.1.3.3 Single European Sky

PJ.04-W2-28.1 will need to take account of the Single European Sky Interoperability Regulation (EC 552/2004) 54 54and amended (SES2) by regulation EC 1070/2009 53. Specifically the pillars relating to managing capacity on the ground as well as EC Implementing Rule IR390/2013 54 laying down a performance scheme for air navigation services and network functions with respect to the airport-related KPIs.

3.1.1.3.4 Environmental

Several EU Regulations and Directives already constrain aviation and airports current operations and future development, and at least impose airports to monitor their impact notably on noise and ambient air quality:

- The Regulation No 598/2014 of 16 April 2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a balanced approach and repealing Directive 2002/30/EC 55
- The Directive No 2002/49/EC of 25th June 2002 relating to the assessment and management of environmental noise 56

- The Directive No 2008/50/EC of 21st May 2008 on ambient air quality and cleaner air for Europe 57

- The Directive No 2016/2284 of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC, the National Emission Ceilings Directive (NEC Directive) from the date of its transposition (30 June 2018) ensuring that the emission ceilings for 2010 set in that Directive shall apply until 2020 58

Additional national or local regulations might also impose other constraints and obligations on airports. For example, the French Law No2015-992 59 (and particularly Article 45) obliges larger French airports to take immediate action to reduce their emissions (by -10% in 2020, and -20% by 2025 compared to 2010).

3.1.1.3.5 Common Project One

Commission Implementing Regulation (EU) 2021/116 of 1 February 2021 on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council. Amends Commission Implementing Regulation (EU) No 409/2013 and repeals Commission Implementing Regulation (EU) No 716/2014 (Text with EEA relevance)

3.1.2 Capability Configurations required for the SESAR Solution

This section reflects the Capability Configurations required by solution 28.1, the relevant sub-operating environments where the CCs operate, and the links between CCs and Capabilities, Nodes and Stakeholders.

Regional airport Network-Integrated (RNI)				
CC	**Op Env**	**Capability**	**Node**	**Stakeholder**
Airport (PJ.04-W2-28.1)	Airport;	Adverse Condition Operations Provision; Aircraft Towing; Airport Capacity Information Provision (incl. Capacity Changes); Collaborative Airport Management; Departure Sequencing; Dynamic Stand Allocation; Landside Events Detection and Forecasting;;	Airport Ops Support;	Civil APT operator;
Civil Aircraft	Airport; En-Route; Terminal Airspace;	Optimised Descent Execution; Optimised Take-Off / Landing Execution; PinS Operations Execution; RNP based Operations Execution;	Flight Deck;	Civil Business Aviation-Fixed Wing; Civil

		Messaging		Business Aviation-Rotorcraft; Civil Scheduled Aviation;
Communication Infrastructure	Airport; En-Route; NET-Network; Network; Terminal Airspace;	Communication; Messaging;		Civil CNS Service Provider; Military CNS Service Provider;
Regional ATFCM	NET-Network; Network;	Collaborative Network Management; Collaborative Trajectory Planning; Messaging; Trajectory Information Synchronisation;	Air Traffic Flow and Capacity Management;	Network Manager;
TWR	Airport;	Adverse Condition Operations Provision Air Traffic Flow Management Airspace Reservation Management Arrival Sequencing Collaborative Network Management Departure Sequencing Integrated Arrival/Departure Sequencing Messaging Trajectory Conformance Monitoring Trajectory Information Synchronisation Wake Turbulence Separation Provision	Aerodrome ATS	Civil ATS Aerodrome Service Provider; Military ATS Aerodrome Service Provider;

Table 6: List of Capability Configuration required for the SESAR Solution

3.2 Changes imposed by the SESAR Solution on the baseline Architecture

Enabler	Element type	Element name	Impact	Change
AIRPORT-03c (CR)	Light Airport Operational Plan (AOP) Management Tool (for RNI airports)			
	Function	Check consistency ATC FPL, Airport Slot and Airport Flight Data	Introduce	(see Function description)
	Function	Compute ACGT (M8a)	Introduce	(see Function description)
	Function	Compute ACGT (M8b)	Introduce	(see Function description)
	Function	Compute TOBT (M2)	Introduce	(see Function description)
	Function	Compute TOBT (M3)	Introduce	(see Function description)
	Function	Compute TSAT (M8a)	Introduce	(see Function description)
	Function	Compute TTOT (M2)	Introduce	(see Function description)
	Function	Compute TTOT (M3)	Introduce	(see Function description)
	Function	Increment TOBT	Introduce	(see Function description)
	Function	Request TOBT Update	Introduce	(see Function description)
	Function	Request TSAT (M10)	Introduce	(see Function description)
	Function	Request TSAT (M8b)	Introduce	(see Function description)
	Function	Send Cancel DPI (M10)	Introduce	(see Function description)
	Function	Send Early DPI Message	Introduce	(see Function description)
	Function	Send Target DPI - Sequenced Message	Introduce	(see Function description)
	Function	Send Target DPI - Target Message (M2)	Introduce	(see Function description)
	Function	Send Target DPI - Target Message (M3)	Introduce	(see Function description)
	Function	Send Target DPI - Target Message (M8a)	Introduce	(see Function description)
	Function	Send Target DPI - Target Message (M8b)	Introduce	(see Function description)
	Function	Update EIBT (M2)	Introduce	(see Function description)
	Function	Update EIBT (M3)	Introduce	(see Function description)
	Function	Update EIBT (M8a)	Introduce	(see Function description)
	Function	Update EIBT (M8b)	Introduce	(see Function description)
	Function	Update ELDT (M2)	Introduce	(see Function description)
	Function	Update ELDT (M3)	Introduce	(see Function description)
	Function	Update TSAT	Introduce	(see Function description)
	Function	Update TTOT (M10)	Introduce	(see Function description)
	Function	Update TTOT (M2)	Introduce	(see Function description)
	Function	Update TTOT (M3)	Introduce	(see Function description)
	Function	Update TTOT (M8a)	Introduce	(see Function description)

	Function	Update TTOT (M8b)	Introduce	(see Function description)
	Function	Detect Off Block	Introduce	(see Function description)
	Function	Display Message TSAT cancelled	Introduce	(see Function description)
	Function	Display Warning	Introduce	(see Function description)
	Function	Send ATC DPI Message	Introduce	(see Function description)
	Function	Set TOBT Status to Timed-out	Introduce	(see Function description)
	Function	Update AOBT	Introduce	(see Function description)
HUM-036 (CR)	Ground Handling Agent role updated for RNI concept of operations			
	Role	Ground Handling Agent (PJ.04-W2-28.1)	Update	Update of the Ground Handling Agent responsibility to match RNI concept.
AERODROME-ATC-114 (create CR)	Update of the Aerodrome ATC system to align with RNI airport operations			
	Function	Approve/Reject Startup	Introduce	(see Function description)
	Function	Visualize TSAT	Introduce	(see Function description)
HUM-058 (create CR)	Tower Ground Controller role updated for RNI concept of operations			
	Role	Tower Ground Controller (PJ.04-W2-28.1)	Update	Tower Ground Controller now manages the TSAT notion.
HUM-059 (create CR)	Flight Crew role updated for RNI concept of operations			
	Role	Flight Crew (PJ.04-W2.28.1)	Update	Flight crew now manages the TSAT notion.

Table 7: List of changes due to the SESAR Solution

4 Technical Specifications

4.1 Functional architecture overview (general introduction for all solutions)

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

4.1.1 Resource Connectivity view (one section per NSV-1)

This view describes the Resource Connectivity for the RNI for

It includes the realization of Use Cases:

-UC-RNI.01

-UC-RNI.02

-UC-RNI.03a

-UC-RNI.03b

-UC-RNI.04

-UC-RNI.05

-UC-RNI.06

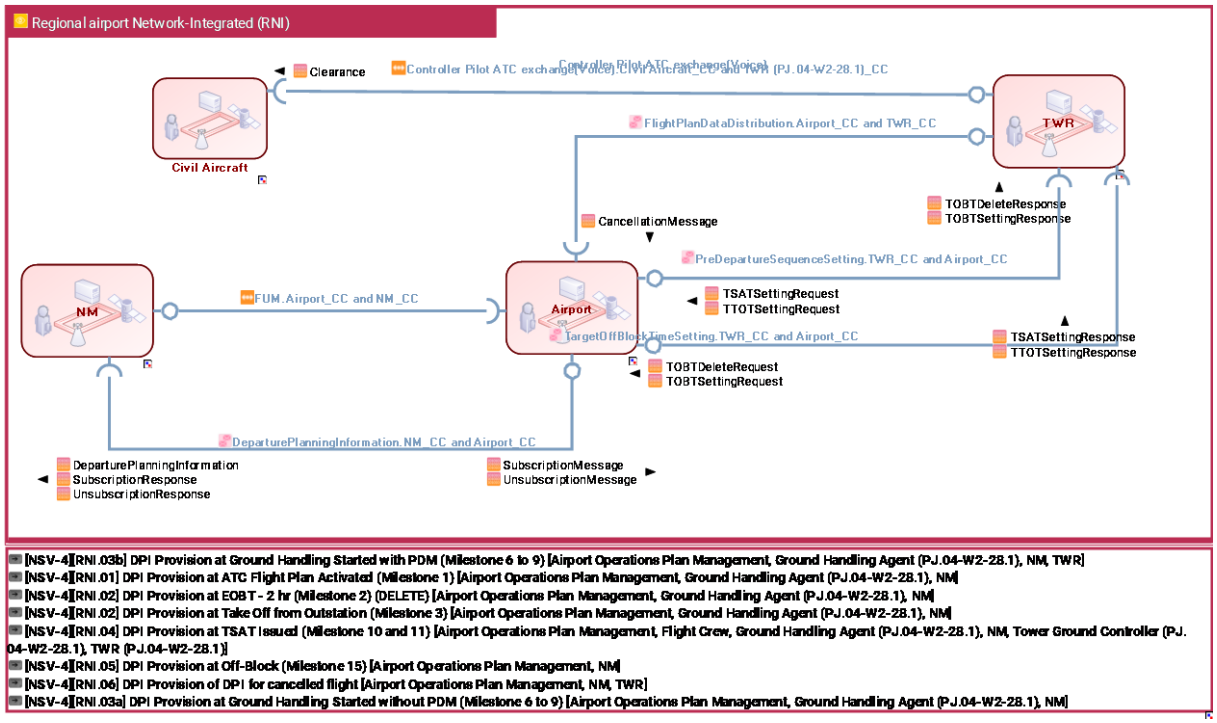


Figure 1 Regional Network Integrated (RNI) Resource Connectivity

4.1.1.1 Resource Infrastructure view (of the NSV-2)

This view describes the Infrastructure Connectivity for PJ.04-W2-28.1.

It supports the RNI Resource Connectivity diagram that includes the realization of Use Cases: UC-RNI.01, UC-RNI.02, UC-RNI.03a, UC-RNI.03b, UC-RNI.04, UC-RNI.05, UC-RNI.06

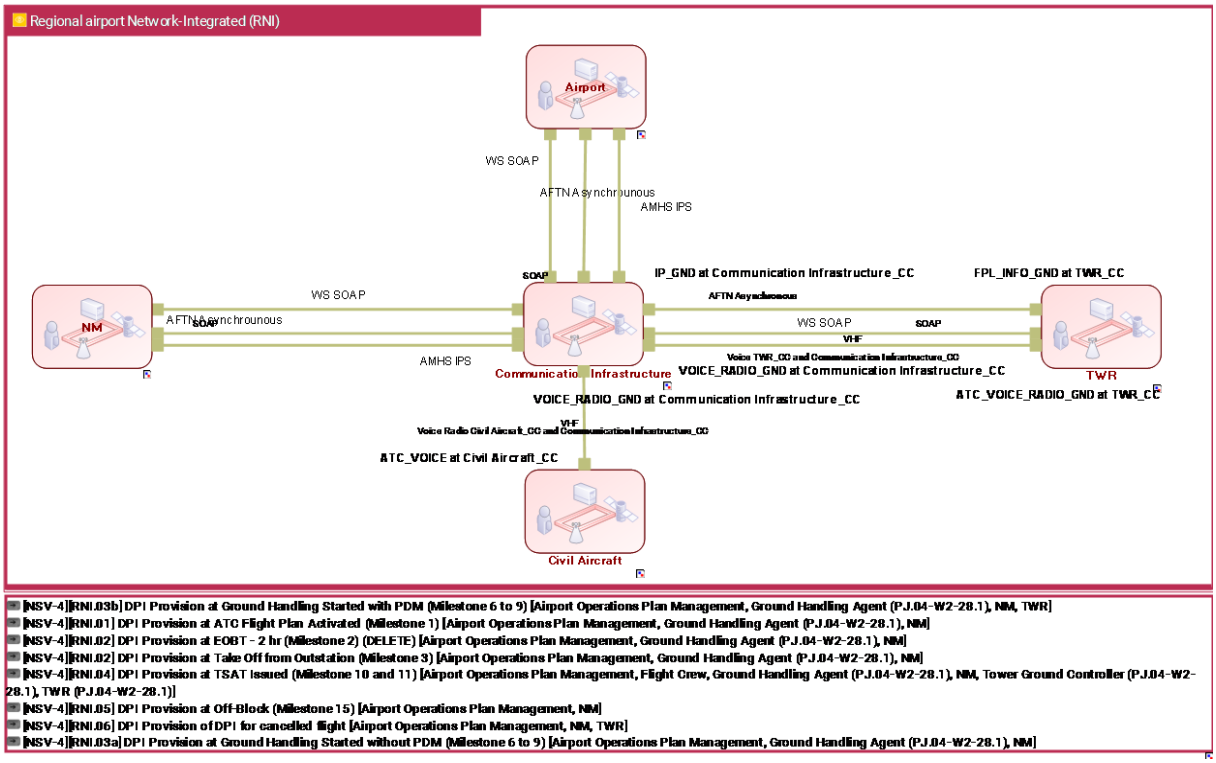
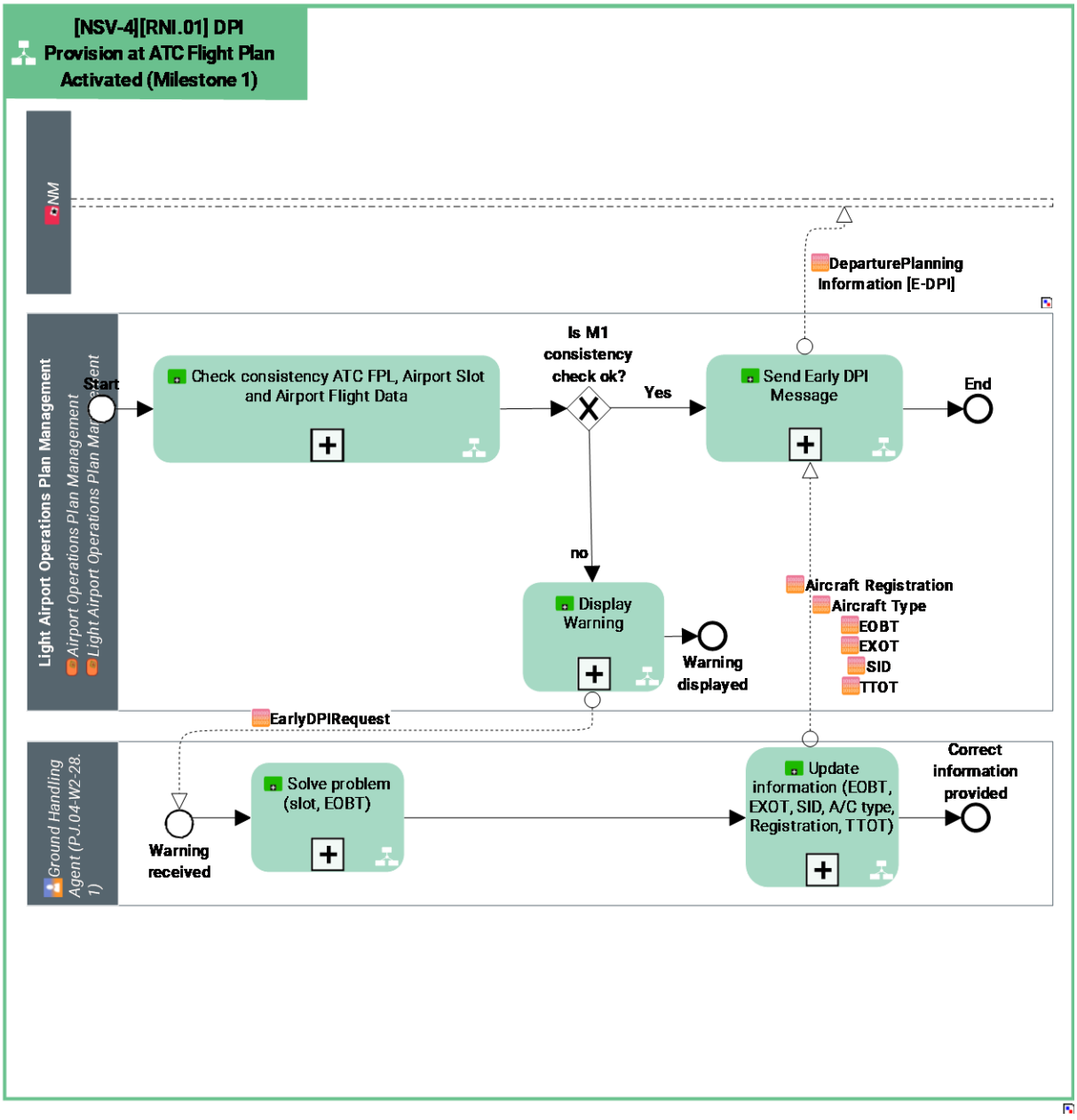


Figure 2 RNI Infrastructure Connectivity

4.1.1.2 Resource Orchestration view (all NSV-4s linked to the NSV-1)

4.1.1.2.1 [NSV-4][RNI.01] DPI Provision at ATC Flight Plan Activated (Milestone 1)

This System Process implements the Use Case [UC-RNI.01] DPI Provision at ATC Flight Plan Activated (Milestone 1)



Role	Functional Block	Function

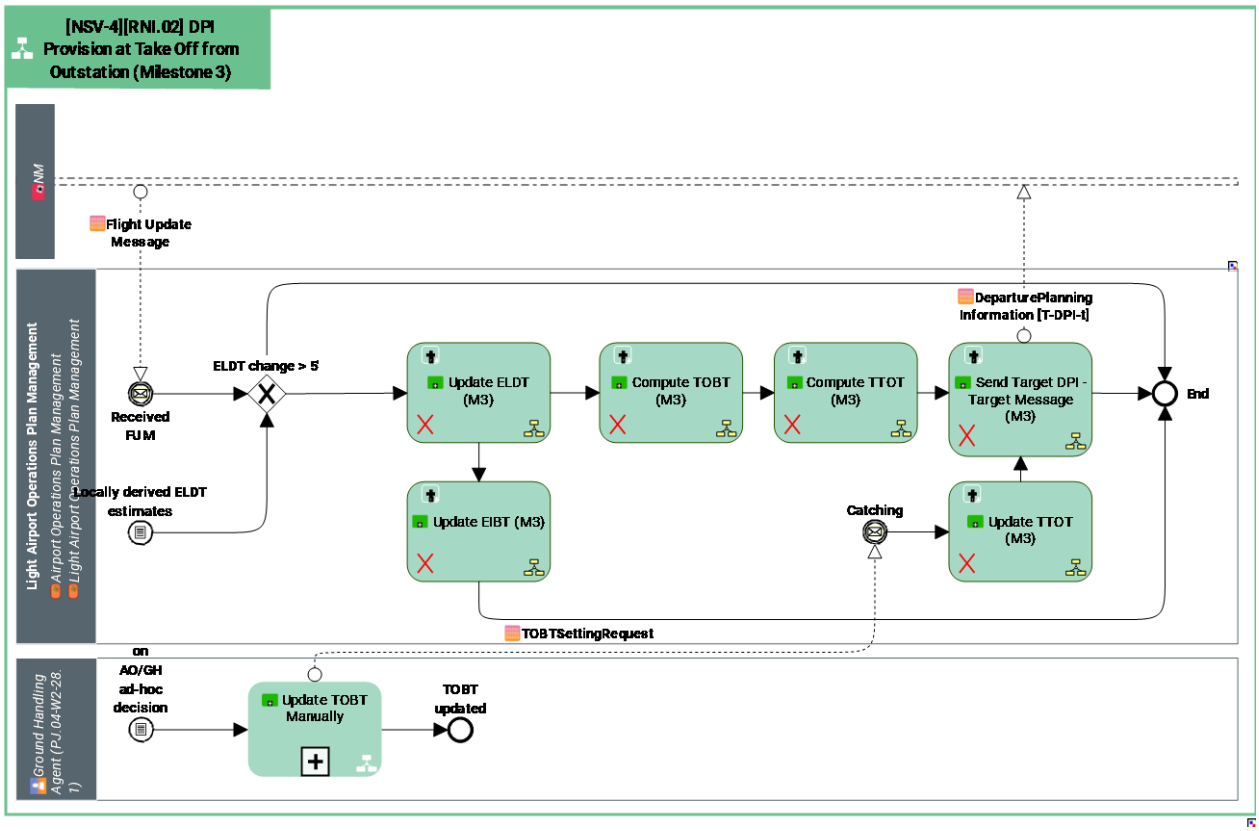
	Light Airport Operations Plan Management	Check consistency ATC FPL, Airport Slot and Airport Flight Data; Display Warning; Send Early DPI Message;
Ground Handling Agent (PJ.04-W2-28.1)		Solve problem (slot, EOBT); Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT);

Function	Description
Check consistency ATC FPL, Airport Slot and Airport Flight Data	(Extracted from Airport CDM Implementation Manual, version 5.0) This activity checks consistency between ATC Flight Plan, Airport Slot and Airport flight data and then confirm the flight to the Network Operations and allow further local processing of the flight. This check shall be performed to verify the consistency between the ATC Flight Plan, Airport Slot and Airport flight data before the first E-DPI is sent.
Display Warning	When no airport slot (SOBT) is can be found or when EOBT is not consistent with SOBT, AO/GH shall be informed and E-DPI shall not be sent until the problem has been solved.
Send Early DPI Message	(Extracted from DPI Implementation Guide, Ed.2.0) The transmission of an E-DPI shall confirm to NMOC that an airport slot and flight plan for a particular flight have been correlated in accordance with local rules at the airport (A-CDM Mile stone 1). The E-DPI will allow (in the future) eliminating ghost flights and duplicated flight plans. When no airport slot can be found or when the flight plan EOBT is not consistent with the airport slot SOBT, the AO shall be informed (by the A-CDM platform) and the E-DPI shall not be sent until the problem has been solved.

	Possible reasons for not sending the E-DPI are: - No airport slot exists for the flight plan - The airport slot has already been assigned to another flight plan (ghost or duplicate flight plan) - The flight plan EOBT is (long) before the SOBT of the airport slot which is an indication that EOBT is made earlier to anticipate e.g. an ATFM delay. E-DPI is also used to supply ETFMS with a first update of the Taxi-Time (EXOT) and SID (CDM Airport Information), the Aircraft Type and Registration and TTOT.
Solve problem (slot, EOBT)	Possible reasons for not sending the E-DPI are: - No airport slot exists for the flight plan - The airport slot has already been assigned to another flight plan (ghost or duplicate flight plan) - EOBT is long before SOBT of the airport slot which is an indication that EOBT is made earlier to anticipate e.g. an ATFM delay
Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)	The AO must provide correct information before this first E-DPI message, in order to feed Network Operations with consistent SOBT, aircraft registration, and first destination data, as early in time as possible. The E-DPI message should not be sent if no or inconsistent information is provided.

4.1.1.2.2 [NSV-4][RNI.02] DPI Provision at Take Off from Outstation (Milestone 3)

This System Process implements the Use Case [UC-RNI.03] DPI Provision at Take Off from Outstation (Milestone 3)

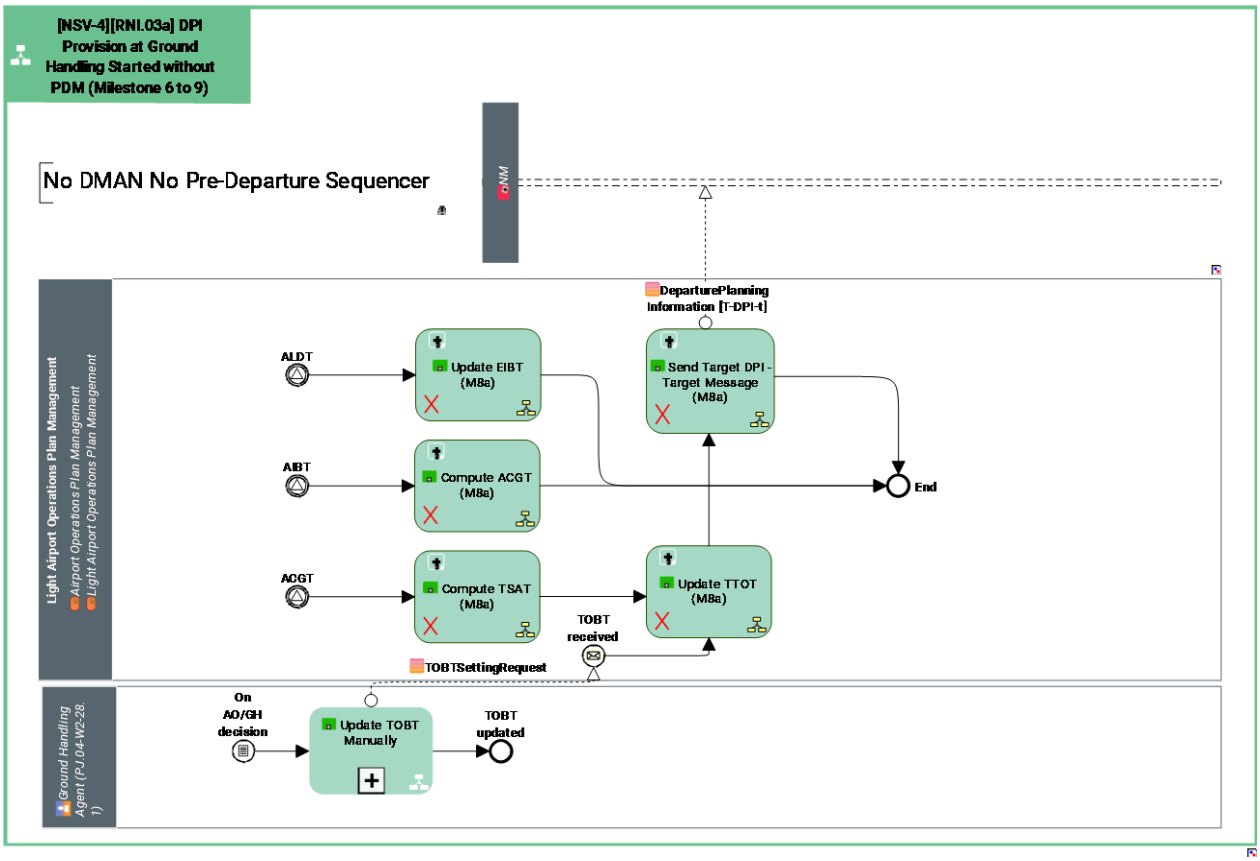


Role	Functional Block	Function
	Light Airport Operations Plan Management	Compute TOBT (M3); Compute TTOT (M3); Send Target DPI - Target Message (M3); Update EIBT (M3); Update ELDT (M3); Update TTOT (M3);
Ground Handling Agent (PJ.04-W2-28.1)		Update TOBT Manually;

Function	Description
Compute TOBT (M3)	Turn-round Time and Expected Taxi-times (EXIT and EXOT) estimates are values stored in the airport database based on historical data. EIBT = ELDT + EXIT TTOT = EIBT + XTTA + EXOT
Compute TTOT (M3)	Turn-round Time and Expected Taxi-times (EXIT and EXOT) estimates are values stored in the airport database based on historical data. EIBT = ELDT + EXIT TTOT = EIBT + XTTA + EXOT
Send Target DPI - Target Message (M3)	The transmission of the first T-DPI-t (or Target DPI-target) Message is linked to Milestone 2. Updates are sent when necessary, e.g. at the Milestones 3 - 9. Dependent on the status of the flight updates could be sent up to 10' before the Milestone 14.
Update EIBT (M3)	EIBT = ELDT + EXIT (Taxi-In Time Estimates)
Update ELDT (M3)	ELDT is updated based on information provided by the FUM messages, taking into account the actual progress of the flight.
Update TOBT Manually	According to local procedures, AO/GH may change TOBT manually; it may also be confirmed automatically or manually.
Update TTOT (M3)	Update Target Take-Off Time with TOBT value. TTOT = TOBT + EXOT

4.1.1.2.3 [NSV-4][RNI.03a] DPI Provision at Ground Handling Started without PDM (Milestone 6 to 9)

This System Process implements the Use Case [UC-RNI.03a] DPI Provision at Ground Handling Started (Milestone 8)

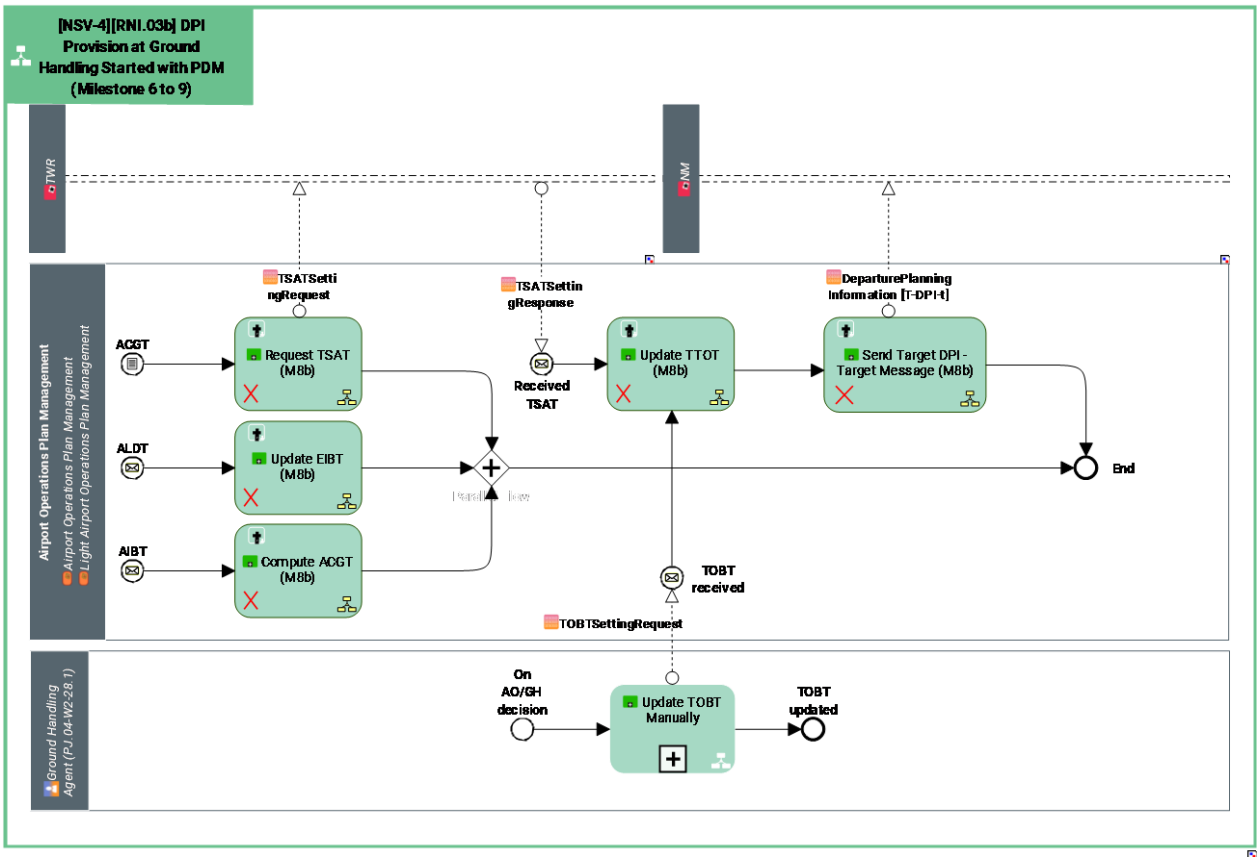


Role	Functional Block	Function
	Light Airport Operations Plan Management	Compute ACGT (M8a); Compute TSAT (M8a); Send Target DPI - Target Message (M8a); Update EIBT (M8a); Update TTOT (M8a);
Ground Handling Agent (PJ.04-W2-28.1)		Update TOBT Manually;

Function	Description
Compute ACGT (M8a)	ACGT = Max (AIBT, Max (SOBT, EOBT) - XTTA)
Compute TSAT (M8a)	TSAT = TOBT or CTOT-EXOT
Send Target DPI - Target Message (M8a)	The transmission of the first T-DPI-t (or Target DPI-target) Message is linked to Milestone 2. Updates are sent when necessary, e.g. at the Milestones 3 - 9. Dependent on the status of the flight updates could be sent up to 10' before the Milestone 14.
Update EIBT (M8a)	EIBT = ELDT + EXIT (Taxi-In Time Estimates)
Update TOBT Manually	According to local procedures, AO/GH may change TOBT manually; it may also be confirmed automatically or manually.
Update TTOT (M8a)	Update Target Take-Off Time with TOBT value. TTOT = TOBT + EXOT

4.1.1.2.4 [NSV-4][RNI.03b] DPI Provision at Ground Handling Started with PDM (Milestone 6 to 9)

This System Process implements the Use Case [UC-RNI.03b] DPI Provision at Ground Handling Started (Milestone 8)

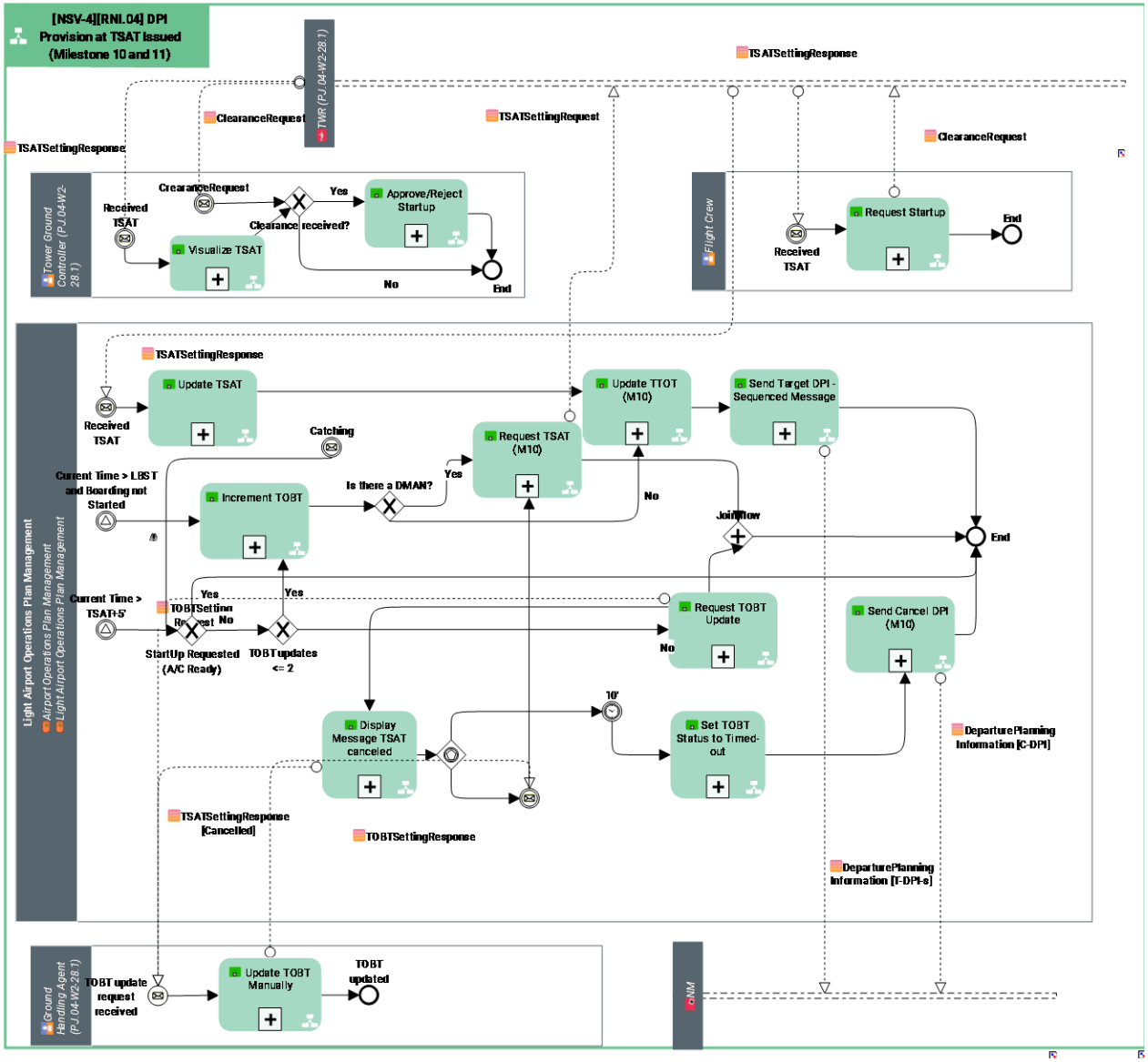


Role	Functional Block	Function
	Light Airport Operations Plan Management	Compute ACGT (M8b); Request TSAT (M8b); Send Target DPI - Target Message (M8b); Update EIBT (M8b); Update TTOT (M8b);
Ground Handling Agent (PJ.04-W2-28.1)		Update TOBT Manually;

Function	Description
Compute ACGT (M8b)	ACGT = Max (AIBT, Max (SOBT, EOBT) - XTTA)
Request TSAT (M8b)	A new entry into the sequence with a new TSAT is requested aligned with the new TOBT
Send Target DPI - Target Message (M8b)	The transmission of the first T-DPI-t (or Target DPI-target) Message is linked to Milestone 2. Updates are sent when necessary, e.g. at the Milestones 3 - 9. Dependent on the status of the flight updates could be sent up to 10' before the Milestone 14.
Update EIBT (M8b)	EIBT = ELDT + EXIT (Taxi-In Time Estimates)
Update TOBT Manually	According to local procedures, AO/GH may change TOBT manually; it may also be confirmed automatically or manually.
Update TTOT (M8b)	Update Target Take-Off Time with TOBT value. TTOT = TOBT + EXOT

4.1.1.2.5 [NSV-4][RNI.04] DPI Provision at TSAT Issued (Milestone 10 and 11)

This System Process implements the Use Case [UC-RNI.05] DPI Provision at TSAT Issued (Milestone 10)



Role	Functional Block	Function
	Light Airport Operations Plan Management	Display Message TSAT canceled; Increment TOBT; Request TOBT Update; Request TSAT (M10); Send Cancel DPI (M10); Send Target DPI - Sequenced Message;

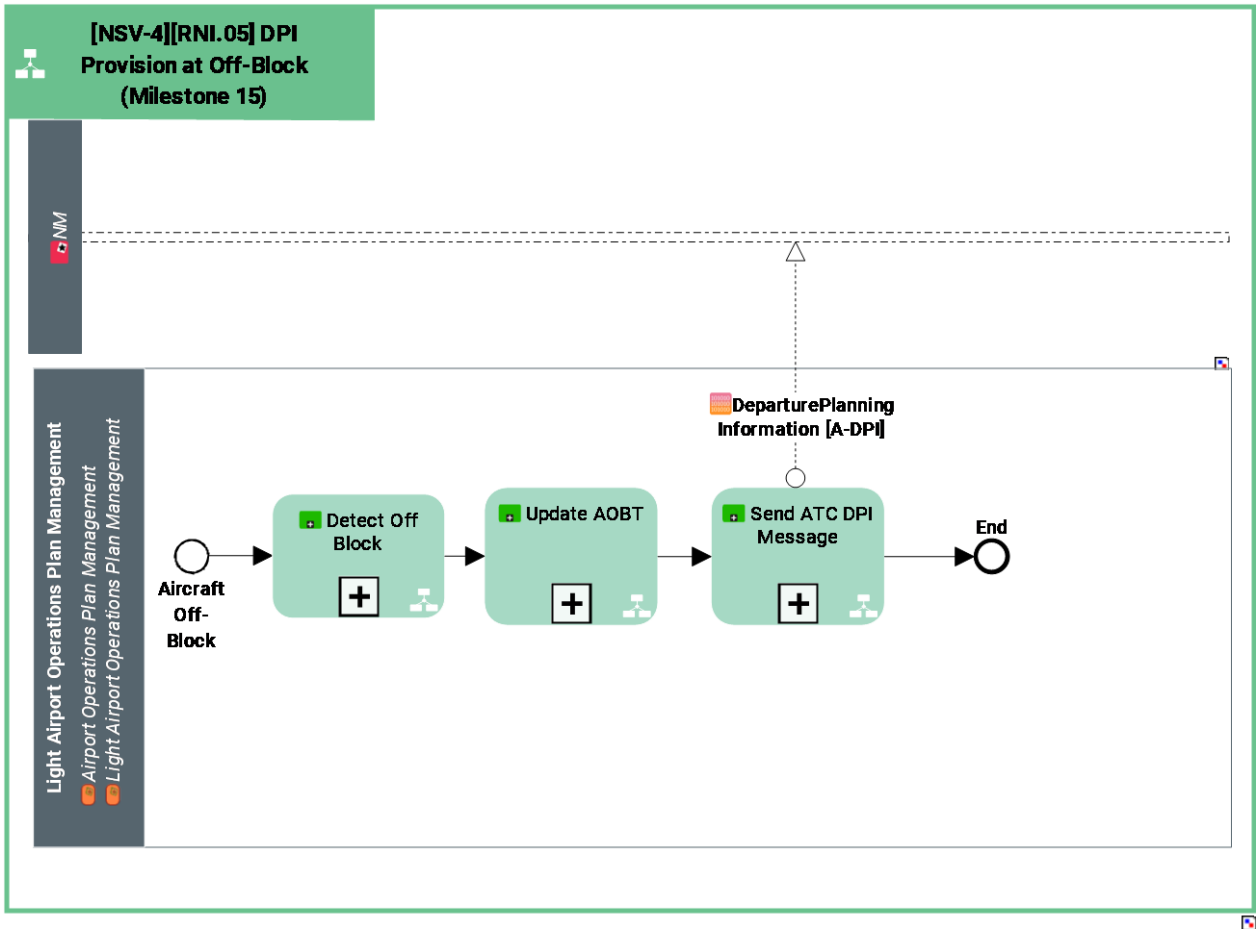
		Set TOBT Status to Timed-out; Update TSAT; Update TTOT (M10);
Flight Crew		Request Startup; Visualize TSAT;
Ground Handling Agent (PJ.04-W2-28.1)		Update TOBT Manually;
Tower Ground Controller (PJ.04-W2-28.1)		Approve/Reject Startup; Visualize TSAT;

Function	Description
Approve/Reject Startup	Approval or Rejection of Engine Start Up
Display Message TSAT canceled	Displays a message that TSAT is cancelled and is not longer valid.
Increment TOBT	Update TOBT by an increment of 5 minutes.
Request Startup	A Request of the Engine Start Up
Request TOBT Update	TSAT+5' is elapsed, aircraft is still not ready, two automatic TOBT increments already happened, manual TOBT is then requested to AO/GH. A 10' time-out is started which if reached will lead to a DPI Cancel sent to NM.
Request TSAT (M10)	A new entry into the sequence with a new TSAT is requested aligned with the new TOBT
Send Cancel DPI (M10)	C-DPI is to inform NM that previously sent DPI information is no longer valid.
Send Target DPI - Sequenced Message	The tranmission of a T-DPI-s (or Target DPI-sequenced) Message at Milestone 10 aims at informing all relevant partners of the TSAT that has been allocated to the flight.

Set TOBT Status to Timed-out	No TOBT entered by AO/GH within the time-out (10min) is notified to Airport Ops Support, which eventually leads to a cancellation of the sequence.
Update TOBT Manually	According to local procedures, AO/GH may change TOBT manually; it may also be confirmed automatically or manually.
Update TSAT	The Target Start-up Approval Time (TSAT) is provided by the Pre-Departure Sequence based on the TOBT+Taxi-Time(EXOT) (for non-regulated flights), the CTOT (for regulated flights) and any CDM Airport constraints. The AO/GH, in coordination with the aircrew, can manage the turn-round process accordingly.
Update TTOT (M10)	Update Target Take-Off Time with TOBT value. TTOT = TOBT + EXOT
Visualize TSAT	Pre-departure sequence visualization, specifically TSAT for each flight within the pre-sequence

4.1.1.2.6 [NSV-4][RNI.05] DPI Provision at Off-Block (Milestone 15)

This System Process implements the Use Case [UC-RNI.06] DPI Provision at Off-Block (Milestone 15)

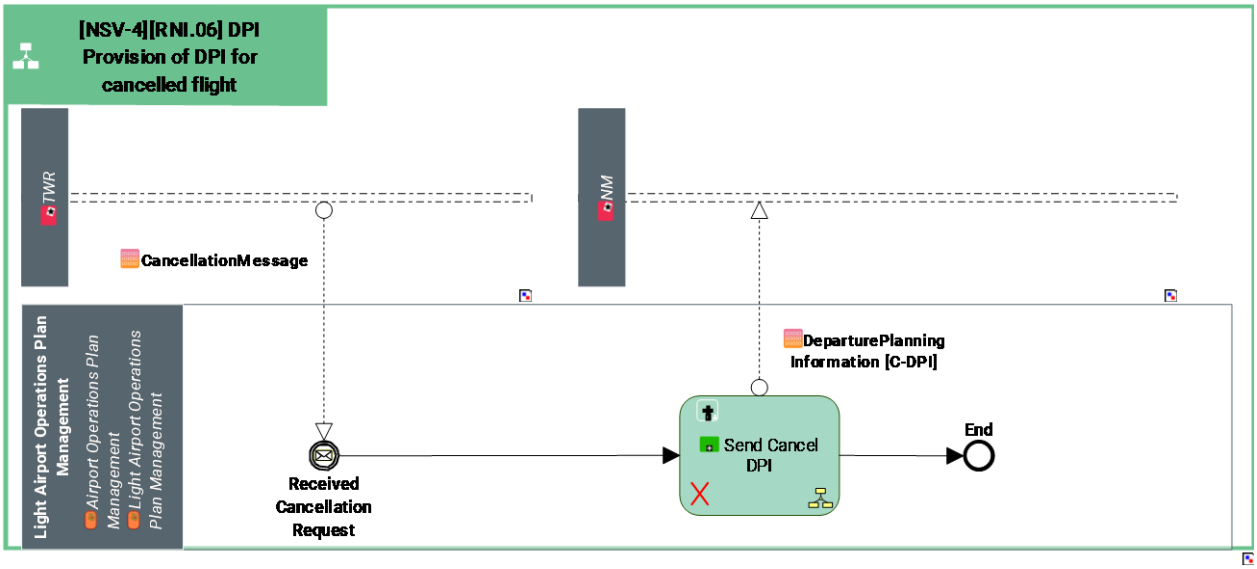


Role	Functional Block	Function
	Light Airport Operations Plan Management	Detect Off Block; Send ATC DPI Message; Update AOBT;

Function	Description
Detect Off Block	This function detects Off Block event via automated docking station.
Send ATC DPI Message	AOBT always triggers an A-DPI message to NM.
Update AOBT	The aircraft has commenced push-back or taxi from parking position. The trigger comes from Aerodrome ATS through ACARS equipped aircraft, automated docking systems, ATC systems or manual input.

4.1.1.2.7 [NSV-4][RNI.06] DPI Provision of DPI for cancelled flight

This System Process implements the Use Case [UC-RNI.07] DPI Provision of DPI for cancelled flight



Role	Functional Block	Function
	Light Airport Operations Plan Management	Send Cancel DPI;

Function	Description
Send Cancel DPI	C-DPI is to inform NM that previously sent DPI information is no longer valid

4.1.2 Resource Composition

4.1.2.1 Airport Operations Centre (PJ.04-W2-28.1)

Deals with the strategic and tactical management of airport operations in coordination with other ATM actors. In this respect, the system is the 'focal point' for the AOP and NOP management at the airport. The main changes impacting the Airport Operations Centre Technical System within S2020 W2 are:

· the integration of the AOP with the NOP;

· the interface with UDPP to take the airspace users priorities into account in the Airport Activity

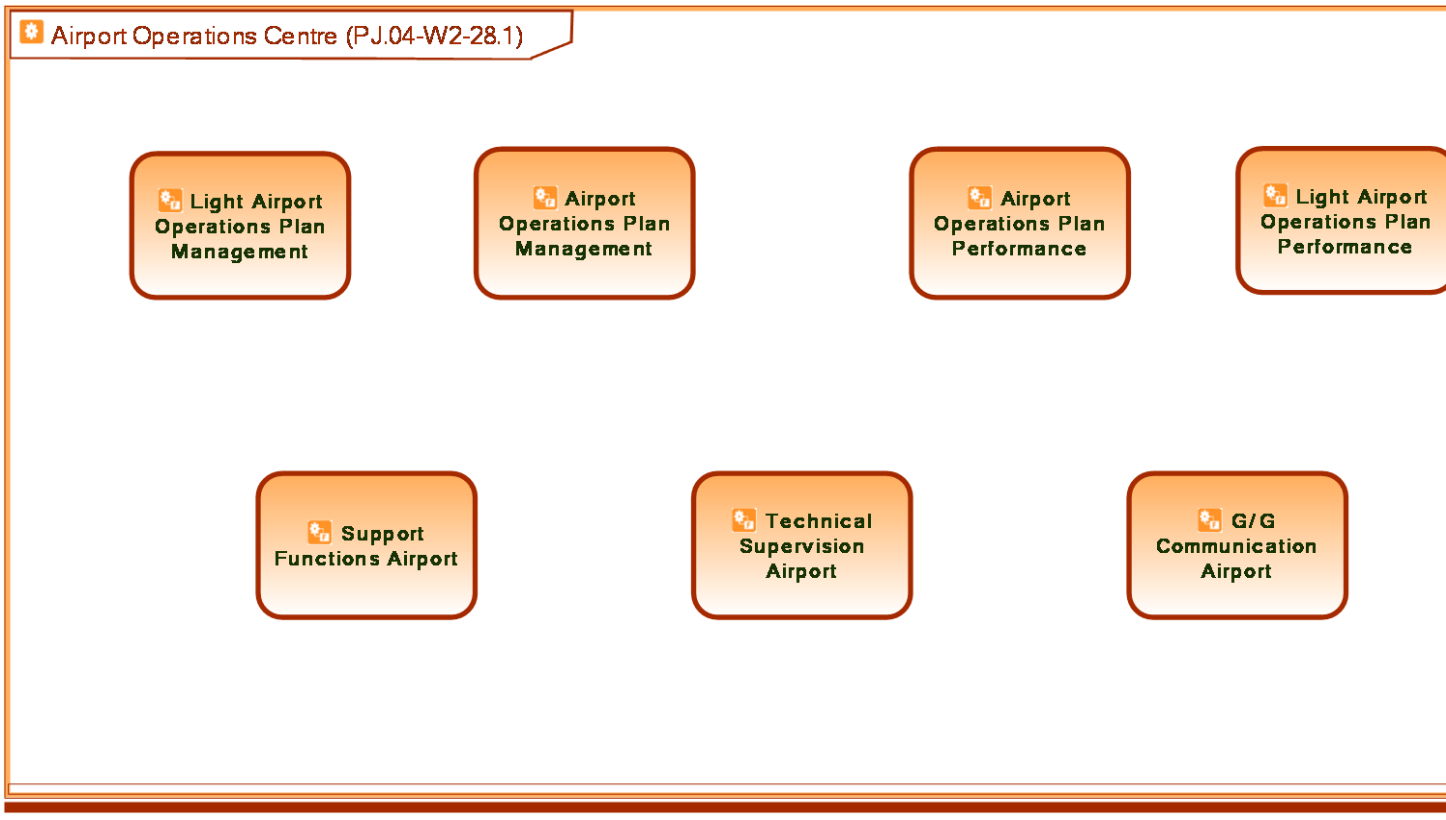
In particular, the evolution of the AOP will address:

· the finalisation of AOP-NOP information sharing that would ultimately lead the European standardisation;

· the procedures to support AOP-NOP collaborative process, including AOP-NOP information quality requirements and

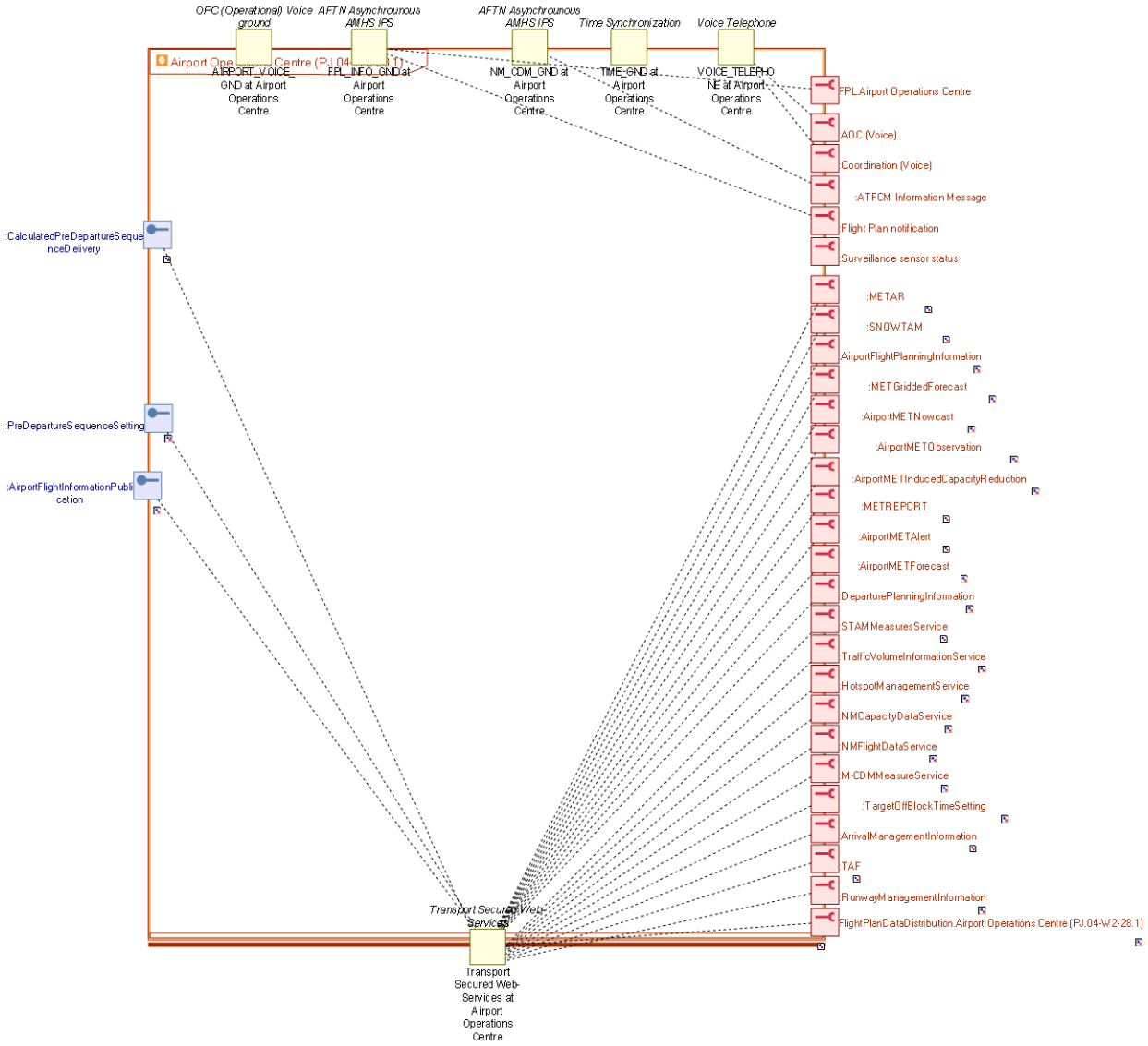
· the exchange of AOP-NOP information through SWIM

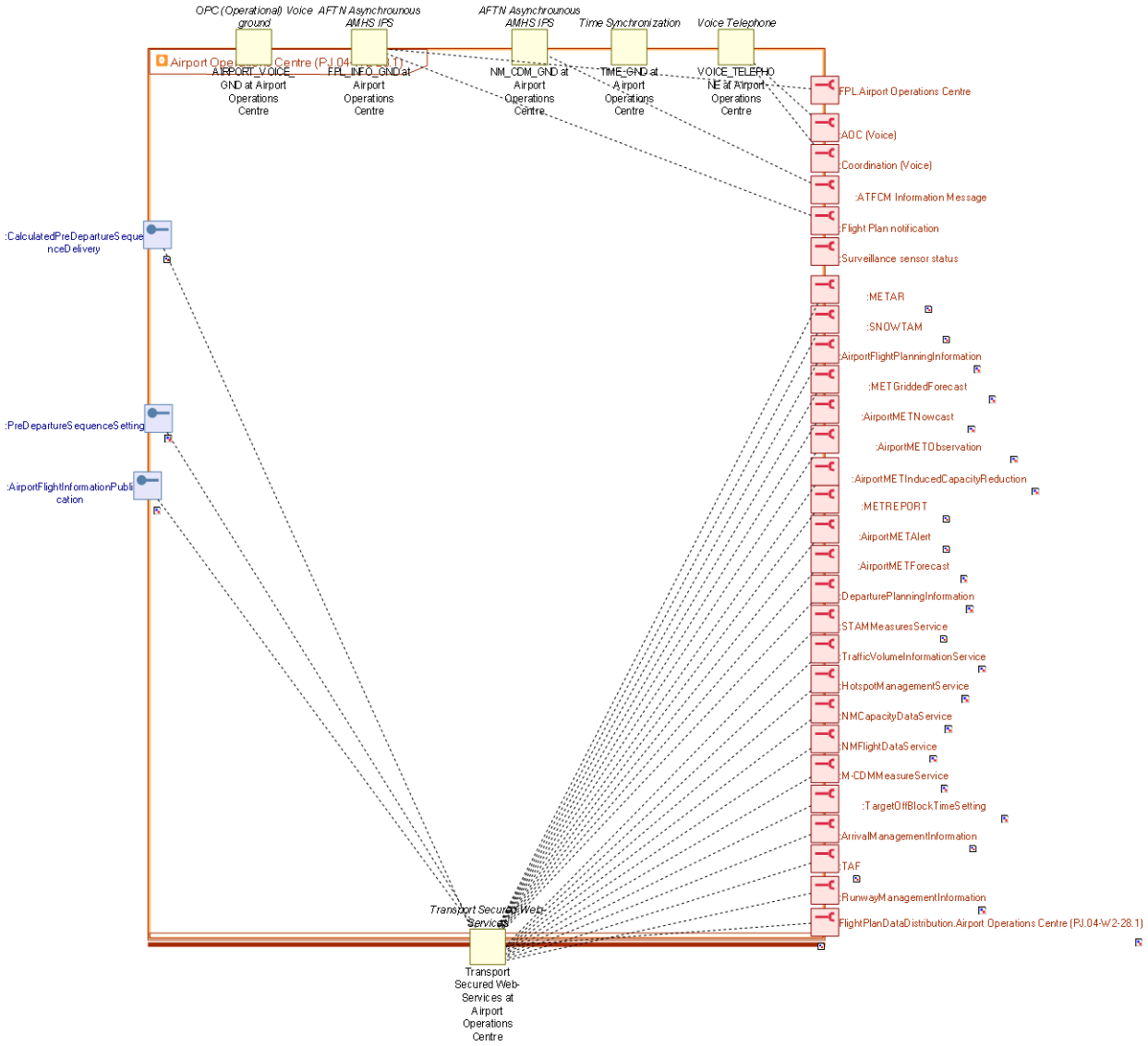
4.1.2.1.1 Composition



https://www.eatmportal.eu/working/data/diagrams/039741A160462453

4.1.2.1.2 System Interfaces Diagram


OPC (Operational) Voice ground
AFTN Asynchrounous AMHS IPS
AFTN Asynchrounous AMHS IPS
Time Synchronization
Voice Telephone
Airport Operations Centre (PJ.04-W2-28.1)
AIRPORT_VOICE_GND at Airport Operations Centre
FPL_INFO_GND at Airport Operations Centre
NM_CDM_GND at Airport Operations Centre
TIME_GND at Airport Operations Centre
VOICE_TELEPHONE at Airport Operations Centre
:CalculatedPreDepartureSequenceDelivery
:PreDepartureSequenceSetting
:AirportFlightInformationPublication
FPL Airport Operations Centre
AOC (Voice)
Coordination (Voice)
:ATFCM Information Message
Flight Plan notification
Surveillance sensor status
:METAR
:SNOWTAM
AirportFlightPlanningInformation
:METGriddedForecast
:AirportMETNowcast
:AirportMETObservation
:AirportMETInducedCapacityReduction
:METREPORT
:AirportMETAlert
:AirportMETForecast
DeparturePlanningInformation
STAMMeasuresService
TrafficVolumeInformationService
HotspotManagementService
NMCapacityDataService
NMFlightDataService
M-CDMMeasureService
:TargetOffBlockTimeSetting
ArrivalManagementInformation
TAF
RunwayManagementInformation
FlightPlanDataDistribution.Airport Operations Centre (PJ.04-W2-28.1)
Transport Secured Web-Services
Transport Secured Web-Services at Airport Operations Centre



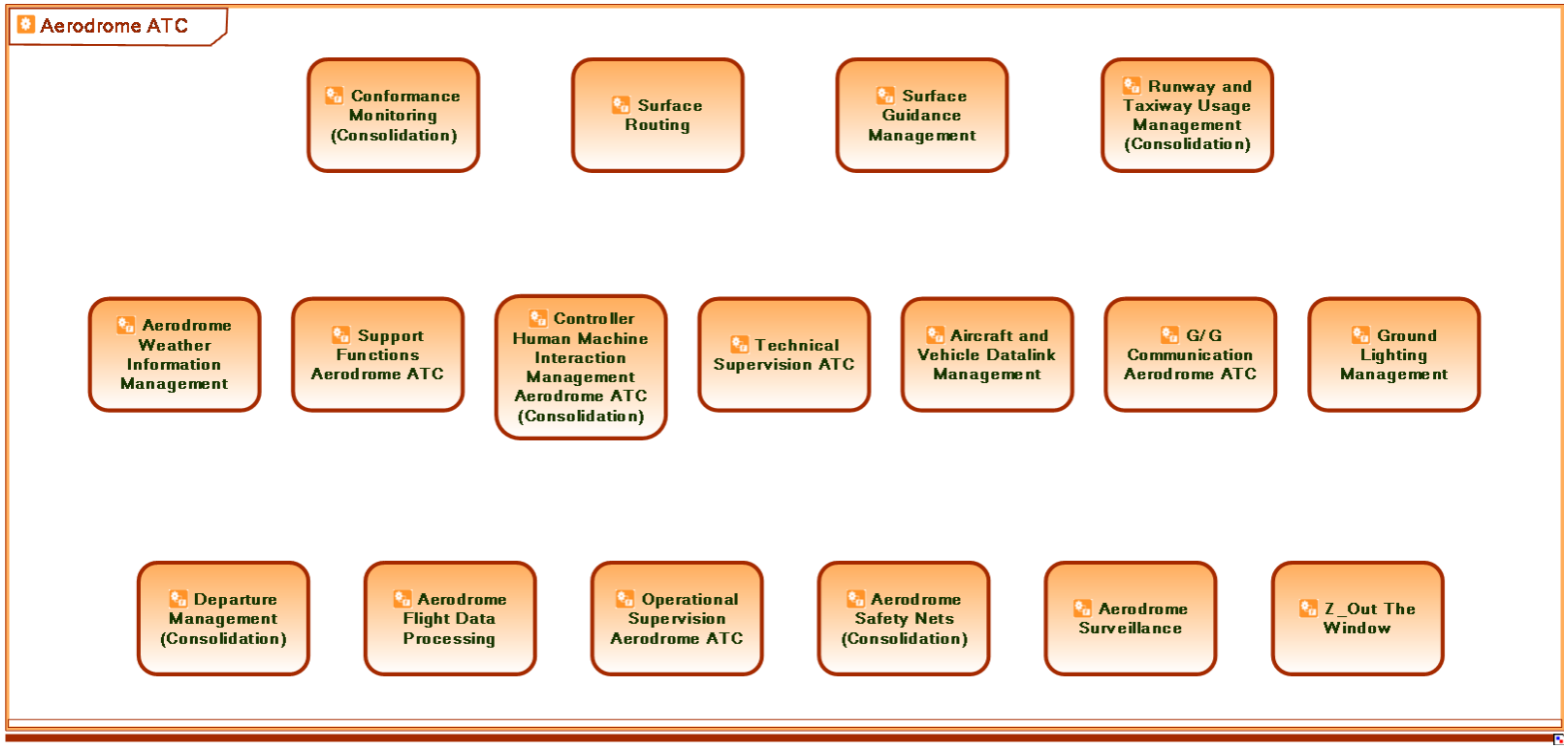
https://www.eatmportal.eu/working/data/diagrams/039741A26046255C

4.1.2.2 Aerodrome ATC

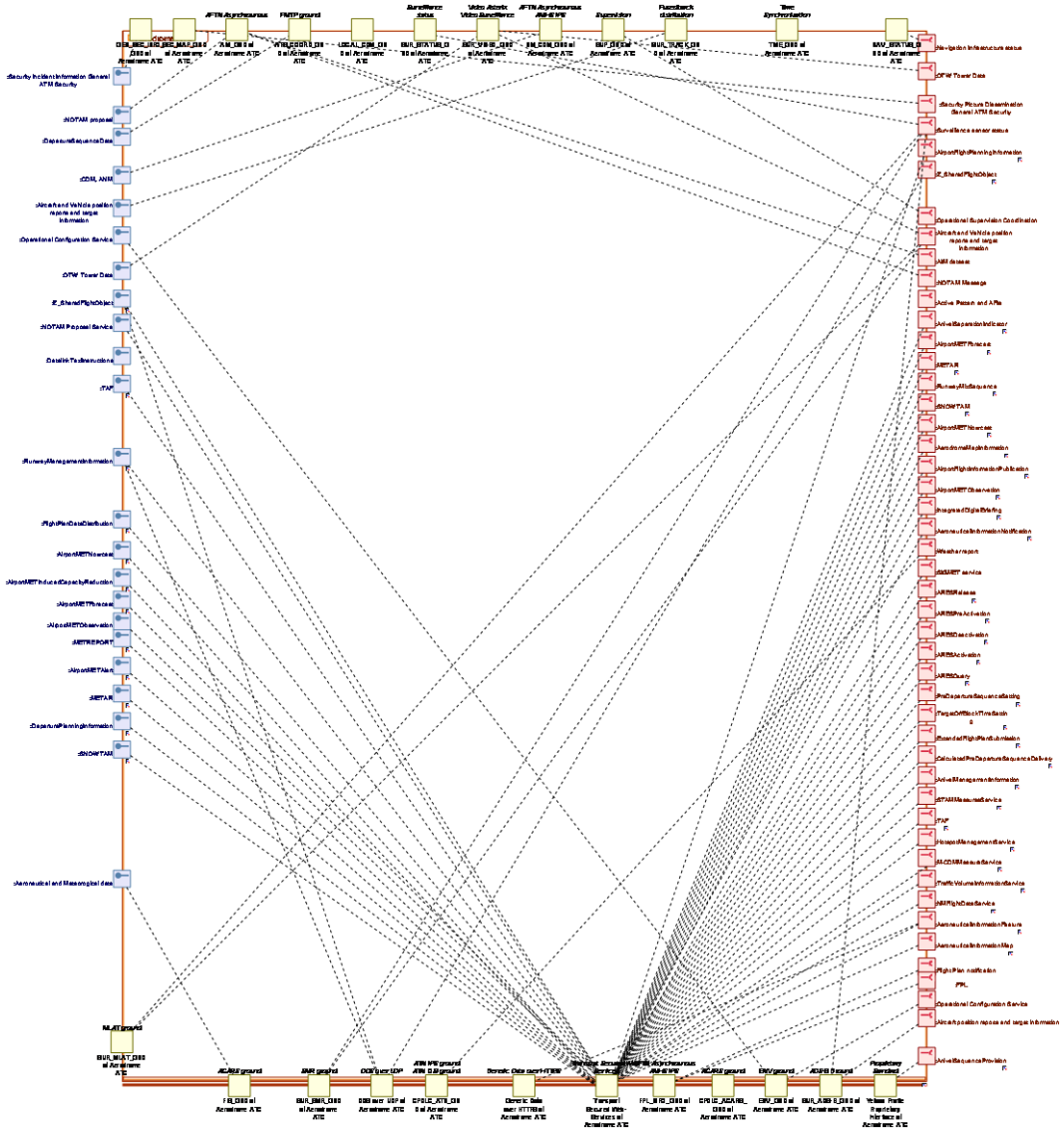
Supports the ATC controllers at an aerodrome and provides the following main functionalities:

- surface routing and guidance,
- infrastructure (weather, lighting, datalink) management,
- safety nets,
- aerodrome surveillance,
- flight data processing,
- departure management.

4.1.2.2.1 Composition


Aerodrome ATC
Conformance Monitoring (Consolidation)
Surface Routing
Surface Guidance Management
Runway and Taxiway Usage Management (Consolidation)
Aerodrome Weather Information Management
Support Functions Aerodrome ATC
Controller Human Machine Interaction Management Aerodrome ATC (Consolidation)
Technical Supervision ATC
Aircraft and Vehicle Datalink Management
G/G Communication Aerodrome ATC
Ground Lighting Management
Departure Management (Consolidation)
Aerodrome Flight Data Processing
Operational Supervision Aerodrome ATC
Aerodrome Safety Nets (Consolidation)
Aerodrome Surveillance
Z_Out The Window

4.1.2.2.2 System Interfaces Diagram



4.1.3 Service view

4.1.3.1 Service Description

Service	Service description
DeparturePlanningInformation	Arrival Management needs to <u>consume</u> departure planning information from Satellite Airports. It is important to appreciate the concept of a satellite airport underlying this service. The situation envisaged is that there are local airports within the AMAN horizon that feed aircraft into the arrival flows managed by the Extended AMAN. That is, the operations in question will be short-haul flights into a hub airport. This information is transmitted prior to the flights EOBT. In addition the “Advanced Tower integration” concept seeks to extend the benefit of having accurate departure planning data available for network management purposes to smaller airports that do not deploy Airport CDM. The concept is very simple – on an “advanced ATC TWR airport” the tower sends A-DPI (at off-block time) and C-DPI messages (on return to stand) to the NM Operations Centre.
FlightPlanDataDistribution	The FlightPlanDataDistribution Service supports the service provider (Network Manager) to: - send a copy of a valid Extended Flight Plan (EFPL) message, Extended Modification (ECHG) message, Extended Delay (EDLA) message to the service consumers concerned by the flight that want to receive extended flight plan messages; - send to all of other service consumers concerned by the flight only a copy of the ICAO Flight Plan included in the EFPL message or a copy of a ‘simple’ modification (CHG) message or a copy of a ‘simple’ delay (DLA) message; - notify to the service consumers the cancellation of a specified flight plan; - send a specific Flight Plan (in Extended or ICAO format) following a specific request from a service consumer.
PreDepartureSequenceSetting	Pre-Departure Sequence Setting service is part of a series of services that help automate the A-CDM process at a CDM Airport. It allows an A-CDM Partner to set the Target Take-Off Time (TTOT), which indicates the target time for the take-off from the runway; and/or the Target Start-Up Approval Time (TSAT), which indicates the target time an aircraft can expect receive start up / push back approval. This is used in exceptional operating conditions.
TargetOffBlockTimeSetting	Target Off-Block Time Setting service is part of a series of services that help automate the A-CDM process at a CDM Airport. It allows an A-CDM Partner to set the Target Off-Block Time (TOBT) that indicates the target time for the aircraft to be ready for Off-Block.

4.1.3.2 Service Provisioning

Interaction	Consumer CC	Consumer System	Provider CC	Provider System
PreDepartureSequenceSetting.TWR_CC and Airport_CC	TWR	Aerodrome ATC;	Airport	Airport Airside Operations; Airport Operations Centre;
TargetOffBlockTimeSetting.TWR_CC and Airport_CC	TWR	Aerodrome ATC;	Airport	Airport Airside Operations; Airport Operations Centre; Ground Handler;
FlightPlanDataDistribution.Airport_CC and TWR_CC	Airport	Airport Operations Centre;	TWR	Aerodrome ATC;
FUM.Airport_CC and NM_CC	Airport	Airport Operations Centre;	TWR	Aerodrome ATC;
DeparturePlanningInformation.NM_CC and Airport_CC	NM	ATFCM;	Airport	Airport Airside Operations; Airport Operations Centre;

4.1.3.3 Service Realization

4.1.3.3.1 Interaction DeparturePlanningInformation.NM_CC and Airport_CC

System Port: WS SOAP at Regional ATFCM_CC

Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

4.1.3.3.2 Interaction FlightPlanDataDistribution.Airport_CC and TWR_CC

System Port: WS SOAP at Airport (PJ.04-W2-28.1)_CC

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Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

System Port: WS SOAP at TWR_CC

Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

Service Interface Definition
FlightPlanDataConsumer

Service Interface Definition
FlightPlanDataPublisher

Service Interface Definition	
FlightPlanProvider	
Standard	**MEP, Security Configuration, Interface Bindings**
FlightPlanProviderInterface.YP.WS SOAP	MEPs Supported: SRR PSPUSH PSPULL

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	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

4.1.3.3.3 Interaction FUM.Airport_CC and NM_CC

System Port: MHS_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: NM_CDM_GND at Airport (PJ.04-W2-28.1)_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: MHS_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	

	X.400
	TCP
	IP

System Port: NM_CDM_GND at Airport (PJ.04-W2-28.1)_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: MHS_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: NM_CDM_GND at Regional ATFCM_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: MHS_GND at Communication Infrastructure_CC

Protocol Stack	Protocol

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AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

System Port: NM_CDM_GND at Regional ATFCM_CC

Protocol Stack	Protocol
AFTN Asynchrounous	
	AFTN
AMHS IPS	
	X.400
	TCP
	IP

4.1.3.3.4 Interaction PreDepartureSequenceSetting.TWR_CC and Airport_CC

System Port: WS SOAP at Airport (PJ.04-W2-28.1)_CC

Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

System Port: WS SOAP at TWR_CC

Protocol Stack	Protocol
WS SOAP	

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	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

4.1.3.3.5 Interaction TargetOffBlockTimeSetting.TWR_CC and Airport_CC

System Port: WS SOAP at Airport (PJ.04-W2-28.1)_CC

Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

System Port: WS SOAP at TWR_CC

Protocol Stack	Protocol
WS SOAP	
	SOAP 1.1 or 1.2
	HTTP 1.1
	TLS 1.2

System Port: IP_GND at Communication Infrastructure_CC

Protocol Stack	Protocol
IP	

4.2 Functional and non-Functional Requirements

The requirements described in the document SESAR Solution PJ.04-01 TS/IRS PJ04-01 TS/IRS- Phase 3 AOP Final Technical Specification, are the baseline for the requirements of the following chapters.

The status of the following requirements has been established according to the V3 validation activities.

4.2.1 Functional Requirements

4.2.1.1 Performance Steering Requirements

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0001
Title	Information Sharing System (ISS)º
Requirement	The ISS shall receive information from the Airport Operations Database (AODB) regarding flight information
Status	<validated>
Rationale	According to airport characteristics and complexity, the ISS architecture may vary.
Category	<Design> , <Functional> , <Interoperability> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0030
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0040
<ALLOCATED_TO>	<System>	Airport Operations Centre (PJ.04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0002
Title	ISS-NMOC Connection

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Requirement	The ISS shall connect to Network Manager Operations Centre (NMOC) through NM B2B web services, AMHS or AFTN.
Status	<validated>
Rationale	NM B2B The Network Manager Business-to-business (B2B) web services are an interface provided by the EUROCONTROL Network Manager (NM) for accessing its services and sharing information. They provide access to both data and services via a system-to-system interface primarily over the Internet. This allows NM customers to integrate information available to EUROCONTROL in their own systems, according to their business needs. The major part of data message interchange in the AFS is performed by the Aeronautical Fixed Telecommunications Network, (AFTN) an international network spanning the whole globe. Today, most ground based information with respect to national and international aviation operations is exchanged via ICAO administered AFTN. Several hundred nodes located virtually in every country of the world exchange messages containing Flight Plans, NOTAM, and Meteorological Data.
Category	<Data> , <Functional> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIs.0010
<ALLOCATED_TO>	<System>	Airport Operations Centre (PJ.04-W2-28.1)

[REQ]

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Identifier	REQ-04-W2-28.1-TS-STRA.0003
Title	Setting up the Expected Boarding Time Duration (XBTD) values
Requirement	The ISS shall provide a means to set up via HMI or configuration files the Expected Boarding Time Duration (XBTD) values considering the following criteria: Aircraft Type, Handling Agent, Boarding Type and Flight Destination.
Status	<validated>
Rationale	Based on historical data, XBTD values are stored in the ISS or AODB Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Functional> , <HMI> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0090
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0004
Title	Setting up the Expected Turn-round Time (XTTA) values
Requirement	The ISS shall provide means to set up to set up via HMI or configuration files the system the Expected Turn-round Time (XTTA) values considering the following criteria: Aircraft operator, Aircraft Type, Boarding Type and Flight Destination.
Status	<validated>
Rationale	Based on historical data, XTTA values are stored in the ISS or AODB

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	Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Data> , <HMI> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0020
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0005
Title	Setting up the Taxi-times Estimates (EXIT and EXOT) values
Requirement	The ISS shall provide means to set up to set up via HMI or configuration files the Taxi-times Estimates (EXIT and EXOT) values considering runway in use and parking stand.
Status	<validated>
Rationale	Based on historical data, EXIT and EXOT values are stored in the AODB. The values can change as a function of the operational conditions at the airport. Assumption: AODB is the selected storage solution. Meanwhile other techniques can be adopted.
Category	<Functional> , <HMI> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1

<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0010
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0006
Title	Actual Landing Time (ALDT)
Requirement	The ISS shall signal the occurrence of ALDT when it is recieved.
Status	<validated>
Rationale	Provided by ATC system or by ACARS from equipped aircraft, the ALDT is the time that an aircraft touches down on a runway. While the ISS can be signalled directly by the system that generates the timestamp, another architecture may foresee an external system that records the information into the AODB and the ISS in its turn catches the information from the AODB.
Category	<Interoperability> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0020
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0007
Title	Actual In-Block Time (AIBT)
Requirement	The ISS shall signal the occurrence of AIBT when it is recieved.
Status	<validated>

Rationale	Provided by ACARS equipped aircraft or automated docking systems or ATC systems, this is the time that an aircraft arrives in-blocks. While the ISS can be signalled directly by the system that generates the timestamp, another architecture may foresee an external system that records the information into the AODB and the ISS in its turn catches the information from the AODB.
Category	<Interoperability> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0040
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0008
Title	Actual Start Boarding Time (ASBT)
Requirement	The ISS shall signal the occurrence of ASBT when it is recieved.
Status	<validated>
Rationale	Automatic from airport system or provided by Aircraft Operator or Ground Handler Agent, this is the time the Boarding starts. The gate is open for passengers to physically start boarding (independent of whether boarding takes place via an air-bridge/pier, aircraft steps or coaching to a stand).
Category	<Functional> , <Data> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0110
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0009
Title	Actual Off-Block Time (AOBT)
Requirement	The ISS shall signal the occurrence of AOBT when it is recieved.
Status	<validated>
Rationale	Provided by ACARS equipped aircraft or automated docking systems or ATC systems or by manual input, this is the time the aircraft pushes back/vacates the parking position.
Category	<Functional> , <Interoperability> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<ALLOCATED_TO>	<Function>	Detect Off Block

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0010
Title	Actual Take-Off Time (ATOT)
Requirement	The ISS shall signal the occurrence of ATOT when it is recieved.
Status	<validated>
Rationale	Provided by ATC system or from ACARS equipped aircraft, this is the time that an aircraft takes off from the runway.

Category	<Interoperability> , <Adaptability> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0030

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0011
Title	TOBT (Milestone 3, Target Off-Block Time)
Requirement	The ISS shall initialize or update the TOBT value for a given flight following initialization or update of ELDT. Calculation for the TOBT is the following: TOBT=max(EOBT; A/ELDT+EXIT+XTTA)
Status	<validated>
Rationale	If the departure airport of the outstation is more than 3hrs flying time from the destination airport the ATOT is received from either the Network Operations FUM or via the Aircraft Operator or Ground Handling Agent. Using the ATOT an ELDT can be calculated by using the Estimated Elapsed Time on the FPL. If the flight is within 3hrs flying time of the destination airport, NMOC monitors progress of the flight and send FUM Messages to provide updated ELDT.
Category	<Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0010

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<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0012
Title	TTOT (Target Take-Off Time)
Requirement	The ISS shall initialize or update the TTOT value for a given flight following initialization or update of TOBT. For non regulated Flights: TTOT ≈ TOBT + EXOT For regulated flights: TTOT ≈ CTOT
Status	<validated>
Rationale	TOBT is extrated from the ISS based on the calculated or AU/GH input. EXOT is extracted from the AODB or ISS based on runway in use and parking stand. Meanwhile Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0010
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0013
Title	TOBT Input Device

Requirement	The ISS shall provide the AO/GH with an HMI that permits to enter a TOBT value
Status	<validated>
Rationale	Each airport may select the HMI that better meet the needs for AO/GH agent. A TOBT can be input through a usual office interface made of a screen display and a mouse, or a mobile application available on a mobile tool connected with the ISS.
Category	<HMI> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0140
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0150
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0160
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0170
<ALLOCATED_TO>	<Function>	Set TOBT Manually Update TOBT Manually

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0014
Title	Manual TOBT Input
Requirement	The ISS shall prioritize any manual TOBT input over any automatic calculated value.
Status	<validated>
Rationale	Any automatic TOBT calculation is suspended.
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0140
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0150
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0160
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0170
<ALLOCATED_TO>	<Function>	Update TOBT Manually Set TOBT Manually

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0015
Title	TSAT (Target Start-Up Approval Time) without Departure Manager (Milestone 10, TSAT Issue)
Requirement	The ISS shall initialize or update TSAT: - to TOBT value if the flight is not regulated, that is no CTOT is applied to the flight - to CTOT – EXOT if the flight is regulated, that is a CTOT is applied to the flight
Status	<validated>
Rationale	TSAT initialization or update is performed together with TOBT.
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0080
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIs.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0130
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0131
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0016
Title	ATC DPI Message (Milestone 15, Off-Block)
Requirement	The ISS shall send a an A-DPI (ATC) Message to NMOC at the moment of the reception AOBT
Status	<validated>
Rationale	The flight has left the block, is “under ATC (or Apron) control” and is taxiing to take-off.
Category	<Data> , <Interoperability> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0090
<ALLOCATED_TO>	<Function>	Detect Off Block Send ATC DPI Message

[REQ]

Identifier	REQ-04-W2-28.1-TS-STRA.0017
Title	Cancel DPI Message
Requirement	The ISS shall send a a C-DPI (CNL) Message to NMOC if the turn-around process is interrupted
Status	<validated>
Rationale	The ISS provides the reason of cancelation in the message. E.g. no airport slot, TOBT expiration, return to stand.
Category	<Data> , <Functional> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1

<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0100
<ALLOCATED_TO>	<Function>	Set TOBT Status to Timed-out Display Warning Send Cancel DPI (M10)

4.2.1.2 Performance Monitoring Requirements

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0001
Title	Flight Data field update – SID (Standard Instrumental Departure)
Requirement	The ISS shall provide a means to update the Flight Data SID field in the database
Status	<in progress>
Rationale	A SID update by ATC needs to be propagated to Flight Data stored into the database
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0040
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0002
Title	Flight Data field update - Runway Departure
Requirement	The ISS shall recieve the Runway Departure from ATC
Status	<in progress>
Rationale	A Runway Departure update by ATC shall be propagated to Flight Data stored into the database.

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Category	<Interoperability> , <Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0050
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0003
Title	Accessing Flight Data
Requirement	The ISS shall have access to Flight Data through the AODB before EOBT.
Status	<validated>
Rationale	A Flight Plan subject to ATFM is submitted by the Aircraft Operator to the Initial Flight Plan Processing System (IFPS) at least 3 hours before EOBT. Once the Flight Plan is accepted it can be stored in the AODB and be assigned an Airport Slot (SOBT).
Category	<Data> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0030
<ALLOCATED_TO>	<Function>	Solve problem (slot, EOBT)

[REQ]

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Identifier	REQ-04-W2-28.1-TS-MORA.0004
Title	Monitoring Actual Timestamps: ALDT, AIBT, ACGT, ASBT, AOBT, ATOT
Requirement	The ISS shall provide a means to have the following Actual Timestamps stored into the AODB at their time of occurrence: ALDT, AIBT, ACGT, ASBT, AOBT, ATOT.
Status	<validated>
Rationale	The origin for the Actual Timestamps that are ALDT, AIBT, ACGT, ASBT, AOBT and ATOT can vary from one airport to another. As examples, there are: ATC system, ACARS from equipped aircraft, manual input from AO/GH, Automated docking systems, Automatic Airport systems.
Category	<Data> , <Functional> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0040
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0060
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0110
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0030
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0005
Title	ALDT triggering EIBT update

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Requirement	Te ISS shall update the Estimated In-Block time at the reception of ALDT derived from: EIBT = ALDT + EXIT
Status	<validated>
Rationale	EXIT based on runway in use and parking stand and extracted from the historical data on the AODB Meanwhile Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0030
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0006
Title	AIBT triggering ACGT setting (Milestone 8, GH starts)
Requirement	The ISS shall infer ACGT once AIBT is set as it follows: ACGT = MAX(SOBT, EOBT) – XTTA.
Status	<validated>
Rationale	For flights that are on a normal turn-round ACGT is considered to commence at AIBT. Use of SOBT and EOBT caters for the case of aircraft on a ‘long’ turnaround such as a night stop. SOBT is the scheduled off-block time, EOBT the latest estimated off-block time. XTTA is extracted from the AODB or ISS based on Aircraft operator, Aircraft Type, Boarding Type and Flight Destination.

	Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0060
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0007
Title	ELDT triggering EIBT update
Requirement	The ISS shall infer EIBT once ELDT is initialized or updated based on the following formula: EIBT=ELDT+EXIT
Status	<validated>
Rationale	EXIT is extracted from the AODB or ISS based on runway in use and parking stand. Meanwhile Airport characteristics and complexity may require more parameters to consider than currently mentioned.
Category	<Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1

<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0030
<ALLOCATED_TO>	<Function>	Update EIBT (M8b)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0008
Title	ACGT triggering TOBT update
Requirement	Once ACGT is set, The ISS shall update TOBT with the maximum value among EOBT, SOBT and ACGT+XTTA. Formally: TOBT=MAX(EOBT, SOBT, ACGT+XTTA)
Status	<validated>
Rationale	Starting the handling process permits a refinement of the TOBT calculation.
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0070
<ALLOCATED_TO>	<Function>	Compute TSAT (M8a)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0009
Title	ACGT triggering LBST setting
Requirement	The ISS shall automatically recalculate LSBT (Last Boarding Start Time) once ACGT basen on the following formula: LSBT=TOBT-XBDT Where TOBT is calculated as TOBT=MAX(ACGT+XTTA, EOBT, SOBT)
Status	<validated>

Rationale	XBTD depends on Aircraft Operator, Aircraft Type, Handling Agent, Boarding Type (contact or remote) and the Flight Destination. Meanwhile more parameters may be required according to airport characteristics and complexity.
Category	<Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0002
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0100
<ALLOCATED_TO>	<Function>	Increment TOBT

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0010
Title	LBST-5’ triggering warning
Requirement	The ISS shall raise a warning visible on the AO/GH HMI if ASBT is not set at LSBT-5'.
Status	<validated>
Rationale	The ISS performs the process described unless a manual TOBT is set by AO/GH. In that case, the automatic TOBT and LBST values increase is suspended and also the ASBT monitoring.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0002
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0121
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0122
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0120

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<ALLOCATED_TO>	<Function>	Increment TOBT

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0012
Title	LSTB Automatic Update
Requirement	The ISS shall update LSBT if the ASBT is not set at the moment of reaching the LSBT moment by incerasing the value in 5 minutes and raise an alert on the AO/GH HMI. The New LSTB will be the latest plus 5 minutes. Formally, this means: If CurrentTime=>LSBT THEN IF ASBT not available, THEN newLSBT=oldLSBT+5' ELSE LSBT is not updated ELSE LSBT is not updated
Status	<in progress>
Rationale	The ISS monitors the boarding status and increases the value of the LSBT automatically if the boarding has not started at the LSB Time.
Category	<Maintainability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0121
<ALLOCATED_TO>	<Function>	Increment TOBT

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0013

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Title	Pre-departure sequence management by ATC
Requirement	The ATC systems shall allow Tower Ground Controller to visualize and manage a pre-departure sequence
Status	<in progress>
Rationale	Tower Ground Controller should be aware of TSAT for each in order to approve or reject start up when it is requested by aircraft pilots (tipically via Voice Radio) The pre-departure sequence can be calculated by ATC Systems (Departure Manager) or by the PDS from the AOP
Category	<Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0150
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0160
<ALLOCATED_TO>	<Function>	Visualize TSAT

[REQ]

Identifier	REQ-04-W2-28.1-TS-MORA.0014
Title	TSAT available on Civil Aircraft
Requirement	The Civil Aircraft systems shall allow the Flight Deck to know which is the TSAT for the flight
Status	<in progress>
Rationale	Flight Crew shall request start up clearance within TSAT tolerance window Typically, this information is comunicated to the flight deck via Radio Voice or ACARS (datalink)
Category	

[REQ Trace]

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Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0170

4.2.1.3 Performance Management Requirements

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0001
Title	Departure Planning Information (DPI) messages
Requirement	The ISS shall send Departure Planning Information (DPI) messages to NMOC according to events identified in Airport CDM Milestones.
Status	<validated>
Rationale	Requirements for DPI Implementation shall laid down in the DPI Implementation Guide.
Category	<Interoperability> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIs.0010
<ALLOCATED_TO>	<Function>	Send ATC DPI Message Send Cancel DPI (M10) Send Target DPI - Target Message (M2) Send Cancel DPI Send Early DPI Message Send Target DPI - Sequenced Message Send Target DPI - Target Message (M8a) Send Target DPI - Target Message (M8b) Send Target DPI - Target Message (M3)

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[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0002
Title	Flight Update Message (FUM) messages
Requirement	The ISS shall process Flight Update Message (FUM) messages received from NMOC to update flight plan data into the database
Status	<validated>
Rationale	Requirements for FUM Implementation shall down in the FUM Implementation Guide. With the evolution of the NM B2B services, FUM information can be also retrieved via B2B services.
Category	<Data> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0010
<ALLOCATED_TO>	<Function>	Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT) Solve problem (slot, EOBT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0003
Title	Accessing the Expected Boarding Time Duration (XBTD) values
Requirement	The ISS shall provide a function to retrieve the Expected Boarding Time Duration (XBTD) value depending on Aircraft Type, Handling Agent, Boarding Type and Flight Destination.
Status	<validated>
Rationale	XBTD values can be retrieved from the flight historical data stored in AODB

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Category	<Data> , <Interoperability> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0030
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0090
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)
<ALLOCATED_TO>	<System>	Airport Operations Centre (PJ.04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0004
Title	Accessing the Expected Turn-round Time (XTTA) values
Requirement	The ISS shall provide a function to retrieve the Expected Turn-round Time (XTTA) value depending on Aircraft operator, Aircraft Type, Boarding Type and Flight Destination.
Status	<validated>
Rationale	XTTA values can be retrieved from the flight historical data stored in AODB.
Category	<Interoperability> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0020
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0005
Title	Accessing the Taxi-times Estimates (EXIT and EXOT) values
Requirement	The ISS shall provide a function to retrieve the Taxi-times Estimates (EXIT and EXOT) values depending on runway in use and parking stand.
Status	<validated>
Rationale	EXIT and EXOT values can be retrieved from the flight historical data stored in AODB
Category	<Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ADMO.0010
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0006
Title	Flight Data
Requirement	The ISS shall provide a means to retrieve Flight Data from NMOC and store information into the database
Status	<validated>
Rationale	Based on all information received and processed NMOC can distribute EFD (ETFMS Flight Data) Messages to inform users with the latest updates and about the latest state of a flight. Through subscription to NM B2B services, users may also request all necessary flight information.

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Category	<Interoperability> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-SPRINTEROP-0001
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0030
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0007
Title	Accessing Airport Transit View (ATV)
Requirement	The ISS shall build the Airport Transit Views made of pairs of inbound flight and outbound flight, usually linked by the aircraft registration
Status	<validated>
Rationale	This operation is mostly performed automatically although special cases may require manual input.
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0040

<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0008
Title	Accessing pre-departure sequencing list
Requirement	The ISS shall have access to a pre-departure sequencing list to obtain TSAT and TTOT
Status	<validated>
Rationale	The pre-departure sequencing list is the order that aircraft are planned to depart from their stands (push off-blocks) taking into account partners' preferences. The pre-departure sequence can also be derived by a departure manager (DMAN), which calculates based on demand the take-off time TTOT and derives the TSAT from the runway sequence. Airports can implement different solutions to achieve the pre-departure sequence, depending on local traffic complexity and surface congestion.
Category	<Functional> , <Data> , <Performance> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0050
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0080
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0009
Title	Accessing Actual Timestamps: ALDT, AIBT, ACGT, ASBT, AOBT, ATOT

Requirement	The ISS shall have access to the following Actual Timestamps: ALDT, AIBT, ACGT, ASBT, AOBT, ATOT.
Status	<validated>
Rationale	The origin for the Actual Timestamps that are ALDT, AIBT, ACGT, ASBT, AOBT and ATOT can vary from one airport to another. As examples, there are: ATC system, ACARS from equipped aircraft, manual input from AO/GH, Automated docking systems, Automatic Airport systems.
Category	<Data> , <Functional> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0040
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0060
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0110
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0030
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0010
Title	Estimated Landing Time (ELDT)
Requirement	The ISS shall receive FUM (Flight Update Message) sent by NMOC in order to initiate or to update ELDT.
Status	<validated>
Rationale	Modification of ELDT of more than a threshold (e.g. 5 minutes) triggers a transmission of a FUM Flight Progress Message by NMOC to targeted airports.

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Category	<Functional> , <Data> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-FUMS.0020
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)
<ALLOCATED_TO>	<Function>	Update ELDT (M3) Update ELDT (M2)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0011
Title	TSAT (Target Start-Up Approval Time) with Departure Manager (Milestone 10, TSAT Issue)
Requirement	The ISS shall provide a means to store TSAT value for a given flight when received from a Departure Manager.
Status	<validated>
Rationale	TSAT is an integral element allowing ATC to manage the departure sequence. TSAT issuance corresponds to Milestone 10 within the set of 16 A-CDM Milestones. This is the time provided by ATC taking into account TOBT, CTOT and/or the traffic situation that an aircraft can expect start up / push back approval.
Category	<Interoperability> , <Functional> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020

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<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0050
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0080
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0012
Title	Early DPI (Milestone 1, EOBT-3h)
Requirement	The ISS shall check for each flight EOBT-3h value every 30 seconds and send an E-DPI (EARLY) Message to NMOC if not already performed including the following details: EOBT, EXOT, SID, Aircraft Type, Registration, TTOT (as MAX(EOBT, SOBT; EIBT+EXIT+XTTA)+EXOT)
Status	<validated>
Rationale	The transmission of the E-DPI Message confirms to NMOC that an airport slot and the flight plan have been correlated in accordance with local rules at the airport. When no airport slot can be found or when the flight plan EOBT is not consistent with the airport slot SOBT, the AO shall be informed and the E-DPI shall not be sent until the problem has been solved.
Category	<Interoperability> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0060
<ALLOCATED_TO>	<Function>	Solve problem (slot, EOBT) Update information (EOBT, EXOT, SID, A/C type, Registration, TTOT)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0013
Title	Target DPI Message (Milestone 2, EOBT-2h)
Requirement	The ISS shall check for each flight EOBT-2h value every 30 seconds and send a T-DPI-t (TARGET) Message to NMOC if not already performed including the following details: EOBT, EXOT, SID, Aircraft Type, Registration,TTOT (as MAX(EOBT, SOBT; EIBT+EXIT+XTTA)+EXOT)
Status	<validated>
Rationale	XTTA is based on Aircraft operator, Aircraft Type, Boarding Type and Flight Destination and extracted from the historical data on the AODB EXOT is based on runway in use and parking stand and extracted from the historical data on the AODB Meanwhile Airport characteristics and complexity may require more parameters to consider than currently mentioned. The Target DPI Message must contain the Target Take-Off Time (TTOT) that takes into account all constraints from AO/GH perspective.
Category	<Functional> , <Data> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0070
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)
<ALLOCATED_TO>	<Function>	Send Target DPI - Target Message (M3) Send Target DPI - Target Message (M2) Send Target DPI - Target Message (M8a) Send Target DPI - Target Message (M8b)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0014
Title	Sequence DPI Message (Milestone 10, TSAT Issue)
Requirement	The ISS shall check for each flight TOBT-40' value every 30 seconds and send a T-DPI-s (SEQ) Message to NMOC if not already performed including the TTOT calculated with TSAT from PDS/DMAN
Status	<validated>
Rationale	TSAT calculation is performed by a Departure Manager (DMAN) tool which will also take into account any ATFM (CTOT) slot applicable to the flight. In the event that no DMAN is present (typical of a non-coordinated airport) then a 'pseudo' TSAT is calculated as follows: TSAT = TOBT (no CTOT) TSAT = CTOT – EXOT (flight subject to CTOT)
Category	<Interoperability> , <Data> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-ENVI.0020
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0080
<ALLOCATED_TO>	<Function>	Send Target DPI - Sequenced Message

<ALLOCATED_TO>	<System>	Airport Operations Centre (PJ.04-W2-28.1)

[REQ]

Identifier	REQ-04-W2-28.1-TS-MARA.0015
Title	Departure Runway and SID for DPI messages
Requirement	The ISS shall receive and store the departure runway and SID from ATC systems to include it in DPI message

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Status	<validated>
Rationale	Provided by ATC, the departure runway and SID are required to derive the EXOT value for use in the TTOT calculation and the SID for use in the DPI message content .
Category	<Functional> , <Interoperability> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-SPRINTEROP-0028
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0040
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0080
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIS.0090
<ALLOCATED_TO>	<Functional block>	Airport Operations Plan Management (PJ04-W2-28.1)

4.2.1.4 Performance Post Analysis Requirements

[REQ]

Identifier	REQ-04-W2-28.1-TS-PORA.0001
Title	Recordings
Requirement	The ISS shall record all events and related parameters for later access or for statistical analysis and database values (taxi-times, turnaround time, boarding time) improvement.
Status	<validated>
Rationale	The ISS stores information about actual and estimated taxi times, turnaround times, boarding times...) so this information can be used for futher analysis
Category	<Functional> , <Data>

[REQ Trace]

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Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-RNIA.0010
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-HP-01
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-001
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-002
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-003
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-004

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4.2.2 Non-Functional Requirements

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0001
Title	Periodical check of flight data and status
Requirement	The ISS shal periodically check time conditions regarding the aircraft process and status based on a configurable frecuency
Status	<validated>
Rationale	There are some RNI and A-CDM triggering conditions that are time dependant. For example: TSAT and TOBT expiration, Late boarding Update. These conditions shall be checked periodically
Category	<Data> , <Design>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0131
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0130
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0122
<ALLOCATED_TO>	<Function>	Set TOBT Status to Timed-out Increment TOBT

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0002
Title	Periodical check of DPI conditions.
Requirement	The ISS shall periodically check DPI update conditions.
Status	<in progress>
Rationale	Some DPI sending conditions doest not depend on update events (e.g: TSAT, AOBT, ATOT, etc..) but on time conditions and

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	need a periodical check, for example the trigger event of EOBT-3h to send the first E-DPI
Category	<Data> , <Design>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-DPIs.0010
<ALLOCATED_TO>	<Function>	Send Target DPI - Sequenced Message Send Target DPI - Target Message (M3) Send Target DPI - Target Message (M8a) Send Early DPI Message Send Target DPI - Target Message (M8b) Send Target DPI - Target Message (M2) Send ATC DPI Message Send Cancel DPI Send Cancel DPI (M10)

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0003
Title	Automatic ASBT Monitoring
Requirement	The ISS shall monitor periodically the start of the boarding process by checking if the ASBT value is set
Status	<in progress>
Rationale	The ASBT is the time which indicates the actual moment of begin (or start) of the boarding process. The ISS checks automatically if this time is available with a configurable frecuency
Category	<Maintainability>

[REQ Trace]

Relationship	Linked Element Type	Identifier

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<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-TXXT.0120
<ALLOCATED_TO>	<Function>	Increment TOBT

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0004
Title	Access to the Post-Operations Analysis Platform
Requirement	The ISS shall allow the access to Post Operations to certain authorised users.
Status	<validated>
Rationale	This is important to maintain data safety as well as prevent unwanted reports generation and possible platform overloading
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0001
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-002
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-001

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0005
Title	Roles and Privileges
Requirement	The ISS shall provide a functionality that allows different profile configuration so each role can have set of customizable privileges regarding module access (read and write) and flight management (per airline, per ground handler, all flights...)
Status	<validated>

Rationale	Through this functionality, each user's profile can be customized, specifying which are the resources and/or events can be managed by the specific Operator.
Category	<Security> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0001

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0006
Title	AOP DataBase Access
Requirement	The ISS shall access exclusively to the ISS database, limiting all other accesses for all operations (Create, Update, Remove, Delete)
Status	<validated>
Rationale	Limitation on accessing database ensures data integrity
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0001
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-001
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-002

[REQ]

Identifier	REQ-04-W2-28.1-TS-NFRA.0007

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Title	The ISS shall use a user autentication method based on a user name and a password
Requirement	The ISS shall use a user autentication method based on a user name and a password
Status	<validated>
Rationale	Autentication avoids any wrong use of the tool
Category	<Security>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.04-W2-28.1
<SATISFIES>	< ATMS Requirement>	REQ-04-W2-28.1-SPRINTEROP-SRD-002
<SATISFIES>	< ATMS Requirement>	REQ-PJ.04.01-W2-28.1-SPRINTEROP-0001

5 Recommendation for Implementation

This section describes the options (if available) that can be chosen when implementing the solution (e.g. local / central deployment, service alternatives etc.) using capability configurations and sub-operating environments as available in the applicable version of EATMA.

The Total Airport Management concept is founded on the enhancement of the AOP, enriched with information concerning a wide set of airport stakeholders. Since the AOP is the unique source of information across airport Actors, the implementation of TAM heavily relies on information sharing. This is applicable whatever the operating environment and deployment option, whether APOC is a physical asset, deployed as a central control room in the airport, for major airports (associated to the "High Utilisation" Airport Operating Environment, see EATMA 9.0), or it is "virtually" built via phone and chat between roles at minor airports.

However the "Airport" Capability Configuration represents the scope of this Solution in terms of EATMA operational environment for all the functionalities mentioned in this document: Information Sharing, RNI Operations, DPI Implementation and Post-Ops.

- Information Sharing: Different capability configurations at airports lead to different information sharing architectures and flows leading into diverse availability and accuracy of data. This should be taken into account during the implementation phase to ensure the airport operational requirements.
    - Information from ATC (ATOT, ALDT, Runway, SID, etc..) could be integrated directly from ATC Systems to AOP or via AODB, if the interface is already developed at the airport.
    - Other relevant information for the RNI process in different ways from different sources, for example:
        - AIBT and AOBT can be detected by ATC Systems, aircraft ACARS, docking guidance, manual input into AODB, etc..
        - ASBT can be detected such as CUTE, manual input, etc
- RNI Operations: Depending on the information availability and the local operational procedures at the airport the implementation of the technical solution. For example, for airport with only remote stands, the expected boarding times (XBDT) wouldn't be dependent on boarding type.
- DPI Implementation: Depending on the information availability and the local operational procedures at the airport, DPI publication rules and contained information may vary from the DPI Implementation Guide. These specifications should be included in the DPI ICD agreed with Network Manager, specially these affecting to:
    - Non-Mandatory information; according to DPI Implementation Guide such as Departure Runway, SID, Stand, Terminal, etc.. are not mandatory in the DPI messages. Even though this lack of information is mainly based on operational circumstances or local rules (e.g: stand or SID not yet allocated), it can also be justified due to the unavailability of this information in the AOP for integration reasons.

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- Post-Ops: For different information model and airport hardware resources information available and the timeframe of availability may vary.

A service-based (SWIM-based) interoperability option is foreseen for information sharing in order to ensure seamless information sharing in a standardized way across stakeholders. Services are provided by the AOP (and the NOP, for connection to the European Network) according to well-known and published interfaces, which determine the data formats, interaction patterns and access policies. In SESAR W1 the SWIM Yellow Profile (System defined according to EATMA 9.0) has been proven to be an added value for multiple validation exercises.

6 Assumptions

Identifier	Title	Type of Assumptions	Description	Flight Phase	KPA Impacted	Owner
AS-GEN-01	Impacted airports	General	Airports that are impacted by PJ04-W2-28.1 are: Airports that constitute a node and can propagate delays in the network (Group 2 category airports) Airports that have no capacity issues but could temporarily need coordination in case of a specific event (Group 3 category airports)	Airport Operations	N/A	PJ04-W2-28.1
AS-GEN-02	Non impacted airports	General	Large airports corresponding to Group 1 category airports	Airport Operations	N/A	PJ04-W2-28.1
AS-GEN-03	AODB Equipment	General	AODB (or any other system with the same functionalities) is available at the selected airport	Airport Operations	N/A	PJ04-W2-28.1
AS-GEN-04	ATFCM awareness	General	ATFCM is aware of deviations from the flight plan / SBT including route changes, diverting flights, missing flight plans / SBTs, change of flight rules (IFR/VFR) or flight type (GAT/OAT).	Airport Operations	N/A	PJ04-W2-28.1
AS-GEN-05	NM Connection	General	The selected airport has the possibility to connect (via AFTN or B2B) to NM services	Airport Operations	N/A	

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7 References and Applicable Documents

7.1 Applicable Documents

Content Integration

- PJ19 EATMA Guidance Material and Report (2019) – 01.00.00
- Appendix C PJ19-W2 D2.15 EATMA Guidance (2020) - ENs, OIs, SOLs Development and Usage Guidance
- EATMA Community pages
- 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

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

System Engineering

- SESAR 2020 Requirements and Validation Guidelines

Safety

26. SESAR, Safety Reference Material, Edition 4.0, April 2016
27. SESAR, Guidance to Apply the Safety Reference Material, Edition 3.0, April 2016
28. SESAR, Final Guidance Material to Execute Proof of Concept, Ed00.04.00, August 2015
29. SESAR, Resilience Engineering Guidance, May 2016

Human Performance

30. 16.06.05 D 27 HP Reference Material D27
31. 16.04.02 D04 e-HP Repository - Release note

Environment Assessment

32. SESAR, Environment Reference Material, alias, “Environmental impact assessment as part of the global SESAR validation”, Project 16.06.03, Deliverable D26, 2014.
33. ICAO CAEP – “Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes” document, Doc 10031.

Security

34. 16.06.02 D103 SESAR Security Ref Material Level
35. 16.06.02 D137 Minimum Set of Security Controls (MSSCs).
36. 16.06.02 D131 Security Database Application (CTRL_S)

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7.2 Reference Documents

34. ED-78A GUIDELINES FOR APPROVAL OF THE PROVISION AND USE OF AIR TRAFFIC SERVICES SUPPORTED BY DATA COMMUNICATIONS.
35. PJ.04-W2-28.1 SPR-INTEROP/OSED; D2.1.050 (Ed. 00.00.05)
36. PJ.04-01 SPR-INTEROP/OSED for V2; D2.1.040 (Ed.01.02.00, 18/01/2019)
37. PJ.04-01 V2 TS/IRS; D2.1.080 (Ed.00.02.00, 18/01/2019)
38. TS/IRS template ed. 02.00.06
39. DPI Implementation Guide; EUROCONTROL; Edition 2.400
40. PJ.04-W2-28.1 Validation Report; D2.1.040 (00.00.04)
41. ED-141 System Requirements Document
42. ED-145 Interface Definition Document
43. ED-146 Test and Validation Document
44. ETSI EN 303 212 V1.1.1 Airport Collaborative Decision Making (A-CDM); Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004
45. Regulation (EC) No 1070/2009 of the European Parliament
46. Commission Implementing Regulation (EU) No 390/2013
47. Regulation (EU) No 598/2014 of the European Parliament and of the Council of 16 April 2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach and repealing Directive 2002/30/EC
48. Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise
49. Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
50. Directive No 2016/2284 of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC, the National Emission Ceilings Directive (NEC Directive)
51. Law no. 2015-992 on Energy Transition for Green Growth (Energy Transition Law)
52. Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan Text with EEA relevance
53. Airport CDM Implementation Manual

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54. ATFCM Operations Manual; Edition 19.3; 07 January 2016

55. Flight Progress Messages Document; Edition 2.100; 19 Mar 2015

56. AIP (Aeronautical Information Publication)-Munich. CDM. ver.2011-11-17

57. DPI & FUM Implementation Road Map; Edition 2.200; Jun 2021

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

59. DPI Implementation Guide; EUROCONTROL; Edition 2.100; 01/08/2017

60. SAFETY ASSESSMENT OF AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) Ed. 2.0

61.

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Appendix A Service Description Document (SDD)

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EUROPEAN PARTNERSHIP

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