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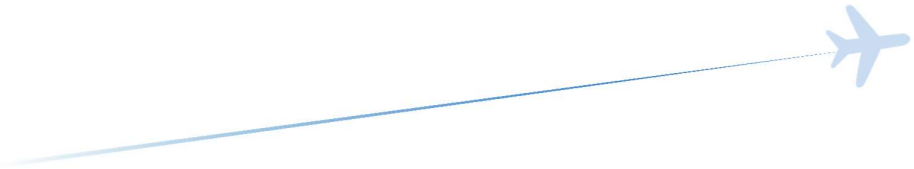

SESAR Solution PJ.07-03 SPR-INTEROP/OSED V3 - Part I

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PJ07-OAUO

OPTIMISED AIRSPACE USER OPERATIONS

This Operational Service and Environment Definition is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 733020 under European Union's Horizon 2020 research and innovation programme.

Abstract

The overall Mission Trajectory Driven Processes focus on the management of Mission Trajectory in planning and execution phases. The flight planning mechanism ensures submission and distribution of iOAT FPL and associated messages within ATM lifecycle from publishing the initial Shared Mission Trajectory (iSMT) the first time until flight termination.

Within this context, the SESAR solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"**, captures those elements that successfully completed V3/TRL6:

- The management of mission trajectory (MT) with variable profile areas (VPA) type of airspace reservations (ARES) as shared via iOAT FPL in the planning phase.
- The ARES conceptual evolution allowing more precise identification of ARES Entry and Exit location and time, to support the increased quality of the trajectory prediction in the corresponding wing operations centre (WOC), network manager (NM) and ATC systems. This includes the evolutions of the VPA module reference as integral part of the evolved iOAT FPL syntax & concept.
- The B2B services for iOAT FPL filing from WOC to NM as well as for the iOAT FPL distribution from NM to ATC. B2B services were as well successfully validated to connect Regional ATFCM (NM) and local ATC FMP systems.

The solution is a combined effort of partners involved and committed to the project development and validation namely Airbus Defence and Space, EUROCONTROL and B4 consortium in particular Czech ANSP. Each partner contributed to the solution within his area of expertise supporting the development and validation of operational improvements and binding enablers.

This SPR-INTEROP/OSED is applicable for solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"**. However, the content of this document has been developed in the context of the validation of the wider "Mission Trajectory Driven Processes" under PJ.07 and PJ.18 in SESAR 2020 Wave 1 and therefore, it also contains elements that were not fully validated up to V3/TRL6 maturity at the end of SESAR 2020 Wave 1. The work on these features has either continued in solution **PJ.07-W2-40** "Initial 4D Mission Trajectory development with integrated DMA types 1 and 2 supported by automation and dynamic civil-military CDM" (integrated approach to the management of MT with DMA types 1 and 2 in the **local planning processes**), which completed V3/TRL6 in Wave 2 or will continue in project **MITRANO** in DES (**MT with types of ARES up to DMA 1&2 in execution phase at network level, respectively in tactical ATFCM and ATC processes**).

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1 Executive Summary

The Mission Trajectory Driven Processes describe the operational improvements and acts as a primary point of entry into the Military AU related ATM domain for internal and external readers in the context of SESAR PJ.07 project Optimized Airspace Users Operations. It brings the Mission Trajectory Detailed Concept developed by European Military ATM community with support of the Aviation Industry to a new dimension and responds to the key challenges set by European Commission Single European Sky SES program. The solution is a building stone of the foundation of holistic European ATM architecture and regarded as military contribution to the performance optimisation of the future European ATM network.

Continuous refinement and development of the Mission Trajectory Driven Processes demonstrates evolution of the MT operational concept elements and their inter-dependency delivering a mature concept as integral part of the SESAR Target ATM concept.

The operational concept behind Mission Trajectory Driven Processes facilitates integration of the Military AU operational requirements into the ATM Network operations through the Mission Trajectory driven processes. It covers transition from Time based to Trajectory based operations and implies improved collaboration between all ATM partners through enhanced civil-military co-ordination that opens up opportunities for seamless military cross-border IFR operations at pan-European scale.

Mission Trajectory Driven Processes also considers two operational streams; one is Airspace Management (ASM) and another one is management of initial Mission Trajectory (iMT) including flight planning and CDM. These operational processes will further evolve into an integrated management of the Military AU demand represented by iMT. The integrated management will encompass airspace management ASM and trajectory management through entire ATM lifecycle. It contributes to the development and propagation of the Military AU demand through allocation of airspace (ARES of different types) and development of the initial Mission Trajectory profile to be further shared with pertinent ATM actors.

The key capabilities represented by WOC, NM and ATC facilitate the integrated management of iMT and interact throughout all ATM phases at local/sub-regional and regional levels. The result of the integrated management represents the Military AU demand as a consolidated data set, shared with the ATM network and all ATM actors concerned through improved OAT FPL mechanism.

One of the key aspects addressed by the solution is a collaborative decision-making process CDM. It plays important role in collaborative planning and in the execution phases of the entire ATM lifecycle. Military participation in CDM can be triggered by different factors and stops when a “system of priorities” has to be applied. This collaboration determines and implements the most optimal for the ATM network solutions through the continuous information sharing of individual, local and network preferences, in both planning and execution phases.

The following Mission Trajectory driven processes within the lifecycle of iMT are the major drivers:

- iSMT Management in Short Term
- iRMT Management in Execution
- iRMT Revision triggered by WOC
- iRMT Revision triggered by ATC
- iRMT Revision triggered by Flight Deck

These processes are described by Activity View diagrams NOV-5. Based on these activity views a set of use cases are derived for each involved operational node. Both artefacts, activity views and use cases, together contain all information to derive the operational requirements, IERs and interoperability requirements.

The solution brings potential benefits to the overall ATM network through the defined operational processes supported by system capabilities facilitating:

- Pro-active contribution to the optimisation of the airspace utilisation and improvement of the ATM network performance.
- Automation of human processes through implementation of the harmonised iOAT FPL.
- Enhanced awareness on true military demand.
- Collaborative planning through enhanced co-ordination of civil and military demand as early as possible to reduce workload and co-ordination efforts.
- Reduction of the complexity of the operational environment and thereby, reducing workload of civil and military ATCOs, e.g. less coordination, less crossing requests.
- Contribution at national level to the overall achievement of performance targets and indicators, including Capacity and Environment, while maintaining Mission Effectiveness.
- Flexibility of the entire ATM network with quick response to short term airspace requests.

The solution also brings the following potential benefits to Military AU:

- Harmonised across ECAC states format of iOAT FPL for military IFR flights in controlled airspace.
- Confidence in harmonised ATS provision across ECAC states to military IFR flights.
- Ability to address military specific requirements for IFR flights operating in controlled airspace (AAR, Formation flights, usage of ARES of different types, RPAS etc.).
- Adaptation of ATC and other support services to military needs including reduction of transit time and less congested environment between ADEP and the reserved area, thus improving mission effectiveness while maintaining safety levels.
- Ability to participate in collaborative planning and sharing of the Airspace resource.
- Quick access to the airspace at short notice through enhanced collaboration with all ATM actors.
- Mutual awareness on each other's demand Military/Military and Civil/Military.
- Automated processing of iOAT FPL across military infrastructure.
- Increased predictability in cross-border operations.
- Officially applied and agreed exemption policy for MT/iOAT FPL.
- Facilitation of single or combined RPAS operations.

Due to incremental approach in the solution development not all the respective concept elements have reached the same maturity yet.

From the OI steps allocated to the mission trajectory driven processes, only **AOM-0303, AOM-0304-A** and **AUO-0215** have completed V3/TRL6 and are under the scope of solution PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)". The "Mission Trajectory Driven Processes" scope is wider and include in addition the rest of the OI steps. Solution PJ.07-03 captures those elements that were validated to V3/TRL6 in the context of SESAR 2020 Wave 1:

- The management of mission trajectory (MT) with variable profile areas (VPA) type of airspace reservations (ARES) as shared via iOAT FPL in the planning phase.

- The ARES conceptual evolution allowing more precise identification of ARES Entry and Exit location and time, to support the increased quality of the trajectory prediction in the corresponding wing operations centre (WOC), network manager (NM) and ATC systems. This includes the evolutions of the VPA module reference as integral part of the evolved iOAT FPL syntax & concept.
- The B2B services for iOAT FPL filing from WOC to NM as well as for the iOAT FPL distribution from NM to ATC. B2B services were as well successfully validated to connect Regional ATFCM (NM) and local ATC FMP systems.

Those with lower maturity will be transferred to Wave 2 for further development and validation since they require more R&D time. These conceptual elements are linked to the ATM Network operations and Trajectory Management domains focusing on ETFMS for DCB/CDM and 4D data with aircraft flight performance sharing and management.

2 Introduction

2.1 Purpose of the document

This document is the Operational Service and Environment Definition (OSED) document for the Mission Trajectory Driven Processes and identifies those elements that have achieved TRL6/V3 within the scope of solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"** in SESAR 2020. It applies the top-down approach covering the high-level concept definition of the environment and operational scenarios by which IMTDP can be described.

Solution PJ.07-03 integrates the work performed under activity PJ.18-01a: both are linked together to jointly develop the initial Mission Trajectory concept in the context of AU operations project. Both activities focus on the same concept, delivering mature operational improvements and technological solutions by addressing the OI steps and the related enablers.

This SPR-INTEROP/OSED is applicable for solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"**. However, the content of this document has been developed in the context of the validation of the wider "Mission Trajectory Driven Processes" under PJ.07 and PJ.18 in SESAR 2020 Wave 1 and therefore, it also contains elements that were not fully validated up to V3/TRL6 maturity at the end of SESAR 2020 Wave 1. The work on these features has either continued in solution **PJ.07-W2-40** "Initial 4D Mission Trajectory development with integrated DMA types 1 and 2 supported by automation and dynamic civil-military CDM" (integrated approach to the management of MT with DMA types 1 and 2 in the **local planning processes**), which completed V3/TRL6 in Wave 2 or will continue in project **MITRANO** in DES (**MT with types of ARES up to DMA 1&2 in execution phase at network level, respectively in tactical ATFCM and ATC processes**).

The SESAR Solution Development Life Cycle aims to structure and perform the work at project level and progressively increase SESAR Solution maturity, with the final objective of delivering a SESAR Solution data pack for industrialisation and deployment. The SPR-INTEROP/OSED represents one of the key parts of this SESAR Solution data pack.

2.2 Scope

The SPR-INTEROP/OSED includes the consolidated validation results from EXE-07.03-V2-01 and EXE-07.03-V3-01 with new conceptual elements, which will enrich Solution PJ.07-03 and enable the description of those elements that have reached full V3/TRL6 status from the entire Mission Trajectory Driven Processes. The conceptual elements related to ETFMS DCB/CDM, 4D trajectory data and aircraft flight performance data sharing have not yet been addressed in the validation activities and remain at lower maturity.

The only selected conceptual elements and operational improvements which were successfully validated in first V3/TRL6 exercise will constitute the core of solution PJ.07-03. It implies that those conceptual elements of the entire iMT concept which require more R&D time will remain with low maturity level and will be developed and validated in Wave 2 of SESAR 2020 program.

The scope of the conceptual elements, which are going to be validated to V3 maturity level is developed and addressed in the Validation plan for V3/TRL6.

This document will cover safety, performance, operational aspects as well as the interoperability aspects related to a specific technology to support the SESAR Solution PJ.07-03.

2.3 Intended readership

SESAR 2020 Projects:

- PJ.06
- PJ.07
- PJ.08
- PJ.09
- PJ.17
- PJ.18
- PJ.19
- PJ.22
- PJ.31

State Airspace User representatives:

- MEPS

Airspace Users

- Civil / Military ANSPs

2.4 Background

This SPR-INTEROP/OSED is based on the results from the literature survey of the deliverables from SESAR 1 work packages contributing to the relevant OFA03.01.04: Business and Mission Trajectory. Analysis from a role play exercise and specific workshops with MEPS and partners working on related OFAs has been transferred as input into this document. Furthermore, the outcome of various validation exercises (VP710, VP716, VP774, VP789, VP790, EXE-07.03-V2-01, EXE-07.03-V3-01), either from discussions during the life cycle of these exercises or from the appropriate validation reports, forms the background for this document. Details of the referenced documents used as input are listed in section 5 of this document.

These operational improvements respond to the following key operational shortcomings:

- Airspace Management:
  - Inability to exploit the opportunities for improvement.
  - Inefficiencies in the ATM Network management and increasing complexity calling for increased flexibility in airspace capacity.
- Network Operations Planning:
  - Disconnected airspace and airport capacity planning processes.
  - Limited sharing of up-to-date planning data.
  - Poor predictability of demand. Uncertainty not fully taken into account.
  - Inconsistent planning information preventing Airspace Users from optimizing their operations.

- Demand Capacity Balancing:
  - Limited flexibility of current ATFCM to cope with increasing traffic demand essentially based on slot allocation.
  - AU's priorities/preferences not taken into account.

The validation results provide evidence of mature operational processes underpinned by technical prototypes facilitating integration of iMT into new operational environment transiting from Time based to Trajectory based operations. The elements that have successfully completed V3/TRL6 are captured via SESAR solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"**.

The entire operational concept will be subject to further R&D with higher maturity level in Wave2.

The Wave 1 results provide an integral view of the operational concept comprising all pertinent ATM actors, which were partially or not at all considered in SESAR 1. ATM actors such as En-route/Approach ATS and ATFCM (Regional/Sub-regional/National) are integral part of the operational environment and totally integrated into Mission Trajectory Driven Processes.

2.5 Structure of the document

This document is structured as foreseen by SJU SESAR 2020 SPR-INTEROP/OSED template.

- Section 1"Executive Summary" contains a short summary and focuses on the key aspects of this document.
- Section 2 "Introduction" describes the purpose and scope of the document, the intended audience, and gives the list of the abbreviations and acronyms used throughout the document.
- Section 3 "Operational Service and Environment Definition"
  - Sub section "SESAR Solution PJ.07-03: A Summary" summarizes the Operational Concept from CONOPS and describes the mapping of relevant OI's to Solutions, the Operational Concept from WOC perspective and processes and services from State Airspace Users point of view.
  - Sub section "Detailed Operational Environment" describes the operational characteristics for SESAR 2020, lists roles and responsibilities, sums up constrains from WOC perspective and describes the deployment status of relevant functions and services.
  - Sub section "Detailed Operating Method" describes the previous operating method, the new SESAR operating method and the differences between them, including the Use Cases.
- Section 4 "Safety, Performance and Interoperability Requirements (SPR-INTEROP)" lists all requirements for Mission Trajectory related processes as well as all information exchange requirements with the involved operational nodes.
- Section 5 "References and Applicable Documents" lists all the applicable and referenced documents.
- Section 6 "Cost and Benefit mechanism" lists benefits identified by solution and provides estimates for the average implementation costs.

2.6 Glossary of terms

Term	Definition	Source of the definition
AIR-REPORT	A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.	ICAO Annex 3
Exemption policy	The exemption policy is a state prerogative and applies in the circumstances when special operational requirements or aircraft equipage require exemption from restrictions and regulations, which in nominal case applies to all IFR flights conducted in controlled airspace.	PJ.07-03
CDM	Collaborative decision-making (CDM) is defined as a process focused on how to decide on a course of action articulated between two or more community members. Through this process, ATM community members share information related to that decision, agree on, and apply the decision-making approach and principles. The overall objective of the process is to improve the performance of the ATM system as a whole while balancing the needs of individual ATM community members. From a military perspective CDM is a process from which all participating parties can gain benefits through the negotiation of proposed options. The negotiation stops either at the moment when all participating parties agree with the result or when they reach a limit in their capability to accept further compromise due to defined priorities".	CONOPS 2017

421 **Table 1 Glossary of terms**

422 # List of Acronyms

Acronym	Definition
A/C	Aircraft
ACC	Area Control Centre or Area Control
ADD	Architecture Description Document
ADES	Aerodrome of Destination
ADEXP	ATS Data Exchange Presentation

Acronym	Definition
ADR	Aeronautical Data Repository
AFUA	Advanced Flexible Use of Airspace
AIM	Aeronautical Information Management
AIP	Aeronautical Information Provider
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information System
AIXM	Aeronautical Information Exchange Model
AMC	Airspace Management Cell
ANS	Air Navigation Service
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
AOC	Aircraft Operations Centre
AOI	Area of Interest
AOP	Airport Operating Plan
AOR	Area of Responsibility
APP	Approach
ARES	Airspace Reservation
ARO	Air Traffic Services Reporting Office
ASHTAM	NOTAM relating to volcanic and/or dust activity
ASM	Airspace Management
ASTERIX	All-purpose Structured EUROCONTROL Surveillance Information Exchange
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATCU	Air Traffic Control Unit
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATM MP	Air Traffic Management Master Plan
ATS	Air Traffic Services

Acronym	Definition
AU	Airspace User
AUP	Airspace Use Plan
B2B	Business-to-Business
BAD	Benefits Assessment Date
BAER	Benefit Assessment Equipment Rate
BFD	Basic Flight Data
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
BT	Business Trajectory
CACD	Central Airspace and Capacity Database
CADF	Centralised Airspace Data Function (ECAC)
CAP	Capacity
CASA	Computer Assisted Slot Allocation System
CAT	Category
CBA	Cost Benefit Analysis
CBA	Cross-Border Area
CC	Capability Configuration
CDM	Collaborative Decision Making
CDR	Coordination Request
CEF	Cost Efficiency
CFD	Cleared Flight Data
CFMU	Central Flow Management Unit
CHMI	Collaboration Human Machine Interface
CIA	Confidentiality, Integrity, Availability
CMC	Civil-Military Coordination
CNS	Communication Navigation and Surveillance
COM	Aeronautical telecommunication service
CONOPS	Concept of Operations
CPDLC	Controller-Pilot Data Link Communications
CPR	Correlated Position Report

Acronym	Definition
CR	Change Request
CRC	Control & Reporting Centre
CSMC	Call Sign Management Cell
CSST	Call Sign Similarity Tool
CTA	Control Area
CTP	Combat Training Program
CWP	Controller Working Position
DB	Deployment Baseline
DCB	Demand Capacity Balancing
dDCB	Dynamic Demand and Capacity Balancing
DDR	Demand Data Repository
DMA	Dynamic Mobile Area
DOD	Detailed Operational Description
DSF	Data Steward Function
EAD	European AIS Database
eAMI	electronic Aeronautical Management Information
EATMA	European ATM Architecture
EATMS	European Air Traffic Management System
EAUP	European Airspace Use Plan
EC	Executive Controller (also referred to as Radar Controller)
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EOBT	Estimated Off Block time
E-OCVM	European Operational Concept Validation Methodology
EPP	Extended Projected Profile
ER ACC/APP	En-route Area Control Centre/Approach
ERNIP	En-Route Network Improvement Plan

Acronym	Definition
ETFMS	Enhanced Tactical Flow Management System
EUUP	European Updated Use Plan
FAA	Federal Aviation Administration
FAB	Functional Airspace Block
FD	Flight Deck
FDP	Flight Data Processing
FDPS	Flight Data Processing System
FL	Flight Level
FMP	Flow Management Position
FMS	Flight Management System
FOC	Flight Operations Centre
FPL	Flight Plan
FRD	Functional Requirements Document
GAFOR	German Air Force Weather Report
GAT	General Air Traffic
HLAPB	High-Level National / Sub-regional Airspace Policy Body
HPAR	Human Performance Assessment Report
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IBP	Industrial Based Platform
ID	Identification
IER	Information Exchange Requirement
IFPS	Integrated Initial Flight Plan Processing System
iMT	Initial Mission Trajectory
INTEROP	Interoperability Requirements
iOAT FPL	Improved Operational Air Traffic Flight Plan
IOP	Interoperability Protocol
iRMT	Initial Reference Mission Trajectory
IRS	Interface Requirements Specification

Acronym	Definition
iSMT	Initial Shared Mission Trajectory
ISRM	Information Services Reference Model
KPA	Key Performance Area
KPI	Key Performance Indicator
LTCM	Local Traffic Complexity Management
MDT	Mission Development Trajectory
MEPS	Military Engagement Plan for SESAR
MET, METEO	Meteo, Meteorological
MILO	Military Liaison Officer
MOE	Military Operational Environment
MSSC	Minimum Set of Security Controls
IMTDP	Mission Trajectory Driven Processes
N/A	Not Applicable
NAF	NATO Architecture Framework
NM	Network Manager
NMB	Network Management Board
NMC	Network Management Cell
NMF	Network Management Function
NMOC	Network Manager Operations Centre
NOP	Network Operations Plan
NOTAM	Notice to Airman
NOV	NAF Operational View
NSOV	NAF Service Oriented View
NSV	NAF System View
OAUO	Optimized Airspace User Operations
OAT	Operational Air Traffic
OATTS	Operational Air Traffic Transit Service
OC	Operations Centre
OE	Operational Environment

Acronym	Definition
OFA	Operational Focus Areas
OI	Operational Improvement
OLDI	On-Line Data Interchange
OM	Operations Manager
OPAR	Operational Performance Assessment Report
ORM	Operational Reply Message
OSED	Operational Service and Environment Definition
PA	Primary Asset
PAR	Performance Assessment Report
PENS	Pan-European Network Service
PI	Performance Indicator
PIRM	Program Information Reference Model
PRD	Predictability
PRISME	Pan-European Repository of Information Supporting the Management of EATM
PRR	Performance Review Report
PRU	Performance Review Unit
PTR	Profile Tuning Restriction
QoS	Quality of Service
QRA	Quick Reaction Alert
RAD	Route Availability Document
RBT	Reference Business Trajectory
RDP	Radar Data Processing
REQ	Requirement
RPL	Repetitive Flight Plan
RTSA	Real Time Status of ARES
SAC	Safety Criteria
SAR	Safety Assessment Report
SAR	Search and Rescue
SBT	Shared Business Trajectory

Acronym	Definition
SDD	Service Description Document
SecAR	Security Assessment Report
SESAR	Single European Sky ATM Research Programme
SID	Standard Instrument Departure
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SNOWTAM	SNOW State Message To Airmen
SO	Security Objective(s)
SoaML	Service Oriented Architecture Modelling Language
SPR	Safety and Performance Requirements
SRA	Security Risk Assessment
STAM	Short-Term ATFCM Measures
STAR	Standard Instrument Arrival
SUT	System Under Test
SWIM	System Wide Information Management
TAD	Technical Architecture Description
TAFMO	Tactical Flow Management Operations
TM	Trajectory Management
TMA	Terminal Manoeuvre Area
TP&M	Trajectory Prediction & Management
TRA	Training Area
TRL	Technology Readiness Level
TS	Technical Specification
TSA	Temporary Segregated Airspace
TTA	Target Time of Arrival
TTO	Target Time Over
UC	Use Case
UDP	Universal Data Packet
UDPP	User Driven Prioritization Process
UML	Unified Modelling Language

Acronym	Definition
UUP	Updated Use Plan
VALP	Validation Plan
VALR	Validation Report
VALS	Validation Strategy
VP	Validation Plan
VPA	Variable Profile Area
VR	Validation Report
VS	Validation Strategy
V&V	Validation and Verification
WOC	Wing Operations Centre
WP	Way Point
WP	Work Package
WXXM	Weather data Exchange Model
XML	Extended Markup Language

423 **Table 2 List of acronyms**

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3 Operational Service and Environment Definition

The operational improvement steps related to the Mission Trajectory Driven processes for Wave 1 are: AOM-0303, AOM-0304-A, AUO-0210, AUO-0211, AUO-0215 and AUO-228. From them, only **AOM-0303, AOM-0304-A and AUO-0215** have successfully completed V3/TRL6 and have been allocated to solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"**.

The following introductory description covers the full scope of the Mission Trajectory Driven processes (i.e., covers SESAR solution PJ.07-03 and other elements that will require further research under SESAR 2020 Wave 2).

The Mission Trajectory Driven processes refines the Detailed Mission Trajectory concept, develops operational requirements and validates initial Mission Trajectory (iMT) integration into ATM network operations through exchange of iOAT FPL and associated messages/protocols between Wing Operation Centres (WOCs), NM (IFPS) and ATC in close collaboration with airspace management ASM. Continuity in iMT data sharing via iOAT FPL and associated messages/protocols between all actors concerned will increase predictability and overall situation awareness on AU demand and contribute to the performance expectations of the ATM network.

The Mission Trajectory Driven processes refer, through a full integration of all operational nodes within the entire ATM system, to the updating of the processes of all operational nodes for the management of the shared and reference initial Mission Trajectory (iSMT/iRMT). These processes respond to the need to accommodate individual military Airspace User needs and priorities without compromising optimum ATM system outcome and the performances of all stakeholders.

Since every nation (currently) has different procedures, the solution highlights the recommended best practices from the point of view of a (future) WOC function and supporting Technical Systems in line with the SESAR driven ATM evolution. It does neither deal with the differences amongst State Airspace Users' processes around Europe, nor try to show nation's peculiarities.

Trajectory Based Operation, or more specifically 4D Trajectory Management, facilitates a fundamental shift away from the management of flights through tactical intervention towards a more strategic focus on planning and intervention by exception. This enables the effective dynamic adjustment of airspace characteristics in order to meet predicted demand, whilst aiming to keep any distortion to the Business/Mission Trajectories to the absolute minimum, as well as providing sufficient flexibility for optimisation purposes.

The concept does not question those tactical actions necessary for safety reasons or those needed to handle non-nominal situations.

The use of a single reference trajectory through a common data set, shared between all actors from the planning phase onwards, represents the backbone for its subsequent management. The management through time and the sharing of flight relevant data amongst all involved actors improves the reactivity, the interoperability and the performance of the network as a whole, facilitating an improved environment within which Airspace Users specific needs can be better accommodated.

The trajectory is shared in the planning phase as the iSMT, based on the preferred trajectory developed internally by the AU. The iSMT is progressively refined through a collaborative iterative process as the planning phase progresses, to take account of, and reflect, the most up-to-date data, ATM constraints and 4D targets.

When specific conditions are met, the iSMT becomes the iRMT. This transition represents end state of the planning phase and beginning of the execution phase.

The iRMT describes the trajectory the Airspace User has agreed to fly and the ANSPs and Airports agree to facilitate. Such data need to be amended through a revision process in order to reflect the current trajectory to be flown by the aircraft. Indeed, this iRMT "reference trajectory" is the fundamental element, i.e. the heart, of the Flight Relevant Data Set, which contains all the data necessary to support all actors' needs for the preparation and execution of the flight.

The Mission Trajectory-driven Processes will focus on the refinement of military Airspace Users (AUs) operations and management of iMT through iOAT FPL and associated messages mechanism. Different categories of actors involved in the project will cope with challenges in development, validation and further deployment of the solution. These actors are the following:

- State (military) aircraft operators
- ATM Industries
- Network Manager
- ANSP
- National Aviation Authorities

The actors involved in this ATM solution development will also be confronted with the same challenges but from different perspectives:

- State (military) aircraft operators will have to develop new processes and system support functionalities for the development and management of Mission Trajectories through harmonised implementation of improved OAT FPL.
- ATM Industries will upgrade the existing systems and support tools facilitating automation of human processes.
- ANSP, recognizing initial Mission Trajectory as a subject to air traffic service provision will upgrade/modernise ATC systems, revise ATS procedures and training, enhance resource management taking into consideration military Airspace Users operational needs and peculiarity of military aircraft flight performances.
- Network Manager will upgrade IFPS and ETFMS functionalities for processing and distribution of iOAT FPL.
- National Aviation Authorities will provide state expertise facilitating development of prototypes for further implementation and standardisation.
- All ATM actors ATC, WOC, NM will commit to the management of initial Mission Trajectories in order to accommodate military Airspace Users' demand and ensure its integration into NM processes (Demand Capacity Balancing - DCB) hence creating conditions for increased predictability and flexibility in the airspace management (civil &military).

The Mission Trajectory concept describes a trajectory that is distinct from Business Trajectory (BT), runs through all the ATM phases (planning, execution, and post flight analysis) and reflects military AU operational needs. The iMT is specifically designed for the instances when BT cannot completely express in an accurate manner AUs intentions, needs, requirements, and preferences. Therefore, it may be considered that iMT is not addressing only

the needs of military or, in a broader sense, State AUs, but the preferences and requirements of any kind of AU who is finding itself in a situation where BT is not suitable enough.

Military are the primary participants and main contributors to the Mission Trajectory concept, but this does not hinder in any way the possibility of other airspace users to use and take benefit of the existence of MT, being highly recommendable to try to insert and harmonise their requirements with the already existing ones expressed by military.

Representing Military Airspace User, the WOC function will be at the cutting edge in managing Mission and Business Trajectories with support of the ground-based tools. These tools will facilitate the automation of human processes for iMT development, sharing and monitoring. The focus is on the Mission Trajectory development and refinement within layered collaborative planning process and the monitoring functionalities in the execution phase. The BT will be managed by WOC function when military aircraft is flying in agreement with requirements set for business trajectory.

The ATC systems will integrate iMT data, which may contain airspace reservations (ARES), and other specific elements such as formation split and join elements air refuelling anchors etc. facilitating ATCO awareness. Inside ARES, iMT will not be traced by ATCO and shared with pertinent ATM actors with regard to aircraft position as it has no relevance to the ATS operations. ATC systems such as Trajectory Prediction & Management (TP&M) and Local Traffic Complexity Management (LTCM) functional blocks have to be upgraded in order to use trajectory data in real time.

Mission effectiveness will remain a priority for military Airspace Users hence contributing to the overall ATM network performance framework. Therefore, the achievement of the iMT performance objectives will strongly depend on the efficiency of the trajectory management process as well as the ability of the ATM network to adapt to AU demand and properly react on the constantly evolving operating environment. In the framework of SESAR R&D, the performance aspects related to military are addressed in the SESAR Performance Framework document and limited to the key performance area Civil-Military Cooperation and Coordination (CMCC). Therefore any reference to the performance in the context of the solution will be tightly bound with indicators and metrics addressed in the SESAR document.

Within the scope of Trajectory management (TM), iMT brings military specific requirements to the ATM network. Requirements related to confidentiality, aircraft configurations, formation flights, ARES allocation, and synchronisation of multiple missions etc. should be processed on the need to know basis by NM facilitating the allocation of military AU demand.

Management of iMT will be supported by WOC, ER ACC/APP, ASM (Regional and Sub-Regional/National) and ATFCM (Regional and Sub-Regional/Local) functions and system capabilities in order to grant seamless and efficient civil-military ATM coordination while facilitating optimization of all AU flight operations.

3.1 SESAR Solution PJ.07-03: A Summary

From the wide scope of the Mission Trajectory driven processes described above, solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"** captures those elements that were validated to V3/TRL6 in the context of SESAR 2020 Wave 1:

- The management of mission trajectory (MT) with variable profile areas (VPA) type of airspace reservations (ARES) as shared via iOAT FPL in the planning phase.
- The ARES conceptual evolution allowing more precise identification of ARES Entry and Exit location and time, to support the increased quality of the trajectory prediction in the corresponding wing operations

centre (WOC), network manager (NM) and ATC systems. This includes the evolutions of the VPA module reference as integral part of the evolved iOAT FPL syntax & concept.

- The B2B services for iOAT FPL filing from WOC to NM as well as for the iOAT FPL distribution from NM to ATC. B2B services were as well successfully validated to connect Regional ATFCM (NM) and local ATC FMP systems.

PJ.07-03 is dependent on following projects/solutions:

PJ.18-01a necessary for solution, as PJ.18-01a has delivered the TS/IRS required for solution PJ.07-03.

Solution PJ.07-03 is contributing to the following two key features, specified in the CONOPS:

- Optimised ATM Network Services
- Advanced Air Traffic Services

Solution PJ.07-03 is contributing to the following ATM capabilities:

- Airspace Management
  - Airspace Reservation Management
- Demand and Capacity Balancing (Airspace)
  - Air Traffic Demand Provision (Airspace)
  - Air Traffic Flow Management
  - Airspace Capacity Information Provision
- Trajectory Management
  - Collaborative Trajectory Planning
  - Trajectory Conformance Monitoring
  - Trajectory Revision in Execution

The following table describes the associated OI steps which have completed V3/TRL6 and are considered the scope of solution PJ.07-03 “Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)” .

SESAR Solution ID	SESAR Solution Title	OI Steps ID ref. (coming from EATMA)	OI Steps Title (coming from EATMA)	OI Step Coverage
PJ.07-03	Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)	AOM-0303	Pan-European OAT Transit Service	Fully
PJ.07-03	Sharing mission trajectory data with NM and ATC via an	AOM-0304-A	Improved and Harmonised	Fully

SESAR Solution ID	SESAR Solution Title	OI Steps ID ref. (coming from EATMA)	OI Steps Title (coming from EATMA)	OI Step Coverage
	improved OAT Flight Plan (iOAT FPL)		OAT Flight Plan	
PJ.07-03	Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)	AUO-0215	Sharing iSMT through iOAT FPL	Fully

Table 3: OI steps mapping to the solution PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)"

SESAR Solution ID	SESAR Solution Title	OI Steps ID ref. (coming from EATMA)	OI Steps Title (coming from EATMA)	OI Step Coverage
N/A, intermediate work on "Mission Trajectory Driven Processes"	N/A	AUO-0210	Participation in CDM through iSMT and Target Time (TTO) negotiation	Partial
N/A, intermediate work on "Mission Trajectory Driven Processes"	N/A	AUO-0211	WOC Management of iRMT via improved OAT FPL	Fully
N/A, intermediate work on "Mission Trajectory Driven Processes"	N/A	AUO-0228	Agreed iRMT	Fully

Table 4: Other OI steps matured by the project activities not yet V3/TRL6

Following table summarizes the High Level Operational Requirements applicable to the SESAR Solution PJ.07-03 in the CONOPS [6].

High Level CONOPS Requirement ID	High Level CONOPS Requirement	Reference to relevant CONOPS Sections e.g. Operational Scenario applicable to the SESAR Solution
S07-03-HLOR-01	Trajectory management shall allow the planning and executing of the most efficient (from military AU perspective) military missions by • Involving military and civil Airspace Users into the DCB processes through SIMT Target Time negotiation when deemed necessary; • Involving WOC in refinement and iterative update of iMT via CDM with due regard to AUs priorities Exploiting the capability of a Pan-European OAT-IFR Transit Service for cross-border operations"	B.1.1 RBT/RMT Revision B.1.2 Life Cycle of the 4D Trajectory B.2.1 Airspace Configuration Definition and Management B.2.2 Civil/Military Collaboration
S07-03-HLOR-02	Trajectory definition processes shall be as efficient and effective as possible to reach: • An optimum trade-off between planning effort and flight operations benefit; especially in the execution phases; • High degree of process automation on state AU side to reduce human workload and systems scale as much as possible; and High degree of flight efficiency during the flight operations by allowing the optimization of trajectories	B.1.1 RBT/RMT Revision B.1.2 Life Cycle of the 4D Trajectory B.2.1 Airspace Configuration Definition and Management B.2.2 Civil/Military Collaboration

574 **Table 5: Applicability of HL CONOPS requirements to the Solution**

575 ### 3.1.1 Deviations with respect to the SESAR Solution(s) definition

576 The following deviations to solution's PJ.07-03 definition in EATMA [4] have to be taken into account.
577 Corresponding Change Requests have been created by PJ.18-01a in coordination with PJ.07-03. Both Solutions
578 assume that these CR are granted and this SPR-INTEROP/OSED is based on these implemented CRs. The following
579 table is a summary of the content of the CRs.

Enabler	OI Step	Deviation
A/C-72	AOM-0303	Not considered by the teams of solution PJ.07-03. No impact on A/C.
PRO-014	AOM-0303 AOM-0304-A AUO-0215	Not considered by the teams of solution PJ.07-03, as this is integral task of CMAC.
PRO-015	AOM-0303 AOM-0304-A	Not considered by the teams of solution PJ.07-03.
SWIM-APS-01a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. Enablers are too generic, SESAR solution uses available B2B NM services
SWIM-APS-02a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. Enablers are too generic, SESAR solution uses available B2B NM services
SWIM-APS-03a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. Enablers are too generic, SESAR solution uses available B2B NM services
SWIM-APS-04a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. Enablers are too generic, SESAR solution uses available B2B NM services
SWIM-INFR-05a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. This enabler is used by the SESAR solution.
SWIM-NET-01a	AOM-0304-A	Not considered by the teams of solution PJ.07-03. This enabler is used by the SESAR solution.

Table 6: Deviations to solution's PJ.07-03 definition in EATMA

Enabler	OI Step	Deviation
METEO-06b	AUO-0228	Not considered by the teams of solution PJ.07-03, as only reception of METEO data applicable.
PRO-014	AUO-0228	Not considered by the teams of solution PJ.07-03, as this is integral task of CMAC.
PRO-076	AUO-0210	Not considered by the teams of solution PJ.07-03, as this is integral task of CMAC.
PRO-077	AUO-0211	Not considered by the teams of solution PJ.07-03, as this is integral task of CMAC.

Table 7: Deviations on other OI steps addressed in Wave 1 in EATMA

3.2 Detailed Operational Environment

This section describes the detailed Operational Environment with Roles and Responsibilities, which are relevant for the Mission Trajectory driven processes in the context of Optimised Airspace Users operations project. Therefore it covers the full scope of the OI steps described above (those included in solution PJ.07-03 (V3/TRL6 completed) and those that did not complete V3/TRL6).

It should be noted that notion of operating environment is complementary to the operational environment as described below.

The notion of operating environment provides a logical link between the operational needs expressed by Airspace Users and the need to deploy new ATM procedures and technologies. By definition, Operating Environment (OE) means an environment with a consistent type of flight operations. In fact, operating environment can equally be applicable to civil and military flight operations with slight difference in the description of categories of such an environment.

For the purposes of strategic deployment planning set out in the Master Plan, European service provision units have been categorised into four operating environments: airport, terminal manoeuvring area (TMA), en-route and network. Further subdivisions for detailed planning purposes recognise the different needs of units with differing complexity and traffic Levels.

Military operating environment (MOE) has been created to analyse the contribution of civil-military coordination and interoperability solutions for mission effectiveness and overall network performance. Military's approach is to implement civil capabilities when possible and when those capabilities do not introduce constraints and

limitations to higher military functions. While a large portion of civil operations at airports, in TMA and en-route are comparable, military flight operations are substantially different.

Military Airspace Users will be concerned with operating environments when deploying new operating methods, tools and procedures and consider both ground and airborne components.

The ground based Operating Environment will comprise organisation of air operations and service provision whilst the airborne based environment will mainly focus on provision of services rendered to military and civil traffic in respective areas of responsibility. Such Operating environments will cover:

- Military airbases and airbases collocated with co-use by civil aviation.
- TMA with military and mixed operations handling and transit service for military and civil flights.
- CTA control area with military areas of responsibility.
- ARO handling and transit service for military and civil flights.
- ARES with tactical control and transit service for all non-participating flights.

The ECAC airspace is constantly undertaking modernisation to optimise ATM network operations and satisfy performance targets set for different reference periods. This modernisation brings new design features and operational processes/procedures.

Each operational node of the European ATM Architecture implements functions and services to realise the ATM capabilities. In solution PJ.07-03 the following operational nodes, including their instances, are addressed:

- Network Operations
  - Airspace Organisation
    Airspace Organisation node is responsible for airspace design and consolidation of airspace needs under consideration of traffic demand forecast.
  - Airspace Management
    Airspace Management node is responsible for the airspace management and the airspace allocation activities.

    - Airspace Management (Regional)

    Airspace Management (Regional) node instance is responsible for the provision of ASM support at regional level through gathering and consolidation of ASM requests, and further publication via eAUP/eUUP in NOP on a daily basis.

    - Airspace Management (Sub-regional/National) Airspace Management (Sub-regional/National) node instance is responsible for the airspace organisation and management and the airspace allocation activities.

  - Air Traffic Flow and Capacity Management

- Regional ATFCM
  The Regional ATFCM node instance is responsible for the DCB activities and the resources and capabilities forecast and plan.
- Sub-regional/Local ATFCM
  the Local/sub-regional ATFCM node instance is mainly responsible for the DCB/dDCB activities and is involved in the airspace management and crisis activities.

- ATS Operations

Air traffic service (ATS) include variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service). Air Traffic control service is provided for the purpose of preventing collisions between aircraft, and on the manoeuvring area between aircraft and obstructions. Furthermore it's provided for expediting and maintaining an orderly flow of air traffic (based on ICAO Doc 4444).

- En-Route/Approach ATS Performs all the en-route and approach ATS operations.
- Airspace Users Operations
  - Airspace user operations (WOC)

  Performs all ground related activities facilitating Military AU flight operations in planning and execution phase.
- Flight Deck

  Performs all the on-board AU operations including flight execution/monitoring according to agreed trajectory, compliance with ATC clearances/instructions, etc.

The following figure gives an overview of the involvement of the operational nodes in the Mid / Short Term Planning Phase and the Execution Phase within the scope of PJ.07-03.

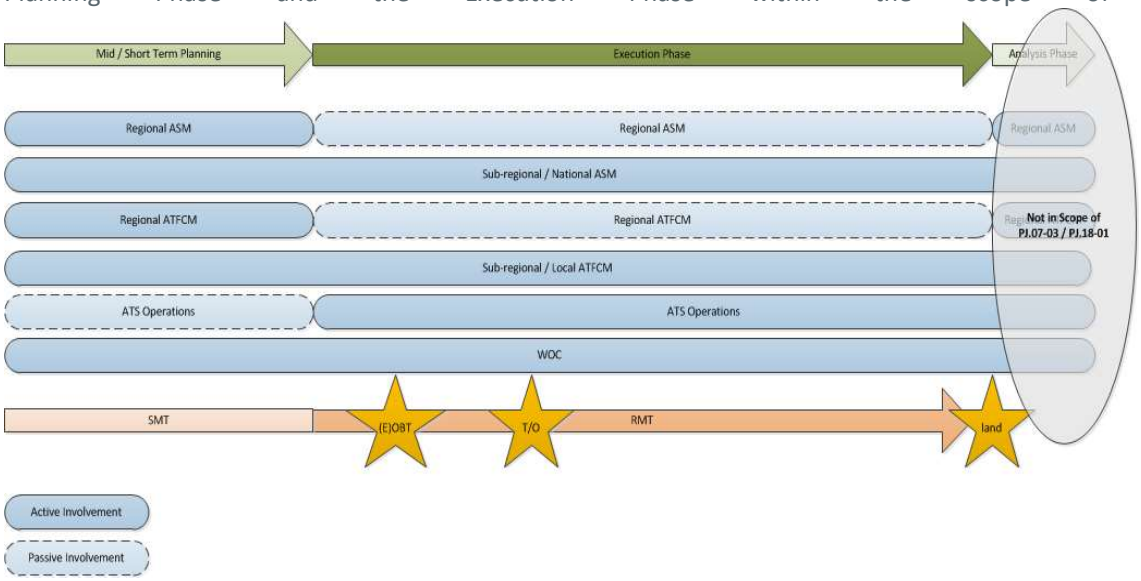


Figure 1: Operational Nodes Involvement in Flight Phases

3.2.1 Operational Characteristics

This section details the Mission Trajectory-related processes from perspective of Wing Operations Centre, Air Traffic Flow and Capacity Management, Airspace Management and Air Traffic Services operations and shows roles and actors concerned.

The R&D solutions under SESAR 2020, contribute to the improvements and benefits to be realised through the gradual implementation and deployment of the SESAR ATM CONOPS [6]. The achievement of the above described improvements with the maximum performance gains will require a change in the way in which solutions are deployed and services are provided.

Following aspects of the operating environments need to be considered for SESAR 2020:

- Traffic Characteristics (including Airport)
  Presented by Long term forecasting with horizons of up to twenty years, as indicated in the 2013 edition of EUROCONTROL's study, "Challenges of Growth" [35].
- Capacity Characteristics (European ATM Master Plan) [5]
  - Airports: Combination of Utilisation / Layout.
  - TMA: Low Medium/High Complexity.
  - En-Route: For En-Route Operating Environments, the categories are based on the Complexity score (a composite measure combining traffic density (concentration of traffic in space and time) with structural complexity (structure of traffic flows) described in the PRR Report 2013.
- Airport Capacity
  Presented in chapter 4.2 of Challenges of Growth 2013 Task 4: European Air Traffic in 2035.
- Environmental Impact
  Presented in chapter 5 of Challenges of Growth 2013 Task 4: European Air Traffic in 2035.
- Other factors[1]
  - Travel distance and aircraft size
  - High-speed train
  - Climate Change Risks and Resilience

The detailed operational characteristics for each of the operational nodes under the scope of solution PJ.07-03 are described in the following sub-sections.

3.2.1.1 Airspace Organisation and Management (ASM)

Airspace Organisation and Management (ASM) is enriched by introduction of the Advanced Flexible Use of Airspace concept AFUA in SESAR 1 with deliverables at maturity level ready to be moved to the industrialisation phase. Therefore all these deliverables could be considered as a base line with regard to airspace organisation and management.

The AFUA concept provides more flexibility to all Airspace Users by allowing dynamic airspace management in all phases of the operations - from initial planning, throughout the execution phase and post-operational analysis phase.

AFUA concept brings new airspace design features to optimally fulfil military AU needs and better share the airspace resources with all Airspace Users concerned.

At the same time modularity of the VPA designed ARES provide military users with the required airspace optimal to achieve their mission objectives.

Implementation of AFUA concept implies for

- Military: The dynamic management of airspace that allows the planning and management of military operations much closer to the time of operation if required. The automation of human processes in ASM support tools which improve the civil-military decision making process and provide additional features, like

forecast, which improves visibility and transparency in planning and execution phases. It ensures the optimum satisfaction of military Airspace requirements.

- Civil: The dynamic management of airspace allows the planning and management of a better Demand and Capacity Balancing at the three levels of airspace management.
- All: In order to ensure optimum use of available airspace by all Airspace Users, the need for direct co-ordination and a collaborative dialogue between civil and military Local Network Management actors (AMC, ACC, …) and the Network Manager will require system support and communications to allow for real-time updating of the airspace database (in planning and execution phase). This will provide improved coordination between military and civilian Airspace Users and an enhanced mutual awareness of airspace activity of both civil and military operations. Additionally, this more effective and Advanced Flexible Use of the Airspace (AFUA) will increase capacity by reduction of the workload at Execution Phase.

Network Operations Plan implements the Network Strategic Plan at operational level for the next 2 – 5 years. Consequently it focuses at operational implementation cascaded down into shorter term plans down to the daily level. It includes the route network improvement plan ERNIP and the scares resources plans. It addresses:

- Re-enforcement of capacity planning;
- Airspace design and utilisation actions;
- Use of network planning tools and data;
- Preparation of system changes/special events;
- Deployment of flight efficiency improvement actions;
- Proposals and support for operational improvements;
- Network procedures (ATFCM/ASM/ATS);
- Deployment of network systems and programmes.

3.2.1.2 Airspace Management Regional

The Network Manager acts as catalyst and facilitator for an efficient overall network management by all ATM stakeholders.

The dynamic management of airspace allows the planning and management of military operations much closer to the time of operation. The automation provided by ASM support tools improves the civil-military collaborative decision making process and improves visibility and transparency in planning and execution phases. It ensures balance between civil and military AU requirements hence improving ATM network performance.

The optimum use of available airspace is ensured through direct co-ordination and a collaborative dialogue between civil and military actors (e.g. AMC, ACC, and FMP) at local level. Network Manager provides system support and communications to allow for real-time updating of the environmental database (in planning and execution phase) by means of improved coordination between military and civilian Airspace Users and an enhanced mutual awareness of airspace activity of both civil and military operations.

Civil-military coordination is enhanced through various means, including real time airspace status update, for ASM processes using B2B services between local ASM support systems and NM systems, and also the integration of airspace status data from the ASM systems into the ATC systems. B2B exchanges comprise Airspace Use Plan (AUP) and Updated Use Plan (UUP) exchange and the ability for the local ASM tool to send updates of static airspace data to the NM system to be validated on the next AIRAC cycle. Additionally ASM, NM and ATC systems

shall be able to process real time airspace status data. ATC actors (e.g. ATCO) automatically receive real time airspace status information update from the local ASM system.

The update of the Pan European Network Situation (NOP) with information on airspace and route availability status accompanied, where needed, with updated input to the operational plan on the agreed scenarios for routes, sectors and areas.

Provide static and dynamic Airspace data in a standardised AIXM format as a common basis for Airspace Management and AIM Operations.

The ASM/NM Interoperability is enriched by developing and validating the interface between ASM tools and ATFCM systems allowing to share information on airspace planning and real time airspace status.

3.2.1.3 Airspace Management Sub-Regional/Local (AMC)

Local and Sub-regional actors (ACCs, AMCs, FAB) in close coordination with Regional ATFCM assess the impact of airspace demand and develop solutions in order to optimise network, regional, sub-regional and local performance. This process is a continuously iterative and interactive validation, development and refinement of the forecast that is built into a final operation plan promulgated the day before the operations.

Modular temporary airspace structures and reserved areas are introduced to enable sub-divisions, new areas or revised airspace requirements. The design of Variable Profile Areas is a common principle used in the European airspace design.

The greater flexibility is offered to accommodate military requirements by defining different airspace scenarios with acceptable network impact through extension or sub-division of military training areas (TSA/TRA/CBA) adjusted to match military training and operational requirements for each type of mission.

While offering greater flexibility to accommodate military operational requirements, NM, ANSP and Airspace Users will benefit from higher availability of CDRs or just airspace agreed upon CDM process for tactical Flight Planning purpose.

3.2.1.4 Air Traffic Flow and Capacity Management (Regional NM function)

Air Traffic Flow and Capacity Management is an iterative process that runs along the ATM lifecycle starting at the Long-Term Planning Phase, being refined and detailed during the Medium Term Planning and Short Term Planning Phase, with corrective actions even during the Execution phase.

The Air Traffic Flow and Capacity Management process integrates Local-/Sub-Regional and Regional information into a common shared Demand and Capacity picture. It is a key characteristic that none of the above mentioned levels/actors work in isolation, but together in an integrated way.

The planning process relies on traffic forecast based on economic, environmental and political considerations. The resulting Network planning is reflected by the Network Operations Plan (NOP) and made available to all actors via the NOP Portal.

Predefined DCB Solutions and available ACC and airport configurations are defined taking into consideration long term Airspace User plans, reflected mainly through adjustments to the European Air Route Network as part of the ICAO European Region Air Navigation Plan. In justified cases it considers also the required measures to cope with major / global events such as the Olympic Games or significant military exercises.

Traffic forecast is based on a “cloning flight mechanism” and on a maximum airport capacity that can be accommodated regardless of the flight type that is “cloned” when exceeding the airport accommodation capacity.

Airport resources plan development is mainly programmed locally for each airport and through non-standardised collaborative/commitment procedures with the Airspace Users and the other stakeholders.

Currently, Airport capacity is not described according to transparent and/or standardised criteria.

A number of current items related to long term planning will still be considered in the context of SESAR:

- Quality of service;
- Traffic forecast;
- Local capacity planning;
- Long-term military planning (major exercises);
- Planning of significant events (Olympics etc.);
- Catalogue of predefined solutions.

At the airport level, local activities during the Long Term Planning phase will remain.

The Demand planning is based on forecasts about traffic demand and Airspace Use. The forecasts are progressively detailed and refined with new / updated / more detailed information about flight intentions, as getting closer to operations.

Coordination between Network Management and Airspace Management is effected before the day of operation with reviews and updates in the tactical Phase (Day of operations).

The reference traffic demand is based on historical data, intentions and predictions for civil traffic.

Detailed flight specific historical military IFR traffic data is not included, since military flights or portion thereof is not processed today by the NM systems and in consequence did not feed historical traffic demand data sets.

If historical military IFR traffic data would be useful to be included in the future, needs to be validated. It is assumed that due to the high variability of military IFR operations compared to regular scheduled flights, predictability might even be decreased.

Capacity planning is reflected by a capacity plan, which takes into account refined information, where available, on the potential impact of Long-term military planning of major exercises.

The Capacity plan is based on the definition of ATM resources and the selection of configurations adapted to the demand.

Some types of DCB Solution already exist, such as predefined scenarios.

Short-term DCB Solutions are further necessary, because:

- A part of the traffic/airspace demand will only be known on the day of operation;
- The predictability of weather and unexpected events will remain limited in the medium-term;
- Flexibility is required to cope with low predictable factors, introducing variability in traffic demand.

Network Management is monitoring the execution phase to support the processes detailed in short-term planning. The Detection of imbalances is based on traffic load monitoring:

- from hourly capacity use to airspace volume occupancy counts monitoring;
- Dynamic airspace volume re-configuration as a means to adjust resources in execution;

- Airspace requirements confirmed at short notice.
- Specific short term DCB measures may be affecting airborne flights
- DCM measures are not applicable to military flights, except, generally if operated entirely under GAT rules, but even for those, exemption are normally granted in daily operations.

3.2.1.5 Air Traffic Flow and Capacity Management (Sub-Regional/Local NM function)

Is part of the above described operational environment and provides detailed Capacity information for the sub-regional or local area concerned to the overall Network Operations Plan at regional level.

3.2.1.6 ATS Operations

The Operational Environment of Air traffic services (ATS) that can be common for civil and military Airspace User operations include flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service). Air Traffic control service is provided for the purpose of preventing collisions between aircraft during the flights, and on the manoeuvring area between aircraft and obstructions. Furthermore it's provided for expediting and maintaining an orderly flow of air traffic.

Further on the ATS operational characteristics detail Processes, Roles, Responsibilities, and Constrains, in the context of Mission Trajectory Driven Processes and relevant for the Optimised Airspace User Operations.

Ground based automated means are used in En-Route and Approach ATS, to support the air traffic controllers in the provision of the following activities related to the PJ 07-03:

- Ground-ground and (air-ground in RBT) exchanges of flight and environment data,
- Update and distribution of flight plan data, potentially correlated with track data built from surveillance sources,
- Distribution of warnings and alerts upon detection of ARES infringement, separation criteria infringement, or on non-conformance between aircraft behaviour and corresponding flight plan data,
- Pre-tactical and tactical conflicts detection, conflicts resolution assistance and local traffic complexity assessment.

A pan-European OAT-IFR Transit Service (OATTS) as a holistic part of the European ATM system provides ATM services to military IFR domestic and cross-border operations in controlled ECAC airspace. The provision of ATM services is adapted to the requirements of military AU with a big diversity in aircraft performance. It facilitates the integration of military IFR flights into the ATM Network operations and offers more flexibility and freedom to military operations hence ensuring mission effectiveness, sometimes mitigating the need for full compliance with equipage requirements and thus reducing retrofitting costs.

An ECAC-wide OATTS connects national structures and arrangements via predefined entry- and exit parameters under the framework of the EUROAT (EUROCONTROL Specifications for harmonized Rules for OAT-IFR inside controlled Airspace in the ECAC Area) to establish a flexible service provisions facilitating OAT-IFR flights across Europe. This includes as much as feasible an integration of military IFR operations into the European route network, since this approach is beneficial to military and civil operational flexibility through increased civil-military co-ordination and information sharing.

The development of an ECAC-wide OATTS offers a viable solution to integrate military operations into the future ATM Network operational environment maintaining sufficient military operational flexibility while ensuring that

military IFR operations will not be imposed with restrictions in regard to aircraft equipage, ATFM measures and/or other ATM arrangements.

The following operational processes characterise ATS operations in the context of the solution:

- IOAT FPLs and all consecutive messages are processed validated and distributed by centralised flight plan processing to respective ATCUs, Network Operations Plan (NOP) and Enhanced Tactical Flow Management System (ETFMS).
- Trajectories generated in local FDP systems on the basis of received iOAT FPLs are stored in the system and flight becomes a subject to air traffic service provisions with the first FPL associated activation message.
- ATC FD processing in validations when ATC receive iOAT FPLs.
- Aim is to demonstrate and validate cross-border OATTS
- Use of the PROTECTED FPL indicator in NOP and CHMI to demonstrate the feasibility to assure confidentiality (selected distribution) to the extent required.
- Use of harmonised iOAT FPL features to the maximum extent possible.
- Demonstrate military training in ARES including entry/exit points processing in IMT and its sharing.
- ATC (pilot) simulator platform emulates the execution of the flight by processing Mission Trajectories.
- ATC sends “recorded” radar track information (CPR msg.) back to WOC for i.e. monitoring.

The Airspace User owns the Mission Trajectory, thus in normal circumstances the users have primary responsibility over their operation. In circumstances where ATM constraints (including those arising from infrastructural and environmental restrictions/regulations) need to be applied, the resolution that achieves the best mission outcome within these constraints is left to the individual user.

Typically constraints will be generated or released by various ATM partners through CDM and potentially State AU operational processes, for the iMT. The owners’ prerogatives do not affect ATC or Pilot tactical decision processes.

State AU operations may impose additional constraints to other AU in form of airspace reservation, plus priority setting depending on the mission type.

3.2.1.7 Airspace User Operations (WOC)

Each operational node, and capability configuration, are applicable either to one or more Sub-operating environments (Airport, En-Route (High Complexity, Medium Complexity, Low Complexity), Network, TMA (High Complexity, Medium Complexity, Low Complexity). In the context of the solution the Airspace User Operations (WOC) is associate with the following operating environments: TMA, En-route and Network.

From SESAR definition phase on, along the evolution of the operational concept development, WOC has never been mirroring neither the organisational structure nor operational activities of FOC. The MT concept explicitly describes WOC as a function that can be distributed amongst different entities with different roles and actors according to national military organisation and infrastructure. In the context of the solution, roles actors and responsibilities affiliated with WOC function are used to explain operational activities and information exchanges between all relevant nodes along all phase of iMT lifecycle.

The Operational Concept describes three typical phases of the mission life cycle which are well known by State Airspace Users and coincide with the ATM lifecycle:

- Mission Planning,
- Mission Execution and
- Mission Debriefing

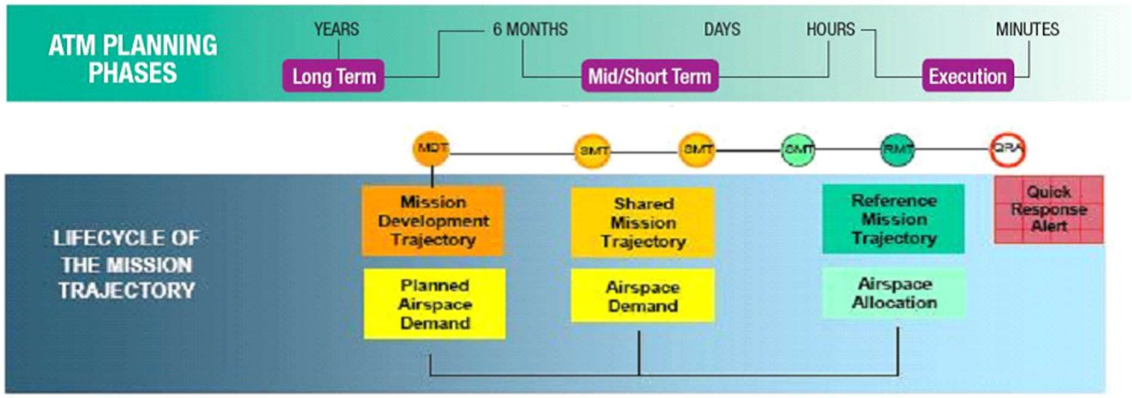


Figure 2: ATM Planning and Trajectory Life Cycle phases

Length, details, events and organizational matters of these three phases will vary throughout State Airspace Users around Europe. This section of the SPR-INTEROP/OSED will provide a generic view regardless of national and/or military specifics, by focusing on ATM relevant aspects only.

An up to date and complete set of planning data forms an essential basis for sound and safe flight or mission planning. The required data in appropriate quality and correctness will be made available via initial SWIM services for download into proved and certified support systems and data bases. Data made available from initial SWIM covers initial content from aeronautical data (EAD, CACD), environmental data i.e. Aeronautical Information Management data (i.e. the regional AIM Technical System), weather data (4D Weather Cube) and flight plan data amongst other. Initial SWIM services will enable transfer/import of planning data into the WOC system(s) (i.e. the State AU WOC Technical System(s)). AIM contains static data, including military data such as military waypoints etc., to enable consistent and reliable mission planning for State Airspace Users.

Based on the data just described and many other (internal) information sources, State Airspace Users plan missions/flights with respect to aeronautical, meteorological and tactical aspects. In mid-term planning phase the Early Flight Intent will be shared before the filing of the flight plan. Early flight intents are an expression of the intention to use a defined airspace or volume of airspace namely ARES over a defined timeframe. The format does not include a trajectory description for SESAR 2020. An Early Flight Intent includes the following data:

- Aerodrome (Departure/Arrival)
- Airspace Designator(s) (for the intended Airspace to be used)
- Time/Duration of the activity (including Date)
- Aircraft Type
- Mission Type
- Priority Information
- Number of Aircraft in the mission

In reference to the appropriate Trajectory management vocabulary for State Airspace Users the following types need to be supported in SESAR 2020:

- Initial Mission Trajectory(s) (iMT, iMDT, iSMT, iRMT)
- Initial Shared Mission Trajectory (iSMT)
- Agreed initial Reference Mission Trajectory (iRMT).

The iRMT is the result of a collaborative planning process. The revised and agreed iSMT is published as iRMT, at the moment when all actors have the same view on the trajectory and agree to facilitate the trajectory execution. The iRMT contains all data included in the (latest) agreed iSMT, in particular the target times TTO/TTA, which ensures a common understanding of the essential 4D waypoints in iMT. These have to be taken into account as fixed in the Regional ATFCM regulation process.

IOAT FPL has to be filed after consolidation of the mission planning process. Filing of the flight plan will be supported by the Mission Support System (MSS). The MSS enables the State AU to easily share flight plan data in form of an iOAT FPL Format with the Regional ATFCM (i.e. Network Manager) via B2B service(s). The required functions have been implemented in form of an intuitive user interface in the Mission Planning Software. All flight plans are to be exchanged in a common format. This format is based upon the ICAO FPL 2012 format and applies to military IFR flights in controlled airspace.

Solution PJ.07-03 is addressing in this phase the part from publishing the iRMT to the point in time where the A/C moves the first time.

During the execution phase, WOC will stay in the loop for the handling of the following scenarios:

1. Monitoring of incoming position reports with iRMT downstream checks.
2. Refinement of the iRMT following Flight Crew request, in order to avoid hazardous weather areas or to comply with tactical ATC constraints.
3. Acceptance of the iRMT revision initiated by ATC. These data exchanges rely on the latest a/c position and revised trajectory profile. It facilitates monitoring functionality and constantly contributes to the trajectory update in the WOC systems.
4. State AU IFR operations will be subject to ATFM regulations and constraints unless otherwise specified in iOAT FPL and exemption policy will apply.

Due to operational reasons WOC may trigger a re-optimization of the trajectory that leads to iRMT revision. As WOC is limited in its capability directly communicate the revision request to Flight Deck, it normally initiates the revision request via ATC. The revision request contains data relevant to the flight in execution and exchanged via ground-ground communication. ATC responds to the revision request in accordance with tactical situation and facilitates trajectory modification. As not all State AU A/C are equipped with Air-Ground data link, State AU internal voice communications will be used. It will be up to the Flight Crew to negotiate profile changes with ATC.

The mission post flight analysis phase is not in scope of SESAR 2020 Solution PJ.07-03 and will be subject to future R&D activities. However, the following description is given to complete the whole picture.

Essential for continuous improvement in aviation is the task to learn from previous flights or missions. To improve safety, aviation processes and flight crew skills debriefings are held after each mission/flight in order to grant further enhancement on all levels/aspects of aviation. Following debriefing areas will be considered by State Airspace Users:

1. Debriefing on technical logistical aspects (aircraft, equipment, technical infrastructure)

2. Debriefing on planning and flight execution (flight crew skills, crew resource management)
3. Debriefing on tactical aspects (headquarter, staff, operations officer)
4. Debriefing on ATM/ATC aspects (KPA and KPI)

Only the last debriefing category is of relevance for ATM / SESAR. In SESAR different KPA (e. g. Flight Safety, Mission Effectiveness) and related KPI (e. g. Flight time from base to ARES, Available training time within ARES) have been defined. These will be recorded and evaluated for further analysis and future enhancement of the ATM System.

3.2.2 Roles and Responsibilities

This sections groups the roles and responsibilities of each operational node. Inactive roles not involved in the operational activities in scope of Solution PJ.07-03 are "shadowed".

Roles which are currently not defined in CONOPS [6] or EATMA [4] are described here with more details. Already existing roles are only referenced. "Inactive" Roles will be removed as soon as they are defined in EATMA [4]. They are marked with the tag #PJ19.

3.2.2.1 Airspace Organisation and Management (Regional NM Function)

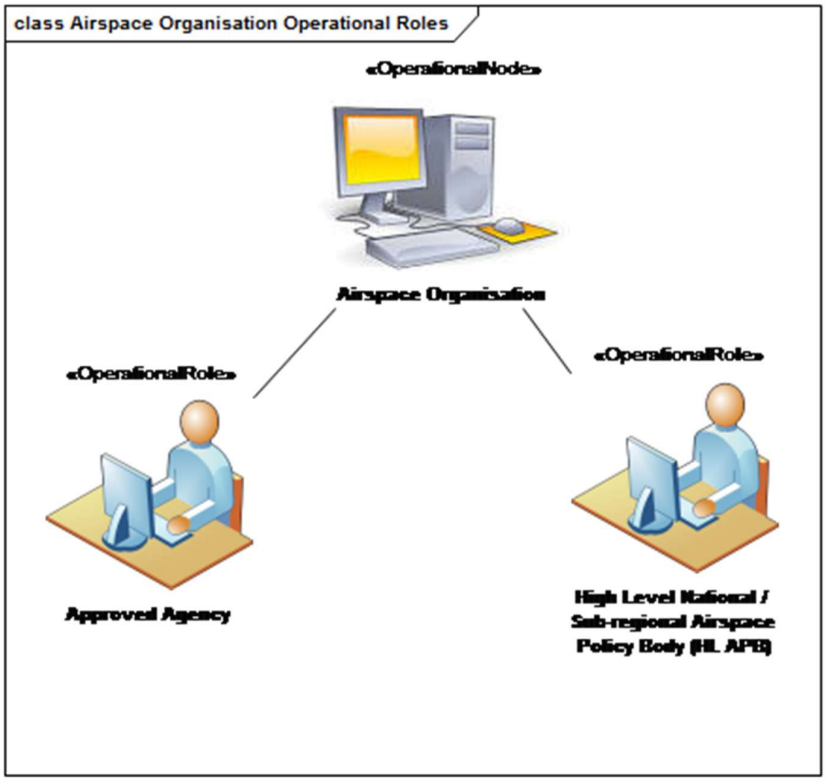


Figure 3: Airspace Organisation Operational Roles SESAR 2020 Wave 1

3.2.2.1.1 Approved Agency

Approved Agencies are units, which are authorised by States to deal with Airspace Managers for airspace allocation and utilisation matters.

Their responsibilities include the submission of their needs for airspace to the AM and of any update on their request.

They are permitted to negotiate for airspace to be allocated by AM within the European AFUA (Flexible Use of Airspace) framework constraints.

They are also required to ensure that the airspace usage is in accordance with the agreed airspace use plan...

3.2.2.1.2 High Level National / Sub-regional Airspace Policy Body (HLAPB)

High Level Airspace Policy Bodies are established by States for strategic ASM policy, planning and coordination. Appropriate civil and military representation is granted in HLAPB.

Has a leading role within the Strategic Level 1 Cycle activities at national level and at the sub-regional (FAB) level. It is responsible for assuring prerequisites for the most optimum operational Airspace Configuration for the volume(s) of airspace within its responsibility;

Closely coordinates with the adjacent HL APBs (both in horizontal and vertical plane) in order to ensure that national /sub-regional airspace design projects are compatible and consistent with cross-border airspace policy;

Closely coordinates with the Network Manager to obtain required information, data and expertise, and to ensure that national/sub-regional airspace design projects are compatible and consistent with all the plans, in particular with the overall Network Strategy Plan and its implementation through the Network Operations Plan;

Enable seamless and synchronized operational transition between the neighbouring Airspace Configurations;

Relies on the expertise of all the stakeholders within the CDM process, mainly on the national or sub-regional expertise as Flow Managers, Airspace Managers, Local Capacity / Traffic Managers, working in the area of its responsibility;

Consults any of the stakeholders and users of the airspace (e.g. different service providers, civil or military airspace users);

Supports National Supervisory Agencies (NSAs) (or its sub-regional equivalent) in performance monitoring activities.

3.2.2.2 Regional Airspace Management

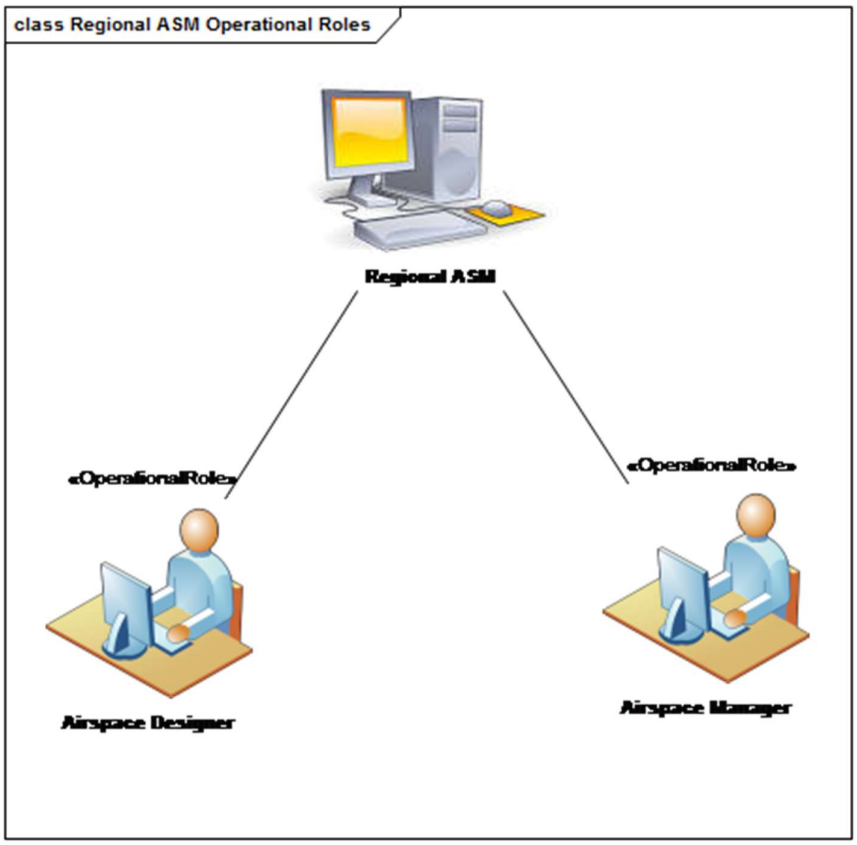


Figure 4: Regional ASM Organisational Roles SESAR 2020 Wave 1

3.2.2.2.1 Airspace Designer

Airspace Designer shall be understood as a function performed by different stakeholders at local, sub-regional and regional levels.

This function allows the establishment of airspace structures in order to accommodate the different types of air activity, volume of traffic and differing levels of service in accordance with the airspace policy defined by the HLAPB.

In the Long-term Planning phase, the main task is based on the design and optimisation of the ATS route network and the areas such as conventional TSAs and TRAs, but also Cross Border Areas (CBAs) and Variable Profile Areas (VPAs). Design options for both the efficient usage by the military of such areas and the optimum route network for civil airspace users are also prepared within the context of the advanced FUA.

In the long, medium-short planning, ad-hoc airspaces might be designed to accommodate major events (e.g. large scale military exercises, Chief of States Summit, Olympic Games, Football World Cup) leading to AIP Supplement publications.

3.2.2.2.2 Airspace Manager

Airspace Management functions are fully integrated in DCB process and they are performed at regional, sub-regional (FAB) and local (national or ACC) levels.

By convention, the "Airspace Manager" refers only to the local function integrated in all Sub-regional ATM Network Management Function.

The Airspace Manager (AM) is responsible for the medium to short term planning of national and potentially FAB level ASM right up to its operational implementation within European FUA (Flexible Use of Airspace) framework constraints. The AM role may in reality be filled by two actors: The Civil Airspace Manager (CAM) & The Military Airspace Manager (MAM), these actors would then have clear locally defined roles and areas of authority;

The AM task is to manage the competing airspace demands from Civil and Military operations in a pragmatic way, taking account of relevant factors.

The output will involve the management of things like: CDR's, Euro (RAD) restrictions, exercise restriction, airspace allocation. This is resolved into an agreed plan which is then communicated to FM, LTM and NM.

3.2.2.3 Sub-Regional/National Airspace Management

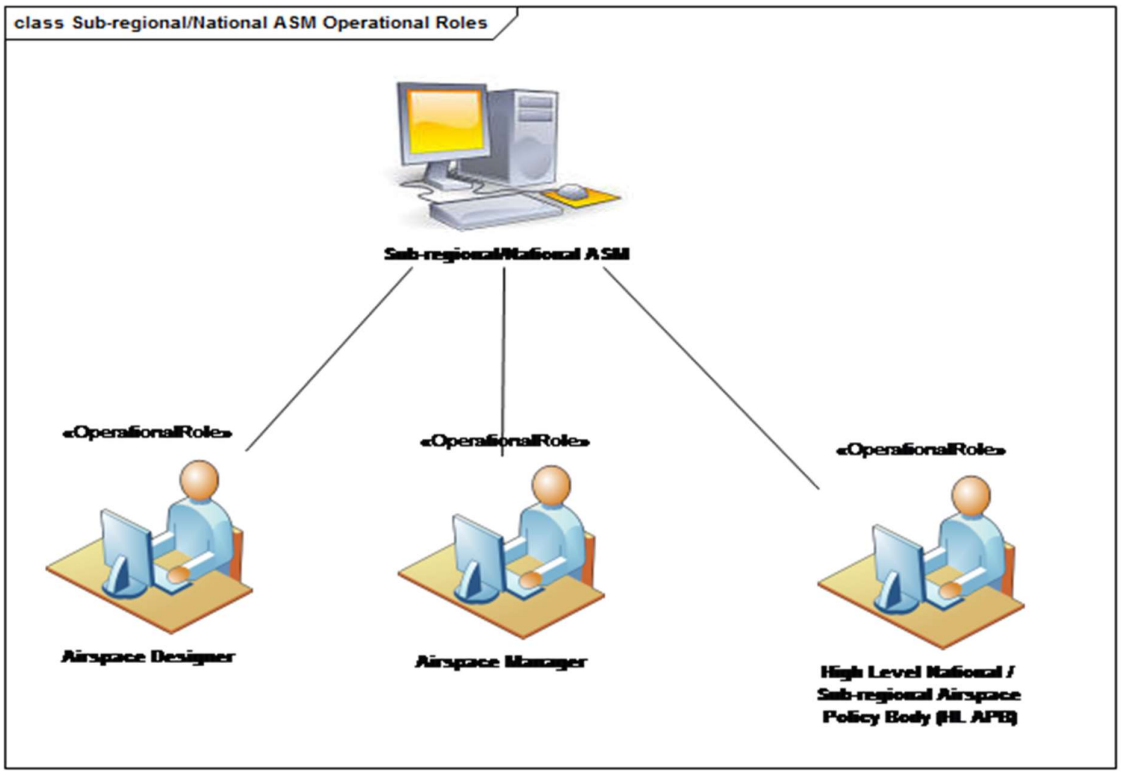


Figure 5: Figure Sub-Regional/National ASM Organisational Roles SESAR 2020 Wave 1

3.2.2.3.1 Airspace Designer
As defined above.

3.2.2.3.2 Airspace Manager
As defined above.

3.2.2.3.3 High-Level National / Sub-regional Airspace Policy Body (HLAPB)

As defined above.

3.2.2.4 Regional Air Traffic Flow and Capacity Management

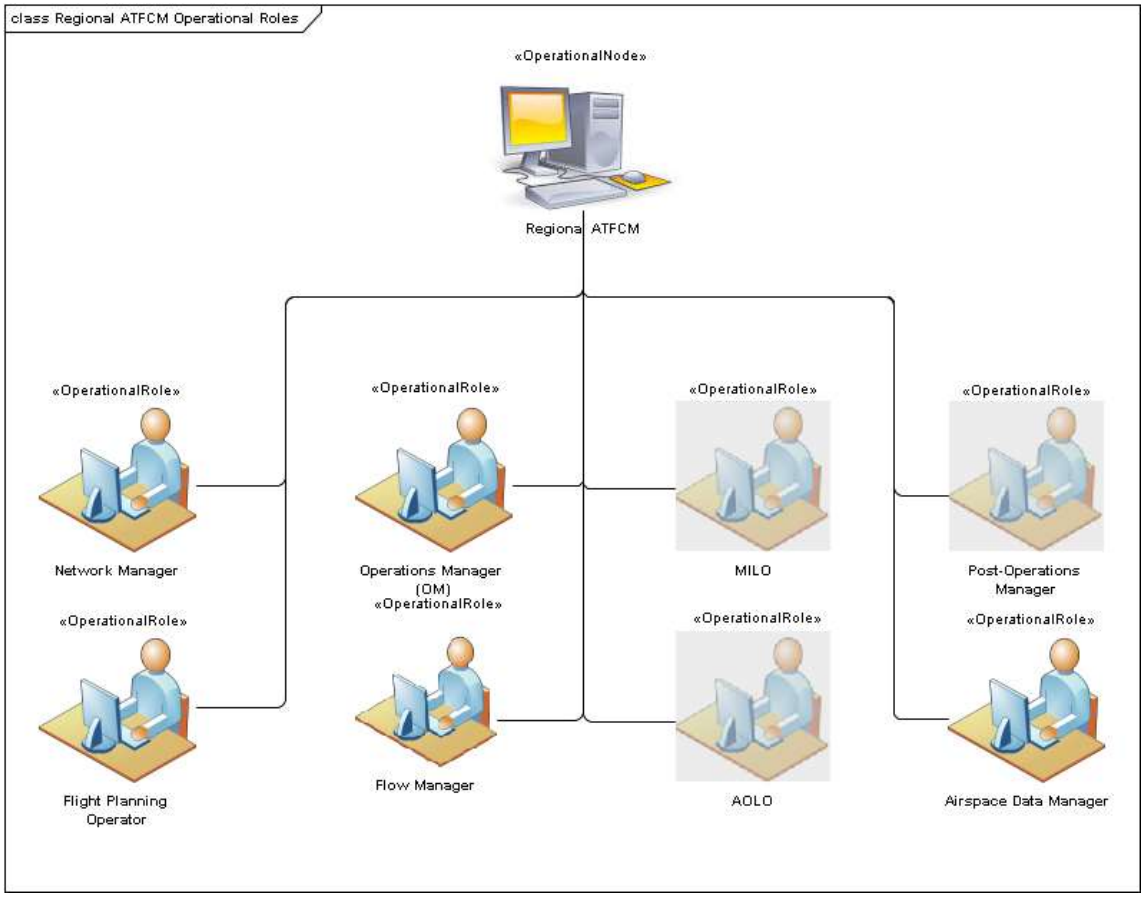


Figure 6: Regional ATFCM Organisational Roles SESAR 2020 Wave 1

3.2.2.4.1 Network Manager

The Network Manager acts as catalyst and facilitator for an efficient overall network management by all ATM stakeholders. The Network Manager role will be enabling, facilitating and promoting the Network Operations Plan, providing a framework to allow Local/Sub-regional Network Manager and Airspace Users actors to share information (Network View), to coordinate (CDM) and to prepare scenarios to be used at network level when necessary.

Main Responsibilities:

Has a key role within the planning phases to ensure the most efficient performance of the European Network;
The Network Manager provides a consolidated and coordinated approach to all planning and operational activities of the network, including monitoring and improvement of its overall performance;
Monitors all the long-term local or sub-regional activities and identifies situations where the Network performance may be affected by national and/or sub-regional decisions;

Closely coordinates with all the involved HLAPBs in order to ensure coherency of the European Network operations;
Participates to airspace design activities and simulation activities to provide performance evaluation;
Develops an integrated European Route Network Design, through a cooperative decision-making process;
Prepares, through appropriate coordination, seasonal plans or plans for special events;
At the end of the long-term planning phase, delivers an initial integrated Network Operations Plan based on the local/sub-regional activities outcomes;
Develops, maintains and implements the rolling Network Operations Plan based on the local/sub-regional activities outcomes and Airport planning activities;
Through a rolling CDM process between partners, develops, validates and disseminates the integrated Airspace Configuration via the NOP;
Supports the submission of the SBT/SMT by the AUs, verifies their consistency with regard to the ATM environment described in the NOP and ensures their dissemination to all relevant partners. During the medium to short term planning phases the Network Manager will be working towards identifying and mitigating significant DCB issues, which affect the network at a regional level. Dependent upon the related FABs and ANSP involved, such mitigation is also likely to require Network Management influence at sub-regional and local levels as well as support where requested. The Network Manager is involved in DCB activities carried out in collaboration with the FABs level. The role of the Network Manager in this activity is to coordinate and provide most optimum solutions at Network level (optimized Airspace Configuration sand other DCB solutions if required), as well as ensure that any DCB measure is decided considering the global optimum of the network. The subsequent agreed outcomes are then published in the NOP.
The Network Manager supports the User Driven Prioritisation Process (UDPP). The Network Manager provides support for Network crisis management.
The Network Manager facilitates and ensures the migration of the SBT/SMT in an RBT/RMT agreed among all partners in a CDM process.
During the execution phase, the Network Manager assures that every stakeholder has proper access to the Network view. He also assures the stability of the NOP (Network Operations Plan), in partnership with the sub-regional and local layers reacting to unexpected events, which impact on overall network performance, such as unusual meteorological conditions or loss of significant assets (e.g. runways, airports). In this respect, the Network Manager consolidates local DCB solution at regional level and may participate to RBT/RMT revisions.
The activity addressed at Network level includes also the compilation of the NOP, the successive integration of Shared Business/Mission Trajectories, the collection and dissemination of ATM constraints, the real-time identification of potential interactions between accepted and agreed Reference Business/Mission Trajectories and (newly published) Shared Business/Mission Trajectories and the communication of these interactions to the corresponding Airspace Users.3.2.2.4.2 Military Liaison Officer (MILO)
As defined in the EATMA, acting as part of the Network Operations Management function and working closely with the pre-tactical and tactical teams.

3.2.2.4.3 Flight Planning Operator

The Flight Planning Operator's work is organised around the following systems and services:

- Integrated Initial Flight Plan Processing System (IFPS)
- Flight Efficiency Support
- Repetitive Flight Plan (RPL)
- Demand Data Repository (DDR) & Data Steward Function (DSF)

- Call Sign Management Cell (CSMC)

The Integrated Initial Flight Plan Processing Systems (IFPS) rationalises the receipt, initial processing and distribution of flight plan data for the 41 EUROCONTROL Member States as well as for Morocco and Israel. It provides the Flow Management System (ETFMS) with a copy of flight plan data and give air navigation service providers flight plan data that can be automatically processed. The Flight Planning Service provides real-time assistance, 24/7 in flight planning for aircraft operators.

The Flight Efficiency Support contributes to the flight efficiency programme by assisting airspace users in reducing their environmental impact and to do flight planning more efficiently. This support could be enhanced to assist military AUs specifically in the familiarisation phase with the iOAT FPL and the aeronautical environmental data at regional level.

The Repetitive Flight Plan (RPL) feeds the IFPS with scheduled flight plan 20 hours before EOBT.

The Demand Data Repository (DDR) & Data Steward Function (DSF) maintains IATA and ICAO code matching tables for aircraft operators, airports and aircraft types and specific schedules of flight data for DDR and PRISME. Missing ICAO A/C type designators for most of the actual military aircraft types, is a key issue to be addressed by the related ICAO working groups jointly and corresponding military entities.

The Call Sign Management Cell (CSMC) participates actively in raising awareness about call sign similarity reduction process. It supports Aircraft Operators in using the Call Sign Similarity Tool (CSST) which detects and de-conflicts similarities within AO schedules. Currently most military OAT flight plans use tactical call signs, which is not compliant with ICAO standards and is addressed in the harmonised iOAT FPL filing guidelines.

3.2.2.4.4 Operations Manager (OM)

The Operations Manager optimises the daily operational service delivery and drives a high performance operation based on the Network Manager Performance Plan, by implementing the best operational plan on a daily basis, anticipating and minimizing local and network delays, ensuring a continued and balanced performance improvement for flight efficiency, capacity and emissions. The COM manages the NMOC day-to-day operations and acts as the focal point for crisis management within the European air traffic flow management arena. Furthermore, he runs NM teleconferences and performance operational briefings. He manages the daily ATFCM WebEx conferences with the FAA and other international agencies.

Military AUs could simply join those teleconferences and WebEx's. Or if more appropriate, specific briefing sessions for military AUs could be set up with appropriate frequency.

3.2.2.4.5 Flow Manager

The Flow Manager is a role performed at sub-regional level, which contributes to the Network Management Function. In circumstances warranted by traffic demand and complexity, the Sub-regional capability enables achievement of AU and AO operational ambition within the envelope of local and regional performance targets whilst simplifying the tactical interaction between stakeholders.

Remaining consistent with the processes described in this document, Sub-regional activity takes management responsibility for the airspace for a number of geographically adjacent ACCs whilst presenting a single operational interface to the regional actor; representing the local actors, including Airports, within this airspace. Whilst involvement throughout the planning phase promotes predictability in operation, one of the key benefits of the Sub-regional capability is the additional flexibility provided in execution, as desired by customers.

Such flexibility results from a detailed understanding of the airspace, the implications of the evolving demand and the ultimate impact on workload at local level. Another benefit is the ability to know, with a greater clarity than

would be available at the Regional level, the actual configurations and running of the operations room(s) on a day-to-day basis. This local expertise allows the sub-regional to operate with a high level of clarity of the issues and options to resolve those issues, largely without recourse to constraints. The requirement for such detailed understanding also limits the size of a sub-region.

Within ACCs, during execution Sub-regional actors (Flow Manager), interacts significantly with relevant actors involved in the INAP process, optimising intervention for the benefit of the collective group or actors.

3.2.2.4.5.2 Short-term Strategic and Pre-tactical Flow Manager Operations

The Network Management Cell (NMC) manages the short-term strategic and pre-tactical Air Traffic Flow and Capacity Management (ATFCM) which starts from 6 days before the day of operations (D) and is iteratively updated until D-1 included.

Its task is to:

- optimise available capacity to meet forecast demand, and/or
- manage demand to minimise delay and cost;
- publish the agreed plan for the day of operations after a process of Collaborative Decision Making.

The function is supported by the computerised ETFMS system in the form of Predict, Tact and Simex.

Daily Plan

The daily Plan serves the objective to enhance the civil and military coordination process at the European Network level, with the aim of supporting the daily ASM/ATFCM process, to improve flight efficiency and to increase military mission effectiveness.

The NMC works proactively with Air Traffic Control Centres, the Aircraft Operator Liaison and Military Liaison Officers to create a network plan in advance of the day of operation, coordinating issues affecting the network and mitigating the impact and communicates the plan to the network of Aircraft Operators, Airports and Air Traffic Control Centres.

Network Events

The NMC simulates network events such as major sporting events, industrial action and new systems at Air Traffic Control Centres to provide information to all parties affected. It mitigates their impact through measures created, coordinated and implemented accordingly.

3.2.2.4.6 Aircraft Operator Liaison Officer

The Aircraft Operator Liaison Officers are the main point of contact with aircraft operators for any ATFCM measure. Their work is divided between:

- assisting the Network Management Cell in preparing the daily pre-tactical plan, and
- participating in daily tactical operations, in particular re-routing.
- monitoring the weather, anticipating and reporting on its impact on the Network.

3.2.2.4.7 Airspace Data Manager

The role of the Airspace Data Manager is the management of the Airspace Data; known as the Environment System, including the following domains:

- Aeronautical Infrastructure: Collection, implementation and maintenance of airways, routes, SIDs, STARs, CDRs, RAD, PTRs, airports and all related data as published in the States AIPs.
- Operational airspace structure: Creation and maintenance of operational airspaces and sector design as agreed with ANSPs and States.
- AOs addressing management: Support to AOs in the setup and maintenance of addressing parameters related to NM services (addressing, ORMs, CASA parameters).
- ANSPs addressing management: Maintenance of addressing parameters for IFPS and CASA messaging.
- Operational pre-validation and Network impact assessment: In close coordination with and giving support to the ANSPs and National Authorities and on their request, providing advanced Network impact assessments of major airspace changes; conceptual changes prior to publication.
- Centralised Airspace Data Function (CADF): Daily support and management of AUP/UUP in close coordination with Airspace Management Cells (AMC) and national authorities.

It is important to understand, that each of the above domain under the responsibility of the airspace data manager is key for a successful integration of iOAT FPLs into the central validation and further distribution. Thus, solutions for the evolution to cope as well with military aeronautical data, airspace structures, addressing parameters, are a required prerequisite for a future implantation.

3.2.2.4.8 Post-Operations Manager

The Post-Operational Manager assures the post-operational analysis and reporting of the traffic situation, the Demand and Capacity Balance and NM and Network performance. His main tasks are:

- To monitor and report on NM and network operational performance, including ATFM IR compliance;
- Explain main causes of network and NM operational performance issues; and
- Support internal / external performance improvement actions.

Dedicated reports on daily, monthly, quarterly, season and yearly base are produced.

Responsibility

Monitoring and reporting on performance is a partnership between several NM functions. The Operational analysis and reporting role is invariably one of data manager, facilitator and coordinator to the performance management processes (network, NM and ATFM IR compliance).

Beneficiaries

The beneficiaries of the work are the NM IR and ATFM IR stakeholders, such as NM, NMB, EC, States, performance managers, ANSPs, airports and AOs.

3.2.2.5 Sub-Regional/Local Air Traffic Flow and Capacity Management

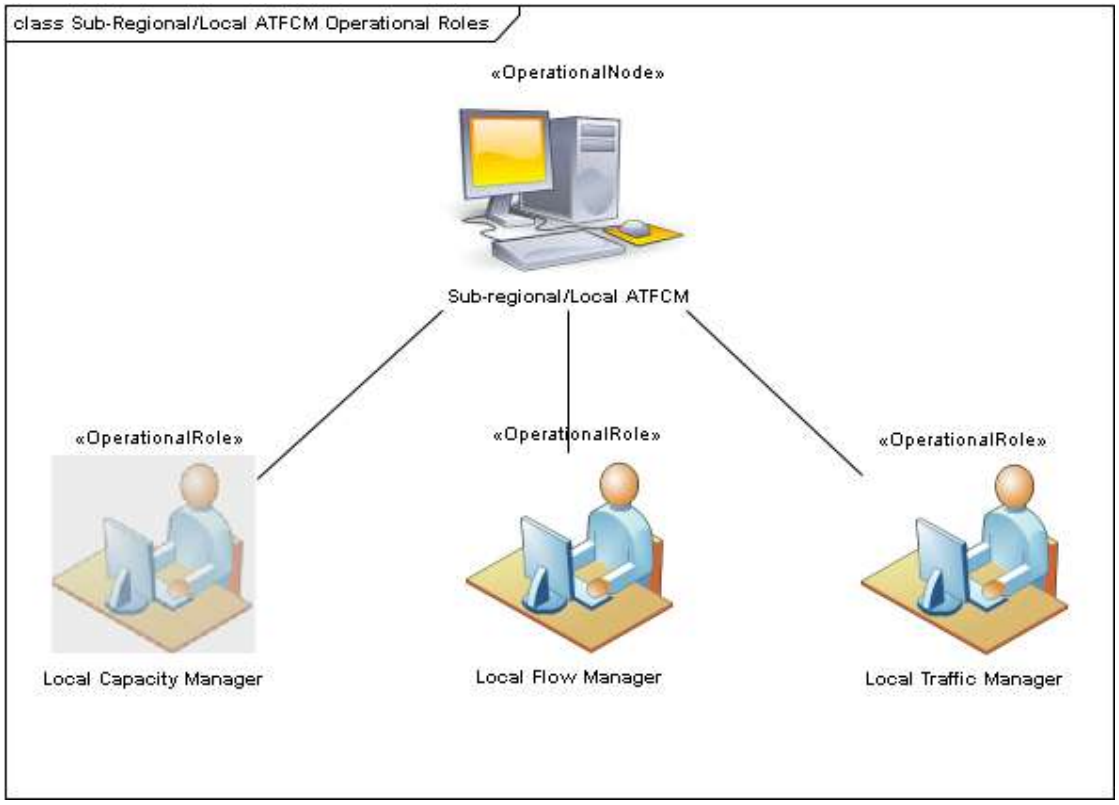


Figure 7: Sub-Regional/Local ATFCM Organisational Roles SESAR 2020 Wave 1

3.2.2.5.1 Local Capacity Manager

The Local Capacity Manager is a role acting mainly in long-term planning phase.

- The Local Capacity Manager is focusing on either an ACC, a FAB geographical area or Airfields operation. The Local Capacity Manager is a planning role, which contributes to the long-term capacity planning (for Airspace Organisation and Management and DCB activities).
- The main tasks of the Local Capacity Manager are to analyse and establish traffic flows and local capacity values for various airspace configurations and airport capabilities and to contribute to the establishment of DCB procedures and practices.

The local information and knowledge base they have provides an important platform on which to build optimised capacity plans. The type of local factors that a Local Capacity Manager will take account of are: Geo-political (i.e. quiet hours), related procedures, staff availability, sector flexibility, non-nominal weather condition, special events, optimised landing / departure rates, infrastructure and un-serviceability.

3.2.2.5.2 Local Flow Manager

As defined above.

3.2.2.5.3 Local Traffic Manager

The Local Traffic Manager is a role exercised at local level that contributes to the Network Management Function.

Main Responsibilities:

- The Local Traffic Manager functionally lies in between the Flow Manager and ATC planning actors, taking a view over a sector family or group of sectors (potentially a complete ACC) and any Airfield Towers that fall within the Local Traffic Manager's area of responsibility. He acts as the coordinating link between the ANSP, sub-regional and regional flow and airspace management.
- Within the medium to short term planning phases, the Local Traffic Manager contributes to the planning activities handled by the Flow Manager, as an expert in the process.
- He develops and coordinates locally and adequately within the FAB area and appropriate partners, catalogues of dDCB measures to solve hotspots at local/FAB level during execution phase.
- The Local Traffic Manager has the leading role in the DCB/dDCB processes in execution phase (and appropriately in the short term planning phase close to execution).
- He monitors the situation at local level and anticipates hotspots and workload issues. In case of an imbalance, he is responsible for:
- Declaring the hotspot
- Identifying the adequate solutions (Airspace Configuration and flow / Trajectory Management if necessary),
- Assessing their impact, looking for optimisation, coordinating and refining them with concerned partners (other Local Traffic Managers, AUs, Airports, Flow Manager, Network Manager, ATC actors)
- Using CDM process, except if time doesn't permit, implementing them (or delegating the implementation to the adequate actors), requiring a sub-regional or regional action where necessary.
- The Local Traffic Manager provides a bridge in understanding between operational perceptions of complexity, workload & demand and how that translates into DCB requirements as deliverable occupancy & workload values.
- In execution and as appropriate within the short term planning phases, the Local Traffic Manager works closely with Supervisors and ATC actors (through INAP function, see following section). The Local Traffic Manager is also likely to be either a Supervisor, or report to one, and as such will retain local safety accountability. As such any proposed DCB initiatives will have to be approved by him.

3.2.2.6 En-Route/Approach ATS

Air Traffic Services (ATS) include variously, Flight Information Service, Alerting Service, Air Traffic Advisory Service, Air Traffic Control Service (Area Control Service, Approach Control Service or Aerodrome Control Service). An Air Traffic Control Service is provided for the purpose of preventing collisions between aircraft, and on the manoeuvring area between aircraft and obstructions. Furthermore, it is provided for expediting and maintaining an orderly flow of air traffic (based on ICAO Doc 4444).

The En-Route and Approach Air Traffic Services have a key role in the execution and pre-execution phase of flight to ensure the most efficient performance of the Network within the area of their responsibility.

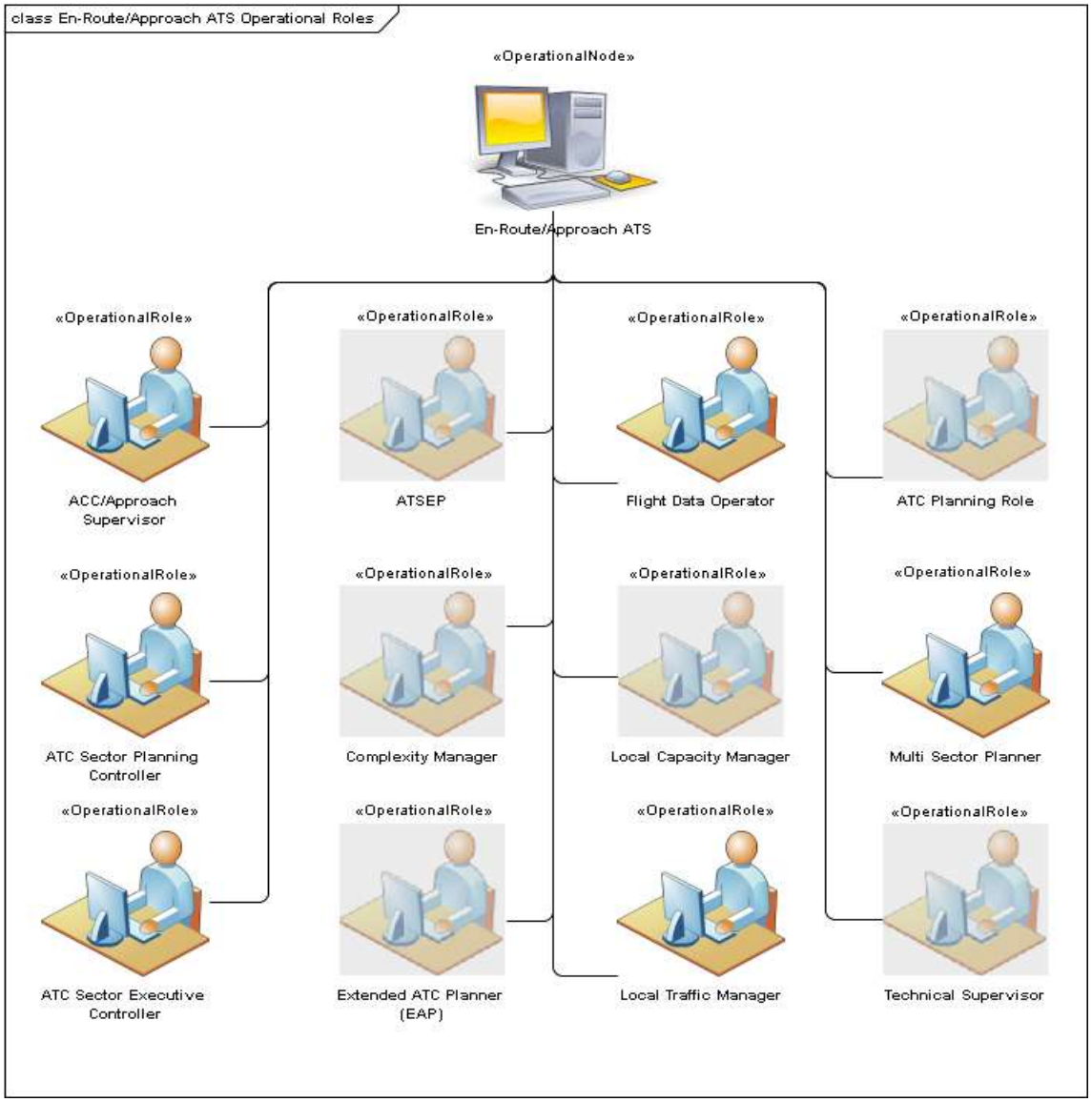


Figure 8: En-Route/Approach ATS Organisational Roles SESAR 2020 Wave 1

3.2.2.6.1 ACC/Approach Supervisor

The ACC/Approach/TMA Supervisor is responsible for the general management of all activities in their respective Operations Room. He decides on staffing and manning of Controller Working Positions in accordance with expected traffic demand. Supported by simulations of traffic load and of traffic complexity, and assisted by the NMF, he takes decisions concerning the dynamic adaptation of sector configurations to balance capacity to forecast demand. Based on the results of simulations the required flow control measures may be implemented by ATFCM through a CDM process.

Main Responsibilities

- The ACC/Approach/TMA Supervisors main responsibilities are:

- Analysis of traffic flows and sector load in collaboration with the LTM and the Flow Manager.
- Split or combining of control sectors according to expected traffic load after co-ordination with the Local Traffic Manager.
- Coordinating with the other concerned Supervisors on the activation and de-activation of special use airspace
- Allocation of sector configuration and declared capacity.
- Decide on staffing and manning of Controller Working Positions according to their training and sector validations.
- Coordinating with the other concerned Supervisors if short term planning changes are allowed by ASM.

3.2.2.6.2 ATC Sector Planning Controller

The Planning Controller is mainly responsible for planning and coordination of the traffic entering, exiting or existing within the ATC Sector.

According to the company policy, local procedures, operating methods and traffic environment, the Planning Controller could endorse responsibilities belonging to different roles. Depending on the ANSP local practice and under specified conditions, Single Person Operations (SPO) could be carried out. In the case of Single Person Operations: a single Controller will take the responsibility for both planning and tactical aspects of the sector operation.

Furthermore, it provides tactical flight control assistance to the Executive Controller.

Main Responsibilities

The responsibilities of Planning Controller are to:

- Co-ordinate entry and exit conditions.
- Check flight-plans/RBT/RMTs for possible conflicts and complexity issues within its area of responsibility.
- Plan conflict-free flight path through his area of responsibility and in so far as practicable, plan taking into account if the aircraft is also subjected to other network constraints in order to facilitate the execution of the RBT/RMT
- Coordinate with the ATC Sector Executive role about planned conflict solution strategies based on system derived solution proposals
- Implement solution strategies by communicating trajectory changes to the aircraft through the concerned ATC Sector Executive role via Data Link.
- Monitor flights regarding adherence to flight plan/RBT/RMT.
- Co-ordinate with adjacent control areas/sectors for the delegation of AoR or aircraft

The basic responsibilities given to the controller are not going to be changed by the way of traffic control within flight centric operations: The basic task of the controller remains untouched: he has to ensure a conflict-free flight as well as safety and optimization of traffic flows.

3.2.2.6.3 ATC Sector Executive Controller

The Executive Controller has responsibility for traffic management within the sector/AoR and for the tactical tasks.

He is responsible for the safe and expeditious flow of all flights operating within its area of responsibility. Its principal tasks are, compliance with the ICAO Rules of the Air, other relevant ICAO (e.g. Doc. 4444) and European/National provisions to separate known flights operating within its area of responsibility and to issue instructions to pilots for conflict resolution and segregated airspace circumnavigation.

Additionally, he monitors the trajectory (4D and 3D) of aircraft, according to the clearance they have received. The responsibilities of the Executive Controller are focused on the traffic situation, as displayed at the integrated Controller Working Position (CWP), and are very much related to task sharing arrangements within the sector team. The wide use of data link helps to enhance the task sharing between the executive and the Planning Controllers, as both controllers are technically able to communicate with the Flight Crew.

The Executive Controller responsible for TMA is called Approach Controller.

Main Responsibilities

Executive Controller main responsibilities are:

- Identify conflict risks between aircraft.
- Provide separation between controlled flights.
- Provide sequencing between controlled flights.
- Provide information on observed but unknown flights that may constitute traffic for known aircraft.
- Monitor flights regarding adherence to flight plan/RBT/RMT.
- Communicate with pilots by means of R/T or data link.
- Monitor information on airspace status, e.g. activation/ deactivation of segregated/reserved airspace.
- Monitor the weather conditions.
- Monitor aircraft equipment status according to information provided by the system.
- Coordinate with the Planning Controller about planned conflict solution strategies based on system derived solution proposals.
- Coordinate the implementation of system derived conflict solutions with the Planning Controller.
- Transfer control of aircraft to the appropriate Executive Controller when clear of traffic within his area of jurisdiction.
- Assign specified headings, speeds and levels suitable for the planned approach.
- Inform pilots about the intended approach procedures and determine (if not done by arrival management systems) the approach sequence.
- Issue approach clearance and, if necessary, holding instructions.

3.2.2.6.4 Multi Sector Planner

Multi Sector Planner corresponds to the actor fulfilling the ATC Planning Role for several Executive Controllers.

3.2.2.6.5 Flight Data Operator

The Flight Data Operator is responsible for validating the flight plan information received from Airspace Users (including individual pilots). In addition, the Flight Data Operator provides an advisory service (a “help desk”) to

the individual pilot on flight plan issues when the automated system is unable to provide the assistance required if requested.

The Flight Data Operator is responsible, under the direction of the Multi-Sector/Planning/Executive Controller (depending on sector configuration), for the input of the additional fight data, such as routing, altitudes, destination and alternates, for flights that have filed an airborne flight plan.

In the event of aircraft diversions the Flight Data Operator is responsible for any manual updating of flight data, to reflect newly issued routing and destination. This ensures that downstream sectors are aware of the revised trajectories through an updated Network Operations Plan.

Additionally, he is responsible for the manual preparation, input and dissemination of flight data (e.g. the verbal transfer of estimates) in the event of automated systems degradation.

Responsibilities

The Flight Data Operator's responsibilities are:

· Validate the syntax of all received flight plans in cases of System rejection.

· Assist Planning Controller in updating basic flight plan information to enable the System to properly process air-filed flight plans.

· Provide advice and information to individual Airspace Users regarding route and airspace availability.

· Process and input flight plan changes to the System regarding aircraft diversions in coordination with the Local Traffic Manager.

· Process and input flight data changes in cases of inconsistency between planned fight data and actual flight data.

· Ensure that the appropriate Planning Controller is made aware of any downstream constraints that may affect the new routing of diverted aircraft.

· Maintain a current data base on airspace, routings and restrictions within the Flight Plan System.

· Respond to information queries originated by Airspace Users regarding flight plan issues.

· In the event degraded operations, re-input basic information into the System to ensure the timely re-correlation of all known aircraft.

3.2.2.6.6 Local Traffic Manager

As defined above.

3.2.2.7 State Airspace Users Operations (WOC function)

This section provides a list of roles and their corresponding responsibilities implementing and executing WOC functions. The list contains those roles which are applicable either for the use cases in section "Use Cases" or for the requirements in chapter Safety, Performance and Interoperability Requirements (SPR-INTEROP)". The greyed roles are applicable to the WOC in general and just mentioned to complete the Picture, but not described furthermore in this document.

The CONOPS SESAR 2020 [6] together with the ADD [13] are the reference for analysis and compilation of roles and responsibilities in this section of the SPR-INTEROP/OSED. The naming has been taken from these documents wherever applicable. Differences are highlighted, and details are added where required. Some additional roles were added in order to draw a complete picture of the related operational scenarios in order to describe ATM-relevant State Airspace Users' operation(s).

NOTE:

- Although the terms 'Actor' and 'Role' do not strictly mean the same - an actor can fulfil one or more roles, depending on the use case – the terms are interchangeable within this document.
- The described roles are assigned to a specific group, domain or an organisational unit. In the case where the operational interaction cannot be assigned to a role, the activity will be assigned to the related group, domain or organisational unit.

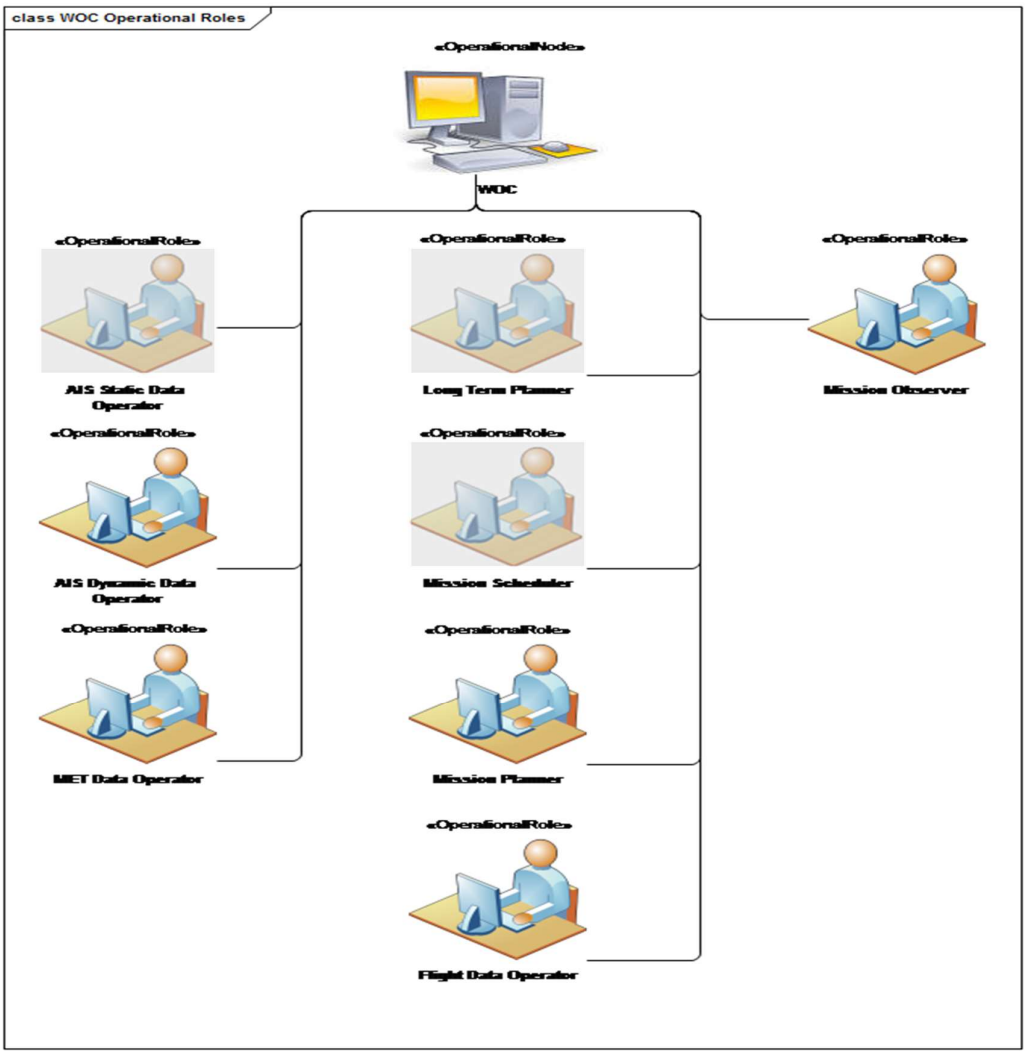


Figure 9: State AU Organisational Roles SESAR 2020 Wave 1

State Airspace Users are a subgroup of Airspace Users in general, who are involved in airspace planning, reservation and management and usage of airspace on behalf of a state. State Airspace Users (e.g. Air Force, Army, Navy and the paramilitary users like police forces, border security, customs services, SAR organizations, etc.) are a wider group than military Airspace Users. The variety of mission types for these (non-military) Airspace Users is reduced. Most missions will be executed under civil rules and regulations.

The level, position and structure, which can accommodate those roles, depend entirely on the State Airspace User. One role can represent several processes in different phases of AU's activities.

Due to the shift from ASM to Trajectory management environment in ATM the actors and the roles can change and the number of processes is reduced. This is logical outcome as many of the processes performed by human actors will be delegated to system actors and thus human workload will be reduced (automation is a main SESAR Concept feature).

3.2.2.7.1 Long Term Planner

The Long Term Planner is a WOC function, which is complementary to the Regional ATFCM perspective of the long term planning process. It expresses the State Airspace Users' needs such as draft plans for exercises, training and special events.

Responsibility

- Long term planning of the State Airspace Users needs and expectations based on the guidelines (draft plans) of the long term planning process.
- Demands for education and CTP (Combat Training Program).
- Defining the training policy within military organization and the training needs throughout the year.

3.2.2.7.2 Mission Scheduler

The Mission Scheduler arranges the missions according to the detailed plans of the State AU for training and operations. The level, position and structure required to accommodate this role depend entirely on the State AU.

Responsibility

- Scheduling the missions of the State Airspace User and preparation plus update of the State Airspace Users missions plan.
- Schedules the training missions based on the training needs.
- Alerting WOC in time in case of QRA.
- Assignment of operational activities.

3.2.2.7.3 AIS Static Data Operator -

The AIS Static Data Operator supports the WOC activities by provision of aeronautical information and data used to develop and perform the mission, usually supported from AIS and/or ATS office.

His task is to import and prepare all necessary navigation data such as maps, aeronautical data, and obstacle data and further.

Responsibility

- Support the WOC with provision of topical information and prognoses.
- Provide aeronautical advisory service to the mission planner and the Flight Crew during planning, execution and post flight phases of a mission.

3.2.2.7.4 AIS Dynamic Data Operator

The AIS Dynamic Data Operator supports the WOC activities as expert of the NOTAM theme. In general these NOTAMs contain aeronautical, meteorological, tactical information etc., usually supported from the NOTAM office.

Responsibility

- Support the WOC with provision of topical NOTAM.

3.2.2.7.5 Flight Data Operator

The Flight Data Operator assists the Flight Crew with the management of flight plans. He drafts the FPLs according to the prepared missions, shares FPLs for further processing by NM and potentially executes necessary corrective actions or FPL modifications.

Responsibility

- Support the State WOC with provision of topical information related to FPL
- Create, file, update and cancel flight plans.

3.2.2.7.6 MET Data Operator

The MET Data Operator provides the required forecast and the latest observed MET information to the State Airspace User to ensure adequate mission support. He observes and reports airport weather as well as territorial weather progress like GAFOR. Finally the MET Data Operator advises the Flight Crew on weather situations and forecasts.

Responsibility

- Meteorological advisory service to the mission planner and the Flight Crew during planning, execution and post flight phase of a Mission.

3.2.2.7.7 Mission Planner

The Mission Planner prepares the missions of the State Airspace User with consideration to possible influences on the mission's trajectory. Personnel acting under the role of the "Mission Planner" can be seen as, military persons who will assist the Flight Crew in all aspects of mission planning.

Responsibility

- To assess MET information, NOTAMs plus other AIPs and calculate impacts to the planned mission.
- To assess tactical situations.
- To prepare the flight routes.
- To decide about operational changes.

3.3.37.8 Mission Observer

The Mission Observer executes the overall monitoring of the mission to support the Flight Crew in managing operational changes in order to achieve mission objectives.

Responsibility

- Monitoring the mission/flights during execution.

- Provide support to the Flight Crew in order to achieve the mission objectives.

3.2.2.8 Flight Deck

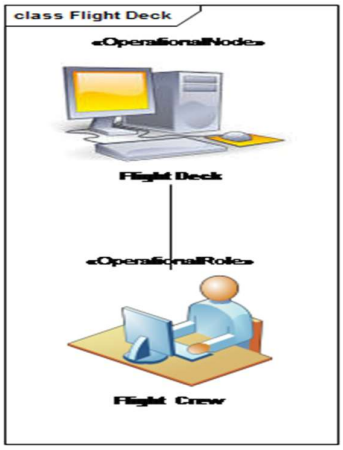


Figure 10: Flight Deck Organisational Roles SESAR 2020 Wave 1

3.2.2.8.1 Flight Crew

The Flight Crew (including single pilot cockpit) remains ultimately responsible for the safe and orderly operation of the flight in compliance with the ICAO Rules of the Air, other relevant ICAO and NSA/EASA provisions, and within airline standard operating procedures. It ensures that the aircraft operates in accordance with ATC clearances and with the agreed Reference Business Trajectory.

For military, some additional rules not covered by ICAO may be implemented by the States for State Aircraft.

Pilots of Remotely Piloted Aircraft (RPA) have the same roles and responsibilities as pilots of conventional aircraft. Responsibilities to assure airborne spacing with regard to another aircraft may be delegated by ATC to the Flight Crew under specific circumstances. The Flight Crew will then be responsible for spacing using ASAS-Spacing (e.g. Sequencing and Merging). ATC will still retain responsibility for separation from other aircraft.

3.2.3 Technical Characteristics

N/A

3.2.4 Applicable standards and regulations

The following standards and regulations are applicable to the SESAR Solution PJ.07-03:

- CFMU Interface Manual for ICAO 2012 (New Flight Plan Content Introduced by Amendment 1 to DOC 4444 (PANS-ATM))
- (EC) Regulation 2150/2005 of 23 December 2005
- EUROCONTROL Guidelines for a harmonised and iOAT FPL , Volume 1 – OAT FPL Harmonisation, Edition 1.0, 18/08/2016
- EUROCONTROL Guidelines for a harmonised and iOAT FPL Volume 2 – Improvement requirements for OAT FPL
- Network Manager IFPS User Manual – Edition Number: 21.1; 24/10/2017

- EUROCONTROL Guidelines Minimum CNS Infrastructure and Avionics Equipage for the Support of OAT Harmonisation
- EUROCONTROL Specification for harmonized Rule for Operational Air Traffic (OAT) under Instrument Flight Rules (IFR) inside controlled Airspace of the ECAC Area (EUROAT)
- EUROCONTROL Guidance for Military Aeronautical Information Publications Consistency with ICAO Annex 15
- Mission Trajectory Detailed Concept EUROCONTROL document

3.3 Detailed Operating Method

In this section the new SESAR operating method will be described and compared to the previous operating method defined as the deployment baseline, at the beginning of SESAR 2020.

From the ATM architecture perspective, notion of Capability Configuration is used as a wrapper to bring together resources (human/ Roles and Technical Systems) fulfilling one or more ATM Capabilities.

In order to avoid misinterpretation of WOC definition in the SESAR context, WOC is used as a generic term. It defines those functions and/or operational activities of military AU and State Aircraft Operators (military and non-military), which are necessary to grant safe and efficient aircraft operations in the Single European Sky.

Functions, which reflect a holistic operational concept of military AU, are part of this document. WOC functions and activities described in this document may actually be allocated or executed at different levels in hierarchy (for example in Wing Operations Centres, Squadron Operations Centres, military Air Operations Centres, Control & Reporting Centre (CRC), etc.) depending on the implementation, roles and organization in different countries.

3.3.1 Previous Operating Method

The previous operating method is refined versus the V2 OSED, focusing on specific aspects of the current operations in military AU ATM domain.

Nowadays, military IFR flights are not integrated into the ATM network operations and information on military AU demand is fragmented. The demand is split on two constituents; one is airspace reservation/restriction followed by ASM process and another one is the flight profile with 3D route linked or not to ARES and followed by the flight planning process.

The request for ARES follows a harmonised ASM process and reflects military AU Demand for airspace. The ASM process ensures booking and allocation of the requested airspace volume through AUP/UUP mechanism established at the pan-European level. At this stage, the ATM network has information only regarding demand for ARES and runs assessment on the anticipated impact on traffic flows and consequently the ATM network performance.

The trajectory of the individual flight from airbase until the allocated ARES is not shared and remains invisible to the ATM network. Typically, this gap is mitigated by decreasing capacity of respective ATC sectors in the airspace with combined high-density traffic and military activities.

When the military mission operational requirements do not consider airspace reservation/restriction, the entire mission trajectory represents the military AU Demand and must be treated accordingly to ensure conflict-free safe IFR operations in controlled airspace.

Every sovereign state applies processes and procedures, which suit best to their national ATM systems and tailored to the national airspace design. Evidently, every country facilitates the integration of information about military flights in the local ATC systems and these processes vary from country to country. Lack of information on

the military IFR flights operating in controlled airspace creates additional complexity, increases workload, and reduces capacity with low predictability and inefficient routings.

Military AU develop their trajectories using the mission planning tools associated with the aircraft type. Mission planners use these tools to generate ground trajectories with the most up to date flight performance data. The usage of flight performance data is essential to develop the trajectory lateral extension and vertical profile. This trajectory is as close as possible to the expected evolution of the flight in later operations and excludes most of the ATM constraints generated by ATC and Network Manager. The trajectory developed in the mission planning tools then downloaded in the mission management system (MMS) and regarded by aircrew as a reference trajectory to be flown. ATC units receive local OAT FPLs when applicable and translate them into the ATC system Flight Plans for further use in tactical operations.

The local OAT FPL does not contain information about ARES with adherent attributes, which may facilitate ATCO operations increasing awareness and predictability. The transformation of the local OAT FPL into the ATC system FPL requires manual interventions by the flight data operators that create additional workload. The formats of current OAT FPL are not harmonised between states and vary from country to country at pan-European scale therefore any cross-border activities require lengthy coordination procedures and usage of the ICAO FPL.

The military AU when flying in controlled airspace, often use a standard ICAO FPL format. Flights with different status such as Head of State, AAR, transport missions, cross-border flights subject to ATS provision apply standard ICAO FPLs. These FPLs are processed in the NM system and distributed to ATS sectors and aerodromes accordingly. The NM system validates only the route segments associated with published route network excluding segments that are not published but used by military for the operational purpose. These unpublished segments are omitted in the trajectory profile calculation creating uncertainties and providing additional complexity for ATC tactical operations.

ATC, NM, and FMPs use the FPL data for trajectory validation and calculation and make it visible in the ATM system. Lack of aircraft flight performance data in the dataset leads to an inaccurate trajectory. The aircraft performance model uses generic aircraft performance information (as opposed to the actual performance data used by Airspace Users) and numbers of assumptions are made in trajectory calculations. At the end of the process the calculated flight trajectory is often inconsistent and inaccurate compared to the one originally calculated by the AU's flight planning tools.

One of the inaccurate profile prediction consequences is resulting in false or not reported medium term conflicts reports that may affect separation minima set for the military flights spacing, thus causing inadequate, and not needed use of the airspace. Previous operating methods are mostly based on the airspace reservation imposed on and limiting civil aircraft operations by defining envelope surrounding planned military mission. This is 3D area plus safe buffer activated pretty well in advance is hereby prohibiting any civil aircraft operation. Avoiding the "ARES" causes additional ATCOs workload, Environmental impact and Air Careers economical losses.

A bit sophisticated approach can practice the G/G online message interchange when the military system applies for ATS routes crossing permission based on planned military flight data. Again, surveillance data are not applied and separation minima have to cope with non-radar control rules. These inconsistencies are mitigated by ATCO during the execution phase through tactical interventions and leads to additional workload.

The models of ATC organisation vary from country to country and have different approaches for OAT FPL processing distribution and integration. Some ATC generate system OAT FPL manually and some rely on already automated processing and insertion of the system FPL in ATC system. It induces extra workload and requires capabilities to not only process but also manage different types of flights with different equipage and flight

performance. They necessitate a different set of environment data, security concerns, which are important and may be associated with synchronising multiple flights

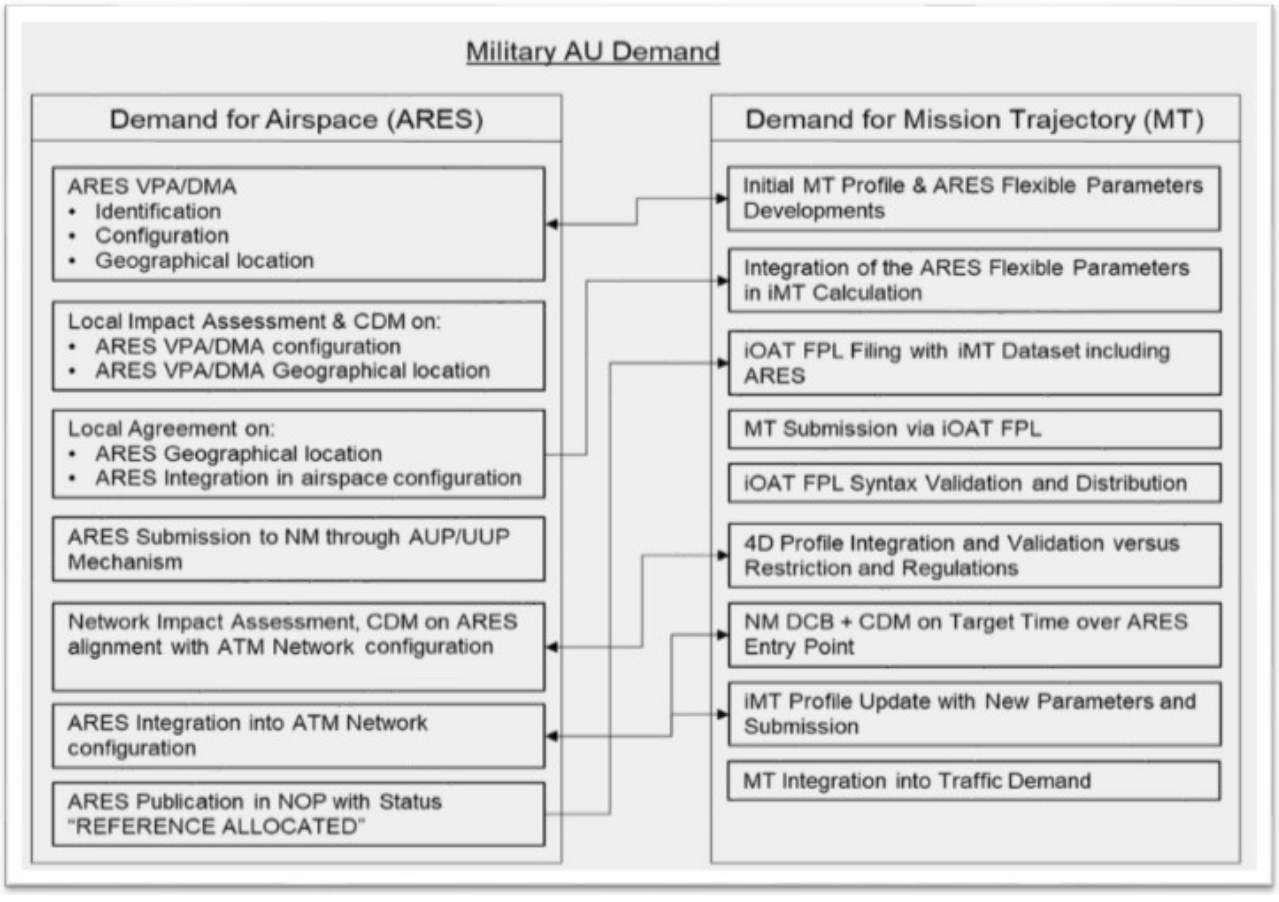
3.3.2 New SESAR Operating Method

In the context of the mission trajectory driven processes the new operating method brings a holistic view on the integrated management of the military AU demand. It demonstrates evolution of iOAT FPL that incorporates the iMT data set. The solution refers to the baseline ATM system as an integrated civil-military ATM model. It represents integrated civil-military ATS provision within one airspace continuum for all civil and military airspace users.

The new operating method facilitates integration of the military IFR flights and mission-specific requirements into the ATM network operations, but this does not restrict other airspace users exploiting the Mission Trajectory concept in circumstances where their operational requirements cannot be fulfilled by applying the concept of Business Trajectory.

The WOC function and respective technical support systems facilitate the military AU operations in planning and execution phase. The WOC function has different implementation dimensions, based on the architecture of the national military organisations. Effectively, for military AU this is a key capability that interfaces with the ATM network and facilitates the trajectory development, sharing, execution, and management.

CDM is a corner stone for the entire ATM network and ATM actors including military AU. From the ATM network perspective CDM is a mechanism that allows all ATM actors to collaborate through recurrent sharing of information and reach a consensus on conflicting demand. For the military AU participation in CDM can be limited due to the specific military mission objectives and priorities. The participation in CDM, provides increased awareness on the true military demand, and facilitates better use of the available capacity. In the context of trajectory management, the participation in CDM can be triggered by different factors starting from the airspace demand until the implementation of a “system of priorities”. This collaboration determines and implements



optimal solutions for ATM network operations through the continuous information sharing of individual, local and network preferences, in planning phase.

Figure 11: Integrated management of military AU demand

The New Operating method focuses on the integrated management of iMT. It reflects military AU demand that comprises trajectory profile developed for particular mission type, and when necessary Airspace Reservation (ARES) allocated via ASM. It reflects the complex operational process that gathers several interrelated activities and ATM actors involved.

The integrated management of iMT delivers operational improvements to the whole ATM lifecycle, from the first time the trajectory is shared with the ATM Network until mission is terminated. It also illustrates how two processes intersect at the planning phase and result in a consolidated data set that is shared through harmonised and improved OAT FPL with all ATM actors concerned.

The integrated management of iMT embraces the conceptual elements stemming from the target ATM concept. One of the conceptual key elements is a collaborative decision making CDM process facilitated by enhanced automation.

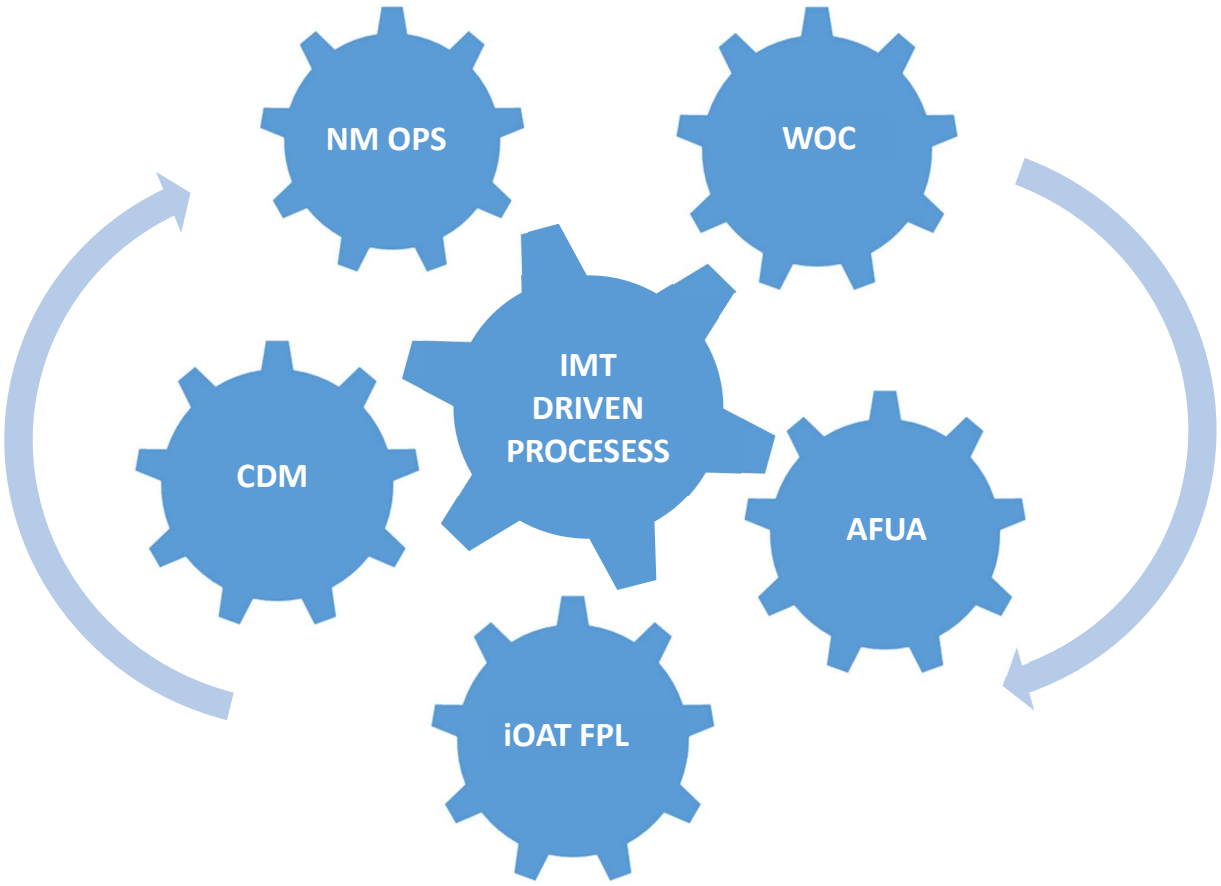


Figure 12: Operational Concept elements

3.3.2.1 Improved OAT FPL evolution

The iOAT FPL is a structured formalised document that aggregates information on IFR flights that is shared with all pertinent ATM actors in a harmonised format. Concept wise, iOAT FPL regarded as a mechanism that facilitates transition from Time-based to Trajectory-based operations and used by the military AU to share demand. IOAT FPL reflects the profile of iMT and flight specific information, which will be accommodated in the controlled airspace of various classes A, C, D, and E and further integrated into the ATM network operations. Flights, which submit iMT via iOAT FPL shall be subject to air traffic service provision or special handling in accordance with AU operational requirements.

The format of iOAT FPL evolves content wise in order to adapt the iMT data set to the operational needs. Comparing with previous iOAT FPL format validated to V2 maturity level the new flight plan elements are introduced in order to enrich the flight related dataset. These elements reflect extension of the VPA volumes up to nine, time values and flight levels associated with ARES entry/exit points, usage of Lat/Long coordinates for ARES entry/exit and also reflect the status of the flight along trajectory profile in accordance with the rules that apply in controlled airspace.

Effectively, the integration of iMT into the Network operations calls for new challenges. Compliance of the flight profile with the ATM Network rules becomes crucial especially for military IFR flights operating in controlled airspace. Submitted by AU the iOAT FPL follows the processing and verification cycle performed by the centralized network function (IFPS) and further distribution to ETFMS. At this stage, the iOAT FPL becomes subject for processing and validation against the policies, procedures and description for route and traffic orientation defined in the Route Availability Document RAD unless otherwise specified by military Authorities in iOAT FPL.

The RAD is a tool designed as a sole-source flight-planning document, which integrates both structural and ATFCM requirements, geographically and vertically. The RAD provides a single fully integrated and co-ordinated list of restrictions and requirements for all areas where the NM provides ATFCM services. The RAD is only applicable to the IFR part of the Flight Plan.

The RAD document consists of six Appendices associated with restrictions:

- Appendix 2 - Area Definition;
- Appendix 3 - Flight Level Capping limits;
- Appendix 4 - En-route DCT limites;
- Appendix 5 - Airport Connectivity;
- Appendix 6 - Flight Profile Restrictions;
- Appendix 7 - FUA Restrictions.

In addition, if necessary, a separate Annex for Special events, containing restrictions of temporary nature (i.e. European/World Sport Events, Olympic Games, large-scale Military exercises, economic forums …).

The Enhanced Tactical Flow Management System (ETFMS) compares traffic demand, regulated demand and load against capacity to assess possible imbalances in the European airspace and allows the implementation of measures to resolve these imbalances in the traffic, such as regulations or rerouting.

Note The IFPS and ETFMS are separate systems; any message submitted to the IFPS must be acknowledged before it is transmitted to the ETFMS, where any relevant flow regulations may then be applied, thus the IFPS cannot know what impact flow regulations may have on any particular flight.

The major improvement of iOAT FPL is a modification of the trajectory profile description and the ARES data set. The iMT profile (2D route plus FL/ALT) may capture different route segments, which are associated with published ATS route network in combination with off-route point-to-point segments or direct segments that makes iMT different from BT that is flying along predefined European route network. These route segments in today's ICAO 2012 FPL abbreviated with GAT and OAT indicators. These indicators may also indicate switch from standard ATS provisions to the special handling associated with mission support services.

Conceptually, the processing and validation of iMT shall cover the whole trajectory profile despite the composition of route segments and associated GAT and OAT indicators as long as profile goes through predefined volume of controlled airspace. Therefore, in new operating method use of these indicators in iOAT FPL becomes irrelevant. The iMT profile may contain published waypoints, points defined by Lat. /Long coordinates, direct or point to point segments, and ARES when it is integrated into iMT profile description. Effectively, it provides a holistic view on entire iMT in NM and ATC systems and contributes to the trajectory management, predictability, capacity and reduces uncertainty on military flight intent facilitating tactical ATC operations.

In addition to the route profile, iOAT FPL contains limited ARES data. This information might not be sufficient to address specific military needs for training in terms of airspace volume. In order to improve it, the iOAT FPL format shall accommodate the requested volume of ARES (VPA designed) through combination of the individual modules up to nine. This number of modules allows optimising ARES configuration and satisfy both military AU training needs and NM performance expectations.

IOAT FPL also accommodates information about ARES entry and exit points with associated time and flight levels. This information is important to ensure safety between iMT entering and exiting the ARES and other traffic movements around it. Complementary to the fixed and published ARES entry and exit points, the use of geographic coordinates provides flexibility to military AU while developing their requested trajectories. Various trajectory profile configurations must be connected to the allocated ARES configuration at any defined entry/exit point allowing the vast variety of military operational training scenarios. The improvement facilitates integration of ad hoc airspace in iMT profile and paves the way to the future DMA concept implementation.

IOAT FPL contains information about elapsed times EET. In addition to EET that reflects the total flight duration time, the other elapsed times apply for trajectory profile calculation update and revision. These time values can be associated with time over significant points, ARES entry/exits or time over target for military AU, while for NM and ATC these parameters are necessary preconditions for the 4D trajectory profile calculation validation and integration in the NM and ATC systems. The time addressed under STAY indicator provides information about duration of the flight within ARES, Holding Pattern or AERORDOM. This time value serves as a reference parameter to provide justification on optimal usage of the available airspace resource and contributes to the ATM network performance assessment. The time over ARES entry point is expressed as elapsed time from take-off until the ARES entry point. This time is associated with the ARES activation period while indicating on the ARES occupancy by the flight.

The taxi time should also be specified in the IOTA FPL as an important constituent of the calculation of the trajectory profile. The taxi time is a variable parameter and may differ from one airbase to another depending on the outline of military aerodromes and procedures that apply to the ground airdrome operations. Therefore, information regarding the taxi time shall be published in national AIPs and available in environmental database.

The rapidly growing segment of civil and military RPAS operations brings new challenges to the ATM system. Military RPAS operating in controlled airspace may use iOAT FPL as reliable mechanism facilitating at initial phase accommodation and further integration of their trajectories into the ATM network operations. The iOAT FPL format provides room for RPAS specific information and can be exploited by military AU and other AU as a reliable mechanism to provide flight data to all ATM actors concerned.

3.3.2.2 ARES integration in iMT

Integration of a new type of ARES (VPA designed) in iMT profile enriches the trajectory data set that is shared with the ATM actors concerned.

The iOAT FPL integrates information elements linked to ARES description and provides the holistic view of the iMT. This includes the ARES flexible parameters facilitating integration of the ARES data set in the trajectory profile description. The ARES flexible parameters are essential attributes and include the following:

- Flexible number of modules per STAY indicator for VPA designed ARES
- Agreed composition of modules as ad-hoc ASM scenario with unique identifier ID;
- Flight level block per ARES configuration;
- ARES entry and exit points expressed either as published Waypoints or Lat/long coordinates;
- Flight level/altitude at ARES entry and exit and;
- Time values expressed as elapsed times EET. EET per STAY indicator specifies ARES duration time and EET in field 18 indicates on time over ARES entry point.

The iOAT FPL has limitations regarding the quantity of individual modules allowed under one STAY indicator. This limitation applies to the VPA designed ARES that may contain excessive number of modules in sequence for one ARES configuration. Therefore, the VPA design allows several possibilities to configure the required volume of airspace.

One possibility as a combination of several adjacent modules to configure the shape of ARES that fits the individual AU operational needs. The modules, **up to nine**, can be inserted in the iOAT FPL under STAY indicator as a reflection of the volume of airspace (reference ARES) allocated via ASM process and published in NOP. Each module has its ID published in national AIPs per VPA designed ARES available in environmental database and activated through AUP/UUP mechanism. This indication in IOAT FPL provides information to ATCO and AD controller on the optimum ARES configuration per mission type.

Another possibility is a fixed ASM scenario for VPA ARES developed in advance, as a predefined configuration of modules per mission type with associated ID and published in national AIPs. Number of these configurations is available in environmental database and activated through AUP/UUP mechanism.

Approach that is more dynamic may allow the combination of the adjacent modules, despite the number thereof, allowing construction of the ad-hoc ARES shape that fits the operational needs. The configured volume is regarded as ad-hoc ASM scenario with unique identifier ID. Such scenario has a temporary nature and is not published in the national AIPs therefore shall necessarily be promulgated through AUP/UUP mechanism and complemented by NOTAM publication. It should feed the environmental database with temporary data of the ad-hoc ASM scenario in order to ensure compliance with the environmental data used by IFPS and CACD.

The FL block per STAY indicator is a reflection of actual low and upper limits of ARES, the individual mission is going to fly in within the predefined time. The adjacent flexible modules may vary in the vertical plain, depending

on the mission and exercise type. It should be noted, that at this initial stage FL block shall reflect unambiguously vertical dimension of the configured ARES and not the individual module.

ARES entry/exit points are essential parameters used in trajectory profile calculation and trajectory management. Via these points, the trajectory profile connects the volume of airspace configured for particular mission type. For ATCO this indicates the point over which the IMT profile is temporary terminated and for AD controller this is the beginning of iMT operation within ARES and vice versa. These points also considered the reference points for the frequency change and the handover of flight from ATS provision to tactical control inside ARES and back to ATCO. The ARES entry/exit points can be expressed either as published 5LNC navigation points or as geographical coordinates expressed by lat. /long.

The published ARES entry/exit points have a static nature and remain unchanged reference parameters. Military use these points to connect their flights with the ARES in daily training for fixed predefined exercise scenarios. Usually the entry/exit points are defined either at the border of the published ARES or in the proximity of the ARES borders within the safety buffers.

In order to satisfy military operational needs and retain flexibility in military training, the use of geographical coordinates for ARES entry/exit point is required. Whenever it is dictated by military training the use of Lat. /Long at the border of the ARES shall be allowed. The transformation of the geographical coordinates into pseudo waypoints with associated abbreviations and proper visualisation to ATCO and AD controller will contribute to robust ATC operations facilitating provision of the tactical ATC clearances for flights heading towards entry and exit point.

Indication on FL at the ARES entry/exit is necessary precondition to retain required level of safety in ATC operations around ARES including FBZ. Both ATCO and AD controller within their area of responsibility shall monitor the adherence to the FL at ARES entry/exit point as indicated in iOAT FPL. Aircraft shall entry and exit ARES at cleared FL as indicated in iOAT FPL. The aircraft shall maintain the horizontal position with non-deviating status while crossing the boundary of ARES in the horizontal plain. In the contrary, while entering or exiting the ARES, the variable flight profile may affect air traffic in the proximity of the ARES FBZ and lead to the infringement of safety inducing extra workload for ATCO.

Time values reflected as EET are essential parameters in IMT profile calculation and management. These are three EET values and one of the EET is linked to the time over ARES entry/exit point. For pilot this is a calculated time over point along trajectory profile and for ATCO/AD controllers this is a time of the trajectory termination before entering into the ARES and restart of the same trajectory after exiting the ARES. This time can also be associated with the activation and deactivation of ARES providing real time airspace status update in the execution phase. This time values can be refined up on in the CDM process in the planning phase and translated into Target times.

AU and ATM actors may initiate refinement of EET over ARES entry point when aircraft still on the ground. It may be triggered by different occurrences e.g. ATM constraints, turn around procedures ground constraints or weather constraint etc. In the context of the trajectory management process, NM function may propose a new time over ARES entry delaying activation of the ARES. This proposed time, once accepted by military AU, will become a planning ATM constraint, also known as a Target time TTO over ARES entry point. The TTO over ARES entry may be accepted or not by military Airspace Users, as the accomplishment of the mission objective(s) is always having precedence over all other operational aspects, except safety.

Time adjustment over ARES entry point can also be a compromise between a desired configuration of VPA modules and time window availability especially in peak hours in congested airspace. This may trigger the iMT revision process with modification of elapsed time. The modification of estimated times should not be triggered

at a very last moment due to variety of constraints in military operational environment e.g. one aircraft is used for several missions during the flight shift.

3.3.2.3 Collaborative Decision Making CDM

Collaborative decision-making (CDM) is defined as a process focused on how to decide on a course of action articulated between two or more community members. Through this process, ATM community members share information related to that decision, agree on, and apply the decision-making approach and principles. The overall objective of the process is to improve the performance of the ATM system as a whole while balancing the needs of individual ATM community members.

From a military perspective CDM is a process from which all participating parties can gain benefits through the negotiation of proposed options. The negotiation stops either at the moment when all participating parties agree with the result or when they reach a limit in their capability to accept further compromise due to defined priorities.

To enable CDM, the Military will share relevant ATM information with accredited CDM partners based on the "need to know" principle. Consequently, the MT and ARES data set shared for CDM would not provide the full set of military information but only related unclassified ATM information.

In accordance with mission requirements, the shared MT will provide two major attributes for supporting CDM, flexibility for negotiation and/or a priority level. To be valuable to all actors and the network, the information shall be harmonized at ECAC level.

Military flights under GAT, OAT/GAT and OAT rules will use a common format, which benefits from appropriate system and service support available for all actors engaged in CDM. The implementation of SWIM standards, governance and infrastructure will fully integrate the military requirements concerning data exchange. The Military will accept connecting their systems to SWIM if a relevant security policy concerning protection against unauthorised access, confidentiality, data integrity, and data availability is applied.

NM systems shall be able to process military mission specifics related to sensitive information, aircraft performance, formation flights, ARES allocation, and synchronisation of multiple missions etc., hence facilitating the allocation of AU specific demands.

3.3.2.3.1 Impact assessment and automation support

For the military AU, WOC will provide automation support for the MT planning functionalities.
WOC will assess equally, the impact of its ATM demand on airspace configuration and network operations and the impact of civil counter proposals on military missions thru a 'what if' automated tool integrated in its mission planning support system. The local/sub-regional joint civil-military ASM-ATFCM function proposed should play a central role in the civil-military CDM by having the ability to assess, based on automated 'what-if' tools, the impacts between airspace configuration scenarios, civil traffic and military requirements, hence offering timely solutions for their balancing at both of local/sub-regional and network levels.
Unlike the civilian model based on economic objectives, the achievement of military missions cannot be measured so easily through quantified indicators. In this context, the assessment of the impacts on defence activities will have to be done through human analysis, supported by 'what if' tools. To assess the impact of ATM solutions on mission objectives, the Military will need to implement and use a specific framework.

3.3.2.3.2 Negotiation and decision

When operating as either Mission or Business Trajectory, the Military AU will engage in consultation with relevant ATM stakeholders in order to reach an agreement on a proposed solution for optimizing the impact of the initial request. The negotiation of MT parameters will be based on the flexibility and priority defined by the WOC.
Military activities and needs cannot be accurately addressed by ATM performance objectives/targets to be easily compared with other CDM actor's requirements. Consequently, CDM involving military requirement should rely on human decision.
Considering the variety of CDM actors as well as their cross-border interactions, an escalation process towards upper level authorities to solve conflicting situation may be not possible. An alternative way stays in pre-defined priority criteria/rules.
A 'system of priorities' that encompasses both civil and military priority criteria will be defined and periodically updated by civil and military authorities at State level in coordination with NM as part of the CDM strategic framework.
Negotiation will stop when either participating parties agree with the result or when there are limitations to further accepting compromises, in this case relevant priority rules are applied.
Application of civil and military priorities shall be framed by specific rules and procedures. While several types of military mission require full priority (e.g. real air policing/air defence missions) there will be situations when military flights will accept prioritisation following civil requests according to rules defined in the strategic framework. These rules may define occurrences, limitations and applicability of civil and military priorities. The Wing Operations Centre (WOC) actor decides when military objectives cannot be met in order to move to the "Priority Rules".

3.3.2.3.3 Strategic framework

A framework agreement to ensure expeditious and equitable civil-military CDM is mandatory. Elaborated and reviewed periodically by State civil and military authorities in coordination with the European network manager, shall clearly describe the actors and their responsibilities, the content of information exchange, the working procedures, the types of priorities and their applicability. It will also contain framework modalities that define decision-making rules, restrictions and limitations, activities, frequencies, applicable to military and civil actors.
To support the assessment of civil-military CDM feasibility as well as a periodical review of the framework, some performance indicators on priorities application may be defined at national/sub-regional level.
To ensure consistent CDM processes at pan-European level it is recommended to develop and implement harmonized frameworks among States/FABs.

3.3.2.3.4 Actors

The Wing Operations Centre (WOC) will represent the key capability of the military AU, able to share, negotiate and mitigate against any constraint both Mission and Business Trajectories, including the appropriate ARES that best meet the mission requirements. WOC will provide the basis for civil-military CDM processes by defining flexible parameters and priorities in MT/ARES data set whenever compatible with mission objectives.
The WOC function and its ATM system support will be deployed in accordance with the architecture of the military national ATM systems. The local/sub-regional joint civil-military ASM/ATFCM actor (Flow Managers, Local Traffic Managers, and Airspace Managers) proposed by SESAR should ensure an integrated management of military demand for airspace and trajectories as well as the consistency of the CDM processes performed at local/sub-regional and regional levels. With respect to its foreseen capabilities, this actor shall be able to make the decision on the allocation of ARES within the area of responsibility. Within the civil-military CDM, the Network Manager will propose optimization of airspace configurations (including ARES) and trajectories with respect to the flexibility/priority defined by the military airspace user and the provisions of the agreed CDM strategic framework.

3.3.2.3.5 ASM/ATFCM dependencies

Sharing and negotiation of MT data will be possible only after a first step in ASM process is concluded.
WOC in coordination with the joint civil-military local/sub-regional ASM-ATFCM actor will judge for each type of ARES the flexible parameters subject to CDM. The results of ARES negotiation will determine the flexibility of MT for supporting NM' optimization and prioritization processes.
The military AUs will not take part on a regular basis in the User Driven Prioritization Process (UDPP), including when flying business trajectories. The military AU will support the ATFCM and DCB processes by sharing airspace and trajectory information through the MT lifecycle and accepting, when possible, their modification within the limits of defined flexibility.
Currently, the ASM and ATFCM are two separated processes although synchronized at some extent. In TBO operations environment, the MT management related processes: mission preparation, ASM, ATFCM, weather information management, and flight planning will be integrated at the extent necessary to address all attributes of military mission within CDM.

3.3.2.4 An exemption policy

The exemption policy is a state prerogative and applies differently varying from country to country. It applies in the circumstances when special operational requirements or aircraft equipage require exemption from restrictions and regulations, which in nominal case applies to all IFR flights conducted in controlled airspace.

The aim of the iOAT FPL is conformity to the IFPS and ATFCM systems and exemptions regard only those rare cases that address military specificities for which these systems had never been built before and do not address it at all.

The solution is targeting only IFR flights, which trajectories have been submitted via iOAT FPL to NM for processing and validation in accordance with established rules and procedures.

Military AU and aircraft manufacturer may be subject to exemption due to the nature of their specific operations and aircraft equipment. For Air Defence missions, Quick Reaction Alerts and other flights conducted for security and defence, States may decide not to use the flight plan at all as time does not permit to generate and submit the iOAT FPL for processing and further distribution.

For all airspace users, the exemption implies the use of mechanisms mitigating the effect of restrictions and regulations established by the NM. It allows freeing an individual flight from any obligation to comply with RAD restrictions and ATFM regulation, which are tools normally used to streamline the processing and distribution of the AU demands in IFPS and ETFMS.

Military flights or industry test flights may not comply with RAD/AIP restrictions for operational or diplomatic reasons and iOT FPL originators will therefore use existing mechanisms to facilitate the processing and integration of these flights into ATM network operations. According to the legacy mechanism, the exemptions automatically apply at pan-European scale to a particular type of flights marked with special status STS indicator as follows STS/SAR; STS/FFR; STS/MEDEVAC; STS/HEAD; STS/ATFMX. However, it should be noted that other type of flights with the following STS indicators shall not be automatically exempted STS/HOSP; STS/STATE; STS/HUM; STS/NONRVSM; STS/FLTCK, STS/HAZMAT, STS/MARSA, STS/ALTRV.

The iMT submitted through iOAT FPL by WOC to NM follows two phases of validation/verification in NM systems: one is on compliance with RAD restrictions in IFPS and another one, on compliance with ATFM regulations in ETFMS.

The iOAT FPL follows the processing and validation by IFPS against the policies, procedures and description for route and traffic orientation defined by RAD or AIPs unless otherwise required by military Authority originating the flight plan due its mission specificities.

During the development phase of iMT, the WOC must assess the compliance of the trajectory profile with RAD/AIP restrictions, while ensuring consistency with the mission operational requirements. In the nominal case, such a trajectory is automatically processed and either distributed between the relevant ATS units and ETFMS, or does not undergo automatic processing and will be processed in accordance with legacy procedures for a non-RAD compliant route.

WOC as originator of the initial mission trajectory and iOAT FPL shall consult aeronautical information and have unrestricted access to AIPs and NOTAM publications. Effectively, almost all regular flights civil and military are affected by restrictions, which cannot be avoided due to complexity and congestion of the national airspace. For the cross-border flights, the trajectory profile shall be assessed against restrictions defined in national AIPs civil, military, and RAD document. WOC may request exemption for entire trajectory or only for that part of it which must go through defined path and requires special handling and provision of mission support services. It implies preliminary coordination with ATS authorities and agreement on the trajectory segments subject to the exemption from RAD/AIP restrictions.

When due to mission specificities the iMT profile cannot comply with RAD/AIP restrictions, WOC will initiate proper coordination with respective ATSU or several ATSU's on the trajectory 3D profile allocation in accordance with mission requirements. This coordination may result in agreements between WOC and ATSU on the trajectory 3D profile that AU agrees to fly and ANSP agrees to facilitate. The result of such coordination is reflected in iOAT FPL as route coordinated with ATC via RTECOORATC designator that ensures automatic processing in IFPS. If the trajectory 3D profile extends beyond the AOR of one ATSU, the name of the next ATSU is also being reported in a corresponding field of the filed iOAT FPL.

When the iOAT FPL submitted to IFPS for processing has been acknowledged, IFPS sends a copy to Enhanced Tactical Flow Management System (ETFMS) where the flight shall be analysed for flow regulations that may be applicable to that flight.

Some sensitive flights can be exempted from flow regulations. Critical mission types may be affected by delays or deviations from the planned 3D trajectories that can lead to abortion of the mission or mismatch with estimates set for particular mission configuration. As an example, Air to Air refuelling or RPAS operations are complex missions requesting precise coordination between participating air assets from different geographical locations and time zones. Non-compliance with estimated times and rendezvous points may create a significant impact on mission effectiveness, fuel efficiency, resource availability etc. The flight plan originator may use the appropriate existing exemption designators to protect such sensitive flights. For cross border trajectories, the designators are valid for the entire duration of the flight.

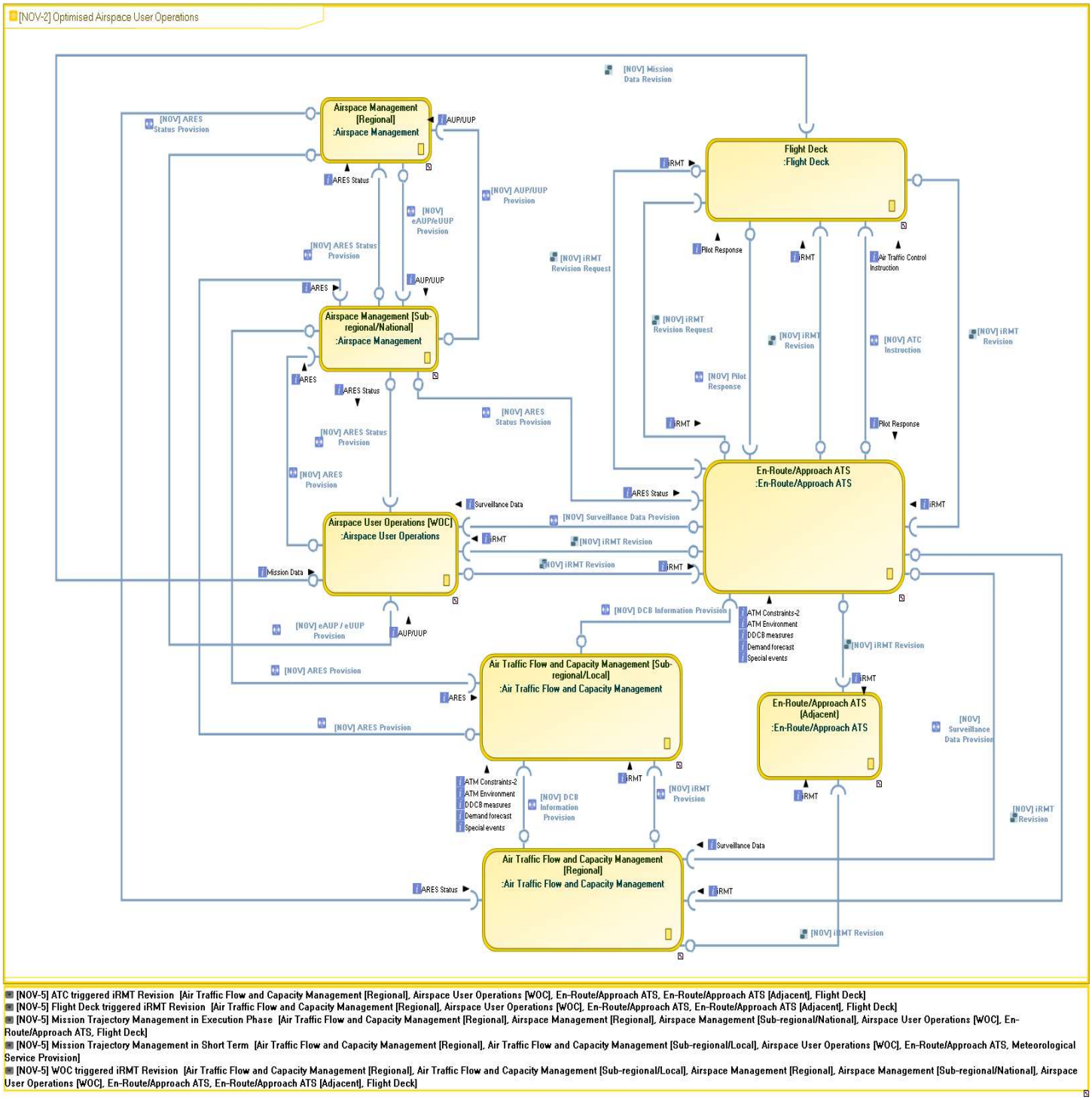
The WOC acting as the originator of the iOAT FPL and associated messages shall use the existing designator ATFMX to exempt a flight from flow regulations. It may also accept to receive slot allocations from regional ATFCM should iMT be subject to flow regulations. As a principle, the exemption designators shall only be used to fulfil operational needs validated by military authority originating the improved OAT FPL.

It should be noted that regarding 8, 33 kHz channel spacing and compliance with requirements for RVSM airspace, solutions developed in legacy system will remain unchanged and apply to those flights which are not compliant.

3.3.2.5 Trajectory Management

Trajectory Management (TM) is a backbone of the future European ATM system. It ensures the availability and the quality of a single reference trajectory through a common data set, shared between all ATM actors from the Flight Planning Phase onwards. The timely sharing of the single reference trajectory between ATM actors concerned in the Flight Execution phase significantly improves the accuracy and reliability of trajectory data. The Reference Trajectory describes the trajectory the Airspace User has agreed to fly and that the ANSPs and Airports agree to facilitate. It is subject to amendments through Trajectory Management (TM) processes in order to ensure that all ground and airborne system use the same reference.

The following figure shows the high level Operational Nodes Connectivity based on the developed Mission Trajectory driven processes in the scope of Solution PJ.07-03, representing an aggregated view of interactions derived from Use Cases.



1964 **Figure 13: Operational Nodes connectivity diagram**

1965

3.3.2.5.1 Initial Mission Trajectory iMT

Initial Mission Trajectory iMT brings a specific dimension to the trajectory management process and delivers data set addressing mainly for military AU specific requirements. The title “initial” illustrates maturity level and bridges two instantiations of the Mission Trajectory concept development moving from Time Based towards Trajectory Based Operations environment.

The iMT describes the trajectory with specifics adherent to the mission objectives. The trajectory data set contains 2D route, multiple values of elapsed time EETs, flight level/altitude, speed and data set describing ARES with flexible parameters as well as information related to the aircraft, its equipment type of flight and exemptions when applicable.

The iMT does not include an accurate 4D trajectory description, as it would be required to perform the tasks of each flight plan recipient. Therefore, receiving ATM stakeholders have to interpolate a 4D trajectory based on the available iMT data and make assumptions wherever required to close the gaps that result from the iOAT FPL. Usage of the correct flight performance information facilitates mitigation of these gaps through more precise view on the trajectory profile per flight phase.

The iMT data model will be further developed within horizon of SESAR 2020 with respect to the confidentiality of mission specific data. The further harmonisation of MT data regards eFPL and FF-ICE data models as future reference models to substitute iOAT FPL allowing military AUs to perform coherent and efficient sharing of 4D trajectory and trajectory management.

For military AUs, trajectory management, together with performance-based navigation (PBN) and advanced surveillance, will be fundamental features of future TBO environment. A key enabler of trajectory management will be high capacity air-ground data link communications and the ability of military airborne functionalities to rely on flight guidance to process trajectory parameters at the level of flight management systems/military mission systems (FMS/MMS). The compliance approach will vary with aircraft types and mission

Air-to-ground data exchange is limited due to military aircraft equipage considering that available data link capabilities are not considered for ATM purpose. Therefore, considering the variety of military aircraft types and different flight performance, the trajectory management relies on the ground developed trajectory and ground - ground data exchange. The SWIM “Yellow” and “GREEN” technical profiles facilitate ground-to-ground iMT data exchange between pertinent ATM actors. In the context of the solution it implies limited scope for iMT in the context of trajectory management focusing on the development of the mature operational processes and prototypes.

Nonetheless, the fighter aircraft is a primary participant in the MT concept and must meet the common ATM/CNS requirements while operating in TBO environment, to mitigate adverse effect on the ATM network performance and minimize use of exemptions and/or derogations.

For equipped transport type aircraft, in the scope of trajectory management air-to-ground data link capabilities are the same as for civil aircraft.

The iMT is shared with all operational stakeholder via iOAT FPL as a harmonised structured format. It delivers the iMT data set to Regional ATFCM (NM Function). Regional ATFCM takes as input the iMT complete data set and when relevant applies some changes (e.g. letters of agreement) to produce the most accurate trajectory integrating accurate information from the AU and ATC. This resulting trajectory is the accepted trajectory and the reference trajectory to check the compliance of the flight plan with published ATM constraints. The accepted trajectory and the ATM constraints applied by NM to the trajectory are also provided to the AU as part of the NM feedback to the AU iOAT FPL submission.

Ground-ground coordination and agreement on the iMT revision proposal could be needed before integration into the aircraft systems (MMS/FMS). Some of the data elements included in the iMT are to be regarded as the current ATM partner's agreement and may only be changed via a revision process. The iRMT revision will occur following significant execution phase events, which change or refine these agreed data elements. The revision process may be executed at ATC initiative (e.g. for separation reasons) or Flight Crew initiative (e.g. weather hazard), WOC (e.g. change of mission or the mission parameters) or Network initiative (e.g. sector overload). The notion of a “ground agreed trajectory” will remain. The use of “ground agreed trajectory” is limited in time between the moments at which the trajectory revision is agreed by the ground actors (FOC/WOC, NM, ATC etc.) and it’s communication to the flight crew. This trajectory is anticipated to be used by the ground predictors before being acknowledged by the Crew.

The revision of the trajectory is a process to address a need or request for change in specific elements of the trajectory data currently shared in the SWIM environment. This process is associated with a need for a decision to be made by two or more stakeholders.

The revision process can be initiated by Flight deck (Flight crew), ATC (ATCO), WOC function, NM function.

When there is a need for revision of the iRMT and time/workload permits and specific conditions are met, a CDM process is triggered based on a proposal made by the initiator of the revision request. An impact assessment on the proposed change is then performed through CDM, including possible adjustments through negotiation amongst the interested stakeholders, leading to an agreement on the change.

A revision process ends when the final decision is made and, in case of modification of related Trajectory data, when the Flight Crew acknowledge the trajectory change.

If the final decision implies a modification of the trajectory data, a Trajectory Synchronisation process will be performed. Trajectory Synchronisation is the automatic process, which ensures the unicity and consistency of a change modifying the trajectory data and its sharing amongst all (relevant) ground stakeholders.

After the Trajectory Revision process is terminated and when a change modifies the Cleared Trajectory Data, a new aircraft predicted trajectory may be downlinked for consistency purpose and for update of related supporting data.

From MT concept perspective revision of sensitive mission trajectories (e.g. fighter aircraft performing combat training) should be rather made by exception then the regular practise taking into account mission targets and effectiveness. It should be noted that revised trajectory may result in abortion of a flight from a mission and have adverse effect on the mission objective.

The update of trajectory is triggered by airborne and ground systems when deviated from original trajectory profile exceeds the predefined threshold for trajectory management requirements.

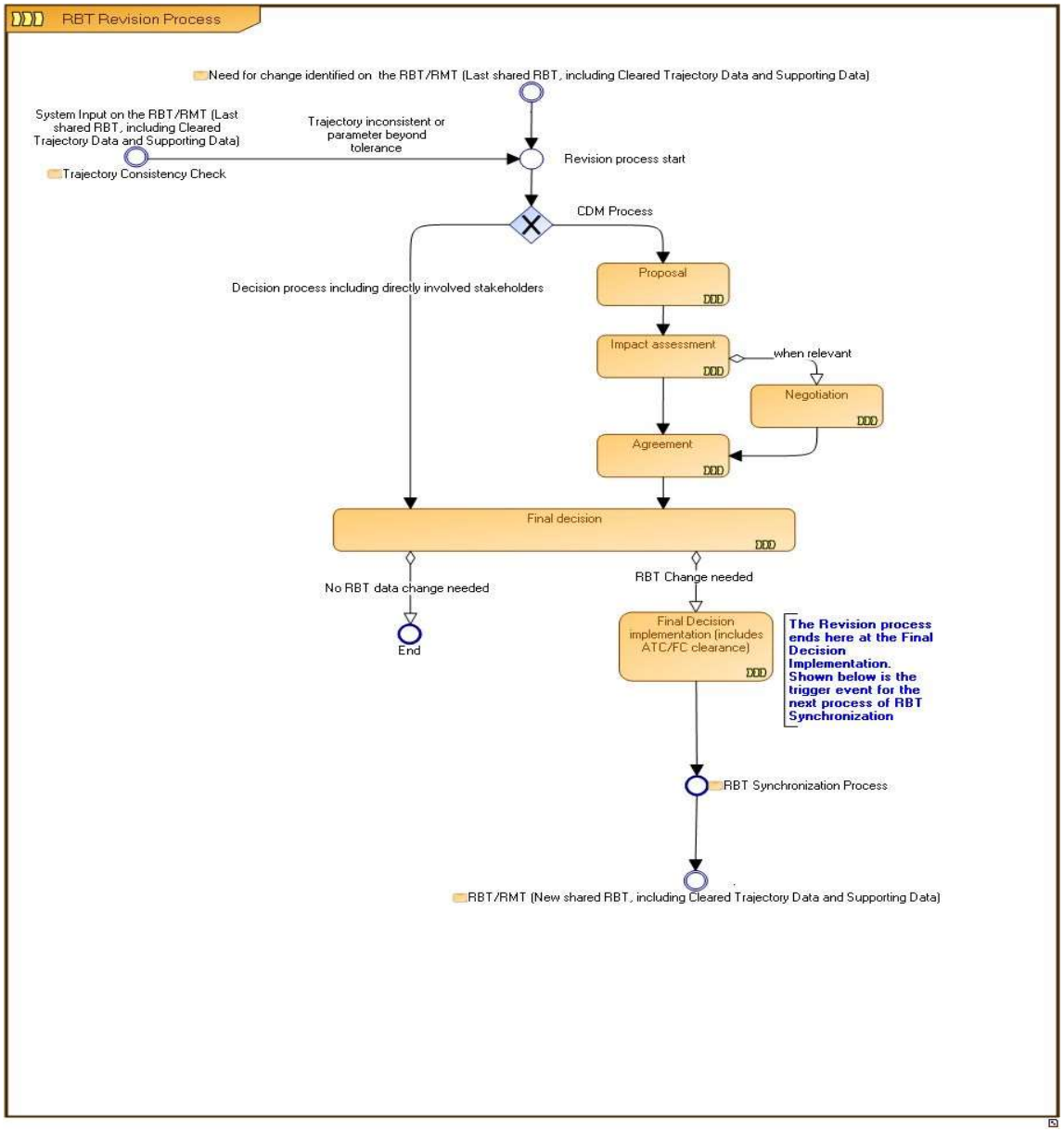


Figure 14: CONOPS Trajectory Revision Process

3.3.2.5.2 Initial Mission Trajectory Data

This chapter describes the main clusters of data elements operationally needed for the initial Mission Trajectory. It does not address iMT data generated in long medium term as it is properly reflected and documented SESAR 1 deliverables.

The composition of iMT data set is broken down into iSMT shared data, iRMT shared data and supporting data reflecting specific data attributes adherent to military operations.

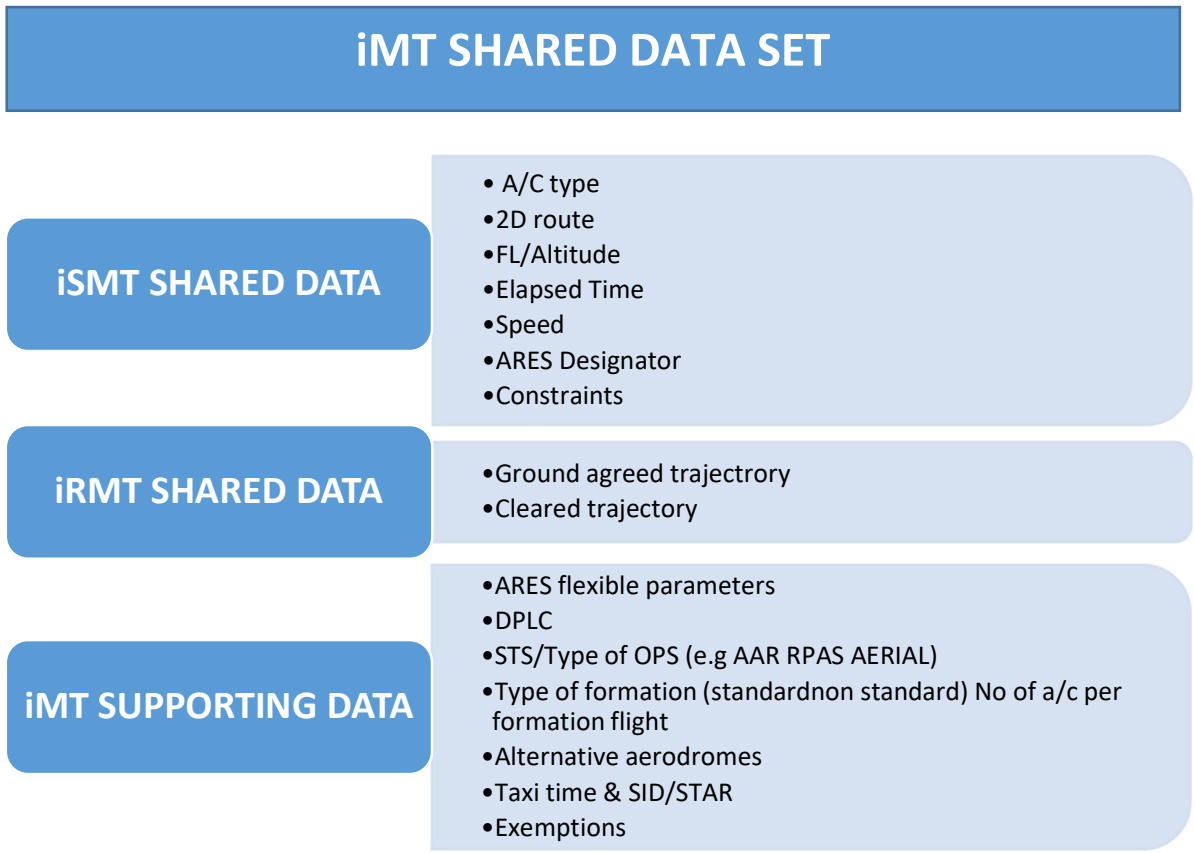


Figure 15: iMT Shared Data Set

3.3.2.5.3 The initial Shared Mission Trajectory iSMT

The iSMT provides common flight and trajectory data across multiple stakeholders regarding a single flight, ensuring that all systems have a common, consistent, up to date view of the flight, and that the data is widely and easily available, subject to appropriate access controls and confidentiality check.

The iSMT is broken down into two clusters:

Requested - filed Trajectory Data: it contains the last trajectory data as submitted from the AU through filed iOAT FPL. As such, it expresses military AU intention with specifics adherent to military operational requirements. The trajectory data are used to initiate a negotiation phase with the relevant ATM actors. The SESAR concept considers the collaborative elaboration and refinement of iSMT in due consideration of known constraints, of anticipated congestions at specific points, of Airspace Users preferences.

This trajectory does not contain 4D trajectory estimates and aircraft performance data. During the flight planning phase, the WOC modifies as necessary the Flight Trajectory from the Requested to the filed Trajectory to take into consideration the feedback (and in particular the constraints) of the Ground actors.

Ground Agreed Trajectory is initiated by the Airspace User's intention. All partners revise this trajectory through a CDM process, which captures the agreements between ATM actors concerned. There is continuity of the data

in the Ground Agreed Trajectory from the iSMT to the iRMT. Some data elements are specific for the Flight Planning phase and not used in the Flight Execution Phase as well as data elements specific for the Flight Execution Phase will not be used in the Flight Planning Phase.

Note: It should be noted, that milestone when iSMT is first time submitted through iOAT FPL to all pertinent ATM actors is not addressed in the OSED as it remains within the remit of the individual state while respecting the predefined timeframe for flight plan submission.

3.3.2.5.4 The initial Reference Mission Trajectory iRMT

The iRMT represents evolved iSMT through iterative update and modification of the ground agreed trajectory. Actually this a trajectory the Flight crew agrees to fly and ANSP and NM agree to facilitate.

The iRMT is the reference trajectory for the ground actors (ATC, NMF actors, WOC). The trajectory is anticipated to be first known and accepted by the Flight Crew and then cleared by the ATC. It is used by the ground ATM actors for their trajectory management and supports all the ATM processes. In complement of the A/G Shared Trajectory Data, it captures the specific agreement on the flight trajectory between the ground actors.

In case that an iRMT revision has been performed, agreed and shared on the ground but not yet shared with the Flight Crew, the Ground Agreed Trajectory will be different from the A/G Trajectory Data until the change will be transmitted to the Flight Crew. For example, when downstream ATSUs and WOC agree to modify the route in order to avoid a hot spot or to connect trajectory with newly identified available ARES, the Ground Agreed Trajectory will be revised with the new route. In that case, the route in the Ground Agreed Trajectory and in the A/G Shared Trajectory Data will be different until the route change will be shared with the Flight Crew. All ground actors will use the Ground Agreed Trajectory as a reference for Trajectory Management and for any further revisions.

3.3.2.5.5 Ground supporting Data

Ground Supporting Data contains other data exchanged to support negotiations between ground actors. The supporting data provide additional flexible parameters and attributes adherent to mission trajectory and facilitate trajectory management. This data used in CDM process and facilitate ATC operations providing additional information on military demand.

3.3.2.6 The operating methods

3.3.2.6.1 Management of iSMT

This section describes the operating method of the iSMT management and operational activities provided by the pertinent Nodes in the short-term planning phase (see EATMA [4]).

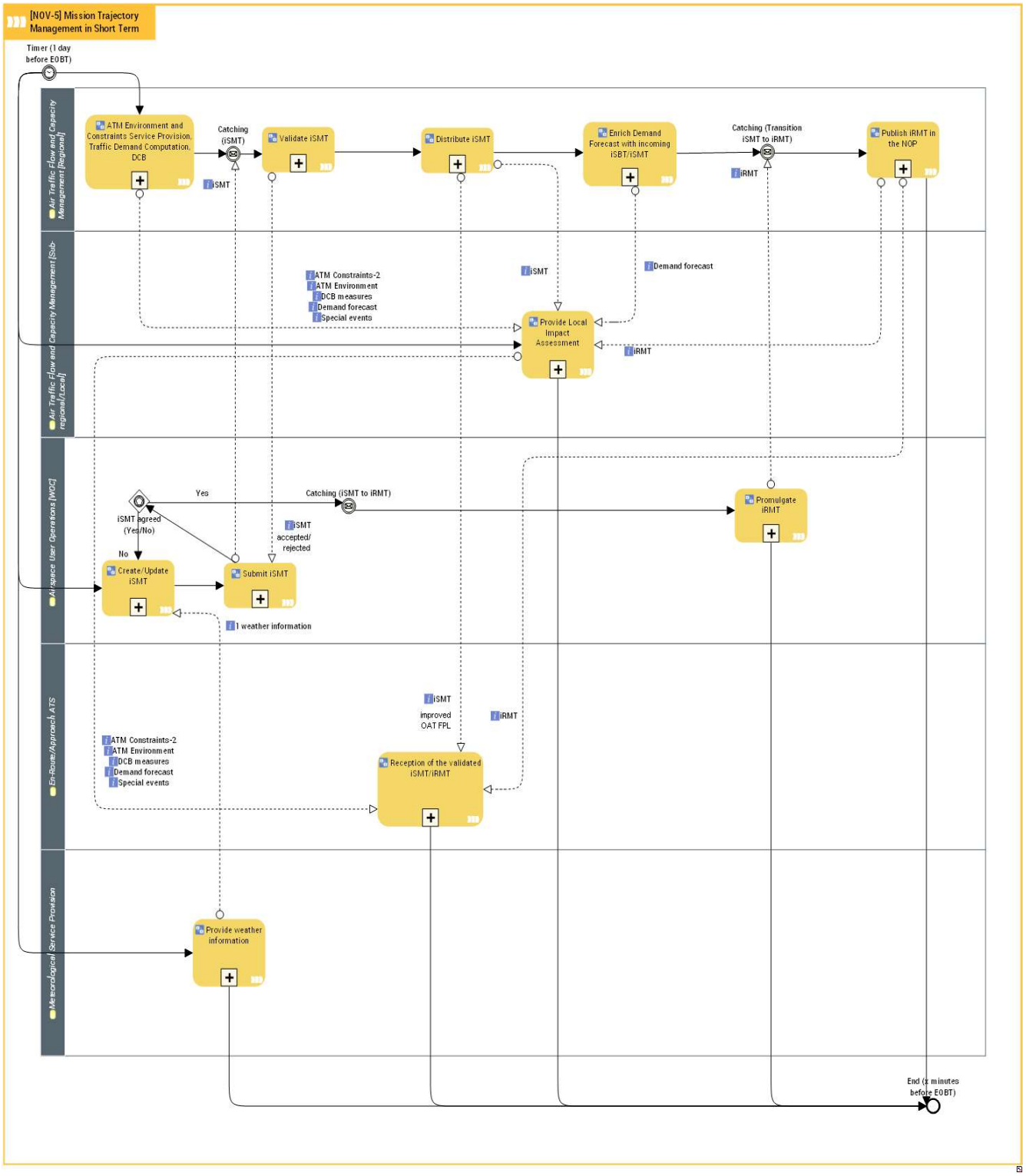
The iSMT management includes the finalization of the development of the iMT, the creation and update, submission, validation and distribution of an iSMT through the iOAT FPL mechanism. It also includes transition of iSMT to iRMT when all necessary conditions are met and all involved stakeholders have agreed to the transition of iSMT to iRMT upon decision of WOC and in agreement with all pertinent ATM actors.

The management of iSMT in the Short Term planning phase is supported by the following operational activities:

- AU Operations (WOC) :
  - Create/Update iSMT
  - Submit iSMT
  - Promulgate iRMT
- ATFCM (Regional):
  - ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB
  - Validate iSMT
  - Distribute iSMT
  - Enrich and publish demand forecast with incoming iSBT/iSMT data
  - Publish iRMT in the NOP
- ATFCM (Sub-regional/Local) :
  - Provide Local Impact Assessment
- En-Route/Approach ATS :
  - Reception of the validated iSMT/iRMT
- Meteorological Service Provider Operational Activities:
  - Provide weather information

A detailed description of the operational activities is given in section "Differences between new and previous Operating Methods" of this SPR-INTEROP/OSED document.

The following figure shows the activity view and related information exchanges between the involved operational nodes of the Mission Trajectory management in the short term planning Phase.



2138 **Figure 16: iSMT Management in Short Term**

3.3.2.6.2 Management of iRMT in the Execution Phase

This section describes the operating method of the iRMT management in the execution phase and describes the operational activities of the pertinent Nodes (see EATMA [4]) .This functional process covers the nominal case of the execution of iRMT, which may include an ARES data set associated with trajectory profile.

Note: The Flight Deck operations are not part of the concept description therefore activities related to Flight Deck are used only to address the pertinent actor for information exchange. The term “Flight Deck” represents the operational node, and the term “Flight Crew” is the human role that performs all respective activities.

The iMT Execution process will be supported by the following operational activities:

- Flight Deck:
  - Load mission data into aircraft
  - Execute Mission
- En-Route/Approach ATS :
  - Monitor trajectories and assess traffic situation
- ATFCM (Regional) :
  - Monitor Actual Mission Trajectory and Update IRMT accordingly
- ATFCM (Sub-regional/National) :
  - Monitor Flights
- ASM (Regional):
  - Provide ASM support Regional
- ASM (Sub-regional/National):
  - Provide ASM support (AMC)
  - Update and share ARES status
- AU Operations (WOC):
  - Monitor Mission

Detailed description of the operational activities is given in section "Differences between new and previous Operating Methods" of this SPR-INTEROP/OSED document.

The following figure shows the activity view and related information exchanges between the involved operational nodes of the iMT management in the execution phase.

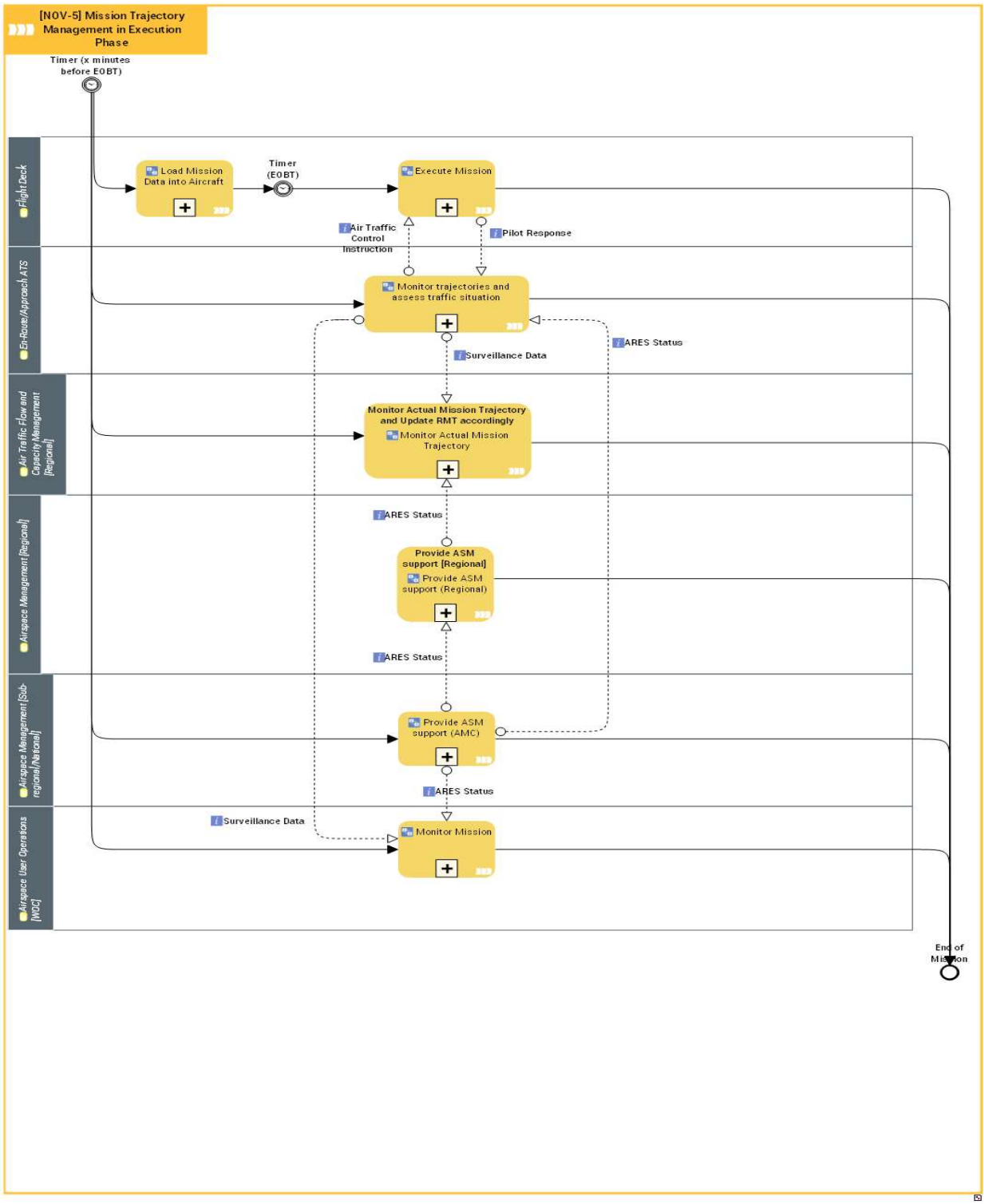


Figure 17: iRMT Management in Execution Phase

3.3.2.6.3 Revision of iRMT triggered by WOC

This section describes the operating method of the iRMT revision triggered by WOC in the execution phase (see Figure…).

This functional process covers all of the revision needs, taking into account that ASM function as part of the AFUA concept was defined in SESAR 1. The ASM part is described here to provide the complete picture of the operating method and will not be detailed furthermore.

WOC may trigger iRMT revision in the execution phase due to various reasons including ground and airborne constraints, tactical modification or weather adverse conditions. Consequently, the following revision criteria will apply:

- Trajectory profile without ARES not exhaustive
    - Change of WP/EET (e.g. time of a Rendezvous, etc.)
    - Change of EOBT (e.g. Delay)
    - Change of 2D Route (e.g. change of ADES, change of WP, etc.)
- trajectory profile with ARES not exhaustive
    - Change of ARES flexible parameters such as;

– Number of modules for VPA designed ARES

– Unique identifier ID for ad-hoc ARES configuration (ASM scenario);

– Flight level block per ARES configuration;

– ARES entry and exit points expressed either as published Waypoints or Lat/long coordinates;

– Flight level/altitude at ARES entry and exit and;

– Time values expressed as elapsed times EET including ARES duration time and time over ARES entry point.

- Entry and / or Exit time outside of EAUP/EUUP activation time

- Change of ARES location (changing from allocated ARES1 to allocated ARES2, both ARES included in EAUP/EUUP)
- Extension of ARES volume and activation time

The State AU internal procedures for information exchange of operational / tactical mission data between WOC and State AU A/C is under national control of the State AU and not in the scope of solution PJ.07-03.

The WOC triggered iRMT Revision initiates the following operational activities:

- AU Operations (WOC):
    - Refine/Update ARES
    - Analyse and update ARES change proposal
    - Update iRMT
    - Propose iRMT revision
    - Assess Impact on Mission

- Promulgate iRMT
- Abort Mission
- Monitor Mission

- ASM (Sub-regional/National):
  - Provide ASM support (AMC)
  - Analyse and update ARES change proposal
  - Update and share ARES status
- ATFCM (Sub-regional/Local) :
  - Provide Local Impact Assessment
- ASM (Regional):
  - Provide ASM support regional
  - Publish eAUP/eUUP in the NOP
- ATFCM (Regional):
  - Monitor Actual Mission Trajectory and Update iRMT accordingly
- En-Route/Approach ATS:
  - Asses AoR impact
  - Revise iRMT
  - Monitor trajectories and assess traffic situation
- Flight Deck Operational Activities:
  - Assess Mission impact
  - Execute mission
  - Return to base

A detailed description of the operational activities is given in section "Differences between new and previous Operating Methods" of this SPR-INTEROP/OSED document.

The following figure shows the activity view and related information exchanges between the involved operational nodes of the iRMT revision triggered by WOC.

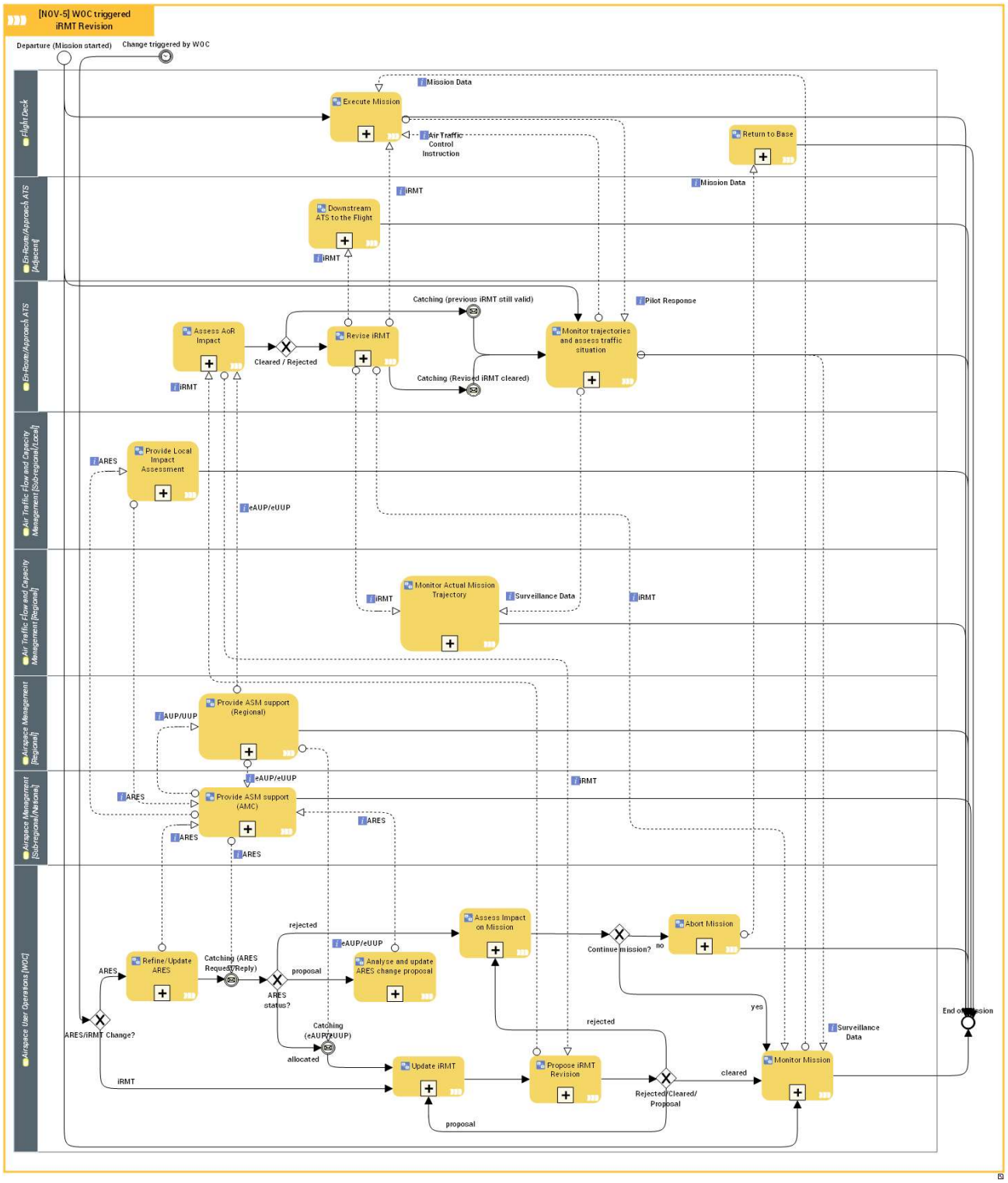


Figure 18: WOC triggered iRMT Revision

3.3.2.6.4 iRMT Revision triggered by ATC

This section describes the operating method of the iRMT revision triggered by ATC after departure.

This functional process covers the revision needs of ATC for the iRMT.

The ATC triggered iRMT Revision process has to be supported by the following operational activities:

- En-Route/Approach ATS:
  - Monitor trajectories and assess traffic situation
  - Request iRMT Revision
  - Revise iRMT
  - Downstream ATS to the Flight
- Flight Deck:
  - Assess Mission Impact
  - Revise trajectory
  - Execute Mission
  - Return to base
- ATFCM (Regional):
  - Monitor Actual Mission Trajectory and Update iRMT accordingly
- AU Operations (WOC)
  - Update iRMT
  - Monitor Mission

A detailed description of the operational activities is given in section "Differences between new and previous Operating Methods" of this SPR-INTEROP/OSED document.

The following figure shows the activity and related information exchanges between the involved operational nodes view of the IRMT revision triggered by ATC.

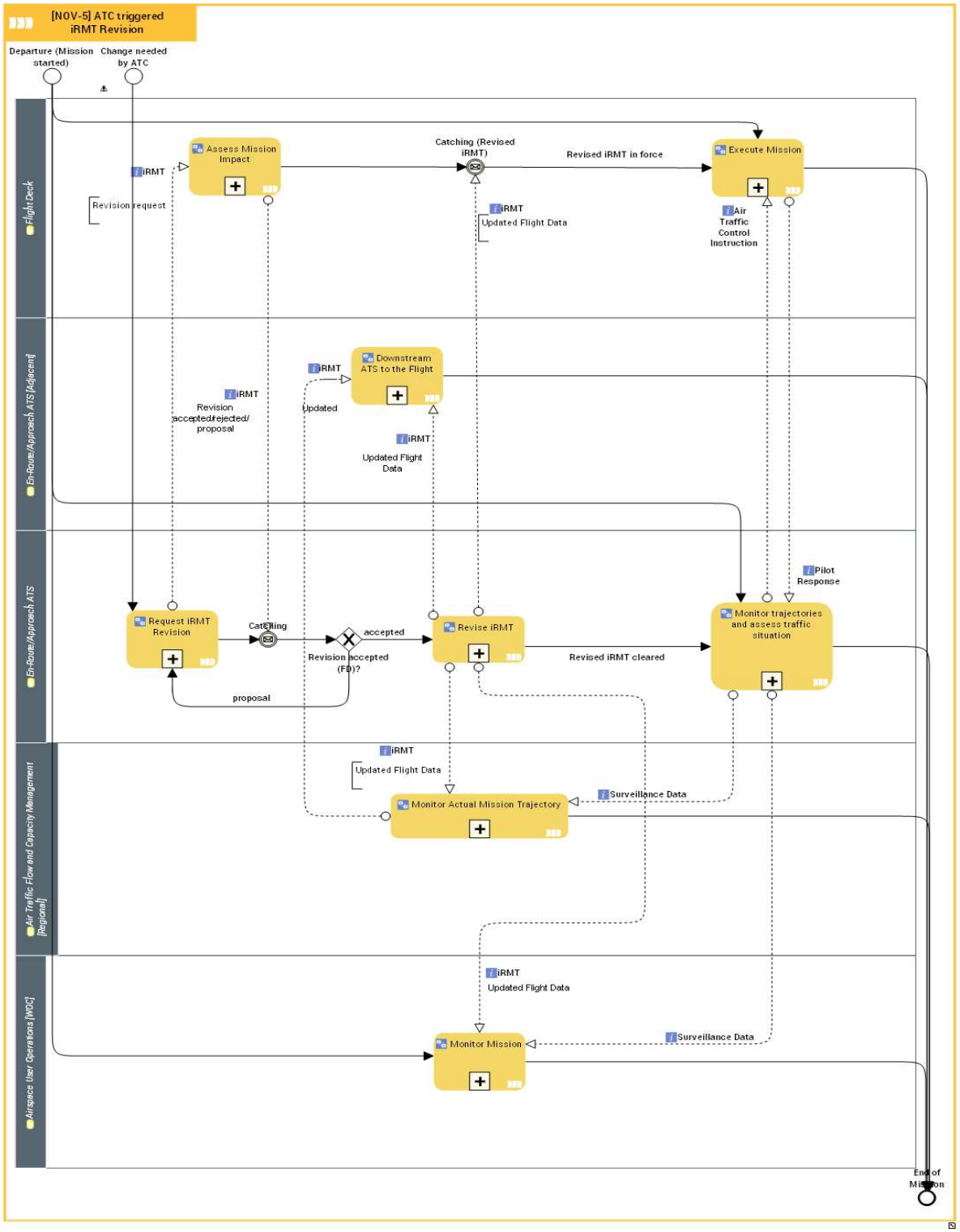


Figure 19: ATC triggered iRMT Revision

3.3.2.6.5 iRMT Revision triggered by Flight Deck (Flight Crew)

This functional process covers the revision needs of the Flight Deck for the IRMT after departure.

Note:

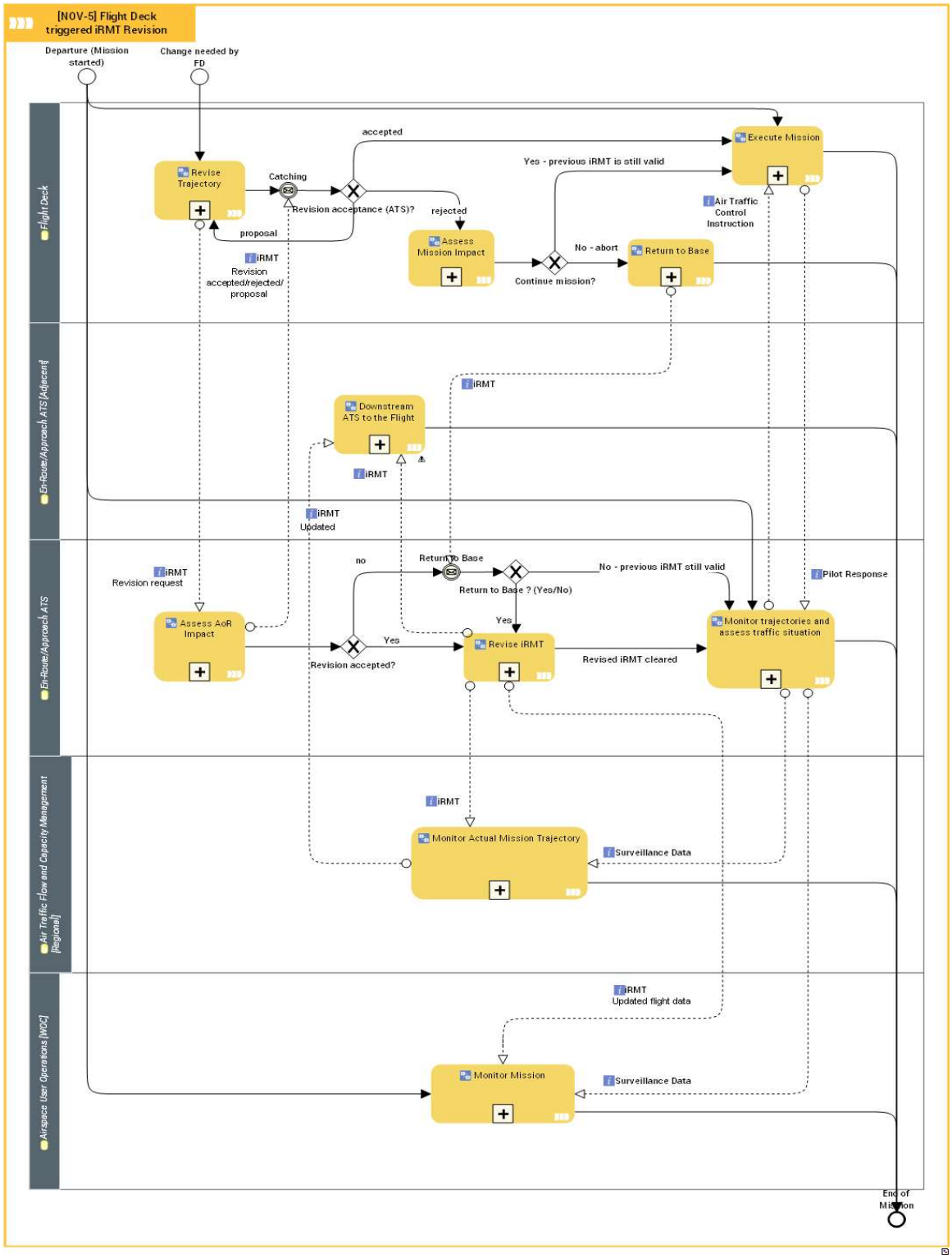
- The term “Flight Deck” represents the operational node, and the term “Flight Crew” is the human role which performs all the activities on board of the State AU A/C.
- The Flight Deck activities are only described very rough to provide the complete picture. For more details refer to document package of related SESAR 2020 Solution.

The Flight Deck triggered IRMT Revision process has to be supported by the following operational activities:

- Flight Deck:
  - Revise Trajectory
  - Assess Mission impact
  - Execute Mission
  - Return to Base
- En-Route/Approach ATS:
  - Assess AoR Impact
  - Revise iRMT
  - Downstream ATS to the Flight
  - Monitor trajectories and assess traffic situation
- ATFCM (Regional):
  - Monitor Actual Mission Trajectory and Update IRMT accordingly
- AU Operations (WOC):
  - Update iRMT
  - Monitor Mission

A detailed description of the operational activities is given in section "Differences between new and previous Operating Methods" of this SPR-INTEROP/OSED document.

The following figure shows the activity view of the IRMT revision triggered by Flight Deck.



2284

2285 **Figure 20: Flight Deck triggered iRMT Revision**

3.3.2.7 Use Cases

This section describes the use cases derived from the activity views for each of the involved operational nodes. They are broken down to the level of details necessary to extract operational requirement.

The use cases are grouped according to the iMT lifecycle including short term and execution phases. Short term is concerned by iSMT and execution by iRMT. The operational processes and activities described in Use Cases associated with trajectory management TM. Those UC's addressing short term planning phase have been subject to validation and completed V3 maturity level. The Use Cases addressing execution phase will remain at V2 maturity level and considered candidates for future SESAR 2020 Wave 2.

The mid-term planning phase was addressed and validated in SESAR 1 activities therefore, it is not in the scope of this SPR-INTEROP/OSED. Furthermore, the information exchange in this phase is not foreseen in SESAR 2020 to be part of the management of the iSMT by means of the iOAT FPL. Hence this is not in the scope of solution PJ.07-03 and no use cases related to activity view "iMT in Medium Term" are described in this SPR-INTEROP/OSED document.

The naming of the use cases follows the following convention.

- UC-<Operational Node>-<Number>: <Activity View> [Optional (<Level of Operational Node>)]

The use cases related to the planning phase which are in scope of Solution PJ.07-03 have been derived from the activity view "iSMT Management in Short Term".

- UC-ATC-01: iSMT Management in Short Term
- UC-ATFCM-01a: iSMT Management in Short Term (Sub-regional/Local ATFCM)
- UC-ATFCM-01b: iSMT Management in Short Term (Regional ATFCM)
- UC-WOC-01: iSMT Management in Short Term

The use cases related to the execution phase (not in the scope of solution PJ.07-03) have been derived from the activity view "iRMT Management in Execution Phase".

- UC-FD-02: iRMT Management in Execution Phase
- UC-ATC-02: iRMT Management in Execution Phase
- UC-ATFCM-02: iRMT Management in Execution Phase
- UC-ASM-02a: iRMT Management in Execution Phase (Regional ASM)
- UC-ASM-02b: iRMT Management in Execution Phase (Sub-regional/National ASM)
- UC-WOC-02: iRMT Management in Execution Phase

Operational needs may require revision of an iRMT for several reasons. Subject for changes could be:

1. iRMT without ARES
    a. Change of WP/EET (e.g. time of a Rendezvous, etc.)
    b. Change of EOBT (e.g. Delay)
    c. Change of 2D Route (e.g. change of ADES, change of WP, etc.)
2. iRMT with ARES

a. Entry and / or Exit time outside of EAUP/EUUP activation time.

b. Change of ARES location (changing from allocated ARES1 to allocated ARES2, both ARES included in EAUP/EUUP)

c. Change of ARES location (changing from allocated ARES1 to not yet allocated ARES2 (ad hoc ARES))

d. Extension of ARES volume

In principle the revision of an iOAT FPL without an ARES can be addressed by one use case for each operational node. Additionally the change of an allocated ARES by another already allocated ARES (Nr.2.b.) is also covered by this use case. The revision of an iOAT FPL with ARES, except Nr.2.b. is covered by an additional use case.

Therefore out of the above listed needs for change, the following use cases were identified:

- UC-FD-03: WOC triggered iRMT Revision
- UC-ATC-03: WOC triggered iRMT Revision
- UC-ATFCM-03a: WOC triggered iRMT Revision (Sub-regional/Local ATFCM)
- UC-ATFCM-03b: WOC triggered iRMT Revision (Regional ATFCM)
- UC-ASM-03a: WOC triggered iRMT Revision (Regional ASM)
- UC-ASM-03b: WOC triggered iRMT Revision (Sub-regional / National ASM)
- UC-WOC-03: WOC triggered iRMT Revision
- UC-FD-04: ATC triggered iRMT Revision
- UC-ATC-04: ATC triggered iRMT Revision
- UC-FD-05: Flight Deck triggered iRMT Revision
- UC-ATC-05: Flight Deck triggered iRMT Revision
- UC-ATFCM-04: ATC / Flight Deck triggered iRMT Revision
- UC-WOC-04: ATC / Flight Deck triggered iRMT Revision

The following sub-sections describe all the use cases listed above in more Detail.

3.3.2.7.1 UC-ATC-01: iSMT Management in Short Term

3.3.2.7.1.1 Scope

This use case covers the iSMT management by the ATC in the short term planning phase.

3.3.2.7.1.2 Level

User Goal

3.3.2.7.1.3 Summary

En-Route/Approach ATS receives from ATFCM (regional) iSMT data based on the latest validated iOAT FPL (including modification messages to iOAT FPL) in order to allocate and manage the trajectories within respective AoR in execution phase. Received iSMT is processed and stored in the ATC systems for any further modifications

and or activation. During the short-term planning phase En-Route/Approach ATS collects from Regional and Sub-regional and Local ATFCM all necessary information related to ATM and Environmental Constrains, DCB measures, Demand forecast and on Special events which may have impact on the flight execution. The ATC constraints or STAM that apply to the flight are communicated to Regional ATFCM for further update and refinement of the iSMT.

3.3.2.7.1.4 Actors

- En-Route/Approach ATS Roles
  - ACC/Approach Supervisor
  - Flight Data Operator
  - ATC Sector Planning Controller
  - Multi Sector Planner
  - Local Traffic Manager
- Operational Nodes
  - ATFCM (Regional)
  - ATFCM (Sub-regional/Local)

3.3.2.7.1.5 Preconditions

- Data availability e.g.: ATM constrains, ATM Environment, DCB Measures, Demand forecast, Special Events, EAD, ASM, iOAT FPLs, ARES (if applicable), latest agreed iRMT

3.3.2.7.1.6 Post conditions

- Refined iSMT is stored in the ATC system

3.3.2.7.1.7 Success end state

- When all conditions are met the latest version of iSMT (including updates) becomes iRMT to be used and shared in ATS operations

3.3.2.7.1.8 Failed end state

- iSMT is not updated and iRMT (including updates) is NOT used and shared in ATS operations

3.3.2.7.1.9 Notes

IOAT FPL delivers iSMT data set for total Regional and Sub-regional assessment of capacity in accordance with standard procedures of NM for DCB in Pan European airspace. This incorporation of military flights and requested airspace capacity will enable better predictability of airspace demands.

3.3.2.7.1.10 Trigger

- Improved OAT FPL as iSMT received from Regional ATFCM

3.3.2.7.1.11 Main Flow

The following figure shows the ATC use case of the iMT Management in Short Term planning Phase.

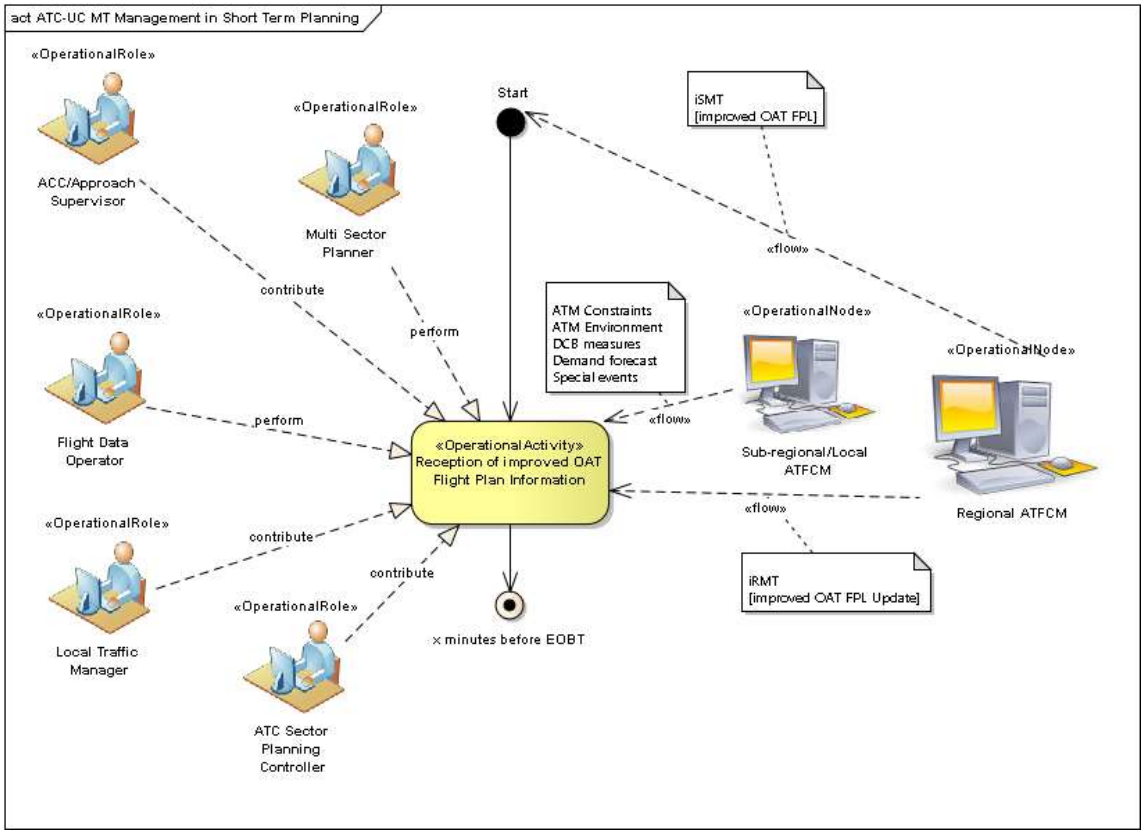


Figure 21: UC-ATC-01 – iSMT Management in Short Term

3.3.2.7.1.12 Alternative Flows

- N/A

3.3.2.7.1.13 Failure Flows

- N/A

3.3.2.7.2 UC-ATFCM-01a: iSMT management in Short Term (Sub-regional/Local ATFCM)

3.3.2.7.2.1 Scope

This use case covers the iSMT Management at sub-regional/local ATFCM level in the short term planning phase.

3.3.2.7.2.2 Level

- User Goal

3.3.2.7.2.3 Summary

The En-Route/Approach ATS receives from ATFCM (regional) iSMT/iRMT data based on the latest validated iOAT FPL (including modification messages to iOAT FPL). The flight list data are used by ATFCM (sub-regional/local) for impact assessment of AoR in order to allocate and manage the trajectories within respective AoR in execution phase.

3.3.2.7.2.4 Actors

- Sub-regional/Local ATFCM Roles
  - Local Flow Manager
  - Local Traffic Manager
- Operational Nodes
  - ATFCM (Regional)
  - En-Route/Approach ATS

3.3.2.7.2.5 Preconditions

- Information for the updated iSMT received by local ATFCM actors

3.3.2.7.2.6 Post conditions

- Impact assessed and ATFCM measure for DCB implemented if necessary

3.3.2.7.2.7 Success end state

- Updated ATM constraints, ATM Environment data, DCB measures Demand Forecast and Special Events available at En-Route/Approach ATS and sub-regional/local ATFCM

3.3.2.7.2.8 Failed end state

- N/A

3.3.2.7.2.9 Notes

This incorporation of military flights and requested airspace capacity will enable better predictability of airspace demands at local ATFCM Level.

3.3.2.7.2.10 Trigger

- N/A

3.3.2.7.2.11 Main Flow

The following figure shows the ATFCM use case of the IMT Management in Short Term planning phase on sub-regional/local Level.

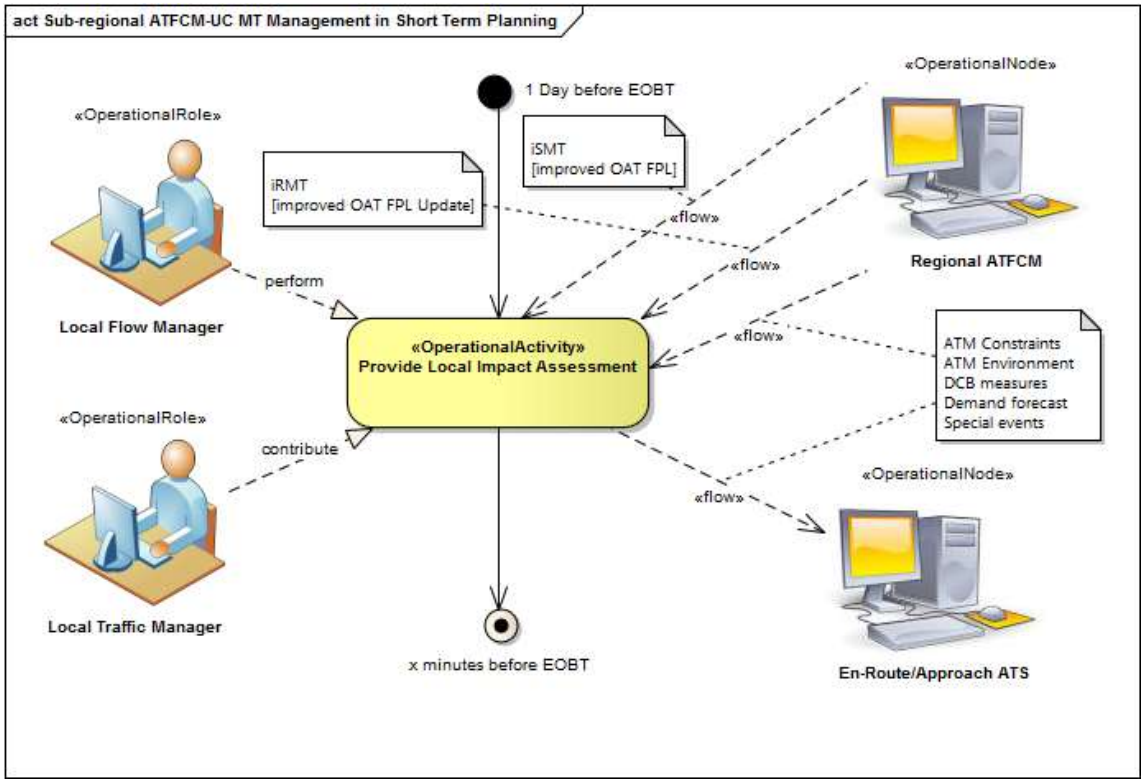


Figure 22: UC-ATFCM-01a – iSMT Management in Short Term (Sub-regional/Local ATFCM)

3.3.2.7.2.12 Alternative Flows

- N/A

3.3.2.7.2.13 Failure Flows

- N/A

3.3.2.7.3 UC-ATFCM-01b: iSMT Management in Short Term (ATFCM Regional)

3.3.2.7.3.1 Scope

This Use case covers the iSMT management in the Short Term Planning Phase at Regional ATFCM level. ATFCM (Regional) is making available information concerning the ATM Configuration, published restrictions (including DCB measures) and associated constraints, special events and demand forecasts. ATFCM (Regional) validates iOAT FPL received from the WOC and further distributes to all ATM actors concerned in accordance with the address list.

3.3.2.7.3.2 Level

- User Goal

3.3.2.7.3.3 Summary

ATFCM (Regional) receives iOAT FPL from the WOC. The iOAT FPL is validated on syntax, semantics and restrictions by the IFPS system. In case the iOAT FPL is valid, the WOC receives an acknowledgement (ACK message). If the iOAT FPL is not valid, IFPS will reject it and send the corresponding (REJ) message including error information to

the WOC. The iOAT FPL will be queued for manual correction. In this case the IFPS sends a (MAN) message to the WOC. The IFPS operator analyses the flight plan, corrects the error and the flight will be processed and distributed. If WOC does not authorise manual correction in IFPS then the IFPS operator will reject the flight plan and the WOC can send a new flight plan including the correction.

3.3.2.7.3.4 Actors

- ATFCM Regional
  - Network manager
  - Flight Planning Operator
  - Flow Manager
- Operational Nodes
  - ATFCM (Sub-regional/Local)
  - State AU Operations [WOC]
  - En-Route/Approach ATS

3.3.2.7.3.5 Preconditions

- iSMT is generated out of iOAT FPL received from WOC

3.3.2.7.3.6 Post conditions

- iSMT is successfully distributed to all ATM actors concerned

3.3.2.7.3.7 Success end state

- ISMT is updated or modified to become iRMT.

3.3.2.7.3.8 Failed end state

- iOAT FPL not valid and rejected

3.3.2.7.3.9 Notes

N/A

3.3.2.7.3.10 Trigger

- The iOAT FPL (iSMT) is received from WOC

3.3.2.7.3.11 Main Flow

The following figure shows the ATFCM use case of the IMT Management in Short Term planning phase on regional Level.

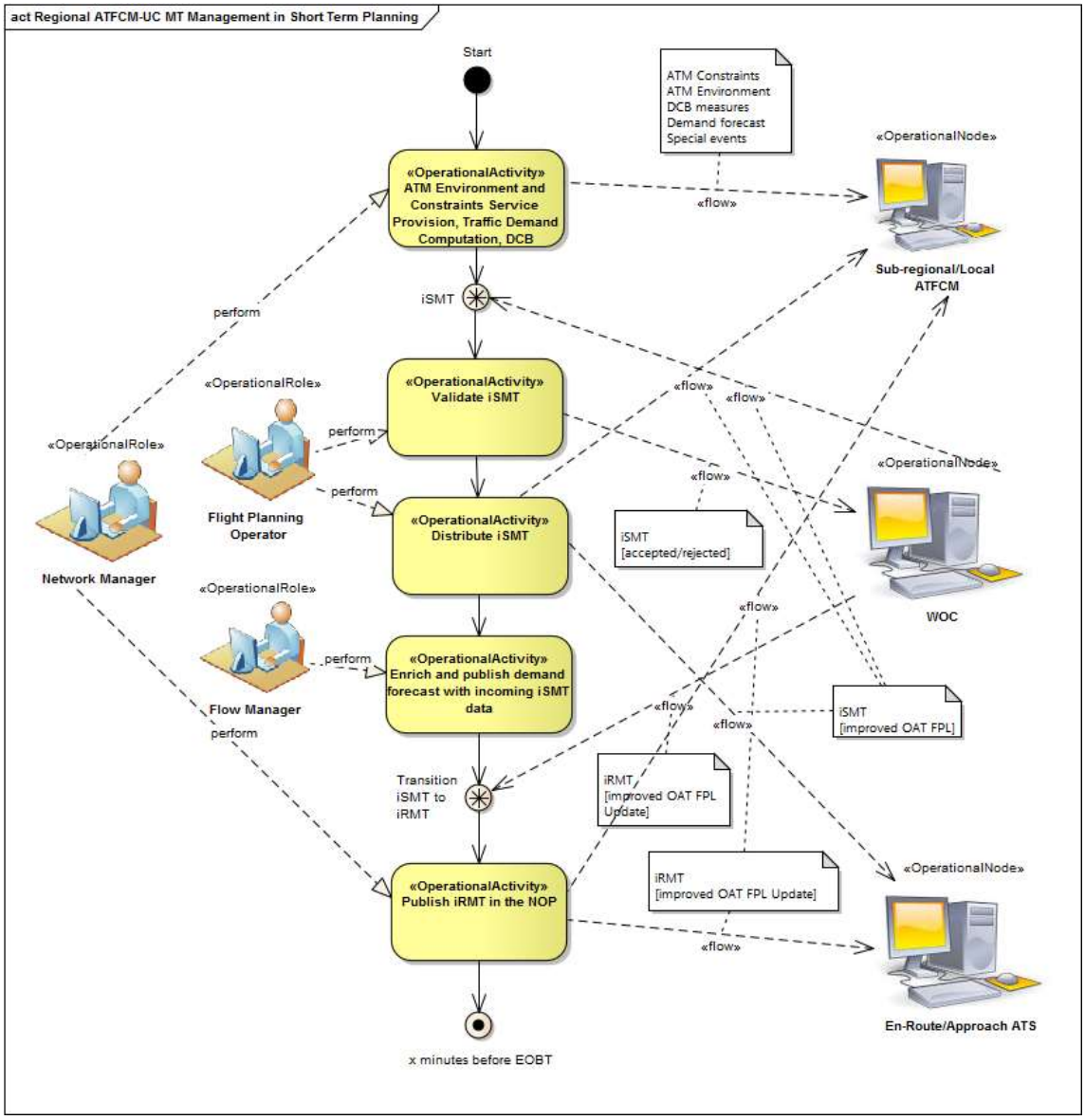


Figure 23: UC-ATFCM-01b – iSMT Management in Short Term (Regional ATFCM)

3.3.2.7.3.12 Alternative Flow

IOAT FPL is not validated and will be queued for correction. The flight plan operator will analyse the error(s), contact the WOC and propose a correction. Either the WOC agrees that the flight plan operator corrects the iOAT FPL, than it becomes valid and will be distributed. Otherwise the flight plan will be rejected and the WOC can file a new corrected flight plan.

3.3.2.7.3.13 Failure Flows

- iOAT FPL Rejected

3.3.2.7.4 UC-WOC-01: iSMT Management in Short Term

3.3.2.7.4.1 Scope

This use case covers management of iSMT by WOC in the short-term planning phase up to the transition from iSMT to iRMT.

3.3.2.7.4.2 Level

- User Goal

3.3.2.7.4.3 Summary

The State AU Operations Centre (WOC) creating/updating the iOAT FPL (also referenced as iSMT) using as input the early mission flight intent information, the developed initial 4D Mission Trajectory and, when applicable, the reference allocated ARES for the mission. The latest available aeronautical and weather information are taken into account and after completion of the flight planning the iOAT FPL (iSMT) is filed and submitted to Regional ATFCM for processing and distribution. When all conditions are met, WOC by submitting the appropriate message type notifies Regional ATFCM that final agreed iSMT becomes the iRMT, which will be further distributed to all ATM actors concerned.

3.3.2.7.4.4 Actors

- Airspace User Operations [WOC] Roles
  - MET Data Operator
  - AIS Dynamic Data Operator
  - Mission Planner
  - Flight Data Operator
- Operational Nodes
  - Meteorological Service Provider
  - ATFCM Regional
  - Airspace User Operations [WOC]

3.3.2.7.4.5 Preconditions

- Mission needs have been defined
- Static & Dynamic AIS Data available
- Weather Information available
- EAUP is released (when ARES is needed)

3.3.2.7.4.6 Post conditions

- Agreed iSMT becomes iRMT

3.3.2.7.4.7 Success end state

- Updated iOAT FPL submitted to Regional ATFCM

3.3.2.7.4.8 Failed end state

- N/A

2521 3.3.2.7.4.9 Notes

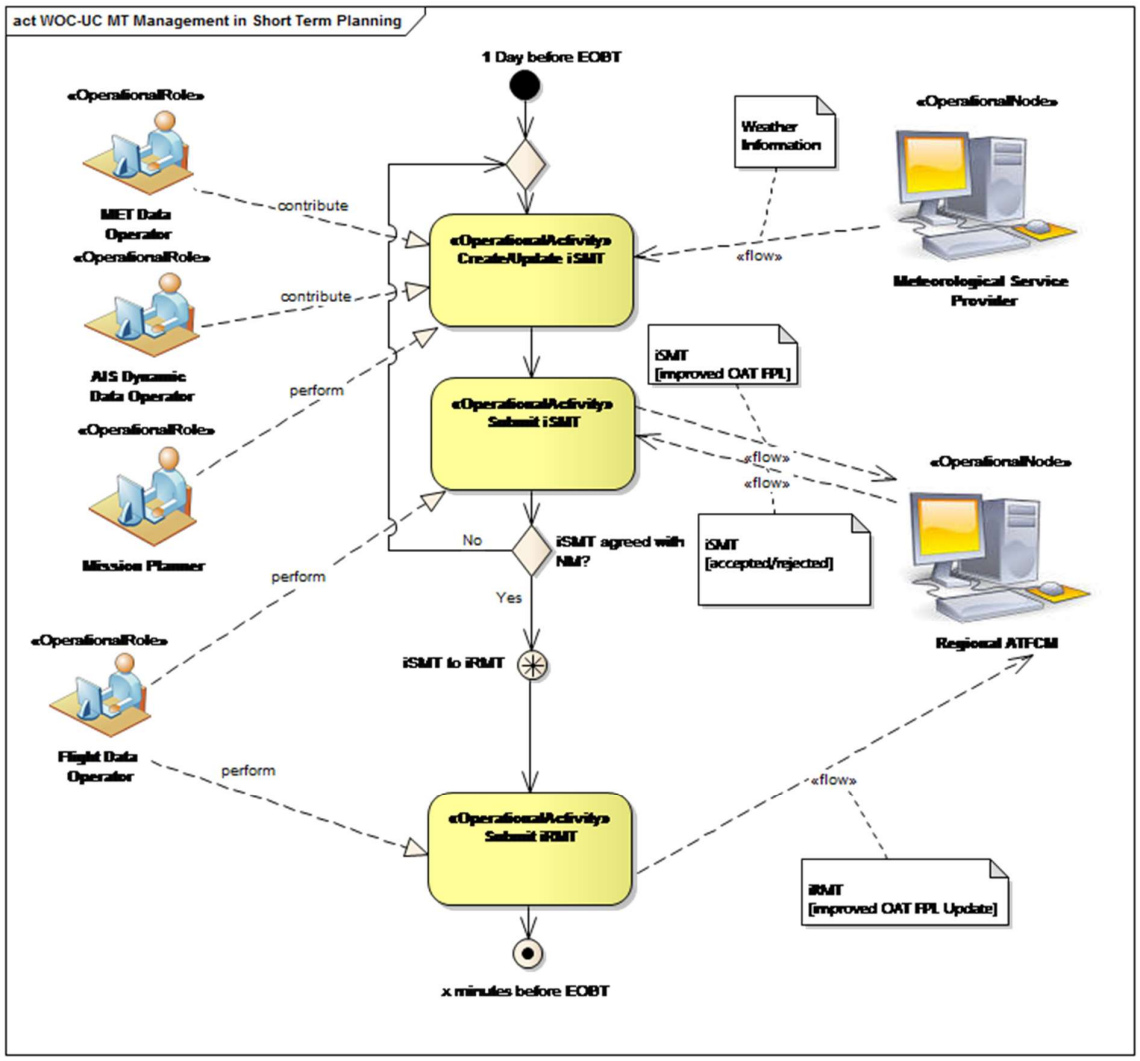
2522 AFUA concept with associated CDM processes is covered by other use cases validated in SESAR 1.

2523 3.3.2.7.4.10 Trigger

2524 • X hours before Of Block

2525 3.3.2.7.4.11 Main Flow

2526 The following figure shows the WOC use case of the IMT Management in Short Term planning phase.



2527

2528 **Figure 24: UC-WOC-01 – iSMT Management in Short Term**

2529 3.3.2.7.4.12 Alternative Flows

2530 • N/A

2531 3.3.2.7.4.13 Failure Flows

- N/A

3.3.2.7.5 UC-FD-02: Flight Deck iRMT management in Execution Phase (not under the scope of solution PJ.07-03)

3.3.2.7.5.1 Scope

This use case covers the iRMT Management by Flight Deck in nominal situation.

3.3.2.7.5.2 Level

- User Goal

3.3.2.7.5.3 Summary

Flight Deck (Flight Crew) loads iRMT data into the mission management system MMS or FMS if equipped, and when a/c is airborne commences the mission in accordance with the loaded iRMT data. The Flight Crew is hereby supported by En-Route/Approach ATS in the controlled airspace.

3.3.2.7.5.4 Actors

- Flight Deck Roles
  - Flight Crew
- Operational Nodes
  - En-Route/Approach ATS

3.3.2.7.5.5 Preconditions

- Mission Trajectory Data available from WOC Mission Support System

3.3.2.7.5.6 Post conditions

- Aircraft landed

3.3.2.7.5.7 Success end state

- Mission executed

3.3.2.7.5.8 Failed end state

- N/A

3.3.2.7.5.9 Notes

This use case is not in scope of solution PJ.07-03 and will not be further investigated. For more details refer to document package of related SESAR 2020 Solution.

3.3.2.7.5.10 Trigger

- X minutes before EOBT

3.3.2.7.5.11 Main Flow

The following figure shows the Flight Deck use case of the IMT Management in the Execution phase.

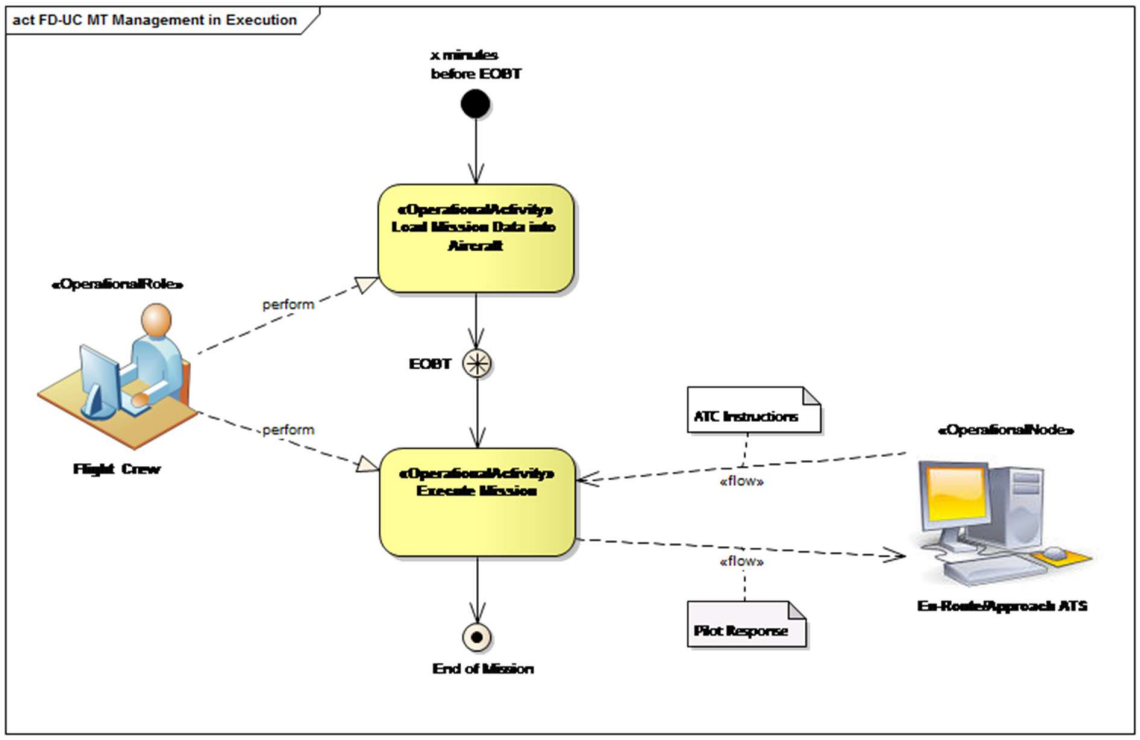


Figure 25: UC-FD-02 – iRMT Management in Execution Phase

3.3.2.7.5.12 Alternative Flows

- N/A

3.3.2.7.5.13 Failure Flows

N/A

3.3.2.7.6 UC-ATC-02: En-Route/Approach ATS iRMT management in Execution Phase (not under the scope of solution PJ.07-03)

3.3.2.7.6.1 Scope

The Management of iRMT in the Execution phase is ensured by Local Traffic Manager, the ATC Planner and/or Executive Controller. ATCO manages the trajectories in compliance with the applicable international or European/National Rules of the Air.3.3.2.7.6.2 Level

- User Goal

3.3.2.7.6.3 Summary

En-Route/Approach ATS constantly focusing on conformance monitoring and traffic optimisation, as well as on preventing, detecting and resolving conflicts in the respective AoR. It is also continuously detecting the deviations between the current position of an aircraft and ground reference trajectory iRMT based on the latest available surveillance data.

3.3.2.7.6.4 Actors

- En-Route/Approach ATS Roles
  - ACC/Approach Supervisor
  - Flight Data Operator
  - ATC Sector Planning Controller
  - Multi Sector Planner
  - Local Traffic Manager
- Operational Nodes
  - Regional ATFCM
  - Sub-regional/Local ATFCM

3.3.2.7.6.5 Preconditions

- Data availability e.g.: ATM constrains, ATM Environment, DCB Measures, Demand forecast, Special Events, EAD, ASM, iOAT FPLs, ARES (if applicable)
- iRMT is available for all ATM actors concerned

3.3.2.7.6.6 Post conditions

- N/A

3.3.2.7.6.7 Success end state

- Mission executed

3.3.2.7.6.8 Failed end state

- N/A

3.3.2.7.6.9 Notes

IRMT is activated to perform requested mission objectives with NO negative impact to other Airspace Users. This incorporation of military flights and requested airspace capacity enabling better predictability of airspace demands.

3.3.2.7.6.10 Triger

- X minutes before EOBT

3.3.2.7.6.11 Main Flow

The following figure shows the En-Route/Approach ATS use case of the iRMT Management in the Execution Phase.

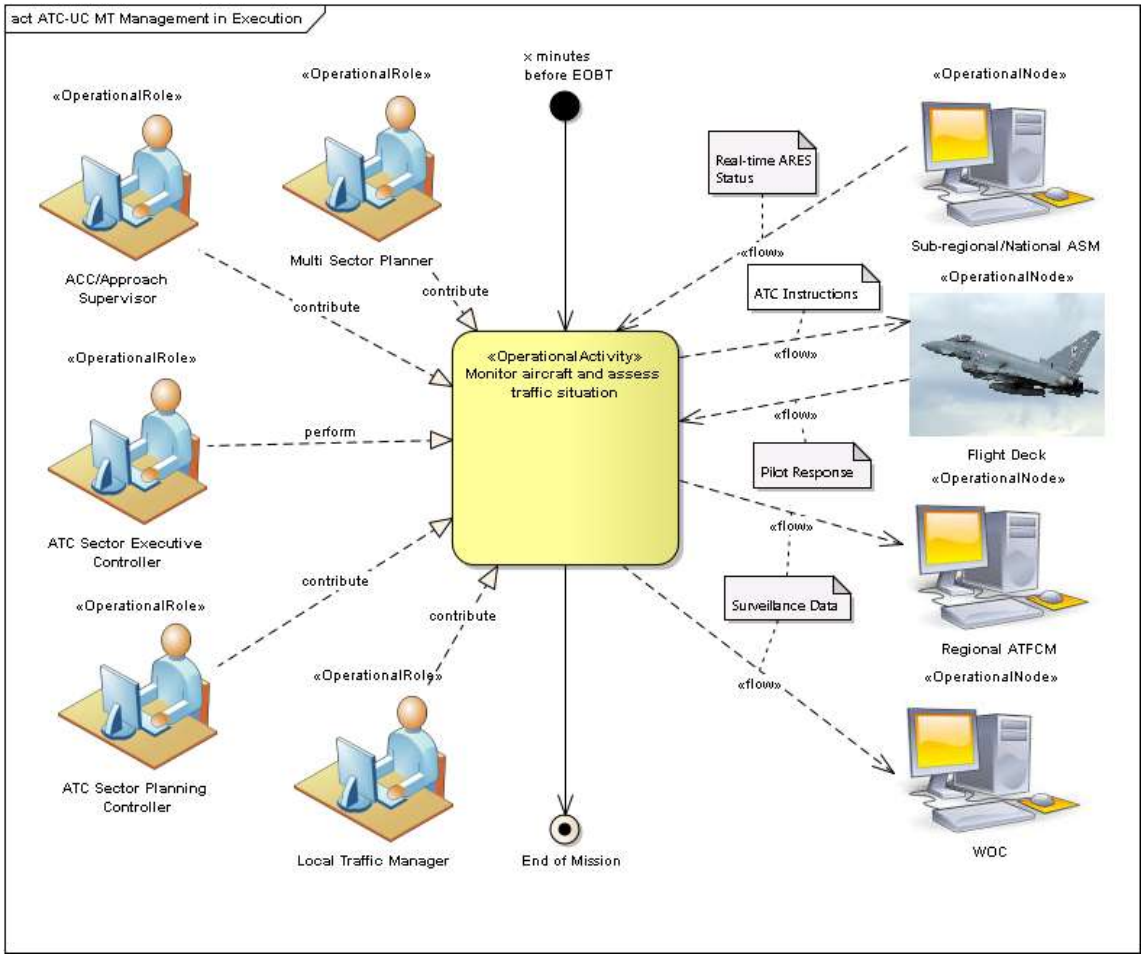


Figure 26: UC-ATC-02 – iRMT Management in Execution Phase

3.3.2.7.6.12 Alternative Flows

- N/A

3.3.2.7.6.13 Failure Flows

- N/A

3.3.2.7.7 UC-ATFCM-02: iRMT Management in Execution Phase (not under the scope of solution PJ.07-03)

3.3.2.7.7.1 Scope

This use case covers iRMT management by NM in the execution phase when no change by WOC, ATC or Flight Deck is required.

3.3.2.7.7.2 Level

- User Goal

3.3.2.7.7.3 Summary

During the execution phase Regional ATFCM monitoring the flown trajectories on the basis of data received from ATC systems (surveillance data via CPR, AFP or EPP data). In case of significant differences with the agreed trajectory the remaining trajectory prediction is re-calculated and the appropriate flight plan update messages (FUM, APL/ACH, trajectory revision) are provided to all concerned ATM Units. The information from the CPRs is used to update permanently the tactical ATFCM situation picture. In the actual Use Case, where no changes or no significant deviations from the flight plan appear, the actual management of the flight in execution is limited to monitoring until arrival/landing at the destination airport.

3.3.2.7.7.4 Actors

- Regional ATFCM Roles
    - Flow Manager (NM)
- Operational Nodes
    - Regional ASM
    - En-Route/Approach ATS

3.3.2.7.7.5 Preconditions

- Agreed iRMT is integrated into NM system (IFPS, ETFMS)

3.3.2.7.7.6 Post conditions

- Mission executed

3.3.2.7.7.7Success end state

- Mission objectives are met

3.3.2.7.7.8 Failed end state

- N/A

3.3.2.7.7.9 Notes

N/A

3.3.2.7.7.10 Trigger

- First System Activation(FSA) message
- Departure Information(DPI) message

3.3.2.7.7.11 Main Flow

The following figure shows the ATFCM use case of the IMT Management in the Execution phase on regional level.

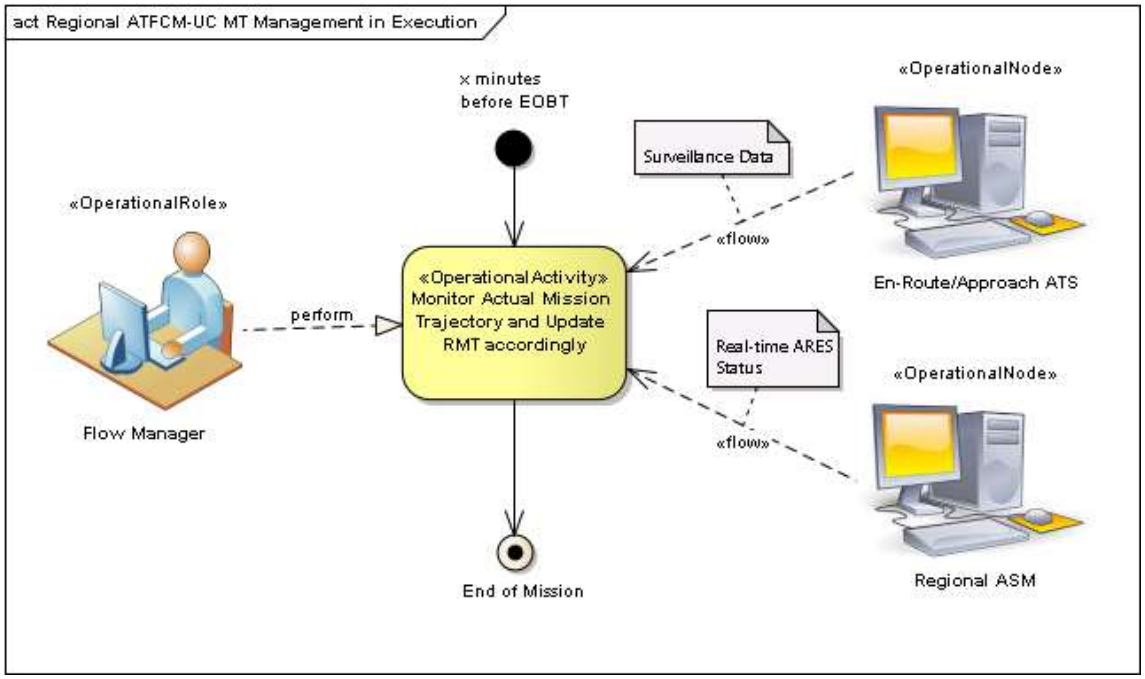


Figure 27: UC-ATFCM-02 – iRMT Management in Execution Phase

3.3.2.7.7.12 Alternative Flows

- N/A

3.3.2.7.7.13 Failure Flows

- N/A

3.3.2.7.8 UC-ASM-02a: iRMT Management in Execution Phase (Regional ASM) (not under the scope of solution PJ.07-03)

3.3.2.7.8.1 Scope

This use case describes Regional ASM support to iRMT management with regard to ARES modification/change in the execution phase.

3.3.2.7.8.2 Level

- User goal

3.3.2.7.8.3 Summary

Regional Airspace manager receives request for ARES modification/change through central airspace data function and performs impact assessment with all pertinent actors concerned. Agreed modification or change in ARES is published in NOP via EUUP and is available for all ATM actors.

3.3.2.7.8.4 Actors

- Regional ASM Roles
  - Airspace Manager

- Operational Nodes
  - Sub-regional/National ASM
  - Regional ATFCM

3.3.2.7.8.5 Preconditions

- Linked to iRMT the reference allocated ARES (AMC manageable) is published in NOP and subject to modification/change in real time.

3.3.2.7.8.6 Post conditions

- All ARES changes triggered by iRMT revision in the execution phase are validated accepted and published in NOP via EUUP.

3.3.2.7.8.7 Success end state

- ARES is modified/changed and iRMT is revised accordingly

3.3.2.7.8.8 Failed end state

- N/A

3.3.2.7.8.9 Notes

It should be noted that Use Cases related to airspace management ASM will not be repeated in the document as they were validated to V3 maturity level in SESAR 1 VP-710 exercise. Therefore all the UCs with status validated should remain as reference use cases with link to the validation exercise description reflected in the Validation plan hence providing broader picture on the operational concept.

3.3.2.7.8.10 Trigger

- iRMT revision in the execution phase with link to ARES modification/change

3.3.2.7.8.11 Main Flow

The following figure shows the ASM use case of the IMT Management in the Execution phase on regional level.

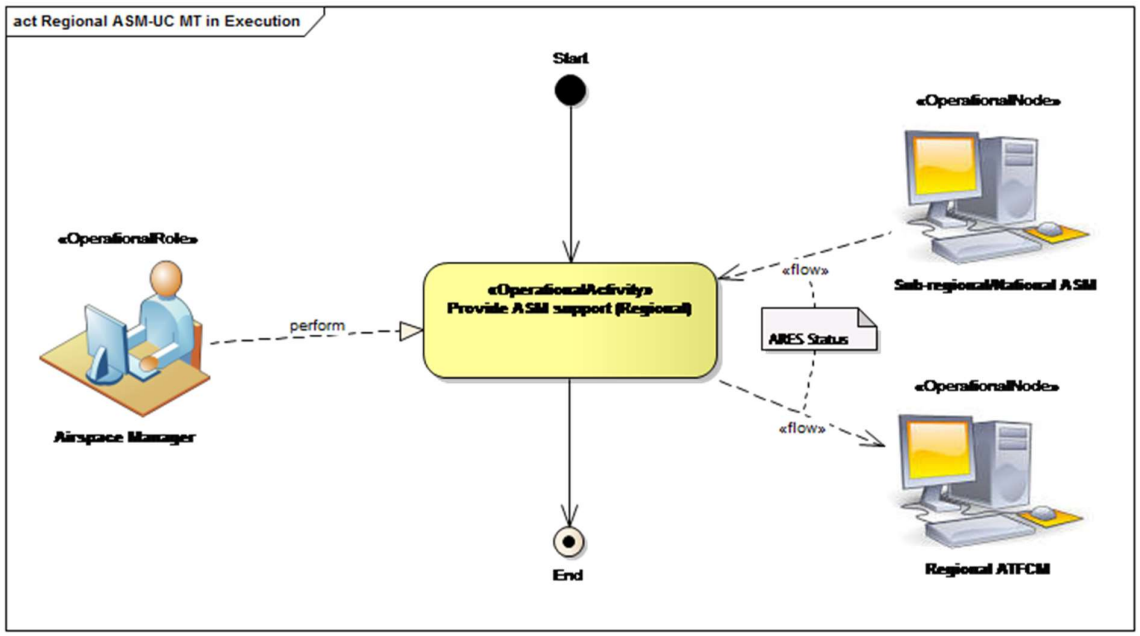


Figure 28: UC-ASM-02a – iRMT Management in Execution Phase (Regional ASM)

3.3.2.7.8.12Alternative Flows

N/A

3.3.2.7.8.13 Failure Flows

N/A

3.3.2.7.9 UC-ASM-02b: iRMT Management in Execution Phase (Sub-regional/National ASM) (not under the scope of solution PJ.07-03)

3.3.2.7.9.1 Scope

This use case describes management of iRMT triggered by ASM in the execution phase at sub-regional and national level.

3.3.2.7.9.2Level

User Goal

3.3.2.7.9.3 Summary

IRMT revision is triggered by WOC for ARES change/modification and sub-regional/local airspace manager performs impact assessment in collaboration with flow and traffic managers. Modified /changed ARES is sent to NM for publication and iRMT is revised. NM publishes modified/changed ARES in NOP and makes it available for all ATM actors concerned.

3.3.2.7.9.4. Actors

- Sub-regional/National ASM Roles
  - Airspace Manager

- Operational Nodes
  - En-Route/Approach ATS
  - Regional ASM
  - WOC

3.3.2.7.9.5 Preconditions

All ARES linked to iRMT are AMC manageable with status reference allocated in NOP and subject to modification/change in real time.

3.3.2.7.9.6 Post conditions

ARES is modified/changed and iRMT is revised accordingly.

3.3.2.7.9.7 Success end state

Actual ARES Status distributed in real-time

3.3.2.7.9.8 Failed end state

N/A

3.3.2.7.9.9 Notes

It should be noted that Use Cases related to airspace management ASM will not be repeated in the document as they were validated to V3 maturity level in SESAR 1 VP-710 exercise. Therefore all the UCs with status validated should remain as reference use cases with link to the validation exercise description reflected in the Validation plan hence providing broader picture on the operational concept.

3.3.2.7.9.10 Trigger

IRMT revision in the execution phase with link to ARES

3.3.2.7.9.11 Main Flow

The following figure shows the ASM use case of the iRMT Management in the Execution phase on sub-regional/national level.

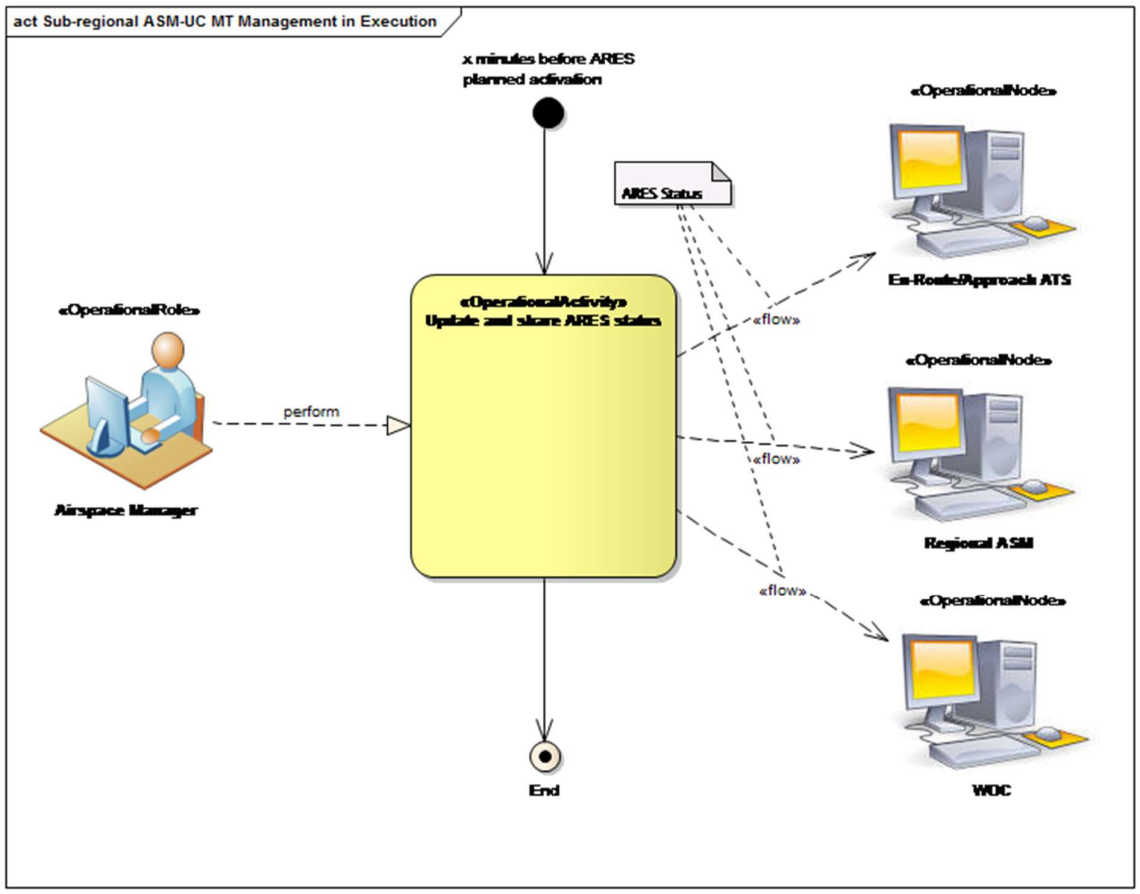


Figure 29: UC-ASM-02b – iRMT Management in Execution Phase (Sub-regional/National ASM)

3.3.2.7.9.12 Alternative Flows

N/A

3.3.2.7.9.13 Failure Flows

- N/A

3.3.2.7.10 UC-WOC-02: iRMT Management in Execution Phase (not under the scope of solution PJ.07-03)

3.3.2.7.10.1 Scope

This use case covers management of iRMT by WOC in the execution phase when no change need is required from WOC point of view to achieve mission objectives.

3.3.2.7.10.2 Level

User Goal

3.3.2.7.10.3 Summary

The WOC monitors the execution of a mission based on real-time surveillance data from civil/military ATC or Air Defence and real-time ARES status. In case the deviation between the current position of the a/c and the iRMT exceeds pre-defined thresholds then, WOC takes appropriate actions for recovery.

3.3.2.7.10.4 Actors

WOC Roles

Mission Observer

Operational Nodes

En-Route/Approach ATS

Sub-regional/National ASM

3.3.2.7.10.5 Preconditions

EAUP/EUUP released

IRMT validated and distributed

3.3.2.7.10.6 Post conditions

N/A

3.3.2.7.10.7 Success end state

Mission executed

3.3.2.7.10.8 Failed end state

N/A

3.3.2.7.10.9 Notes

N/A

3.3.2.7.10.10 Trigger

X minutes before EOBT

3.3.2.7.10.11 Main Flow

The following figure shows the WOC use case of iRMT management in the Execution phase.

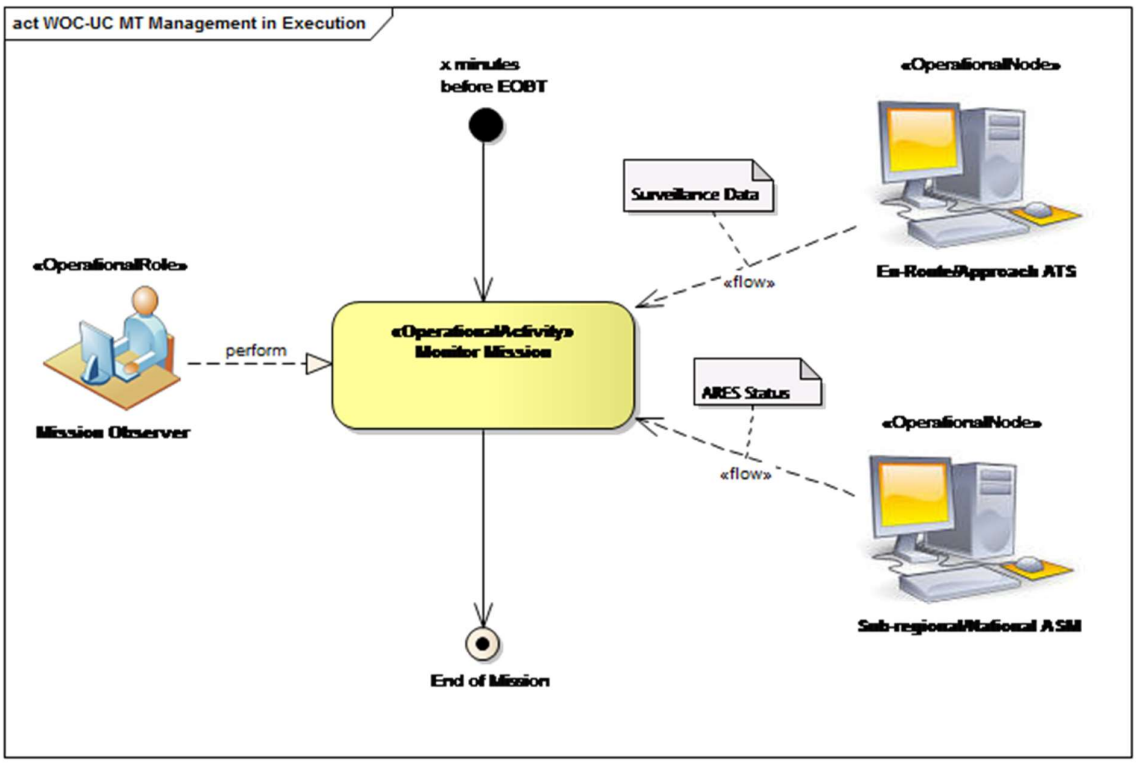


Figure 30: UC-WOC-02 – iRMT Management in the Execution Phase

3.3.2.7.10.12 Alternative Flows

N/A

3.3.2.7.10.13 Failure Flows

N/A

3.3.2.7.11 UC-FD-03: WOC triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.11.1 Scope

This use case covers the revision of iRMT triggered by WOC after Departure.

3.3.2.7.11.2Level

User Goal

3.3.2.7.11.3 Summary

The Flight Crew will execute the mission in accordance with updated Mission data received from WOC via State AU internal communication means. The Flight Crew is hereby supported by En-Route/Approach ATS in the controlled airspace.

3.3.2.7.11.4 Actors

- Flight Deck Roles
  - Flight Crew

- Operational Nodes
  - En-Route/Approach ATS
  - WOC

3.3.2.7.11.5 Preconditions

Agreed and cleared iRMT

3.3.2.7.11.6 Post conditions

Revised and cleared iRMT

3.3.2.7.11.7 Success end state

Mission executed

3.3.2.7.11.8 Failed end state

N/A

3.3.2.7.11.9 Notes

This use case is not in the scope of solution PJ.07-03 and will not be further investigated. For more details refer to document package of related SESAR 2020 Solution.

3.3.2.7.11.10 Trigger

N/A

3.3.2.7.11.11 Main Flow

The following figure shows the Flight Deck use case of the WOC triggered iRMT Revision.

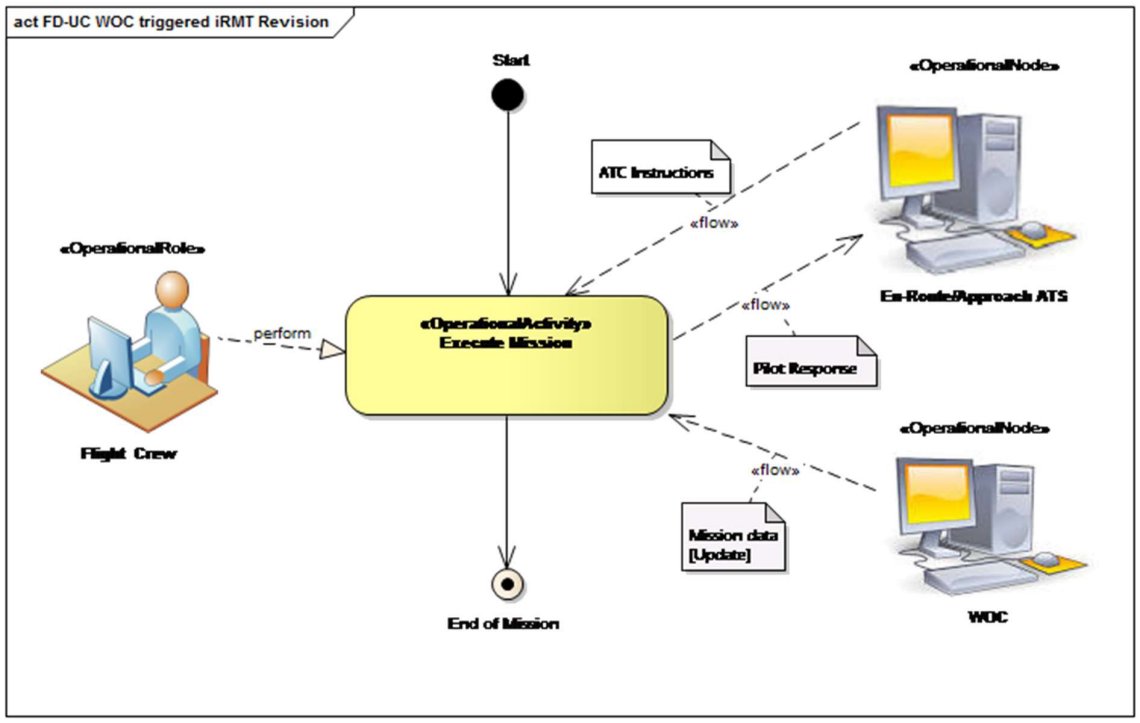


Figure 31: UC-FD-03 - WOC triggered iRMT Revision

3.3.2.7.11.12 Alternative Flows

N/A

3.3.2.7.11.13 Failure Flows

- N/A

3.3.2.7.12 UC-ATC-03: WOC triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.12.1Scope

This use case covers En-route/Approach ATS processes facilitating iRMT Revision triggered by WOC.

3.3.2.7.12.2 Level

User Goal

3.3.2.7.12.3 Summary

Due to Operational needs WOC will require Revision of iRMT and request the ATSU to transfer the revision proposal to FD (Flight Crew). The ATSU runs impact assessment in their AoR and decides on WOCs request (clear, reject or make proposal). If agreed the controller issues instruction for iRMT Revision to the Flight Crew and distributes revised iRMT. If not the current iRMT remains valid.

3.3.2.7.12.4 Actors

- En-Route/Approach ATS Roles
  - Multi Sector Planner

- ATC Sector Planning Controller
- ATC Sector Executive Controller

- Operational Nodes
  - Regional ATFCM
  - WOC
  - Adjacent En-Route/Approach ATS
  - Flight Deck

3.3.2.7.12.5 Preconditions

Data availability e.g.: ATM constrains, ATM Environment, DCB Measures, Demand forecast, Special Events, EAD, ASM, iOAT FPLs, ARES (if applicable) iRMT

iRMT is available for all relevant services

3.3.2.7.12.6 Post conditions

N/A

3.3.2.7.12.7 Success end state

Revised iRMT in force

3.3.2.7.12.8 Failed end state

Previous iRMT still valid

3.3.2.7.12.9 Notes

iRMT changes/revisions enable to perform requested mission objectives with NO negative impact to other Airspace Users. This incorporation of military flights and requested airspace capacity enabling better predictability of airspace demands.

3.3.2.7.12.10 Trigger

iRMT revision request received from WOC

3.3.2.7.12.11 Main Flow

The following figure shows the ATC Use Case of the WOC triggered iRMT Revision.

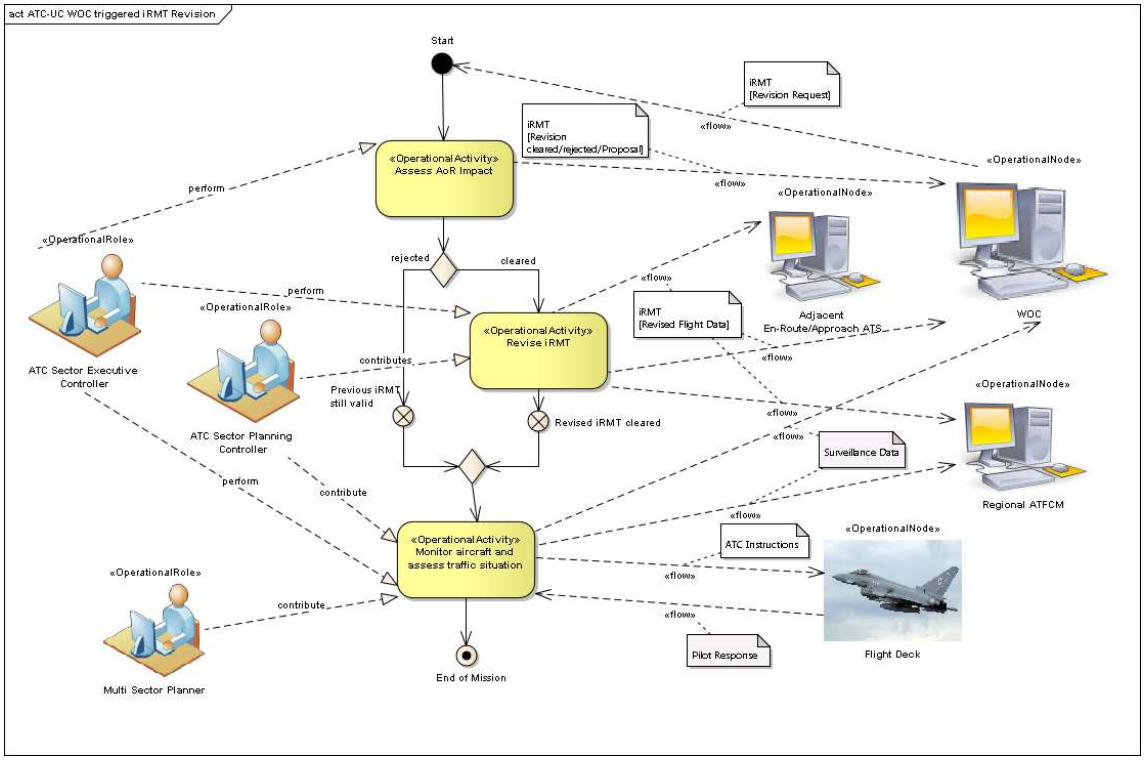


Figure 32: UC-ATC-03 - WOC triggered iRMT Revision

3.3.2.7.12.12 Alternative Flows

N/A

3.3.2.7.12.13 Failure Flows

N/A

3.3.2.7.13 UC-ATFCM-03a: WOC triggered iRMT Revision (Sub-regional/Local ATFCM) (not under the scope of solution PJ.07-03)

3.3.2.7.13.1 Scope

This use case focuses on the management of ARES by Sub-regional/local ATFCM in the execution Phase, triggered by the Revision of the Mission Trajectory.

3.3.2.7.13.2 Level

User Goal

3.3.2.7.13.3 Summary

Sub-regional/local ATFCM role in this use case is limited to the local impact assessment and detection of the affected by new ARES allocation/activation business trajectories in the execution phase and escalating this information to Regional level for ATM Network impact assessment.

3.3.2.7.13.4 Actors

Sub-regional/Local ATFCM Roles

Local Capacity Manager

Operational Nodes

Sub-regional/National ASM

3.3.2.7.13.5 Preconditions

Change of ARES demand

3.3.2.7.13.6 Post conditions

Updated local impact assessment

3.3.2.7.13.7 Success end state

Updated ATM Constraints, ATM Environment, DCB measures, Demand forecast, special events data send to Sub-regional/National ASM

3.3.2.7.13.8 Failed end state

N/A

3.3.2.7.13.9 Notes

Validated in SESAR 1 VP-710 exercise to V3 maturity level within the scope of AFUA Project.

3.3.2.7.13.10 Trigger

ARES demand received from Sub-regional/National ASM

3.3.2.7.13.11 Main Flow

The following figure shows the ATFCM use case of the WOC triggered iRMT Revision on sub-regional / local level.

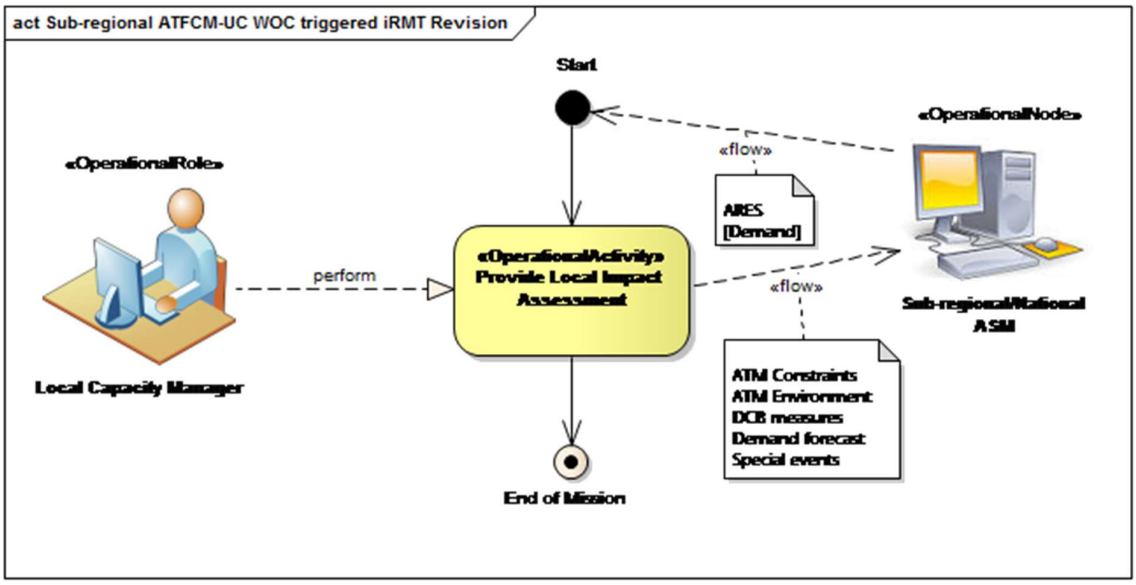


Figure 33: UC-ATFCM-03a - WOC triggered iRMT Revision (Sub-regional/National ATFCM)

3.3.2.7.13.12 Alternative Flows

N/A

3.3.2.7.13.13 Failure Flows

N/A

3.3.2.7.14 UC-ATFCM-03b: WOC triggered iRMT Revision (Regional ATFCM) (not under the scope of solution PJ.07-03)

3.3.2.7.14.1 Scope

This use case covers the revision of iRMT triggered by WOC after Departure.

3.3.2.7.14.2 Level

User Goal

3.3.2.7.14.3 Summary

WOC requires Revision of iRMT to appropriate ATC Sector Planning/Executive Controller. The Controller will assess impact within the AoR, if requested changes are feasible. In the next step the Controller shall request approval of an iRMT Revision to the Flight Deck based on WOC mission operational needs.

When WOC, FD and ATC have agreed on the revision of the iRMT the ATC Controller sends an “ATC Flight Plan Proposal Message (AFP)” to Regional ATFCM. Regional ATFCM distributes the revised iRMT to the relevant ATC Units and to its own tactical flow monitoring.

3.3.2.7.14.4 Actors

Regional ATFCM Roles

NM IFPS & NM IFPS operator

Operational Nodes

En-Route/Approach ATS

3.3.2.7.14.5 Preconditions

iRMT validated and distributed to ATS, flight airborne in execution

3.3.2.7.14.6 Post conditions

N/A

3.3.2.7.14.7 Success end state

Updated ATM Constraints, ATM Environment, DCB measures, Demand forecast, special events data send to Sub-regional/National ASM

3.3.2.7.14.8 Failed end state

N/A

3.3.2.7.14.9 Notes

The use of the “ATC Flight Plan Proposal Message (AFP) is limited to exceptional circumstances! It shall not be considered as default mean to file flight plans.

3.3.2.7.14.10 Trigger

ARES demand received from Sub-regional/National ASM

3.3.2.7.14.11 Main Flow

The following figure shows the ATFCM use case of the WOC triggered iRMT Revision on regional level.

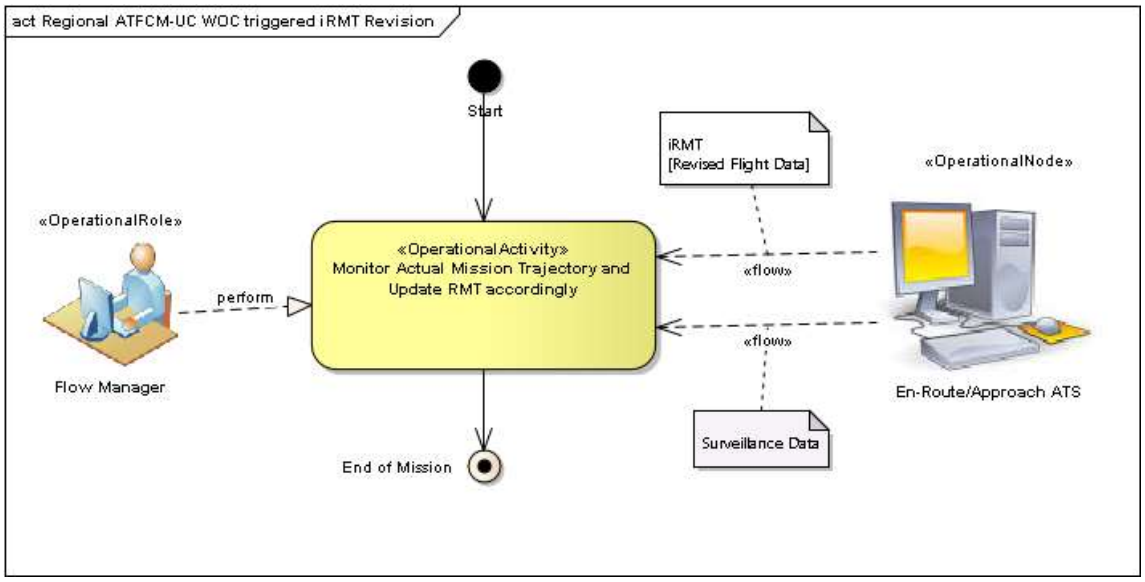


Figure 34: UC-ATFCM-03b - WOC triggered iRMT Revision (Regional ATFCM)

3.3.2.7.14.12 Alternative Flows

N/A

3.3.2.7.14.13 Failure Flows

N/A

3.3.2.7.15 UC-ASM-03a: WOC triggered iRMT Revision (Regional ASM) (not under the scope of solution PJ.07-03)

3.3.2.7.15.1 Scope

This use case covers the WOC triggered revision of the IRMT in the execution phase of a mission where a change of related ARES is required to achieve mission objective. It involves the regional partner in the CDM.

3.3.2.7.15.2 Level

User Goal

3.3.2.7.15.3 Summary

Due to mission requirements the WOC triggers changes to the usage of iRMT related ARES in regard to changes in time, altitude or volume. The draft proposal is launched, coordinated at national level through the AMC and received by the regional ATFCM via UUP. The draft proposal, once confirmed is released, information to the WOC included, in the status of an eAUP or eUUP and published in the NOP.

3.3.2.7.15.4 Actors

Regional ASM Roles

Airspace Manager

Operational Nodes

Sub-regional/National ASM

WOC

3.3.2.7.15.5 Preconditions

All ARES linked to IRMT are AMC manageable with status reference allocated in NOP and subject to modification/change in real time.

3.3.2.7.15.6 Post conditions

iRMT is revised accordingly

3.3.2.7.15.7 Success end state

Updated ARES is published in NOP via EUUP

3.3.2.7.15.8 Failed end state

N/A

3.3.2.7.15.9 Notes

It should be noted that Use Cases related to airspace management ASM will not be repeated in the document as they were validated to V3 maturity level in SESAR 1 VP-710 exercise. Therefore all the UCs with status validated should remain as reference use cases with link to the validation exercise description reflected in the Validation plan hence providing broader picture on the operational concept.

3.3.2.7.15.10 Trigger

AUP/UUP Draft proposal and ready status received from Sub-regional/National ASM

3.3.2.7.15.11 Main Flow

The following figure shows the ASM use case of the WOC triggered iRMT Revision with ARES update on regional level.

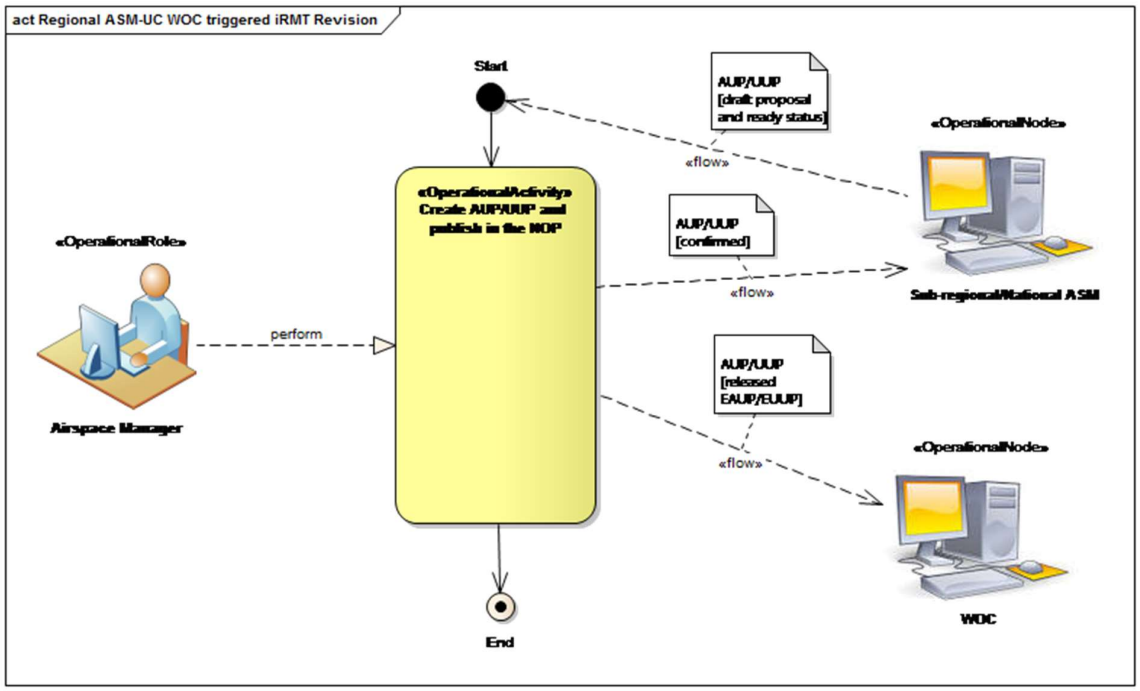


Figure 35: UC-ASM-03a - WOC triggered iRMT Revision (Regional ASM)

3.3.2.7.15.12Alternative Flows

N/A

3.3.2.7.15.13 Failure Flows

N/A

3.3.2.7.16 UC-ASM-03b: WOC triggered iRMT Revision (Sub-regional / National ASM) (not under the scope of solution PJ.07-03)

3.3.2.7.16.1 Scope

This use case covers the WOC triggered revision of iRMT in the execution phase of a mission where a change of related ARES is required to achieve mission objective. It covers the activities of national and sub-regional partners involved in the CDM.

3.3.2.7.16.2 Level

User Goal

3.3.2.7.16.3 Summary

Due mission requirements the WOC requests an ARES change in time, altitude or volume and starts the CDM process involving sub-regional and regional ATFCM. The request will first initiate an impact assessment process at local level, involving FMP (local ATFCM). Following this initial CDM a decision (proposal, allocation or rejection) is sent back to WOC (information) and to regional ATFCM for impact assessment. The final CDM outcome will reflect agreement of all partners involved and the depending decision about the requested ARES change will

reflect them. In case a change to contemporary ARES status is confirmed, an according AUP/UUP is sent out by the regional ATFCM.

3.3.2.7.16.4 Actors

Sub-regional/National ASM Roles

Airspace Manager

Operational Nodes

Sub-regional/Local ATFCM

Regional ASM

WOC

3.3.2.7.16.5 Preconditions

All ARES linked to IRMT are AMC manageable with status reference allocated in NOP and subject to modification/change in real time.

3.3.2.7.16.6 Post conditions

iRMT is revised accordingly.

3.3.2.7.16.7 Success end state

Confirmed AUP/UUP

3.3.2.7.16.8 Failed end state

N/A

3.3.2.7.16.9 Notes

It should be noted that Use Cases related to airspace management ASM will not be repeated in the document as they were validated to V3 maturity level in SESAR 1 VP-710 exercise. Therefore all the UCs with status validated should remain as reference use cases with link to the validation exercise description reflected in the Validation plan hence providing broader picture on the operational concept.

3.3.2.7.16.10 Trigger

ARES Request received from WOC

3.3.2.7.16.11 Main Flow

The following figure shows the ASM use case of the WOC triggered iRMT Revision with ARES update on sub-regional / national level.

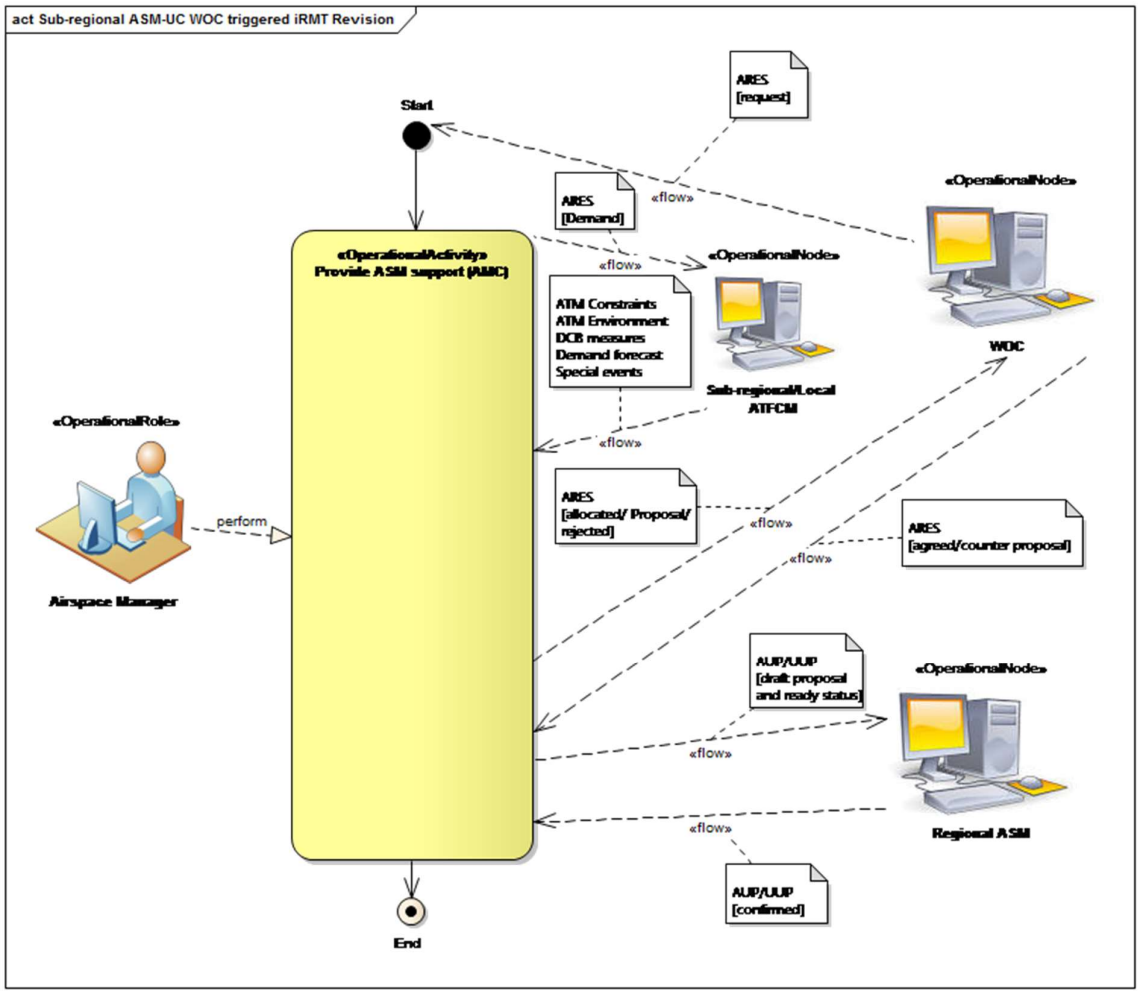


Figure 36: UC-ASM-03b - WOC triggered iRMT Revision (Sub-regional / National ASM)

3.3.2.7.16.12 Alternative Flows

N/A

3.3.2.7.16.13 Failure Flows

N/A

3.3.2.7.17 UC-WOC-03: WOC triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.17.1 Scope

This use case covers the revision of an iRMT triggered by WOC after Departure.

3.3.2.7.17.2 Level

User Goal

3.3.2.7.17.3 Summary

The revision of the IRMT can be triggered by the operational change need from WOC. After update of the 4D Trajectory in the Mission Support System of the WOC, this may include a prior CDM process if an ARES is affected, the WOC requests iRMT revision to the currently responsible En-Route/Approach ATS. Depending on the result of the following CDM process the requested iRMT revision can be supported by En-Route/Approach ATS the WOC will proceed its monitoring activity. In case the revision request has to be rejected, e.g. due to safety issues, the WOC has to decide either to further execute the mission as originally agreed or to abort the mission, if mission objectives cannot be met any more.

3.3.2.7.17.4 Actors

WOC Roles

Mission Planner

Flight Data Operator

Mission Observer

Operational Nodes

Sub-regional/National ASM

Regional ASM

En-Route/Approach ATS

3.3.2.7.17.5 Preconditions

Agreed iRMT

3.3.2.7.17.6 Post conditions

N/A

3.3.2.7.17.7 Success end state

Revised iRMT in force

3.3.2.7.17.8 Failed end state

Mission return to base

3.3.2.7.17.9 Notes

The complete AFUA concept with associated CDM processes is covered by other use cases validated in SESAR 1.

3.3.2.7.17.10 Trigger

- Change Need for iRMT by WOC

3.3.2.7.17.11 Main Flow

The following figure shows the WOC use case of the WOC triggered iRMT Revision.

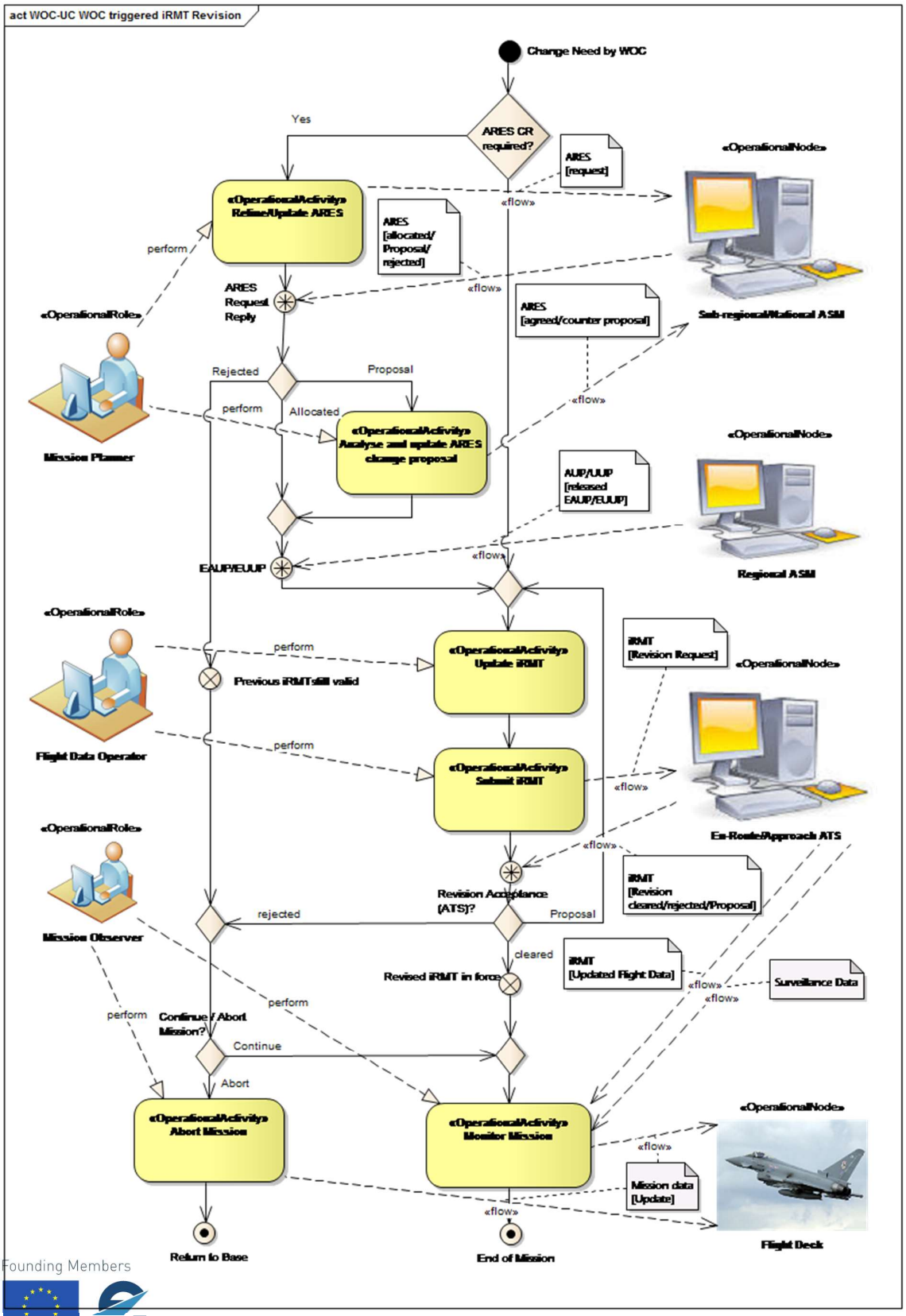


Figure 37: UC-WOC-03 - WOC triggered iRMT Revision

3.3.2.7.17.12 Alternative Flows

N/A

3.3.2.7.17.13 Failure Flows

N/A

3.3.2.7.18 UC-FD-04: ATC triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.18.1 Scope

This use case covers the revision of iRMT triggered by ATC.

3.3.2.7.18.2 Level

User Goal

3.3.2.7.18.3 Summary

Due to ATM constraints there is a change need of the Mission Trajectory by En-Route/Approach ATS. Hence a revision request is sent from En-Route/Approach ATS to the Flight Deck via Air-Ground communication means to solve the constraint. The Flight Crew assesses the impact on the mission and will either accept, reject or makes a proposal. Depending on the result the revised iRMT will become valid or the previous one remains valid.

3.3.2.7.18.4 Actors

Flight Deck Roles

Flight Crew

Operational Nodes

En-Route/Approach ATS

3.3.2.7.18.5 Preconditions

Agreed iRMT

3.3.2.7.18.6 Post conditions

Revised iRMT

3.3.2.7.18.7 Success end state

Revised iRMT in force

3.3.2.7.18.8 Failed end state

Previous iRMT still valid

3.3.2.7.18.9 Notes

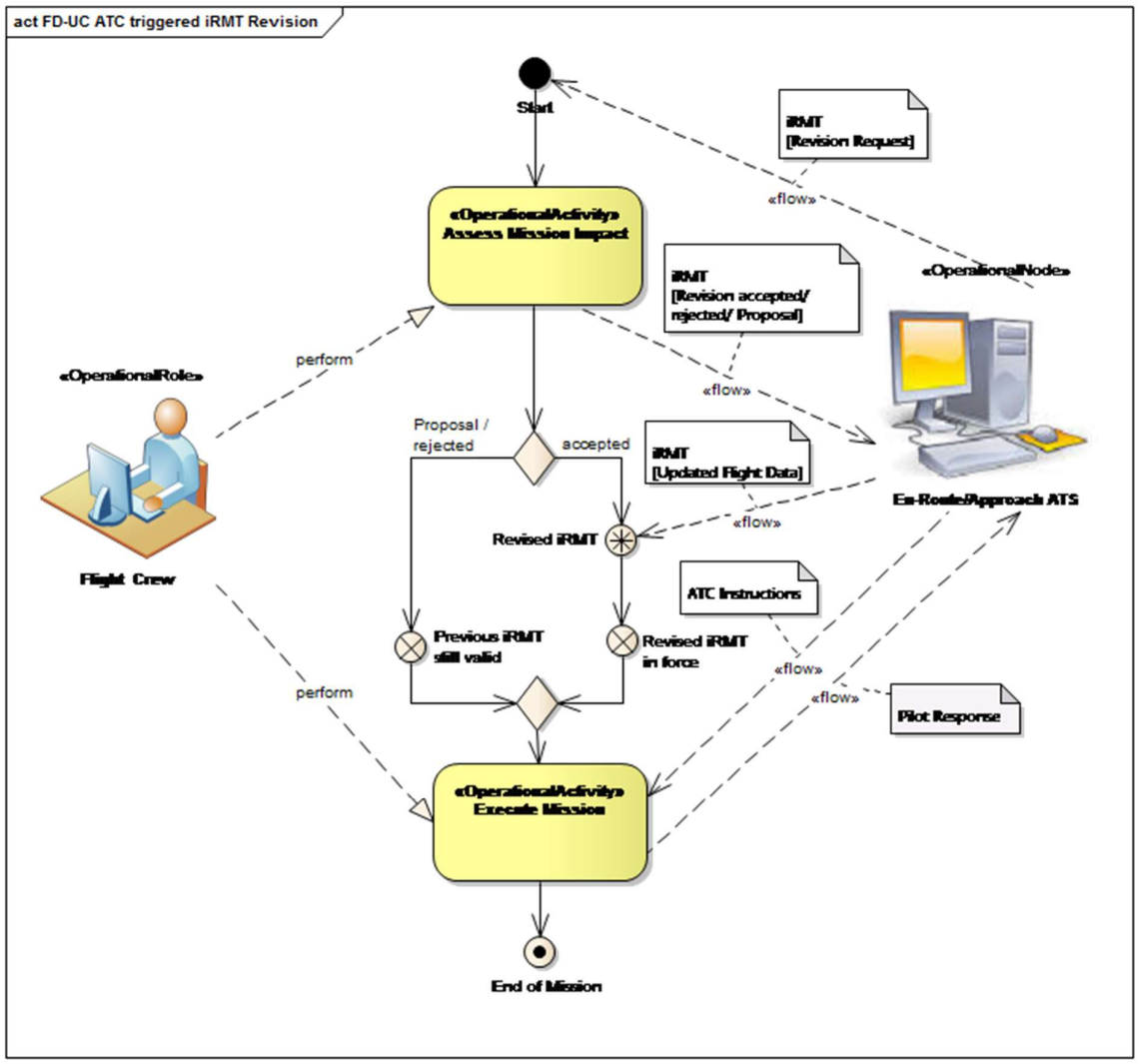
This use case is not in scope of solution PJ.07-03 and will not be further investigated. For more details refer to document package of related SESAR 2020 Solution.

3.3.2.7.18.10 Trigger

iRMT revision request received from En-Route/Approach ATS

3103 3.3.2.7.18.11 Main Flow

3104 The following figure shows the Flight Deck use case of the ATC triggered iRMT Revision.



3105

3106 **Figure 38: UC-FD-04 - ATC triggered iRMT Revision**

3107 3.3.2.7.18.12 Alternative Flows

3108 N/A

3109 3.3.2.7.18.13 Failure Flows

3110 N/A

3111 **3.3.2.7.19 UC-ATC-04: ATC triggered iRMT Revision (not under the scope of solution PJ.07-03)**

3112 3.3.2.7.19.1 Scope

The ATC Sector Executive Controller in the En-Route/Approach ATS requests the revision of iRMT to Flight Deck. This revision can be based on ATS operational needs.

3.3.2.7.19.2 Level

User Goal

3.3.2.7.19.3 Summary

Due to ATM constraints there is a change need of the Mission Trajectory by En-Route/Approach ATS. Hence a revision request is sent from En-Route/Approach ATS to the Flight Deck via Air-Ground communication means to solve the constraint. The Flight Crew assesses the impact on the mission and will either accept, reject or makes a proposal. Depending on the result the revised iRMT will become valid or the previous one remains valid.

3.3.2.7.19.4 Actors

En-Route/Approach ATS Roles

Local Traffic Manager

Multi Sector Planner

ATC Sector Executive Controller

ATC Sector Planning Controller

Operational Nodes

Flight Deck

Adjacent En-Route/Approach ATS

Regional ATFCM

3.3.2.7.19.5 Preconditions

N/A

3.3.2.7.19.6 Post conditions

N/A

3.3.2.7.19.7 Success end state

Revised iRMT in force

3.3.2.7.19.8 Failed end state

Previous iRMT still valid

3.3.2.7.19.9 Notes

iRMT changes/revisions enable to perform requested mission objectives with NO negative impact to other Airspace Users. This incorporation of military flights and requested airspace capacity enabling better predictability of airspace demands.

3.3.2.7.19.10 Trigger

Change need to revise iRMT after Departure by En-Route/Approach ATS

3.3.2.7.19.11 Main Flow

The following figure shows the ATC Use Case of ATC triggered iRMT Revision

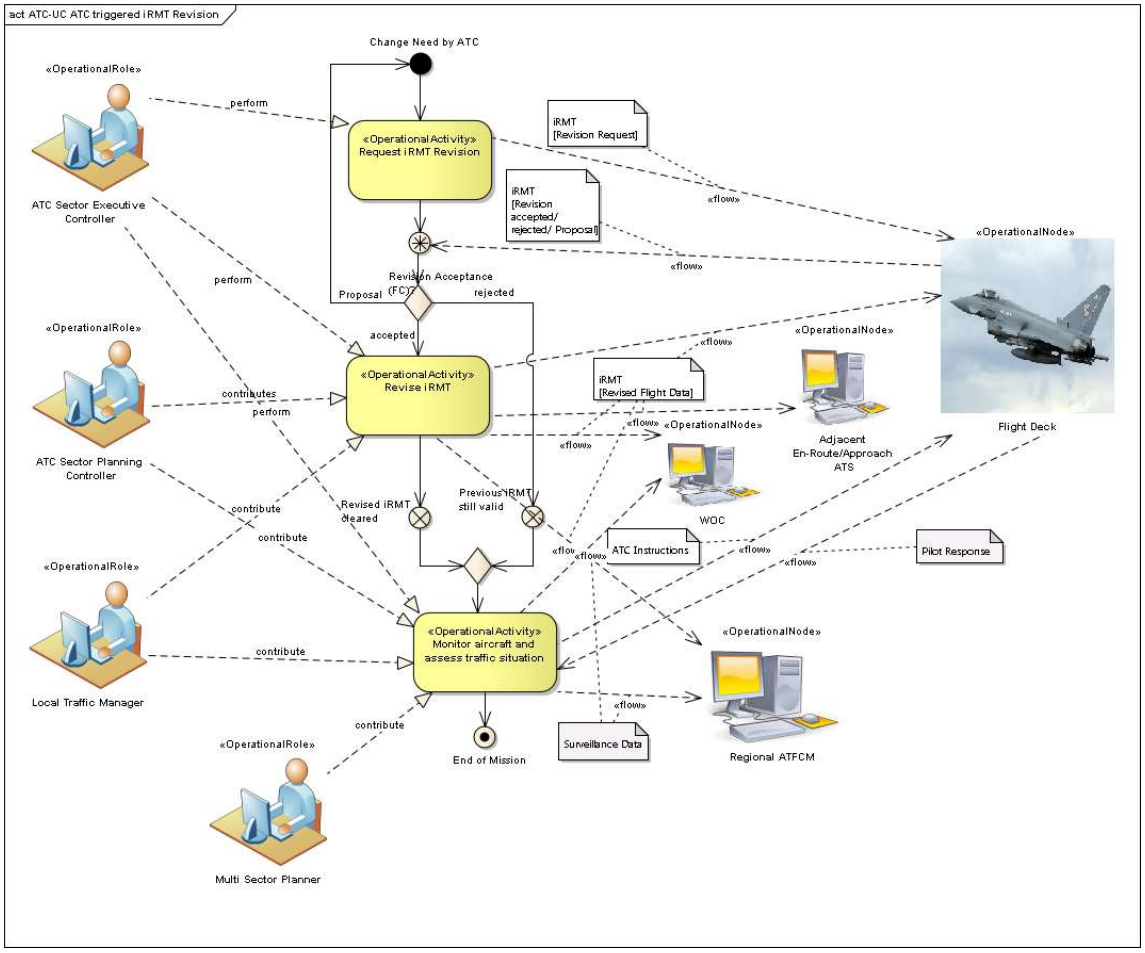


Figure 39: UC-ATC-04 - ATC triggered iRMT Revision

3.3.2.7.19.12 Alternative Flows

N/A

3.3.2.7.19.13 Failure Flows

N/A

3.3.2.7.20 UC-FD-05: Flight Deck triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.20.1 Scope

This use case covers the revision of iRMT triggered by the Flight Deck.

3.3.2.7.20.2 Level

User Goal

3.3.2.7.20.3 Summary

Operational needs may require the Flight Deck to revise iRMT. Hence a revision request is sent to En-Route/Approach ATS via Air-Ground communication means. Depending on the response the revised iRMT is valid and will be executed with support of En-Route/Approach ATS or in case of rejected revision request if mission objectives cannot be met anymore the Flight Deck initiates the abortion of mission and Return to Base (RTB).

3.3.2.7.20.4 Actors

Flight Deck Roles

Flight Crew

Operational Nodes

En-Route/Approach ATS

3.3.2.7.20.5 Preconditions

Agreed iRMT

3.3.2.7.20.6 Post conditions

Revised iRMT

3.3.2.7.20.7 Success end state

Revised iRMT in force

3.3.2.7.20.8 Failed end state

Previous iRMT still valid

3.3.2.7.20.9 Notes

This use case is not in scope of solution PJ.07-03 and will not be further investigated. For more details refer to document package of related SESAR 2020 Solution.

3.3.2.7.20.10 Trigger

Change Need by Flight Deck

3.3.2.7.20.11 Main Flow

The following figure shows the FD use case of the Flight Deck triggered iRMT Revision.

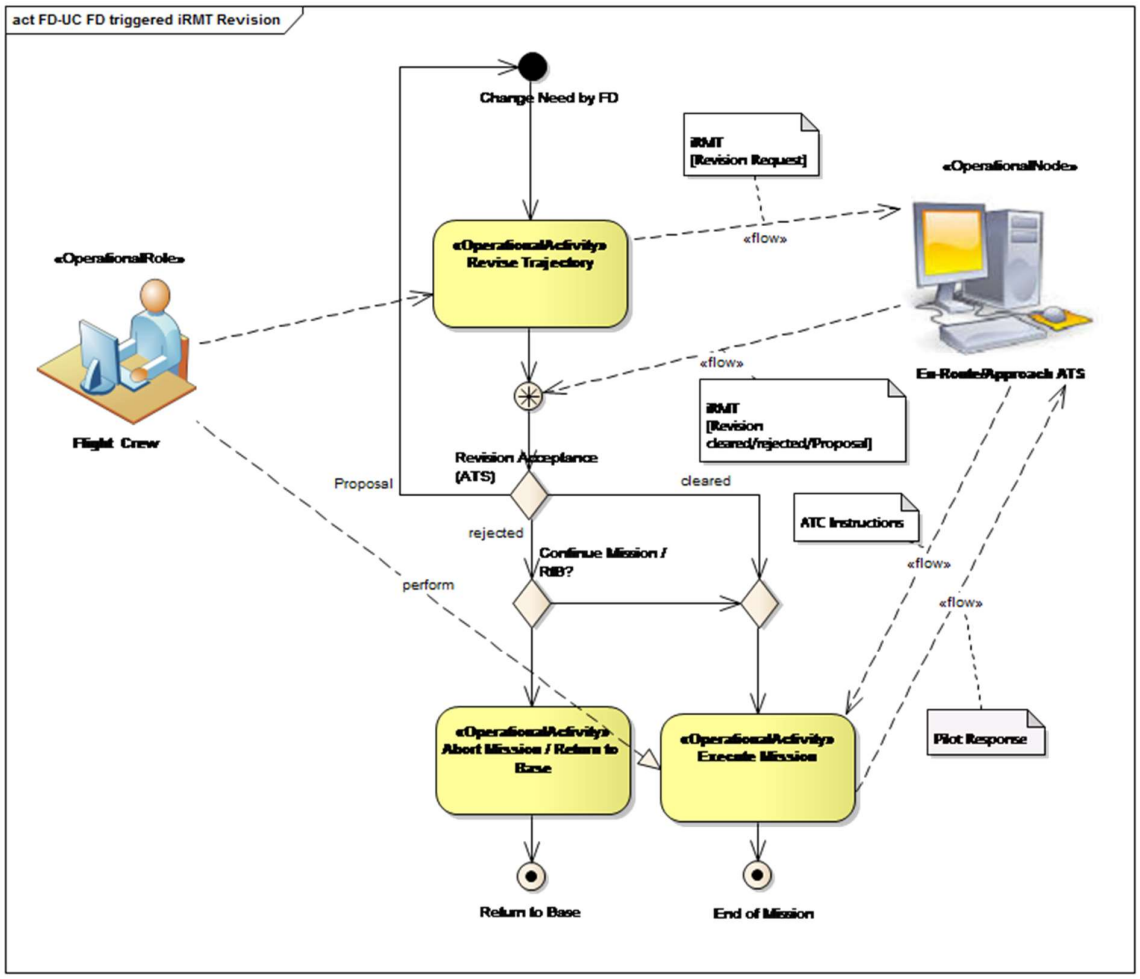


Figure 40: UC-FD-05 – Flight Deck triggered iRMT Revision

3.3.2.7.20.12 Alternative Flows

N/A

3.3.2.7.20.13 Failure Flows

- N/A

3.3.2.7.21 UC-ATC-05: Flight Deck triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.21.1 Scope

If necessary the Flight Deck (pilot) during execution of the flight shall request an iRMT revision to the ATC Sector Executive Controller in the En-Route/Approach ATS.

3.3.2.7.21.2 Level

User Goal

3.3.2.7.21.3 Summary

Flight Deck initiates via communication with En-route/Approach ATS the revision of iRMT due to operational needs. The iRMT revision request is communicated to En-Route/Approach ATS via Air-Ground communication means to revise iRMT. The En-Route/Approach ATS assesses the impact on the mission and either accepts, rejects or makes a proposal facilitating the revise trajectory process. Depending on the result the revised iRMT will become valid or the previous one remains valid.

3.3.2.7.21.4 Actors

En-Route/Approach ATS Roles

- Multi Sector Planner
- ATC Sector Executive Controller
- ATC Sector Planning Controller

- Operational Nodes
  - Flight Deck
  - Adjacent En-Route/Approach ATS
  - Regional ATFCM
  - WOC

3.3.2.7.21.5 Preconditions

N/A

3.3.2.7.21.6 Post conditions

N/A

3.3.2.7.21.7 Success end state

Revised iRMT in force

3.3.2.7.21.8 Failed end state

Previous iRMT still valid

3.3.2.7.21.9 Notes

iRMT changes/revisions enable to perform requested mission objectives with NO negative impact to other Airspace Users. This incorporation of military flights and requested airspace capacity enabling better predictability of airspace demands.

3.3.2.7.21.10 Trigger

iRMT revision request received from Aircraft

3.3.2.7.21.11 Main Flow

The following figure shows the ATC Use Case of Flight Deck triggered iRMT Revision.

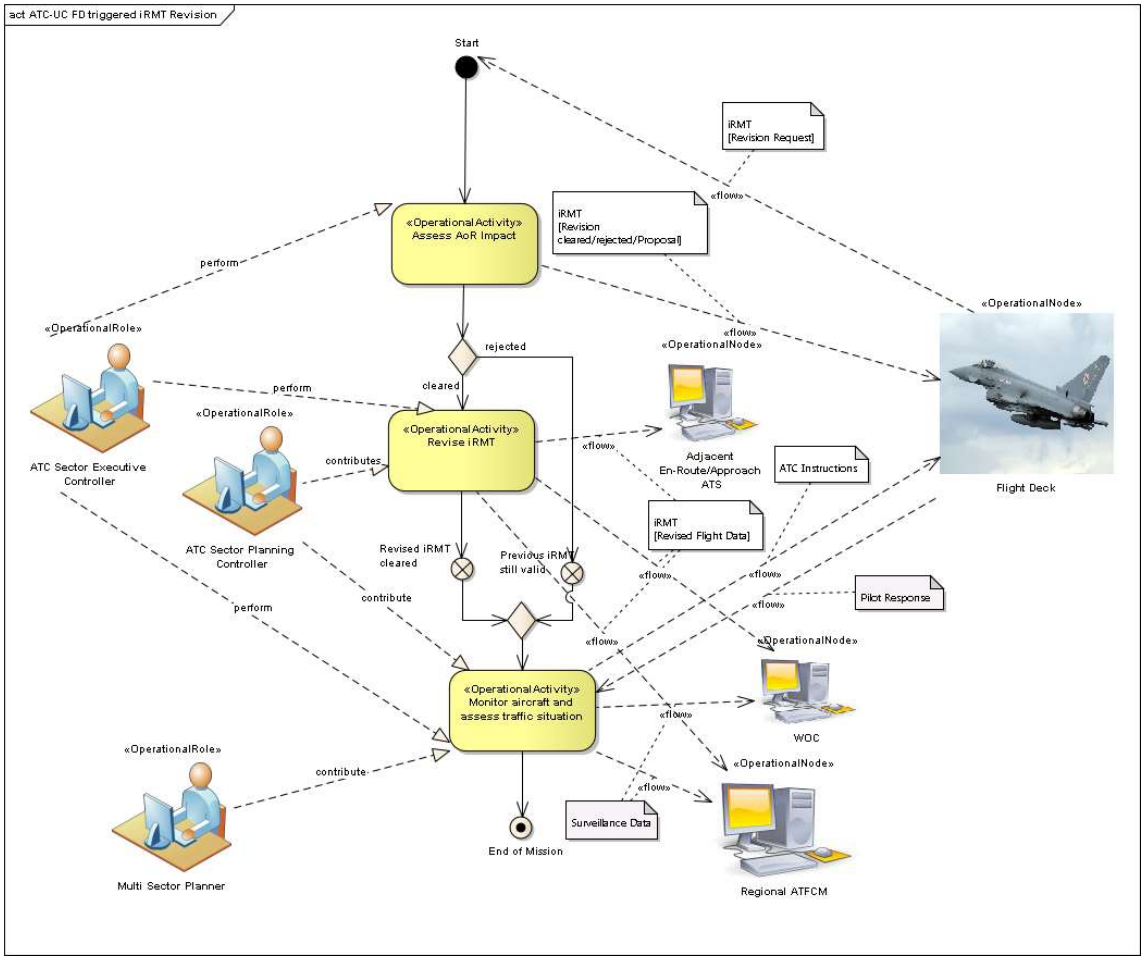


Figure 41: UC-ATC-05 – Flight Deck triggered iRMT Revision

3.3.2.7.21.12 Alternative Flows

N/A

3.3.2.7.21.13 Failure Flows

N/A

3.3.2.7.22 UC-ATFCM-04: ATC / Flight Deck triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.22.1 Scope

This use case covers the revision of iRMT triggered by ATC.

3.3.2.7.22.2 Level

User Goal

3.3.2.7.22.3 Summary

When FD and ATC agreed on the revision of the iRMT the ATC Controller sends an “ATC Flight Plan Proposal Message (AFP)” to Regional ATFCM indicating on the revised iRMT. Regional ATFCM distributes the revised IRMT to all relevant ATS Units and updates previous iRMT with revised one for tactical flow monitoring.

3.3.2.7.22.4 Actors

Regional ATFCM Roles

Flow Manager

Operational Nodes

En-Route/Approach ATS

3.3.2.7.22.5 Preconditions

iRMT validated and distributed to ATS, flight airborne in execution

3.3.2.7.22.6 Post conditions

Mission executed; iOAT FPL and CPR saved in NM Traffic History database; i.e. DDR, PRISME.

3.3.2.7.22.7 Success end state

Revised iRMT flight data available for air traffic monitoring in Regional ATFCM database

3.3.2.7.22.8 Failed end state

N/A

3.3.2.7.22.9 Notes

The use of the “ATC Flight Plan Proposal Message (AFP) is limited to exceptional circumstances! It may not be considered as standard mean to file flight plans.

3.3.2.7.22.10 Trigger

- iRMT with updated flight data received from En-Route/Approach ATS

3.3.2.7.22.11 Main Flow

The following figure shows the Regional ATFCM use case of the ATC or Flight Deck triggered iRMT Revision.

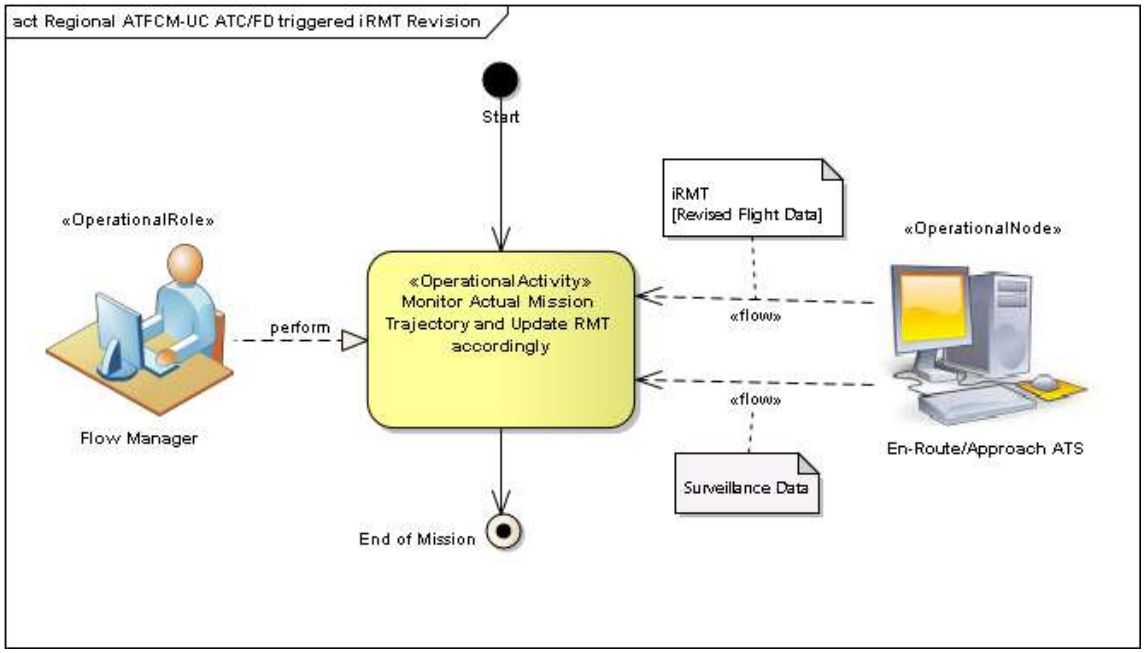


Figure 42: UC-ATFCM-04 – ATC / Flight Deck triggered iRMT Revision

3.3.2.7.22.12 Alternative Flows

N/A

3.3.2.7.22.13 Failure Flows

N/A

3.3.2.7.23 UC-WOC-04: ATC / Flight Deck triggered iRMT Revision (not under the scope of solution PJ.07-03)

3.3.2.7.23.1 Scope

This use case covers the revision of iRMT triggered by ATC or the Flight Deck.

3.3.2.7.23.2 Level

User Goal

3.3.2.7.23.3 Summary

The WOC monitors the execution of a mission based on real-time surveillance data. When iRMT is revised, WOC receives updated trajectory data from En-Route/Approach ATS for further monitoring and update.

3.3.2.7.23.4 Actors

WOC Roles

Mission Observer

Operational Nodes

En-Route/Approach ATS

3284 3.3.2.7.23.5 Preconditions

3285 Agreed iRMT

3286 3.3.2.7.23.6 Post conditions

3287 Revised iRMT

3288 3.3.2.7.23.7 Success end state

3289 Revised iRMT flight data available for mission monitoring in WOC database

3290 3.3.2.7.23.8 Failed end state

3291 N/A

3292 3.3.2.7.23.9 Notes

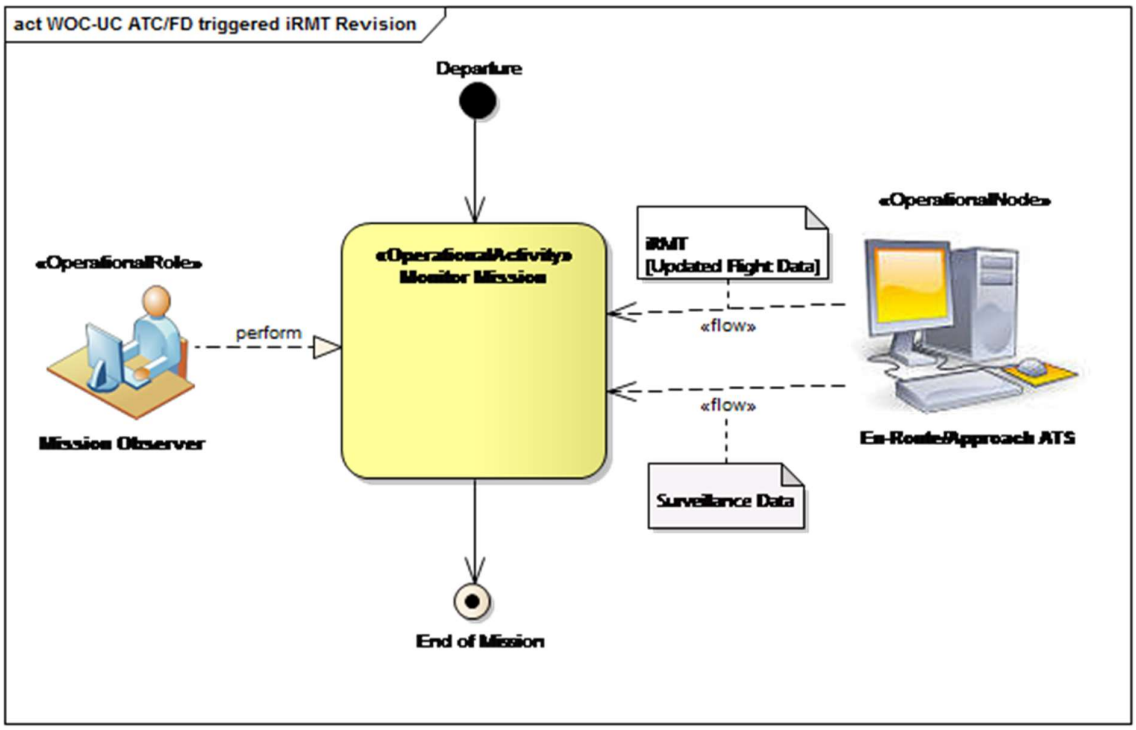
3293 The collaboration between ATC and Flight Crew is executed directly via A/G communication means. The result of
3294 a Flight Deck triggered iRMT Revision is distributed to all involved operational nodes on ground by the controlling
3295 En-Route/Approach ATS.

3296 3.3.2.7.23.10 Trigger

3297 iRMT with updated flight data received from En-Route/Approach ATS

3298 3.3.2.7.23.11 Main Flow

3299 The following figure shows the WOC use case of the ATC or Flight Deck triggered iRMT Revision.



3300

3301 **Figure 43: UC-WOC-04 – ATC / Flight Deck triggered iRMT Revision**

3302 3.3.2.7.23.12 Alternative Flows

3303 N/A

3304 3.3.2.7.23.13 Failure Flows

3305 • N/A

3306

3307 3.3.3 Differences between new and previous Operating Methods

3308 Table SESAR Solution PJ.07-03 Operational Activities lists the activities as defined in EATMA in the scope of
3309 Solution PJ.07-03. New operational activities, which are currently not defined, are marked bold and has to be
3310 added to EATMA by PJ19. Column "Current Operating Method" indicates the Activity View / functional process
3311 where the activity is already used while column "New Operating Method" refers to the new activity view /
3312 functional process, developed by Solution PJ.07-03, where the activity is used.

3313 The activities are group in accordance with the performing operational node by the notation <Operational Node>:
3314 <Operational Activity>.

3315 The details of the activities for each operational node are described in the following sub-sections.
3316
3317

Activities (in EATMA) that are impacted by the SESAR Solution	Current Operating Method	New Operating Method
Flight Deck : Abort Mission	Not used	Flight Deck triggered iRMT Revision
Flight Deck : Assess Mission Impact	Not used	ATC triggered iRMT Revision
Flight Deck : Execute Mission	Not used	IRMT Management in Execution Phase WOC triggered iRMT Revision ATC triggered iRMT Revision Flight Deck triggered iRMT Revision
Flight Deck : Load Mission Data into Aircraft	Not used	IRMT Management in Execution Phase
Flight Deck :Revise Trajectory	Not used	Flight Deck triggered iRMT Revision
En-Route/Approach ATS : **Assess AoR Impact**	**Not used**	**WOC triggered iRMT Revision** **Flight Deck triggered iRMT Revision**
En-Route/Approach ATS : **Downstream ATS to the Flight**	**Not used**	**WOC triggered iRMT Revision** **ATC triggered iRMT Revision**

Activities (in EATMA) that are impacted by the SESAR Solution	Current Operating Method	New Operating Method
		Flight Deck triggered iRMT Revision
En-route/Approach ATS : Monitor aircraft and assess traffic Situation		IRMT Management in Execution Phase WOC triggered iRMT Revision ATC triggered iRMT Revision Flight Deck triggered iRMT Revision
En-Route/Approach ATS : **Request iRMT Revision**	**Not used**	**ATC triggered iRMT Revision**
En-Route(Approach ATS : **Revise iRMT**	**Not used**	**WOC triggered iRMT Revision** **ATC triggered iRMT Revision** **Flight Deck triggered iRMT Revision**
En-Route/Approach ATS : Reception of iOAT FPL Information	IRMT in Short Term	IRMT Management in Short Term Planning
Regional ASM : Create AUP/UUP and publish in the NOP	IMT in Short Term	WOC triggered iRMT Revision
Regional ASM : **Provide ASM support (Regional)**		**IMT Management in Execution Phase**
Sub-regional/National ASM : Provide ASM support (AMC)	IMT in Medium Term IMT in Short Term IMT in Execution Phase	WOC triggered iRMT Revision
Sub-regional/National ASM : Update and share ARES Status		IMT Management in Execution Phase
Regional ATFCM : ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB	IMT in Medium Term IMT in Short Term	IMT Management in Short Term Planning WOC triggered iRMT Revision
Regional ATFCM : Distribute iSMT		IMT Management in Short Term Planning
Regional ATFCM : Enrich and publish demand forecast with incoming iSMT data	IMT in Short Term	IMT Management in Short Term Planning

Activities (in EATMA) that are impacted by the SESAR Solution	Current Operating Method	New Operating Method
Regional ATFCM :: Monitor Actual Mission Trajectory and Update IRMT accordingly		IMT Management in Execution Phase WOC triggered iRMT Revision ATC triggered iRMT Revision Flight Deck triggered iRMT Revision
Regional ATFCM : Publish iRMT in the NOP	IMT in Short Term IMT in Execution Phase	IMT Management in Short Term Planning
Regional ATFCM : Validate iSMT	IMT in Short Term	IMT Management in Short Term Planning
Sub-regional/Local ATFCM : Provide Local Impact Assessment	Not used	IMT Management in Short Term Planning WOC triggered iRMT Revision
WOC : Abort Mission	Not used	WOC triggered iRMT Revision
WOC : Monitor Mission	Not used	IMT Management in Execution Phase WOC triggered iRMT Revision ATC triggered iRMT Revision Flight Deck triggered iRMT Revision
WOC : **Create/Update iSMT**	**Not used**	**IMT Management in Short Term Planning**
WOC : Refine/Update ARES	IMT in Short Term	WOC triggered iRMT Revision
WOC : Submit iSMT	IMT in Short Term	IMT Management in Short Term Planning
WOC : Submit iRMT	IMT in Short Term IMT in Execution Phase	IMT Management in Short Term Planning WOC triggered iRMT Revision
WOC : Update iRMT	Not used	WOC triggered iRMT Revision
WOC : Analyse and update ARES change proposal	IMT in Short Term AFUA rolling AUP	WOC triggered iRMT Revision

Activities (in EATMA) that are impacted by the SESAR Solution	Current Operating Method	New Operating Method
	AFUA continuous sharing ARES	
Meteorological Service Provider :: Provide weather information	IMT in Short Term	IMT Management in Short Term Planning

Table 8: Difference between new and previous Operating Method

ASM Regional operational activities

Current title of the activity	New title of the activity	Current description	New description
Provide ASM support Regional	N/A	N/A	This activity involves ASM Regional facilitating management of Pan-European airspace at the ATM network level in all phases of the ATM lifecycle from planning through execution to post operations analysis. ASM Regional is analysing the airspace demands, identifying conflicts, providing solutions for conflict resolutions and coordinating with ASM Sub-regional/National best optimal airspace configuration and ARES allocation via a CDM process. The ASM Regional consolidates airspace demand publishes it in the NOP and monitors evolution through regular update of the ATM environment in the NOP.
Create AUP/UUP and publish in the NOP	Publish eAUP/eUUP in the NOP	This activity involves the Network Management (CADF) receiving the Draft AUP/UUPs from the ASM Support for validation, as well as for impact	This activity involves ASM regional receiving analysing and validating ASM data through AUP/UUP mechanism. After performing Network impact

		assessment with DCB. When all Draft AUP/UUPs are communicated as in status "Ready" by ASM Support, the CADF produces and releases the eAUP/UUP.	assessment and negotiating with ASM (Sub-regional/National) on an optimal Network configuration the ASM Regional publishes a consolidated eAUP/eUUP in the NOP. Any subsequent update communicated via eUUP will be assessed consolidated and published via eUUP in the NOP.

3321 **Table 9: ASM Regional operational activities**

3322 ### 3.3.3.1 Sub-regional/National ASM Operational Activities

3323

Current title of the activity	New title of the activity	Current description	New description
Provide ASM support (AMC)	N/A	This activity involves analysing the airspace demands (originating from the various WOCs in the form of ARES requests), identifying conflicts and coordinating with each requestor WOC as well as with Network Management to solve conflicts. The interaction between ASM Support, WOC and the Network Management is described in detail in the AFUA process diagrams. This activity also involves coordination of ARES pre-activation, activation and de-activation with WOC, Network Management and ATC.	This activity involves ASM (Sub-Regional/National) analysing the airspace requests (originated from the various WOC), detecting and solving conflicts in close collaboration with, ATFCM (Sub-Regional/local), En-route/Approach ATS, ATFCM (Regional) and WOC who originates the request.
Update and share ARES status	N/A	The ASM Support Systems subsequently sends a notification to the	This activity involves real-time status sharing of the information related to the allocated ARES (pre-

		Network Management Function (NMF) System.	activation, activation, de-activation, and release) between ATM actors concerned.
Analyse and update ARES change proposal	N/A	A CDM negotiation starts between AMC, and WOC and AMC makes the proposal and explains it with free text. WOC may agree or not to the proposal bearing in mind ASM level 1 rules.	The activity involves WOC and AMC engaged in CDM on the ARES update change proposal. The outcome from the CDM process may be a bilateral agreement on the change proposal or WOC may refuse any counterproposals from AMC due to given priorities.

3324 **Table 10: Sub-regional/National ASM Operational Activities**

3325 ### 3.3.3.2 Regional ATFCM Operational Activities

3326

Current title of the activity	New title of the activity	Current description	New description
ATM Environment and Constraints Service Provision, Traffic Demand and Computation, DCB	ATM Environment and Constraints Service Provision, Traffic Demand gathering and Computation, DCB	This activity involves Network Management providing of information on ATM Environment, ATM Constraints (RAD), DCB measures, special events and demand forecasts	This activity involves ATFCM (Regional) making available information concerning the ATM Configuration, published restrictions (including DCB measures) and associated constraints, special events and demand forecasts.
Validate iSMT	N/A	This activity involves Network Management (in particular the IFPS) validating the improved OAT flight plan, as received by the WOC. This validation mainly comprises syntax checking and consistency checking against the latest ATM environment and DCB constraints. Network Management validates OAT flight plans against the availability of the	This activity involves ATFCM (Regional) validating the improved OAT flight plan, as received from the WOC. This validation mainly comprises syntax and consistency checking against the latest ATM configuration, including published restrictions. It provides feedback indicating the status of the flight plan and, where necessary, the nature and cause of any inconsistency.

		requested route in respect of time, level and airspace volume requirements and reports back any unavailability to the originator with a warning message.	
Distribute iSMT	N/A	This activity involves making available via the Network Operations Plan all information related to the shared OAT flight plan.	This activity involves ATFCM (Regional) distributing validated iSMT to all ATM actors concerned and publishing it in the Network Operations Plan NOP
Enrich and publish demand forecast with incoming iSBT/ iSMT data	N/A	This activity involves Network Management re-computing traffic demand over traffic flows, significant points, airports and different types of airspace using the flight information that is included in the improved OAT flight plan.	This activity involves ATFCM (Regional) re-computing traffic demand over traffic flows, significant points, airports and different types of airspace using the flight information that is included in the improved OAT flight plan.
Publish iRMT in the NOP	N/A	This activity involves making available via the Network Operations Plan all information related to the reference OAT flight plan.	This activity involves ATFCM (Regional) publishing the status transition from iSMT to iRMT. The potential triggers for the transition are: a) ATC notification; b) WOC notification;
Monitor Actual Mission Trajectory and Update RMT accordingly	Monitor Actual Mission Trajectory and Update iRMT accordingly	This activity covers the monitoring of the flown trajectory on the basis of surveillance data in form of correlated positions reports (CPR) compared to the planned trajectory from the iOAT FPL. This surveillance data in form of correlated positions reports (CPR) compared to the planned trajectory from the iOAT FPL. In case of significant differences	This activity covers the monitoring of the flown trajectory on the basis of data received from ATC systems (surveillance data via CPR, AFP or EPP data). In case of significant differences with the agreed trajectory the remaining trajectory prediction is re-calculated and the appropriate flight plan update messages (FUM, APL/ACH, trajectory revision)

		the remaining trajectory prediction is recalculated and flight plan update Messages (FUM) are sent to the concerned ATC Units. The same mechanism applies in case of an iRMT revision in execution, where Regional ATFCM receives from ATC an ATC Flight Plan Proposal (AFP), containing the revised iRMT information. The trajectory is recalculated and Flight Plan Update Messages (FUM) are sent to the concerned ATC Units. Further on, the recalculated trajectory will be used to update the traffic flow information at the tactical flow management.	are provided to all concerned ATM Units.

Table 11: Regional ATFCM Operational Activities

3.3.3.3 Sub-regional/Local ATFCM Operational Activities

Current title of the activity	New title of the activity	Current description	New description
Provide Local Impact Assessment	N/A	This function provides the impact assessment (what-if) at the local level.	This activity involves ATFCM (Sub-Regional/local) conducting impact assessment within AoR in collaboration with ASM Sub-regional/national and ATFCM (Regional) with What-If functionalities
Monitor flights	N/A	FMP Monitors flights and associated FDCI in sector.	This activity involves ATFCM (Sub-Regional/local) monitoring flights and associated FDCI in sectors.

Validate iSMT	N/A	This activity involves Network Management (in particular the IFPS) validating the improved OAT flight plan, as received by the WOC. This validation mainly comprises syntax checking and consistency checking against the latest ATM environment and DCB constraints. Network Management validates OAT flight plans against the availability of the requested route in respect of time, level and airspace volume requirements and reports back any unavailability to the originator with a warning message.	N/A

3331 **Table 12: Sub-regional/Local ATFCM Operational Activities**

3332 ### 3.3.3.4 En-Route/Approach ATS Operational Activities

3333

Current title of the activity	New title of the activity	Current description	New description
Reception of iOAT FPL Information	Reception of the validated iSMT/iRMT	This activity involves the ATC FDPS systems receiving the latest improved OAT Flight Plan updates or the reference OAT Flight Plan via the Flight Object IOP mechanism or via "yellow"' SWIM profile data exchanges	This activity involves En-Route/Approach ATS receiving from ATFCM (regional) iSMT/iRMT data based on the latest validated iOAT FPL (including modification messages to iOAT FPL) in order to allocate and manage the trajectories within respective AoR in execution phase. The iSMT/iRMT data is also used by ATFCM (sub-regional/local) for impact assessment of AoR.

Monitor aircraft and assess traffic situation	Monitor trajectories and assess traffic situation	The Executive Controller constantly assesses the traffic situation, monitoring all flights and reacting appropriately to any 'traffic events'.	This activity involves the En-Route/Approach ATS provision constantly focusing on conformance monitoring and traffic optimisation, as well as on preventing, detecting and resolving conflicts in the respective AoR. It is also continuously detecting the deviations between the current position of an aircraft and ground reference trajectory based on the latest available surveillance data. This activity also includes monitoring of the real-time update of ARES status and adherence to the estimated elapsed time over ARES Entry/Exit points.
Downstream ATS to the Flight	N/A	Downstream En-Route/approach ATS provide Air Traffic Services based on the latest available Flight Data communicated by current responsible ATC	This activity involves En-Route/Approach ATS contributing to tactical situational awareness to downstream ATSU about the update/revision of the iRMT whenever tactical clearances or instructions may influence the transfer conditions.
Assess AoR Impact	N/A	N/A	This activity involves En-Route/Approach ATS constantly assessing traffic situation within their AoR and impact caused by trajectory revision.
Revise iRMT	N/A	This activity involves all spectrums of En-Route/Approach ATS services and their involvement to manage 4D trajectories	This activity involves En-Route/Approach ATS providing iRMT revision process. When the revision is terminated the En-Route/Approach ATS informs all ATM actors concerned without delay, including Regional ATFCM with an ATC

			Flight Plan Proposal (AFP), containing the revised iRMT information. The Flight Plan Update Messages (FUM) is distributed by the Regional ATFCM to the concerned ATCU accordingly. Further on, the recalculated trajectory will be used to update the traffic flow information.
Request iRMT Revision	N/A	ATS Operations may request an iRMT Revision due to ATM constraints or Safety reasons (this description is not indicated in EATMA operational activities…)	This activity involves En-Route/Approach ATS initiating trajectory revision either on its own initiative or on behalf of WOC. The activity includes provision of clearances and adjustment of trajectories in accordance with the actual traffic situation, ATM constrains, unexpected deviations from reference trajectory and for Safety reasons.

Table 13: En-Route/Approach ATS Operational Activities

3.3.3.5 WOC Operational Activities

Current title of the activity	New title of the activity	Current description	New description
Create/Update iSMT	N/A	Description: This activity involves the WOC creating or updating the OAT flight plan (also referenced as iSMT) using as input the early mission intent information and the allocated ARES for the mission	This activity involves the State AU Operations Centre (WOC) creating or updating the iOAT FPL (also referenced as iSMT) using as input the early mission flight intent information, the developed initial Mission Trajectory and, when applicable, the reference allocated ARES for the mission.
Submit iSMT	N/A	This activity involves sending the improved OAT Flight Plan to	This activity involves the State AU Operations Centre (WOC) submitting the iOAT

		Network Management for validation, acceptance and further distribution to all concerned stakeholders.	FPL to Regional ATFCM for validation, acceptance and further distribution to all ATM actors concerned. This activity also includes the filing of the improved OAT FPL from the calculated 4D trajectory.
Submit iRMT	Promulgate iRMT	This activity involves the WOC including all improved OAT Flight Plan information into the flight plan that will be the reference for both WOC and ATM Service Providers during the flight execution, and submitting this in the form of the Reference OAT Flight Plan (iRMT) to Network Management (for updating the Network Management flight database and NOP).	This activity involves the State AU Operations Centre (WOC) submitting all updates and revisions to the iRMT through associated messages in order to notify Regional ATFCM on the status change of the iSMT to become the iRMT.
Monitor Mission	N/A	ATC will monitor the mission. Also WOC can monitor the mission by position information derived via Initial SWIM capability, based from track processing of civil or military ATC units. For military Airspace Users the Air Defence units are also be able to monitor – and Command and Control – the mission. Mission modification and, if necessary, Mission Trajectory revision will be done by voice communication between ATC and flight crew. Ad hoc / QRA	This activity involves the State AU Operations Centre (WOC) monitoring the mission by position information derived via Initial SWIM capability, based on track processing surveillance data of civil or military ATC units. For military Airspace Users the Air Defence units are also able to monitor and Command and Control the mission.

		missions need, and will need, immediate take-off permission, which leaves no time for intensive mission Planning. As this kind of mission is scheduled very closely to the take-off time, ATC will be requested to do everything needed to pave the way for the related mission. The WOC may also support this by providing reduced mission intents such as mission area and Airspace Reservation requests in order to accommodate ATC and other ATM stakeholders with basic but important planning information, and last but not least to supply other Airspace Users with information to enable common situation awareness. Co-ordination after take-off will be conducted directly between ATC and flight crew. In the case of a military mission an Air Defence unit will coordinate with the flight crew and civil ATC. The WOC will be capable of giving in-flight support to the flight crew. Re-planning could be calculated on the ground, and mission modification could be proposed resulting in situation awareness composed of an overlay	

		of both tactical and civil provided ATC data. Revision of a mission will be usually initiated by WOC e.g. when the mission objective / target is changed. The WOC will send an updated improved OAT Flight plan. The aircrew can also request a change to a mission e.g. in emergency, contingency situation, due to weather. In this case the revision will be executed by ATC.	
Refine/update ARES	N/A	This activity involves refining the airspace volume needed for the mission, following verification of the mission objectives and checking of weather forecasts and latest ATFCM situation. The refined airspace volume is sent to Airspace Management support with a request for ARES allocation.	This activity involves the State AU Operations Centre (WOC) creating or updating the iOAT FPL (also referenced as iSMT) using as input the early mission flight intent information, the developed initial Mission Trajectory and, when applicable, the reference allocated ARES for the mission.
N/A	Propose iRMT Revision	N/A	This activity involves the State AU Operations Centre (WOC) submitting all updates and revisions to the iRMT through associated messages in order to request a revision of the iRMT at En-Route/Approach ATS.
Analyse and update ARES change proposal	N/A	A CDM negotiation starts between AMC, and WOC and AMC makes the proposal and explains it with free text. WOC may agree or not	This activity involves the State AU Operations Centre (WOC) participating in the CDM process on ARES modification/update with Sub-Regional/National ASM.

		to the proposal bearing in mind ASM level 1 rules.	State AU Operations Centre (WOC) may agree or not to the proposal.
Update iRMT	N/A	This activity involves the WOC updating the iOAT flight plan data using as input the already agreed iRMT and changes needed which have an impact on the mission.	This activity involves the State AU Operations Centre (WOC) updating internally the mission trajectory data using as input the already agreed iRMT and the changes needed which have an impact on the mission.
Abort Mission	N/A	N/A	This activity involves the State AU Operations Centre (WOC) to abort a mission due to the mission tactical constraints or safety reasons. The State AU Operations (WOC) orders the A/C either to return to base or to follow the new tactical instruction followed by a new or the revised iRMT.
N/A	Assess Impact on Mission	N/A	This activity involves the State AU Operations Centre (WOC) assessing impact on iRMT when submitted updates and revision proposal are rejected by the ATM actors concerned. The assessment leads to the decision either to continue the mission as planned or abort the mission

3336 **Table 14: WOC Operational Activities**

3337

3338 ### 3.3.3.6 Flight Deck Operational Activities

Current title of the activity	New title of the activity	Current description	New description
Load mission data into aircraft	N/A	The State Airspace User will transfer all relevant ATM and mission information onto the	N/A

		aircraft. Responsibility lies with the aircrew. The data on board the aircraft will be based on the validated Flight Plan and reserved airspace information ("iRMT"). Options for the transfer of revision or updated mission data will depend on the technical capabilities of both, the WOC and the aircraft, as well as the means of communication between them. This will be dependent upon each nation and also upon each type of aircraft. Some examples are given herein. If only one ATC constraint (e.g. time constraint) is to be modified, this could be done by manual interaction. For capable aircraft it would be feasible	
Execute Mission	N/A	After loading the mission data onto the aircraft, obtaining clearance for and performing take-off, the mission execution begins and will be executed i.e. latest available Flight / Mission Data.	This activity involves Flight Deck (Flight Crew) who loads iRMT data into the mission management system MMS or FMS if equipped, and when a/c is airborne commences the mission in accordance with the loaded iRMT data.
Assess Mission Impact	N/A	Flight Crew assess impact of requested iRMT revision on the mission objectives. In case of unacceptable impact the revision request is rejected and / or Flight	N/A

		Crew proposes an alternative to minimize mission impact.	
Revise trajectory	N/A	The Flight Crew initiates the revision of the Reference Mission Trajectory using Air2Ground voice communication. They request to a modification to part of their flight route in order to prevent the area of turbulences. The ATCO analyses the request and accepts it. The Flight Crew receives the acceptance and continues the flight i.a.w. the revised trajectory.	This activity involves Flight Deck (Flight Crew) who initiates revision of the entire iRMT or portion thereof due to operational or safety reasons via Air to Ground communication with ATCO. After agreement between FC and ATCO is reached, FD executes mission in accordance with ATC clearance for revised iRMT.
N/A	Return to Base RTB		This activity involves the Flight Crew aborting the mission due to operational or safety reasons and returning to base.

Table 15: Flight Deck Operational Activities

3.3.3.7 Meteorological Service Provision Operational Activities

Current title of the activity	New title of the activity	Current description	New description
Provide weather information	**N/A**	This activity involves handling requests and providing weather information concerning the flight or mission activity, in standardised format like WXXM. A broadcast service where weather information is distributed in regular intervals is also handled by this activity.	**N/A**

Table 16: Meteorological Service Provision

4 Safety, Performance and Interoperability Requirements (SPR-INTEROP)

The requirements that follow cover the full scope addressed by SESAR 2020 project PJ.07 on the overall mission trajectory concept.

Within the context of the work on this mission trajectory concept, some elements achieved V3/TRL6 and have been documented in solution **PJ.07-03 "Sharing mission trajectory data with NM and ATC via an improved OAT Flight Plan (iOAT FPL)",** which is focused on the management of the iOAT FPL in the planning phase and its distribution to NM and ATC units.

The scope of solution PJ.07-03 includes the following elements:

- The management of mission trajectory (MT) with variable profile areas (VPA) type of airspace reservations (ARES) as shared via iOAT FPL in the planning phase.
- The ARES conceptual evolution allowing more precise identification of ARES Entry and Exit location and time, to support the increased quality of the trajectory prediction in the corresponding wing operations centre (WOC), network manager (NM) and ATC systems. This includes the evolutions of the VPA module reference as integral part of the evolved iOAT FPL syntax & concept.
- The B2B services for iOAT FPL filing from WOC to NM as well as for the iOAT FPL distribution from NM to ATC. B2B services were as well successfully validated to connect Regional ATFCM (NM) and local ATC FMP systems.

Only those requirements related to the elements described above have completed V3/TRL6 and are considered part of solution PJ.07-03 (they are indicated with status <validated>).

The identifiers of all requirements are assigned in accordance with the following syntax:

<Object type>-<Solution code>-<Document code>-<Category code><Operational Node code>.<Reference number>

e.g.: REQ-07.03-SPRINTEROP-UUNN.0123

The characters between the symbols < and > denote a keyword, and the symbols < and > are not part of the actual identifier. The keywords adhere to the following rules:

- For all requirements the object type is "REQ".
- For all requirements developed by solution PJ.07-03 the code is "07.03"
- For all SPR-INTEROP/OSED requirements the document code is "SPRINTEROP"
- For all operational requirements the category code is "OP".
- For all safety requirements the category code is "SF".
- For all security requirements the category code is "SC".
- For all human performance requirements the category code is "HP".
- For all information exchange requirements the category code is "IE".
- For all interoperability requirements the category code is "IO".

- For all ASM-related requirements the operational node code is "01".
- For all ATC-related requirements the operational node code is "02".
- For all ATFCM-related requirements the operational node code is "03".
- For all WOC-related requirements the operational node code is "04".
- For all requirements the reference number is made of four alphanumeric characters.

Requirement text:

For the formulation of requirements, the rules provided in the SESAR Requirements and V&V Guidelines [35] have been applied. Hence, the requirements contain at least a subject and a statement where the subject is the object under discussion (e.g. operational node), and the statement is a condition, action, intended result or target objective.

The following generic way has been used to write the requirements:

<Object> shall OR should OR may <verb> <Statement>

- Requirements are marked by the use of the verb "shall".
- Recommendations are marked by the use of the verb "should".
- Permissions are marked by the use of the verb "may".

Rationale:

The rationale has been used to provide information such as justification of the allocation or Explanation about the requirement formulation

Requirements Tracing:

The REQ Trace table contains the links in accordance with SESAR Requirements and V&V Guidelines [35].

Only those requirements with status “Validated” are part of solution PJ.07-03.

4.1 Requirements related to Operational Node Regional ASM and Sub-regional/National ASM

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0001
Title	ARES modification in execution phase
Requirement	Local/sub-regional airspace manager shall receive process and analyse request for ARES modification in execution phase
Status	validated
Rationale	Local/sub-regional airspace manager upon reception of the request for new ARES or ARES modification initiates impact assessment.
Category	Operational

3406 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Provide ASM support (AMC)
<ALLOCATED_TO>	<Role>	Airspace Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity En-Route - High Complexity

3407 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0002
Title	Impact assessment of ARES modification in execution phase
Requirement	Local/sub-regional airspace manager shall perform local impact assessment on ARES modification in collaboration with local and regional traffic managers
Status	validated
Rationale	Local/sub-regional airspace manger in collaboration with local and regional traffic managers performs local impact assessment on new ARES or ARES modification in order to detect conflicts and analyse impact on network operations within AoR.
Category	Operational

3408

3409 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Provide ASM support (AMC)
<ALLOCATED_TO>	<Role>	Airspace Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity En-Route - High Complexity Network

3410

3411 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0003
Title	CDM on ARES modification in execution phase
Requirement	Local/sub-regional airspace manager shall initiate CDM with WOC and local traffic manager on new ARES or ARES modification if imbalance or conflict are detected

Status	validated
Rationale	Local traffic manager negotiates with traffic manager and mission planner the optimum ARES configuration/location with least impact on ATM network operations.
Category	Operational

3412

3413 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Provide ASM support (AMC)
<ALLOCATED_TO>	<Role>	Airspace Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity En-Route - High Complexity Network

3414

3415 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0004
Title	Publication of ARES modification in NOP
Requirement	Local/sub-regional airspace manager shall submit ARES modification agreed in CDM through UUP mechanism to regional ATFCM for publication in NOP
Status	validated
Rationale	Agreed upon CDM ARES modification is submitted to regional ATFCM for publication in NOP.
Category	Operational

3416

3417 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Provide ASM support (AMC)
<ALLOCATED_TO>	<Role>	Airspace Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	Network En-Route - High Complexity TMA - High Complexity

3418

3419 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0005
Title	Publication of ARES modification in NOP
Requirement	Regional Airspace manager shall promulgate EUUP on ARES modification and publish it in NOP
Status	validated
Rationale	Regional airspace manager distributes EUUP and publishes in NOP new or modified ARES.
Category	Operational

3420

3421 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create AUP/UUP and publish in the NOP Provide ASM support (Regional)
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity Network En-Route - High Complexity

3422

3423 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP01.0006
Title	Promulgation of and notification on ARES status
Requirement	Local/sub-regional airspace manager shall notify on ARES status to ATC/WOC/FMP upon publication in NOP new or modified ARES
Status	validated
Rationale	New or ARES modification is shared by local/sub-regional airspace manager between ATC/FMP/WOC.
Category	Operational

3424

3425 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Provide ASM support (AMC)

		Update and share ARES status
<ALLOCATED_TO>	<Role>	Airspace Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity Network En-Route - Medium Complexity

3426

3427 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0001
Title	ASM data exchange
Requirement	ASM support system shall provide interface for ASM data exchange between AMC WOC ATC and NM systems (ETFMS,IFPS,CACD/ADR)
Status	validated
Rationale	Originated ARES change request is exchanged via defined interface which ensures connectivity between reference systems.
Category	Interoperability

3428

3429 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3430

3431 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0002
Title	Standards for ASM data exchange
Requirement	ASM support system shall exchange data in XML format (AIXM5.1)
Status	validated
Rationale	Use of the common XML standard for data exchange ensures semantic interoperability and minimizes the human error
Category	Interoperability

3432

3433 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3434

3435 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0003
Title	Technical means for ASM data exchange
Requirement	ASM support system shall exchange data through SWIM technical profile
Status	validated
Rationale	Originated ARES change request is exchanged via B2B service.
Category	Interoperability

3436

3437 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3438

3439 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0004
Title	ASM data exchange
Requirement	The ASM support systems shall connect to the reference data base (CACD/ADR) ensuring exchange of ASM data on ARES status update or modification
Status	validated
Rationale	Ensure regular update of ADR and consolidated usage of ASM data by all actors concerned
Category	Interoperability

3440

3441 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3442

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0005
Title	Standards for ASM data exchange
Requirement	The ASM support systems and the reference data base (CACD/ADR) shall exchange e-AMI messages using a common format (AIXM 5.1)
Status	validated
Rationale	Use of the common XML standard for data exchange ensures semantic interoperability and minimizes the human error
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0006
Title	Technical means for ASM data exchange
Requirement	The ASM support systems and the reference data base (ADR) shall exchange data through SWIM technical profile.
Status	validated
Rationale	ASM data exchanged between ASM support system and ADR via B2B service in real time.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0007

Title	ASM data exchange
Requirement	The ASM support system shall use UUP mechanism to exchange ARES status with NM system within predefined time frame.
Status	validated
Rationale	Ensures update of NOP with ARES status in execution phase within predefined time interval.
Category	Interoperability

3452

3453 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Refine/Update ARES -> Provide ASM support (AMC)
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3454

3455 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0008
Title	Standards for ASM data exchange
Requirement	The ASM support system shall exchange UUP in AIXM 5.1 format.
Status	validated
Rationale	Use of the common XML standard for data exchange ensures semantic interoperability and minimizes the human error.
Category	Interoperability

3456

3457 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Refine/Update ARES -> Provide ASM support (AMC)
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3458

3459 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0009
Title	Technical means for ASM data exchange
Requirement	ASM support system shall exchange UUP through SWIM technical profile.

Status	validated
Rationale	ASM data exchanged between ASM support system and NM system via B2B service within predefined time interval.
Category	Interoperability

3460

3461 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Refine/Update ARES -> Provide ASM support (AMC)
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3462

3463 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0010
Title	ASM data exchange
Requirement	The ASM support system shall exchange ARES status data with FMP systems in real time.
Status	validated
Rationale	ARES status data exchanged between ASM support system and FMP trigger impact analysis in execution phase.
Category	Interoperability

3464

3465 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3466

3467 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0011
Title	Standards for ASM data exchange
Requirement	The ASM support system shall exchange ARES status data with FMP in AIXM 5.1 format.
Status	in progress

Rationale	Use of the common XML standard for data exchange ensures semantic interoperability and minimizes the human error.
Category	Interoperability

3468

3469 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3470

3471 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0012
Title	Technical means for ASM data exchange
Requirement	ASM support system shall exchange ARES status with FMP through SWIM technical profile.
Status	in progress
Rationale	ARES status exchanged between ASM support system and FMP via B2B service within predefined time interval.
Category	Interoperability

3472

3473 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3474

3475 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0013
Title	ASM data exchange
Requirement	The ASM support systems and the ATC System shall allow for the exchange of data messages to activate / de activate and modify an ARES in real time
Status	validated

Rationale	Real time data exchange facilitates ATCO's awareness on ARES status providing graphical visualization on CWP
Category	Interoperability

3476

3477 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3478

3479 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0014
Title	Standards for ASM data exchange
Requirement	The ASM support and ATC systems shall exchange messages in real time using ADEX-P data format.
Status	validated
Rationale	Use of the legacy standard for data exchange ensures data consistency and quality.
Category	Interoperability

3480

3481 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

3482

3483 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO01.0015
Title	Technical means for ASM data exchange
Requirement	The ASM support and ATC systems shall exchange messages through On-line Data Interchange (OLDI) protocol
Status	validated
Rationale	Use of legacy protocols for data exchange between ASM and ASTC systems

Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Cooperative Airspace Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0001
Title	Submit ARES change request
Requirement	Issuer WOC Intended Addressees Local/Sub-regional Airspace manager Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Refine/Update ARES -> Provide ASM support (AMC)

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0002
Title	Accept ARES change request
Requirement	Issuer Local/Sub-regional Airspace manager Intended Addressees WOC Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

3492

3493 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

3494

3495 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0003
Title	Validate ARES change request

Requirement	Issuer Local/Sub-regional Airspace manager Intended Addressees Local/sub-regional Flow and Capacity mangers Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

3496

3497 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

3498

3499 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0004
Title	Modify ARES

Requirement	Issuer Local/Sub-regional Airspace manager Intended Addressees Local/sub-regional Flow and Capacity mangers Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

3500

3501 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

3502

3503 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0005
Title	Propose changes to AUP

Requirement	Issuer Local/Sub-regional Airspace manager Intended Addressees Local/Sub-regional Flow and capacity managers Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds	Information
Status	validated	
Rationale		
Category	IER	

3504

3505 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

3506

3507 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0006
Title	Submit UUP

Requirement	Issuer Local/Sub-regional Airspace manager Intended Addressees Regional Airspace data manager Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

3508

3509 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

3510

3511 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE01.0007
Title	Receive EUUP

Requirement	Issuer Regional Airspace data manager Intended Addressees Local/sub-regional Airspace manager Flow and Capacity managers Information Element ARES change request Interaction Rules and Policy N/A Content Type Data Periodicity On Demand Safety Criticality Severe Maximum Latency Seconds
Status	validated
Rationale	
Category	IER

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Create AUP/UUP and publish in the NOP -> Update iRMT

4.2 Requirements related to Operational Node Regional ATFCM and Sub-regional/Local ATFCM

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1001
Title	Process iOAT FPL and associated messages in Regional ATFCM
Requirement	The Regional ATFCM shall process iOAT FPL and associated messages.
Status	Validated

Rationale	A single flight plan repository, containing flight plans for civil and military AUs, is a logical evolution for Europe. Flight plan consistency would be easily ensured and the repository should be usable by both civil and military entities as required. In order to support a wider distribution of military flight plans to concerned civil ATS units for handling, coordination or mutual awareness as appropriate, the provision of iOAT FPL to the Regional ATFCM and their further processing and promulgation will be established
Category	Operational

3518

3519 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Validate iSMT
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3520

3521 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1002
Title	Options for filing and submission of iOAT FPL.
Requirement	Regional ATFCM shall provide the same options for filing and submission of iOAT FPL as for civil GAT FPL.
Status	Validated
Rationale	In order to enable military stakeholder an early transition to the new procedures and a phased migration towards new system functionalities, different options for filing and submitting an iOAT FPL need to be offered.
Category	Operational

3522

3523 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT Reception of iOAT FPL Information
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3524

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1003
Title	Distribution of iOAT FPL
Requirement	Regional ATFCM shall distribute all accepted iOAT FPLs and associated messages to all relevant civil and military entities in the IFPZ as today implemented for GAT FPLs.
Status	Validated
Rationale	To ensure the distribution of iOAT FPLs to satisfy civil and military needs.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Distribute iSMT
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1004
Title	iOAT FPL subject to ATM Network rules
Requirement	Regional ATFCM shall apply ATM Network rules (e.g. RAD checking, AIP) to iOAT FPLs to validate their compliance with them within the IFPZ as today for GAT flights.
Status	Validated
Rationale	In general, iOAT FPLs shall comply with the ATM network rules as GAT FPLs. Only where mission needs do not allow, the Exemption policy will apply.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Validate iSMT
<ALLOCATED_TO>	<Role>	Network Manager

<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1005
Title	Exemption from RAD checking shall be applied via RMK/"RTECOOATC" route co-ordinated"
Requirement	Regional ATFCM shall omit RAD checking to iOAT FPLs, which contain in Item 18 RMK/"RTECOOATC"
Status	Validated
Rationale	Specific iOAT FPLs shall not be subject to any ATM route network rules and restrictions. WOC needs to coordinate the trajectory before filing and submission to NM with the concerned ATC units and indicated that this has been done in Item 18 via RMK/"RTECOOATC" to apply exemption policy.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Validate iSMT
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1006
Title	Exemption from ATFCM measure via STS
Requirement	Regional ATFCM shall omit ATFCM measure to iOAT FPLs containing specific STS indicators in Item 18.
Status	Validated
Rationale	Specific iOAT FPLs shall not be subject to any ATFCM measures. WOC needs to insert STS indicator in Item 18 of iOAT FPL" to apply exemption policy.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Validate iSMT
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3540

3541 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP03.1007
Title	Cross check correct ARES data in iOAT FPL
Requirement	Regional ATFCM shall cross check that ARES data in iOAT FPL comply with ARES allocated via ASM process.
Status	Validated
Rationale	Regional ATFCM shall ensure that ARES are permeable for OAT flights only if the airspace volume is identified in the iOAT FPL i.e. the correct ARES identifier is present in Item 15 (Route) of the iOAT FPL.
Category	Operational

3542

3543 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Validate iSMT
<ALLOCATED_TO>	<Role>	Network Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3544

3545 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1001
Title	Data exchange
Requirement	The Regional ATFCM shall provide interface for the data exchange of iOAT FPL and associated messages.
Status	Validated
Rationale	iOAT FPL data exchanged via interface defined by Regional ATFCM that ensures seamless connectivity between systems
Category	Interoperability

3546

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1002
Title	Standards for data exchange
Requirement	The Regional ATFCM shall process all standard data formats (ADEXP, XML) applicable to iOAT FPL and associated messages.
Status	in progress
Rationale	Use of the standard data formats for processing in Regional ATFCM ensures semantic interoperability and facilitates automation.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1003
Title	Technical means for data exchange
Requirement	The Regional ATFCM shall exchange iOAT FPL and associated messages data via SWIM
Status	in progress
Rationale	Use of B2B service facilitates compliance with SWIM technical profile for iOAT FPL data exchange in Regional ATFCM
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1004
Title	Data exchange
Requirement	The Regional ATFCM shall provide interface to all AU for the iOAT FPL filing and submission.
Status	in progress
Rationale	Regional ATFCM provides interface with flight planning tool to all AU for filing and submitting iOAT FPL alike for GAT FPL allowing early validation of iOAT FPL on correctness and compliance with network rules before final submission.
Category	Interoperability

3558

3559 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3560

3561 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1005
Title	Standards for data exchange
Requirement	The Regional ATFCM shall process all standard data formats (ADEXP, XML) applicable to iOAT FPL.
Status	in progress
Rationale	Filing and submitting iOAT FPL through established interface performed in standard data exchange formats in Regional ATFCM
Category	Interoperability

3562

3563 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3564

3565 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1006
Title	Technical means for data exchange
Requirement	Regional ATFCM shall ensure integration of iOAT FPL data for filing and submission via SWIM technical profile
Status	in progress
Rationale	Use of B2B service facilitates compliance with SWIM technical profile for iOAT FPL data exchange in Regional ATFCM
Category	Interoperability

3566

3567 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3568

3569 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IOP03.1007
Title	Data exchange
Requirement	Regional ATFCM shall provide interface for distribution of iOAT FPL and associated messages data alike for GAT FPL
Status	in progress
Rationale	iOAT FPL and associated messages data distributed to all relevant ATM actors through established interface in Regional ATFCM. The established interface allows seamless distribution of the iMT data derived from iOAT FPL and associated messages to all ACCs concerned for processing and integration in local data processing systems
Category	Interoperability

3570

3571 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3572

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1008
Title	Standards for data exchange
Requirement	The Regional ATFCM shall distribute iOAT FPL and associated messages in standard data formats (ADEXP, XML).
Status	in progress
Rationale	Distribution of iOAT FPL through established interface performed in standard data exchange formats in Regional ATFCM
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1009
Title	Technical means for data distribution
Requirement	The Regional ATFCM shall distribute iOAT FPL and associated messages in standard data formats (ADEXP, XML) through SWIM technical profile.
Status	in progress
Rationale	Use of B2B service facilitates compliance with SWIM technical profile for iOAT FPL data distribution in Regional ATFCM
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1010
Title	Data exchange between Regional ATFCM and Sub-Regional/Local ATFCM
Requirement	Regional ATFCM shall provide interface for iMT data exchange between Regional and Sub-Regional/Local ATFCM
Status	in progress
Rationale	Regional ATFCM ensures iMT data exchange with Sub regional/local ATFCM
Category	Interoperability

3582

3583 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3584

3585 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1011
Title	Standards for data exchange
Requirement	The Regional ATFCM shall exchange iMT data in standard data formats (ADEXP, XML).
Status	in progress
Rationale	iMT data exchanged in standard format ensures semantic interoperability and mitigates human error.
Category	Interoperability

3586

3587 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3588

3589 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1012
Title	Technical means for data exchange
Requirement	The Regional ATFCM shall exchange iMT data with Sub regional/national ATFCM through SWIM technical profile.
Status	in progress
Rationale	Use of B2B service facilitates compliance with SWIM technical profile for iMT data exchange
Category	Interoperability

3590

3591 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3592

3593 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1013
Title	Data exchange
Requirement	Regional ATFCM shall provide interface for data exchange between environmental data and flight plan data processing systems.
Status	in progress
Rationale	Regional ATFCM ensures exchange of data to cross check the iOAT FPL data on compliance with environmental database to ensure that
Category	Interoperability

3594

3595 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

3596

3597 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1014

Title	Standards for data exchange
Requirement	The Regional ATFCM shall apply data standards for exchange between environmental data and flight plan data processing systems.
Status	in progress
Rationale	The standards for data exchanged ensure semantic interoperability while cross-checking compliance of iOAT FPL and with environmental data in Regional ATFCM
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.1015
Title	Technical means for data exchange
Requirement	The Regional ATFCM shall ensure exchange of data between environmental data and flight plan data processing systems via SWIM.
Status	in progress
Rationale	Use of SWIM services for data exchange between environmental data and flight plan data processing facilitates compliance with SWIM.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	
<ALLOCATED_TO>	<Functional Block>	

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0004

Title	Reception of Mission Trajectory Data and return of validation status
Requirement	**Regional ATFCM shall be connected to the WOC to receive Mission Trajectory data and answer with validation status.**
Status	in progress
Rationale	iOAT FPL and validation status message exchange between WOC and Regional ATFCM (IFPS) using technologies as defined for the iOAT FPL. V2 validated in SESAR 1 WP7.6.21 IMT Exercise VP-716.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0005
Title	Reception of Mission Trajectory Data and return of validation status
Requirement	**The WOC shall exchange Mission Trajectory data with Regional ATFCM using the iOAT FPL format.**
Status	in progress
Rationale	iOAT FPL and validation status message exchange between WOC and Regional ATFCM (IFPS) using technologies as defined for the iOAT FPL. V2 validated in SESAR 1 WP7.6.21 IMT Exercise VP-716.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0006
Title	Reception of Mission Trajectory Data and return of validation status.
Requirement	**The WOC shall exchange Mission Trajectory data with Regional ATFCM through SWIM technical profile.**

Status	in progress
Rationale	iOAT FPL and validation status message exchange between WOC and Regional ATFCM (IFPS) using technologies as defined for the iOAT FPL. V2 validated in SESAR 1 WP7.6.21 IMT Exercise VP-716.
Category	Interoperability

3614

3615 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

3616

3617 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0007
Title	Provision of Aeronautical information for mission planning
Requirement	The Regional ATFCM shall provide an interface to allow the WOC to connect to get Airspace structure, Airspace planning data, Aeronautical information and NOTAM.
Status	in progress
Rationale	
Category	Interoperability

3618

3619 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

3620

3621 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0008
Title	Provision of Aeronautical information for mission planning
Requirement	**Regional ATFCM shall provide Aeronautical information to WOC through AIXM 5.1 and/or eAMI messages.**
Status	in progress
Rationale	
Category	Interoperability

3622

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO03.0009
Title	Provision of Aeronautical information for mission planning
Requirement	Regional ATFCM shall provide **Aeronautical information to the WOC via SWIM technical profile.**
Status	in progress
Rationale	
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0001
Title	Submission of iOAT FPL
Requirement	Issuer • WOC or ATC in case of FPL revision in execution Intended Addressees • Regional ATFCM Information Element • iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds

Status	in progress
Rationale	
Category	IER

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0002
Title	Provision of Improved OAT FPL validation status
Requirement	Issuer • Regional ATFCM Intended Addressees • WOC Information Element • ACK/REJ/MAN Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Validate iSMT -> Submit iSMT

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0003
Title	Distribution of improved OAT FPL
Requirement	Issuer • Regional ATFCM Intended Addressees • En-Route/Approach ATS(civil military) Information Element • iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Validate iSMT -> Submit iSMT Submit iRMT -> Publish iRMT in the NOP

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0004
Title	STAY airspace

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • STAY ARES in iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3642

3643 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3644

3645 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0005
Title	STAY aerodrome

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM Information Element • STAY aerodrome in iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3646

3647 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3648

3649 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0006
Title	STAY ARES entry & exit

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • ARES entry/exit point name or geo coordination in iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3650

3651 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3652

3653 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0007
Title	Formation

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • Formation information (lead a/c, call signs, number of a/c, WTC) in iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3654

3655 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

3656

3657 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0008
Title	Formation of different A/C

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • ZZZZ Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3658

3659 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3660

3661 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0009
Title	RPAS

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • PIC, Phone number of PIC, flight type "R" in iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3662

3663 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

3664

3665 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0010
Title	Tactical call sign

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • Tactical call sign in field 18 of iOA TFPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3666

3667 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3668

3669 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0011
Title	EUR/OAT

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • EUR/OAT indicator in field 18 iOAT FPL Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3670

3671 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3672

3673 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE03.0012
Title	DCN or FAP for Cross boarder

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM, En-Route/Approach ATS(civil military) Information Element • DCN or FAB indicator in iOAT FPL; i.e. DCN/EATF2013 or FAP/EATF2013 Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3674

3675 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

3676 4.3 Requirements related to Operational Node En-Route/Approach ATS

3677 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0001
Title	Request iRMT Revision
Requirement	The En-Route/Approach ATS shall request an iRMT Revision to the Flight Deck.
Status	in progress
Rationale	The En-Route/Approach ATS within their AOR has to have a possibility for trajectory revision either on its own initiative or on behalf of WOC. The activity includes provision of clearances and adjustment of trajectories in accordance with the actual traffic situation, ATM constrains, unexpected deviations from reference trajectory and for Safety reasons

Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Request iRMT Revision
<ALLOCATED_TO>	<Role>	ATC Sector Executive Controller ACC/Approach Supervisor ATC Sector Planning Controller Multi-Sector Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity TMA - High Complexity

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0002
Title	Downstream ATS to the Flight
Requirement	Situational awareness to the Downstream En-Route/Approach ATS shall be provided about any updates to iRMT.
Status	in progress
Rationale	The En-Route/Approach ATS contributing to tactical situational awareness to downstream ATSU about the update/revision of the iRMT whenever tactical clearances or instructions may influence the transfer conditions.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Downstream ATS to the Flight
<ALLOCATED_TO>	<Role>	ATC Sector Executive Controller ATC Sector Planning Controller
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity TMA - High Complexity

3685 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0003
Title	Revise iRMT
Requirement	The En-Route/Approach ATS shall have a possibility to revise iRMT.
Status	in progress
Rationale	The En-Route/Approach ATS need a possibility to provide iRMT revision process. When the revision is terminated the En-Route/Approach ATS informs all ATM actors concerned without delay, including Regional ATFCM with an ATC Flight Plan Proposal (AFP) message, containing the revised iRMT information. The Flight Plan Update Message (FUM) is distributed by the Regional ATFCM to the concerned ATCU accordingly. Further on, the recalculated trajectory will be used to update the traffic flow information.
Category	Operational

3686

3687 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Revise iRMT
<ALLOCATED_TO>	<Role>	ATC Sector Executive Controller ATC Sector Planning Controller Local Traffic Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity En-Route - High Complexity

3688

3689 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0004
Title	Monitor trajectories and assess traffic situation
Requirement	The En-Route/Approach ATS shall assess and monitor conformance of Mission Trajectory.
Status	in progress

Rationale	The En-Route/Approach ATS shall constantly focus on conformance monitoring and traffic optimisation, as well as on preventing, detecting and resolving conflicts in the respective AoR. It is also continuously detecting the deviations between the current position of an aircraft and ground reference trajectory based on the latest available surveillance data. This activity also includes monitoring of the real-time update of ARES status and adherence to the estimated elapsed time over ARES Entry/Exit points
Category	Operational

3690

3691 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Monitor trajectories and assess traffic situation
<ALLOCATED_TO>	<Role>	ATC Sector Executive Controller ATC Sector Planning Controller Local Traffic Manager Multi-Sector Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	TMA - High Complexity En-Route - High Complexity

3692

3693 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0005
Title	Assess AoR impact
Requirement	The En-Route/Approach ATS shall constantly assessing traffic situation within their AoR.
Status	in progress
Rationale	The En-Route/Approach ATS in close collaboration with local/regional and neighbouring ATFCM shall assess impact within their AOR caused by traffic situation, ARES activations or any other operational impact and ATM constrains.
Category	Operational

3694

3695 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Assess AoR Impact

<ALLOCATED_TO>	<Role>	ACC/Approach Supervisor Local Traffic Manager Flight Data Operator ATC Sector Planning Controller Multi-Sector Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3696

3697 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.0006
Title	Reception of the validated iSMT/iRMT
Requirement	The En-Route/Approach ATS shall receive from Regional ATFCM iSMT/iRMT data based on latest validated iOAT FPL information (including modification messages) in order to allocate and manage the trajectories within respective AoR in execution phase via SWIM technical profile.
Status	in progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data for flights monitoring conflict resolutions (when activated) and impact assessment. The ACC/APP supervisor and ATC Sector Planning Controller shall receive all relevant data including required ARES and RBT/RMT positions and intentions within their AOR. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation. The iSMT/iRMT data are also used by Sub-regional/local ATFCM for impact assessment of AoR. iOAT FPL information with reference to Harmonised iOAT Guidelines Volume 2 release should be validated by ATC.
Category	Operational

3698

3699 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Reception of the validated iSMT/iRMT
<ALLOCATED_TO>	<Role>	Flight Data Operator Local Traffic Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3700 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.1001
Title	Develop (Process) iMT with up to 9 VPA modules
Requirement	The ATC shall receive, process and develop requested iMT including demanded ARES configuration
Status	In progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data including demanded ARES configuration as a combination of up to nine predefined VPA modules under one STAY indicator. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	<Operational>

3701

3702 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Local Traffic Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3703

3704 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.1002
Title	Develop (Process) iMT referring to ad hoc ASM scenario
Requirement	The ATC shall receive, process and develop requested iMT including demanded ARES configuration as ad-hoc ASM scenario with predefined ID.
Status	In progress

Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data including demanded ARES configuration as an ad-hoc ASM scenario with predefined ID under one STAY indicator. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	<Operational>

3705

3706 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Local Traffic Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3707

3708 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.1003
Title	Develop (Process) iMT with flexible entry/exit points
Requirement	The ATC shall receive, process and develop requested iMT including the ARES flexible parameters in iMT profile description.
Status	In progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data including the ARES entry/exit points either as predefined Waypoints or geographical lat/long coordinates with associated flight levels and time values. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	<Operational>

3709

3710 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Local Traffic Manager

<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3711

3712 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.1004
Title	Develop (Process) iMT without indication of GAT or OAT segments
Requirement	The ATC shall receive, to process and develop requested iMT profile irrespective of the GAT or OAT segments.
Status	In progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these iMT even without indication of the GAT or OAT route segments. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	<Operational>

3713

3714 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Local Traffic Manager
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3715

3716 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP02.1005
Title	Route coordination for Non Standard Flights (NSF) exemption
Requirement	The ATC shall provide arrangements for NSF with WOC (AU).
Status	In progress
Rationale	In an exceptional cases when iOAT FPL shall not be subject to any ATM route network rules and restrictions due to the WOC mission objectives an agreement for NSF exemption need to be achieved with the ATC. WOC needs to coordinate the trajectory before filing and submission to NM with the concerned ATC units and indicated that this has been done in Item 18 via RMK/"RTECOOATC" to apply exemption policy.
Category	<Operational>

3717

3718 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	TBD (respective ATC unit)
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3719

3720 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0001
Title	Request iRMT Revision
Requirement	En-Route / Approach ATS shall be connected via Ground to Air to the Flight Deck to monitor/control the flight and negotiate potential iRMT revisions.
Status	in progress
Rationale	The En-Route/Approach ATS controller starts the CDM process with Flight Deck to negotiate their change needs for iRMT Revision. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

3721

3722 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Request iRMT Revision -> Assess Mission Impact
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication

3723

3724 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0002
Title	Request iRMT Revision
Requirement	En-Route / Approach ATS shall communicate iRMT Revision Request (Mission data update(s)) to the Flight Deck with standard phraseology (via voice) and negotiate potential iRMT revisions if necessary.

Status	in progress
Rationale	Flight Crew assessed the mission impact and confirms that the iRMT revision request is accepted (the mission objectives can be achieved) and the A/C will follow it. If not, CDM process with proposals can be issued to ATCO. In case of unaccepted iRMT revision request the FC can reject it. Neither acceptation nor rejection of iRMT request may result in mission cancelation. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

3725

3726 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Request iRMT Revision -> Assess Mission Impact
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication

3727

3728 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0003
Title	Request iRMT Revision
Requirement	En-Route / Approach ATS shall send Mission data update(s) to the Flight Deck with standard ATCO/pilot phraseology (voice) and negotiate potential iRMT revisions.
Status	in progress

Rationale	Flight Crew assessed the mission impact and confirms that the iRMT revision request is accepted (the mission objectives can be achieved) and the A/C will follow it. If not, CDM process with proposals can be issued to ATCO. In case of unaccepted iRMT revision request the FC can reject it. Neither acceptation nor rejection of iRMT request may result in mission cancelation. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

3729

3730 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Request iRMT Revision -> Assess Mission Impact
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication

3731

3732 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0004
Title	Revise iRMT
Requirement	iRMT revision to the Flight Crew shall be transmitted via Ground to Air voice communication. For other relevant iRMT users see Revision of Mission Trajectory data.
Status	in progress
Rationale	When Flight Crew assessed the mission impact and accepted iRMT revision request. ATCO controlling the flight shall revise iRMT and the ATM system is updated. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

3733

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Execute the Mission
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication Flight Plan - Lifecycle Mgt - Data Distribution

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0005
Title	Revise iRMT
Requirement	iRMT revision to the Flight deck shall be transmitted via Ground to Air radio voice communication using standard ATCO/pilot phraseology. For other relevant iRMT users see Revision of Mission Trajectory data.
Status	in progress
Rationale	When Flight Crew assessed the mission impact and accepted iRMT revision request. ATCO controlling the flight shall revise iRMT and the ATM system is updated. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Execute the Mission
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication Flight Plan - Lifecycle Mgt - Data Distribution

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0006
Title	Revise iRMT

Requirement	iRMT revision to the Flight deck shall be transmitted via Ground to Air radio voice communication using standard ATCO/pilot phraseology. For other relevant iRMT users see Revision of Mission Trajectory data.
Status	in progress
Rationale	When Flight Crew assessed the mission impact and accepted iRMT revision request. ATCO controlling the flight shall revise iRMT and the ATM system is updated. Communication from ATS to State AU A/C is not in Scope of SESAR 2020 PJ.07-03.
Category	Interoperability

3741

3742 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Execute the Mission
<ALLOCATED_TO>	<Functional Block>	Air-Ground Voice Communication Flight Plan - Lifecycle Mgt - Data Distribution

3743

3744 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0007
Title	Downstream ATS to the Flight
Requirement	En-Route / Approach ATS shall be connected to all relevant ATM Nodes for iRMT Revisions distribution information exchange.
Status	in progress
Rationale	The ATS shall have a possibility to revise iRMT within their AOR and via Ground to Ground communication to distribute the revised iRMT to all relevant actors (including neighbouring ATS units).
Category	Interoperability

3745

3746 [REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Downstreem ATS to the flight
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications

3747

3748 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0008
Title	Downstream ATS to the Flight
Requirement	En-Route / Approach ATS shall be connected to all relevant ATM Nodes for iRMT Revisions distribution information exchange. For any possible updates ADEXP/OLDI standards are used.
Status	in progress
Rationale	The ATS shall have a possibility to revise iRMT within their AOR and via Ground to Ground communication to distribute the revised iRMT to all relevant actors (including neighbouring ATS units).
Category	Interoperability

3749

3750 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Downstreem ATS to the flight
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications

3751

3752 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0009
Title	Downstream ATS to the Flight
Requirement	En-Route / Approach ATS shall be connected to all relevant ATM Nodes for iRMT Revisions distribution information exchange during execution phase. Possible updates through SWIM technical profile.
Status	in progress
Rationale	The ATS shall have a possibility to revise iRMT within their AOR and via Ground to Ground communication to distribute the revised iRMT to all relevant actors (including neighbouring ATS units).
Category	Interoperability

3753

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Downstreem ATS to the flight
<ALLOCATED_TO>	<Functional Block>	Flight Plan - Lifecycle Mgt - Data Distribution

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0010
Title	Reception of iOAT FPL information
Requirement	En-Route / Approach ATS shall be connected to receive iOAT FPL Mission Trajectory Data (iSMT/iRMT) and modification messages from Regional ATFCM.
Status	in progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data for flight impact assessment. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Publish iRMT in the NOP -> Reception of iOAT FPL information (and updates)
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications Flight Plan - Lifecycle Mgt - Data Distribution

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0011
Title	Reception of iOAT FPL information
Requirement	En-Route / Approach ATS shall be connected to receive iOAT FPL Mission Trajectory Data (iSMT/iRMT) and modification messages from Regional ATFCM using improved OAT Flight Plan format.
Status	in progress

Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data for flight impact assessment. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	Interoperability

3761

3762 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Publish iRMT in the NOP -> Reception of iOAT FPL information (and updates)
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications Flight Plan - Lifecycle Mgt - Data Distribution

3763

3764 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0012
Title	Reception of iOAT FPL information
Requirement	En-Route / Approach ATS shall be connected to receive iOAT FPL Mission Trajectory Data (iSMT/iRMT) and modification messages from Regional ATFCM via SWIM technical profile.
Status	in progress
Rationale	iOAT FPL information based on validated latest available Mission Trajectory data shall be distributed from Regional ATFCM to all relevant users. ATS shall receive and process these data for flight impact assessment. The Sub-regional/local ATFCM shall receive all data within their AOR/AOI for impact assessment and flow regulation.
Category	Interoperability

3765

3766 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Publish iRMT in the NOP -> Reception of iOAT FPL information (and updates)
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications Flight Plan - Lifecycle Mgt - Data Distribution

3767

3768 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0013
Title	Environmental data reception
Requirement	En-Route / Approach ATS shall be connected to Sub-Regional/Local ATFCM to receive environmental constrains.
Status	in progress
Rationale	Environmental constrains shall be distributed from Regional ATFCM to Sub-regional/local ATFCM for impact assessment and flow regulation. ATS shall receive and process these data for impact assessment and environmental constrains.
Category	Interoperability

3769

3770 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Distribute iSMT -> Reception of iOAT FPL information
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications

3771

3772 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0014
Title	Environmental data reception
Requirement	En-Route / Approach ATS shall be connected to Sub-Regional/Local ATFCM to receive environmental constrains (e.g. RAD, FUA/EU restrictions) in standard format.
Status	in progress
Rationale	Environmental constrains shall be distributed from Regional ATFCM to Sub-regional/local ATFCM for impact assessment and flow regulation. ATS shall receive and process these data for impact assessment and environmental constrains.
Category	Interoperability

3773

3774 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Distribute iSMT -> Reception of iOAT FPL information

<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications

3775

3776 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0015
Title	Environmental data reception
Requirement	En-Route / Approach ATS shall be connected to Sub-Regional/Local ATFCM to receive environmental constrains (e.g. RAD, FUA/EU restrictions) through SWIM technical profile (final operational capability).
Status	in progress
Rationale	Environmental constrains shall be distributed from Regional ATFCM to Sub-regional/local ATFCM for impact assessment and flow regulation. ATS shall receive and process these data for impact assessment and environmental constrains.
Category	Interoperability

3777

3778 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Distribute iSMT -> Reception of iOAT FPL information
<ALLOCATED_TO>	<Functional Block>	Legacy Ground-Ground Datalink Communications

3779

3780 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0016
Title	Revision of Mission Trajectory data
Requirement	The En-Route/Approach ATS shall connect to relevant systems to exchange initial Reference Mission Trajectory data including updates and revisions.
Status	in progress
Rationale	During execution phase of the flight, the En-Route/Approach ATS will exchange Reference Mission Trajectory data including iRMT Revision Requests and iRMT Revisions with all concerned parties.
Category	Interoperability

3781

3782 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Functional Block>	Flight Plan - Lifecycle Mgt - Data Distribution

3783

3784 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0017
Title	Revision of Mission Trajectory data
Requirement	The En-Route/Approach ATS shall exchange initial Reference Mission Trajectory data including updates and revisions. During transition for any trajectory updates ADEXP/OLDI standards are used.
Status	in progress
Rationale	During execution phase of the flight, the En-Route/Approach ATS will exchange Reference Mission Trajectory data including iRMT Revision Requests and iRMT Revisions with relevant systems. The Flight data are sent via BFD and CFD messages by En-Route/Approach ATS. Currently Change request is sent from WOC to En-Route/Approach ATS via iOAT FPL "CHG" message. The use of iOAT FPL format for exchange of revised mission trajectory between En-Route ATS and WOC is under investigation.
Category	Interoperability

3785

3786 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Functional Block>	Flight Plan - Lifecycle Mgt - Data Distribution

3787

3788 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0018
Title	Revision of Mission Trajectory data
Requirement	The En-Route/Approach ATS shall exchange initial Reference Mission Trajectory data including updates and revisions with WOC. During transition for any possible updates ADEXP/OLDI standards are used. Possible research goal is B2B standard.
Status	in progress

Rationale	During execution phase of the flight, the En-Route/Approach ATS will exchange Reference Mission Trajectory data including iRMT Revision Requests and iRMT Revisions with relevant systems. The Flight data are sent via BFD and CFD messages by En-Route/Approach ATS to WOC. Change request is currently sent from WOC to En-Route/Approach ATS via iOAT FPL "CHG" message. The use of iOAT FPL format for exchange of revised mission trajectory between En-Route ATS and WOC is under investigation.
Category	Interoperability

3789

3790 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Functional Block>	Flight Plan - Lifecycle Mgt - Data Distribution

3791

3792 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0019
Title	Surveillance data for mission monitoring
Requirement	The En-Route/Approach ATS shall connect to WOC to send surveillance data during execution phase.
Status	in progress
Rationale	The WOC shall be connected to ATS to receive surveillance data for monitoring the mission.
Category	Interoperability

3793

3794 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor trajectories and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3795

3796 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0020
Title	Surveillance data for mission monitoring

Requirement	The En-Route/Approach ATS shall send surveillance data (track data such as position, heading, speed, Mode S information) to WOC using ASTERIX CAT062 Standard.
Status	in progress
Rationale	WOC shall be sent surveillance data so to be able to monitor mission.
Category	Interoperability

3797

3798 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor trajectories and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3799

3800 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO02.0021
Title	Surveillance data for mission monitoring
Requirement	The WOC shall receive surveillance data (track data such as position, heading, speed, Mode S information) from En-Route/Approach ATS via SWIM technical profile.
Status	in progress
Rationale	The transmission of information between WOC and En-Route/Approach ATS for surveillance information shall be through a B2B SWIM profile. Currently this will be realised via UDP Unicast.
Category	Interoperability

3801

3802 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor trajectories and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3803

3804 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE02.0001

Title	iSMT - (Reception of Improved OAT-FPL information)
Requirement	Issuer • Regional ATFCM (NMOC/IFPS) Intended Addressees • Relevant civil & military (ATM, ATC) entities Information Element • ATM Constraints • ATM Environment • Special Events (iOAT-FPL) Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 • On Demand Safety Criticality • severe Maximum Latency • Minutes (seconds)
Status	in progress
Rationale	
Category	IER

3805

3806 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Distribute iSMT -> Reception of iOAT FPL information Publish iRMT in the NOP -> Reception of iOAT FPL information (and updates)

3807

3808 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE02.0002
Title	iRMT (Update of filed iOAT FPL information)

Requirement	Issuer • Regional ATFCM (NMOC/IFPS) Intended Addressees • Relevant civil & military (ATM, ATC) entities Information Element • ATM Constraints • ATM Environment • Special Events (iOAT-FPL) Interaction Rules and Policy • N/A Content Type • Data Periodicity • 24/24 • On Demand Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3809

3810 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Downstreem ATS to the flight Revise iRMT -> Monitor Actual Mission Trajectory and Update RMT accordingly Revise iRMT -> Monitor Mission

3811

3812 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE02.0003
Title	Send iRMT Revision Request

Requirement	Issuer • EN-Route/Approach ATS Intended Addressees • Flight Deck Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Voice Periodicity • On Demand Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3813

3814 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Request iRMT Revision -> Assess Mission Impact Assess Mission Impact -> Revise iRMT

3815

3816 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE02.0004
Title	Send iRMT Revision

Requirement	Issuer • EN-Route/Approach ATS Intended Addressees • Flight Deck and Relevant civil & military (ATM, ATC, WOC, AD/C2) entities Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Voice/Data Periodicity • 24/24 Safety Criticality • severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

3817

3818 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Execute the Mission Revise iRMT -> Downstreem ATS to the flight Revise iRMT -> Monitor Mission

3819

3820

3821 4.4 Requirements related to Operational Node WOC

3822 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1001
Title	Develop iMT
Requirement	The WOC shall be able to define the ARES configuration as a combination of up to nine predefined VPA modules.
Status	In progress

Rationale	The WOC Mission planner integrates the ARES configuration as a combination of nine VPA modules under one STAY indicator into iOAT FPL in accordance with defined rules and procedures for iOAT FPL filing.
Category	<Operational>

3823

3824 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3825

3826 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1002
Title	Develop iMT
Requirement	The WOC shall be able to define the ARES configuration as ad hoc ASM scenario with pre-defined ID.
Status	In progress
Rationale	The WOC Mission planner integrates the ARES configuration, as ad hoc ASM scenario, under one STAY indicator into iOAT FPL in accordance with defined rules and procedures for iOAT FPL filing.
Category	<Operational>

3827

3828 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3829

3830 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1003
Title	Develop iMT

Requirement	The WOC shall be able to integrate the ARES flexible parameters in iMT profile description.
Status	In progress
Rationale	The WOC Mission planner integrates the ARES entry/exit points either as predefined Waypoints or geographical **lat. /long coordinates** with associated flight levels and time values into iOAT FPL in accordance with defined rules and procedures for iOAT FPL filing.
Category	<Operational>

3831

3832 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3833

3834 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1004
Title	Develop iMT
Requirement	The WOC shall be able to define the iMT profile irrespective of the GAT or OAT segments and submit it to Regional ATFCM.
Status	In progress
Rationale	The WOC Mission planner integrates into iOAT FPL the defined iMT profile as 2D route with requested flight levels/altitude without indication on the GAT or OAT segments of entire trajectory.
Category	<Operational>

3835

3836 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner

<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3837

3838 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1005
Title	Submit iSMT
Requirement	The WOC shall pre-validate filed iOAT FPL through the NM validation mechanism before final submission
Status	In progress
Rationale	The WOC Mission planner uses the pre-validation mechanism on the NM NOP portal to ensure that iOAT FPL is semantically correct and possible mistakes, if any, are detected. The corrected iOAT FPL then submitted to Regional ATFCM.
Category	<Operational>

3839

3840 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3841

3842 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1006
Title	Submit iSMT
requirement	The WOC shall negotiate with respective ATC the allocation of the trajectory profile before submission to Regional ATFCM
Status	In progress
Rationale	The WOC Mission planner enters in negotiation with respective ATC on 3D trajectory profile allocation that is conflicting with IFPS restrictions. After reaching agreement with ATC, the mission planner files iOAT FPL with text: “Route coordinated with ATC” before submission to Regional ATFCM.

Category	<Operational>

3843

3844 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3845

3846 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1007
Title	Submit iSMT
Requirement	The WOC shall be able to extract the trajectory 4D profile and share it with Regional ATFCM on demand in readable format.
Status	In progress
Rationale	The WOC Mission planner extracts the 4D profile from the Mission support system in appropriate readable format and share it with to Regional ATFCM on demand
Category	<Operational>

3847

3848 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3849

3850 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.1008
Title	Submit iSMT

Requirement	The WOC shall apply special indicators in the dedicated iOAT FPL subfields for trajectories exempted from restrictions and regulations.
Status	In progress
Rationale	The WOC Mission planner indicates in the iOAT FPL dedicated subfield the exemptions, which apply to the particular mission type hence mitigating negative effect of the restrictions and regulations on the mission during validation of the trajectories in Regional ATFCM systems.
Category	<Operational>

3851

3852 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3853

3854 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0001
Title	Development of Mission Trajectory
Requirement	The Mission Planner in the WOC shall create Mission Trajectory data that contains 4D information of the planned route.
Status	validated
Rationale	Mission Trajectory data consists out of - airspace reservation, - planned Flight-Route-Information. This request(s) should be shared to enhance predictability. It is of benefit for the network and accommodation of airspace needs to all Airspace Users. The long/medium term / early flight intent together with the Airspace reservation is the representation of the SIMT. The initial Mission Trajectory is shared via iOAT FPL (iOAT FPL). V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Operational

3855

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

[REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0002
Title	Access to Aeronautical Information
Requirement	The Mission Planner in the WOC shall use latest validated aeronautical information with contribution of AIS Dynamic Data Operator to update Mission Trajectory data.
Status	validated
Rationale	The aeronautical information shall be used by the Mission Planner when creating the mission trajectory to enhance mission planning quality. Aeronautical information shall include static and dynamic data such as: EAD: - AIP - NOTAM/SNOWTAM/BIRDTAM/ASHTAM CACD: - Information on Availability of CDRs - Information on ARES - ATFCM information AIS (Aeronautical Information Service) might be used. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Operational

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	Mission Planner AIS Dynamic Data Operator

<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3861

3862 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0003
Title	Access to Meteorological Data (weather forecast)
Requirement	The Mission Planner in the WOC shall use topical meteorological information with contribution of MET Data Operator to update Mission Trajectory data.
Status	in progress
Rationale	Communication from METEO to WOC is not in scope of SESAR 2020. The meteorological information contributed by MET Data Operator shall be used by the Mission Planner when creating the mission trajectory to enhance mission planning quality.
Category	Operational

3863

3864 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT
<ALLOCATED_TO>	<Role>	MET Data Operator Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3865

3866 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0004
Title	Submission of iSMT
Requirement	The Flight Data Operator in the WOC shall submit the iSMT based on latest available Mission Trajectory data to the Regional ATFCM.
Status	in progress
Rationale	The iOAT FPL shall be filed to the NM. Preferably via a B2B service to the NM using XML format. Alternative formats may also exist. V2 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Operational

3867

3868 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3869

3870 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0005
Title	Update a submitted iSMT
Requirement	If changes to the content of a submitted initial Shared Mission Trajectory are needed, the Flight Data Operator shall submit updated initial Shared Mission Trajectory to Regional ATFCM.
Status	in progress
Rationale	These messages may include UPD, DLA, and CNL. Conditions for transmission of these messages are defined by ICAO/AIP. If an iOAT FPL includes ARES data to be modified (e.g. timeframe), the CDM process for ARES needs to be conducted first. V2 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Operational

3871

3872 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3873

3874 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0006

Title	Transition iSMT to iRMT
Requirement	If conditions for transition from initial Shared Mission Trajectory to initial Referenced Mission Trajectory are met, the Flight Data Operator in the WOC shall submit the initial Referenced Mission Trajectory to Regional ATFCM.
Status	in progress
Rationale	The transition from iSMT to iRMT is pronounced via improved OAT FPL update message to NM.
Category	Operational

3875

3876 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iRMT
<ALLOCATED_TO>	<Role>	Flight Data Operator Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3877

3878 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0007
Title	Mission Monitoring of the executed Mission Trajectory
Requirement	The Mission Observer in the WOC shall monitor the execution of the Mission Trajectory continuously to detect a deviation between the current position of the aircraft and the planned route based on latest available 4D Mission Trajectory data.
Status	validated
Rationale	To detect deviations between planning and executed mission trajectories, the continuous availability aircraft positions during mission execution is mandatory. It is assumed that this information is available from other State Airspace User systems (e.g. Air Defence) or civil ATC. Real-time ARES status information is also part of the monitoring in the WOC. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Operational

3879

3880 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Monitor Mission
<ALLOCATED_TO>	<Role>	Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3881

3882 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0008
Title	Update Mission Trajectory data of the executed Mission
Requirement	The Mission Observer in the WOC shall monitor the execution of the Mission Trajectory to detect deviation between the current position of the aircraft and the initial Referenced Mission Trajectory based on updated Flight Data from En-Route/Approach ATS.
Status	in progress
Rationale	WOC uses updated Flight Data from En-Route/Approach ATS after ATC or Flight Deck triggered iRMT Revision to use accurate 4D mission trajectory data for monitoring the mission.
Category	Operational

3883

3884 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Monitor Mission
<ALLOCATED_TO>	<Role>	Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3885

3886 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0009
Title	Update Mission data of the executed Mission
Requirement	If initial Referenced Mission Trajectory is revised, the Mission Observer in the WOC shall provide the Flight Deck with updated mission data based on Mission Trajectory data.
Status	in progress

Rationale	The WOC has to inform the Flight Crew about modified mission data using State AU internal communication means to ensure the awareness of the Flight Crew for upcoming ATC instructions.
Category	Operational

3887

3888 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Monitor Mission
<ALLOCATED_TO>	<Role>	Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3889

3890 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0010
Title	Trajectory Revision after Reference Allocation of ARES
Requirement	If the Mission Planner in the WOC needs to modify the reference allocated ARES, the Mission Planner shall initiate CDM with Sub-regional/National ASM.
Status	in progress
Rationale	When the ARES is “reference allocated” and the NOP is updated, the iOAT FPL can be filed. If the State Airspace User needs changes concerning the ARES allocation or the improved Flight Plan after that point in time, a new CDM process starts (e.g. via the ASM Support System). Details on the CDM definition can be found in the related SESAR 1 documents.
Category	Operational

3891

3892 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Refine/Update ARES Analyse and update ARES change proposal
<ALLOCATED_TO>	<Role>	Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3893

3894 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0011
Title	Update of iRMT
Requirement	If revision of an initial Referenced Mission Trajectory is needed, the Flight Data Operator in the WOC shall update the Mission Trajectory data.
Status	in progress
Rationale	Based on the Change need by the WOC the Mission Trajectory is re-calculated by utilizing the Mission Support System.
Category	Operational

3895

3896 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Update iRMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3897

3898 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0012
Title	Request for iRMT Revision
Requirement	The Flight Data Operator in the WOC shall submit the initial Referenced Mission Trajectory Revision Request based on latest available Mission Trajectory data to En-Route/Approach ATS.
Status	in progress
Rationale	WOC starts the CDM process with En-Route/Approach ATS to negotiation its change needs for iRMT Revision.
Category	Operational

3899

3900 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iRMT
<ALLOCATED_TO>	<Role>	Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3901

3902 [REQ]

Identifier	REQ-07.03-SPRINTEROP-OP04.0013
Title	Abort a Mission
Requirement	If Mission objectives cannot be met, the Mission Observer shall initiate Mission Abortion.
Status	in progress
Rationale	A mission can be aborted and the mission can be ordered to return to base if the intended mission objectives cannot be met anymore, e.g. extension of Air-to-Air-Refuelling mission of a tanker A/C for a delayed fighter mission. The mission abortion is ordered to the Flight Crew using State AU internal communication means.
Category	Operational

3903

3904 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Abort Mission
<ALLOCATED_TO>	<Role>	Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

3905

3906 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0001
Title	Mission Data update Ground to Air
Requirement	The WOC shall be connected to the Flight Deck to send Mission data update.
Status	in progress
Rationale	Communication from WOC to State AU A/C is not in scope of SESAR 2020. The WOC is in the loop to receive aircraft position during execution. The role can be monitoring only, and may be assistant to the Flight Crew by proposing a revised trajectory if needed.
Category	Interoperability

3907

3908 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor Mission -> Execute Mission Abort Mission -> Execute Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3909

3910 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0002
Title	Mission Data update Ground to Air
Requirement	The WOC shall send Mission data update to the Flight Deck with standard phraseology.
Status	in progress
Rationale	Communication from WOC to State AU A/C is not in Scope of SESAR 2020 PJ.07-03. Currently State AU A/Cs must not be equipped with data communication to update mission data online. Hence the flight crew has to be informed via voice communication.
Category	Interoperability

3911

3912 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor Mission -> Execute Mission Abort Mission -> Execute Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3913

3914 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0003
Title	Mission Data update Ground to Air
Requirement	The WOC shall send Mission data update to the Flight Deck via State AU internal communication means.
Status	in progress
Rationale	Communication from WOC to State AU A/C is not in scope of SESAR 2020.
Category	Interoperability

3915

3916 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Abort Mission -> Execute Mission Monitor Mission -> Execute Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3917

3918 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0004
Title	METEO information for mission planning
Requirement	The WOC shall connect to the Meteorological Service Provider to retrieve METEO data.
Status	in progress
Rationale	Communication from METEO to WOC is not in scope of SESAR 2020. The WOC uses METEO data for mission planning.
Category	Interoperability

3919

3920 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide weather information -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Flight Planning Information and Communication Management Flight Data support Management

3921

3922 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0005
Title	METEO information for mission planning
Requirement	The WOC shall retrieve weather information from the Meteorological Service Provider using the WXXM standard.
Status	in progress

Rationale	Communication from METEO to WOC is not in scope of SESAR 2020. The WOC uses METEO data for mission planning.
Category	Interoperability

3923

3924 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide weather information -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Planning Flight Data support Management

3925

3926 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0006
Title	METEO information for mission planning
Requirement	The WOC shall retrieve weather information from the Meteorological Service Provider via Internet.
Status	in progress
Rationale	Communication from METEO to WOC is not in scope of SESAR 2020. The WOC uses METEO data for mission planning.
Category	Interoperability

3927

3928 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide weather information -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Planning Flight Data support Management

3929

3930 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0007
Title	Revision of Mission Trajectory data

Requirement	The WOC shall be connected to En-Route/Approach ATS to exchange initial Referenced Mission Trajectory data during execution phase.
Status	in progress
Rationale	The WOC exchanges flight data in execution phase with En-Route/Approach ATS to keep the trajectory data up to date for mission monitoring purposes.
Category	Interoperability

3931

3932 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iRMT -> Assess AoR Impact Assess AoR Impact -> Submit iRMT Revise iRMT -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Planning Flight Operations Management

3933

3934 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0008
Title	Revision of Mission Trajectory data
Requirement	The WOC shall exchange initial Referenced Mission Trajectory data with En-Route/Approach ATS using ADEXP/OLDI format.
Status	in progress
Rationale	During execution, the WOC will exchange iRMT Revisions and iRMT Revision Requests with En-Route/Approach ATS. The Flight data are sent via BFD and CFD messages by En-Route/Approach ATS to WOC. Change request will be sent from WOC to En-Route/Approach ATS via iOAT FPL change message. The use of iOAT FPL format for exchange of revised mission trajectory between En-Route ATS and WOC is under investigation.
Category	Interoperability

3935

3936 [REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Assess AoR Impact -> Submit iRMT Submit iRMT -> Assess AoR Impact Revise iRMT -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Planning Flight Operations Management

3937

3938 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0009
Title	Revision of Mission Trajectory data
Requirement	The WOC shall exchange initial Referenced Mission Trajectory data with En-Route/Approach ATS via AFTN.
Status	in progress
Rationale	The exchange of flight data by iOAT FPL format between WOC and En-Route/Approach ATS will be done through AFTN until B2B SWIM profile is established.
Category	Interoperability

3939

3940 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iRMT -> Assess AoR Impact Revise iRMT -> Monitor Mission Assess AoR Impact -> Submit iRMT
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management Flight Planning

3941

3942 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0010
Title	Surveillance data for mission monitoring
Requirement	The WOC shall be connected to En-Route/Approach ATS to receive surveillance data during execution phase.
Status	in progress
Rationale	The WOC receives surveillance data for monitoring the mission.

Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor aircraft and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0011
Title	Surveillance data for mission monitoring
Requirement	The WOC shall receive surveillance data (track data such as position, heading, speed, Mode S information) from En-Route/Approach ATS using ASTERIX CAT062 standard.
Status	in progress
Rationale	During execution, the WOC will receive ATM coordination information (as position, flight status) from En-Route/Approach ATS.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor aircraft and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0012
Title	Surveillance data for mission monitoring
Requirement	The WOC shall receive surveillance data (track data such as position, heading, speed, Mode S information) from En-Route/Approach ATS via SWIM technical profile.
Status	in progress

Rationale	The transmission of information between WOC and En-Route/Approach ATS for surveillance information shall be through a B2B SWIM profile. Currently this will be realised via UDP unicast.
Category	Interoperability

3951

3952 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor aircraft and assess traffic situation -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management

3953

3954 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0013
Title	Aeronautical information for mission planning
Requirement	The WOC shall be connected to the Regional ATFCM to get Airspace structure, Airspace planning data, Aeronautical information and NOTAM.
Status	validated
Rationale	For planning, negotiation and execution, Airspace and Aeronautical data will be used to plan a mission, and to allocate a suitable ARES. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3955

3956 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Data support Management Flight Planning

3957

3958 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0014
Title	Aeronautical information for mission planning

Requirement	The WOC shall receive Aeronautical information from the Regional ATFCM through AIXM 5.1 and/or eAMI messages.
Status	validated
Rationale	Common format for data exchange with Regional ATFCM (ADR). V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3959

3960 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Data support Management Flight Planning

3961

3962 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0015
Title	Aeronautical information for mission planning
Requirement	The WOC shall receive Aeronautical information from Regional ATFCM via SWIM technical profile.
Status	validated
Rationale	Common format for data exchange with Regional ATFCM (ADR). Using SWIM profile anticipates using the SWIM infrastructure for transmission. B2B Web services are used as the available SWIM implementation in SESAR 2020 Wave 1. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3963

3964 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB -> Create/Update iSMT

<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Data support Management Flight Planning

3965

3966 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0016
Title	Aeronautical information for mission planning
Requirement	The WOC may receive Aeronautical information from Regional ATFCM via the PENS infrastructure.
Status	validated
Rationale	Backup or fall back for SWIM profile. Utilizing SWIM profile is preferred. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3967

3968 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Information and Communication Management Flight Planning Flight Data support Management

3969

3970 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0017
Title	Aeronautical information for mission planning
Requirement	The transfer of the data between the WOC and the Regional ATFCM may be derived from a data carrier.
Status	validated
Rationale	Fall back only. Aeronautical information on suitable media, with periodic distribution may be used. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3971

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	ATM Environment and Constraints Service Provision, Traffic Demand Computation, DCB -> Create/Update iSMT
<ALLOCATED_TO>	<Functional Block>	Flight Planning Information and Communication Management Flight Data support Management

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0018
Title	Exchange Mission Trajectory data
Requirement	The WOC shall be connected to Regional ATFCM to exchange Mission Trajectory data.
Status	in progress
Rationale	Data exchange between WOC and Regional ATFCM (IFPS) using technologies as defined for the iOAT FPL. V2 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT Validate iSMT -> Submit iSMT Submit iRMT -> Publish iRMT in the NOP
<ALLOCATED_TO>	<Functional Block>	Flight Planning

[REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0019
Title	Exchange Mission Trajectory data
Requirement	The WOC shall exchange Mission Trajectory data with Regional ATFCM using the iOAT FPL format.
Status	in progress

Rationale	Submission of Flight Plan data to Regional ATFCM (IFPS). V2 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3979

3980 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Validate iSMT -> Submit iSMT Submit iSMT -> Validate iSMT Submit iRMT -> Publish iRMT in the NOP
<ALLOCATED_TO>	<Functional Block>	Flight Planning

3981

3982 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0020
Title	Exchange Mission Trajectory data
Requirement	The WOC shall exchange Mission Trajectory data with Regional ATFCM through SWIM technical profile.
Status	in progress
Rationale	Data exchange between WOC and Regional ATFCM (IFPS) using technologies as defined for the iOAT FPL. V2 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3983

3984 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT Validate iSMT -> Submit iSMT Submit iRMT -> Publish iRMT in the NOP
<ALLOCATED_TO>	<Functional Block>	Flight Planning

3985

3986 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0021
Title	EAUP/EUUP for mission revision

Requirement	The WOC shall be connected to Regional ASM to retrieve European Airspace Use Plan/European Updated Airspace Use Plan.
Status	validated
Rationale	The WOC retrieves AUP/UUP data from NOP to add reference of allocated ARES to Mission Trajectory. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3987

3988 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Create AUP/UUP and publish in the NOP -> Update iRMT
<ALLOCATED_TO>	<Functional Block>	Flight Planning Flight Operations Management

3989

3990 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0022
Title	EAUP/EUUP for mission revision
Requirement	The WOC shall retrieve European Airspace Use Plan/European Updated Airspace Use Plan from Regional ASM using XML standard.
Status	validated
Rationale	The NOP Portal provides access to data via internet browser. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3991

3992 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Create AUP/UUP and publish in the NOP -> Update iRMT
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management Flight Planning

3993

3994 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0023

Title	EAUP/EUUP for mission revision
Requirement	The WOC shall retrieve European Airspace Use Plan/European Updated Airspace Use Plan from Regional ASM through internet browser-based web services.
Status	validated
Rationale	The NOP Portal provides access to data via internet browser. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3995

3996 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Create AUP/UUP and publish in the NOP -> Update iRMT
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management Flight Planning

3997

3998 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0024
Title	Negotiation and ARES information
Requirement	The WOC shall be connected to Sub-regional/National ASM to exchange Planning and Airspace Reservation information.
Status	validated
Rationale	Exchange planning and ARES information with CC Sub-Regional/National ASM. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

3999

4000 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission Refine/Update ARES -> Provide ASM support (AMC) Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Flight Planning

		Flight Operations Management

4001

4002 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0025
Title	Negotiation and ARES information
Requirement	The WOC shall exchange Planning and Airspace Reservation status information with Sub-regional/National ASM using XML standard.
Status	validated
Rationale	Exchanging planning and ARES information with the CC Sub-Regional/National ASM should use a standard. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

4003

4004 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission Refine/Update ARES -> Provide ASM support (AMC) Provide ASM support (AMC) -> Refine/Update ARES
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management Flight Planning

4005

4006 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0026
Title	Negotiation and ARES information
Requirement	The WOC shall exchange Planning and Airspace Reservation status information with Sub-regional/National ASM through SWIM technical profile.
Status	validated
Rationale	Using SWIM profile anticipates using the SWIM infrastructure for transmission. B2B Web services are used as the available SWIM implementation in SESAR 2020 Wave 1. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.

Category	Interoperability

4007

4008 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission Provide ASM support (AMC) -> Refine/Update ARES Refine/Update ARES -> Provide ASM support (AMC)
<ALLOCATED_TO>	<Functional Block>	Flight Planning Flight Operations Management

4009

4010 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IO04.0027
Title	Negotiation and ARES information
Requirement	The WOC shall exchange Planning and Airspace Reservation status information with Sub-regional/National ASM via a B2B connection.
Status	validated
Rationale	As Sub-Regional/National ASM interacts closely with the WOC, a B2B is considered as suitable. V3 validated in SESAR 1 WP11.1 WOC Exercise VP-789.
Category	Interoperability

4011

4012 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES Refine/Update ARES -> Provide ASM support (AMC) Update and share ARES status -> Monitor Mission
<ALLOCATED_TO>	<Functional Block>	Flight Operations Management Flight Planning

4013

4014 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0001
Title	Reliability of Aeronautical information data.

Requirement	The data provided by AIM technical system shall be validated for mission planning purposes.
Status	deleted
Rationale	The AIM data shall be reliable, as the waypoints etc. are used for mission planning.
Category	Safety

4015

4016 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Refine/Update ARES Analyse and update ARES change proposal Create/Update iSMT Update iRMT
<ALLOCATED_TO>	<Role>	Mission Planner AIS Dynamic Data Operator Long Term Planner Flight Data Operator AIS Static Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4017

4018 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0002
Title	Verify validity of aeronautical information
Requirement	The system shall verify the validity of the used aeronautical information before calculation of 4D trajectories.
Status	deleted
Rationale	To ensure that current data is used.
Category	Safety

4019

4020 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT Refine/Update ARES

		Update iRMT Analyse and update ARES change proposal
<ALLOCATED_TO>	<Role>	Mission Planner AIS Static Data Operator Flight Data Operator AIS Dynamic Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4021

4022 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0003
Title	Store validity of aeronautical data set
Requirement	The system shall store within the detailed mission data the validity information of the aeronautical data set used for calculation of 4D trajectories.
Status	deleted
Rationale	… shall be part of 'detailed mission data'
Category	Safety

4023

4024 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Create/Update iSMT Analyse and update ARES change proposal Refine/Update ARES Update iRMT
<ALLOCATED_TO>	<Role>	Flight Data Operator Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4025

4026 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SC04.0001
Title	Encryption of transmitted data (SWIM).
Requirement	Data transmitted through System Wide Information Management (SWIM) shall be encrypted.
Status	in progress

Rationale	Transmission between WOC and the other ATM systems shall be secure.
Category	Security

4027

4028 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT Submit iRMT Refine/Update ARES Monitor Mission Analyse and update ARES change proposal
<ALLOCATED_TO>	<Role>	Flight Data Operator Mission Observer Mission Planner
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4029

4030 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SC04.0002
Title	Encryption of transmitted data (PENS).
Requirement	Data transmitted through PENS shall be encrypted.
Status	in progress
Rationale	Transmission between WOC and the other ATM systems shall be secure.
Category	Security

4031

4032 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Monitor Mission Analyse and update ARES change proposal Refine/Update ARES Submit iRMT Submit iSMT
<ALLOCATED_TO>	<Role>	Flight Data Operator Mission Observer Mission Planner

<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4033

4034 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SC04.0003
Title	Transmission of data
Requirement	The supporting IT infrastructure SWIM and PENS shall transfer Flight Plan data without error.
Status	in progress
Rationale	The Flight Plan data refer to a certain degree of safety. Therefore, there shall be nor error in transmission (e.g. data loss, byte swap etc.).
Category	Security

4035

4036 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT Submit iRMT
<ALLOCATED_TO>	<Role>	Mission Observer Mission Planner Flight Data Operator
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4037

4038 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SC04.0004
Title	Confidentiality violation check
Requirement	The WOC shall prevent the transmission of confidential data to nodes of lower level of confidentiality.
Status	in progress
Rationale	Transmission of confidential data from WOC to other ATM systems has to be avoided under all circumstances.
Category	Security

4039

4040 [REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Activity>	Submit iSMT Submit iRMT Refine/Update ARES
<ALLOCATED_TO>	<Role>	Flight Data Operator Mission Planner Mission Observer
<ALLOCATED_TO>	<Sub-Operating Environment>	En-Route - High Complexity

4041

4042 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0001
Title	Receive Aeronautical information
Requirement	Issuer • Regional ATFCM Intended Addressees • WOC Information Element • ATM Constraints • ATM Environment • Special Events Interaction Rules and Policy • N/A Content Type • Data Periodicity • AIRAC cycle • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1001.
Category	IER

4043

4044 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03

4045

4046 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0002
Title	Receive METEO Information
Requirement	Issuer • Meteorological Service Provider Intended Addressees • WOC Information Element • Weather Information Interaction Rules and Policy • N/A Content Type • Data Periodicity • Wx Forecast cycle Safety Criticality • Severe Maximum Latency • Minutes
Status	in progress
Rationale	Communication from METEO to WOC is not in scope of SESAR 2020.
Category	IER

4047

4048 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide weather information -> Create/Update iSMT

4049

4050 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0003
Title	Send iSMT

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM Information Element • iSMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1008.
Category	IER

4051

4052 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iSMT -> Validate iSMT

4053

4054 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0004
Title	Receive iSMT Processing Status

Requirement	Issuer • Regional ATFCM Intended Addressees • WOC Information Element • iSMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1009.
Category	IER

4055

4056 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Validate iSMT -> Submit iSMT

4057

4058 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0005
Title	Send iRMT

Requirement	Issuer • WOC Intended Addressees • Regional ATFCM Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	in progress
Rationale	
Category	IER

4059

4060 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iRMT -> Publish iRMT in the NOP

4061

4062 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0006
Title	Receive Aircraft Position

Requirement	Issuer • En-Route/Approach ATS Intended Addressees • WOC Information Element • Surveillance Data Interaction Rules and Policy • N/A Content Type • Data Periodicity • Permanent Safety Criticality • Catastrophic Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

4063

4064 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor aircraft and assess traffic situation -> Monitor Mission

4065

4066 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0007
Title	Receive Airspace status in real time

Requirement	Issuer • Sub-regional/National ASM Intended Addressees • WOC Information Element • Real-time ARES activation status Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Severe Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1004.
Category	IER

4067

4068 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Update and share ARES status -> Monitor Mission

4069

4070 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0008
Title	Send Airspace Reservation request

Requirement	Issuer • WOC Intended Addressees • Sub-regional/National ASM Information Element • ARES Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1012.
Category	IER

4071

4072 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Refine/Update ARES -> Provide ASM support (AMC)

4073

4074 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0009
Title	Receive ARES Request Status

Requirement	Issuer • Sub-regional/National ASM Intended Addressees • WOC Information Element • ARES Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirements IER-11.01.02-OSED-WOCI.1014, IER-11.01.02-OSED-WOCI.1015, IER-11.01.02-OSED-WOCI.1016.
Category	IER

4075

4076 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Provide ASM support (AMC) -> Refine/Update ARES

4077

4078 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0010
Title	Retrieve NOP information

Requirement	Issuer • Regional ASM Intended Addressees • WOC Information Element • AUP/UUP Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Minor Maximum Latency • Minutes
Status	validated
Rationale	V3 validated by VAL-EXE VP-789 as SESAR 1 Requirement IER-11.01.02-OSED-WOCI.1006.
Category	IER

4079

4080 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Create AUP/UUP and publish in the NOP -> Update iRMT

4081

4082 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0011
Title	Send iRMT Revision Request

Requirement	Issuer • WOC Intended Addressees • En-Route/Approach ATS Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	in progress
Rationale	
Category	IER

4083

4084 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Submit iRMT -> Assess AoR Impact

4085

4086 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0012
Title	Receive iRMT Revision Request Processing Status

Requirement	Issuer • En-Route/Approach ATS Intended Addressees • WOC Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	in progress
Rationale	
Category	IER

4087

4088 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Assess AoR Impact -> Submit iRMT

4089

4090 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0013
Title	Receive iRMT Revision

Requirement	Issuer • En-Route/Approach ATS Intended Addressees • WOC Information Element • iRMT Interaction Rules and Policy • N/A Content Type • Data Periodicity • On Demand Safety Criticality • Major Maximum Latency • Minutes
Status	in progress
Rationale	
Category	IER

4091

4092 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Revise iRMT -> Monitor Mission

4093

4094 [REQ]

Identifier	REQ-07.03-SPRINTEROP-IE04.0014
Title	Send Mission data Update

Requirement	Issuer • WOC Intended Addressees • Flight Deck Information Element • Mission data Interaction Rules and Policy • N/A Content Type • Voice Periodicity • On Demand Safety Criticality • Severe Maximum Latency • Seconds
Status	in progress
Rationale	
Category	IER

4095

4096 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Information Exchange>	Monitor Mission -> Execute Mission Abort Mission -> Execute Mission

4097 4.5 Performance Requirements

4098 [REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0001
Title	Performance assessment (Quantitative)
Requirement	The solution shall provide evidence of the quantitative assessment of benefits for military and civil operational stakeholders
Status	in progress
Rationale	The following performance indicators PIs are considered to ensure the quantitative assessment: - Mission efficiency (+/- Minutes) - Rate of military exemptions to standard ATM network rules (%) - Rate of acceptability of military exemptions to standard ATM network rules (%)

Category	PERFORMANCE

4099

4100 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Civil-Military Cooperation and Coordination

4101

4102 [REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0002
Title	Performance assessment (Qualitative)
Requirement	The solution shall provide the qualitative performance assessment of benefits for military and civil operational stakeholders
Status	in progress
Rationale	Predefined criteria will be used in experts' judgement to properly assess benefits delivered by operational processes and activities. These criteria are as following: - complexity, - availability of information, - accuracy of data - acceptability of military exemptions to standard ATM route network rules by the IFPS and ETFMS
Category	PERFORMANCE

4103

4104 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Civil-Military Cooperation and Coordination

4105

4106 [REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0003
Title	En-route Capacity
Requirement	The solution shall provide evidence of the achievement of the En-route capacity by 0,505% at the ATM network level
Status	in progress

Rationale	Operational processes and activities in conjunction with supporting technical systems contribute to the achievement of En-route Capacity. Either quantitative or qualitative assessments will demonstrate achievement of the targets set for the solution concerning En-route Capacity.
Category	PERFORMANCE

4107

4108 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Capacity

4109

4110 [REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0004
Title	Predictability
Requirement	The solution shall provide evidence of the achievement of the Predictability by 0.155% at the ATM network level
Status	in progress
Rationale	Operational processes and activities in conjunction with supporting technical systems contribute to the achievement of predictability. Either quantitative or qualitative assessments will ensure achievement of the targets set for the solution concerning Predictability.
Category	PERFORMANCE

4111

4112 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Predictability

4113

4114 [REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0005
Title	Safety
Requirement	Mission Trajectory-driven processes shall contribute to the achievement of SAFETY by factor -1.13%.
Status	in progress

Rationale	Operational processes and activities in conjunction with supporting technical systems contribute to the achievement of Safety. Either quantitative or qualitative assessments will ensure achievement of the targets set for the solution concerning Safety.
Category	PERFORMANCE

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Safety

[REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0006
Title	Civil-Military Cooperation and Coordination
Requirement	The Solution shall assess impact of the ATM network operations on the military operation and training
Status	in progress
Rationale	The quantitative and qualitative assessments provide evidence or not of an impact of the ATM network operations on the military operation and training by applying performance indicators defined in the SESAR performance framework.
Category	PERFORMANCE

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Civil-Military Cooperation and Coordination

[REQ]

Identifier	REQ-07.03-SPRINTEROP-PF00.0007
Title	Civil-Military Cooperation and Coordination
Requirement	The Solution shall assess contribution of the Military AU to the performance expectations of the ATM Network
Status	in progress

Rationale	The quantitative and qualitative assessments provide evidence of the Military AU contribution or not into the ATM network performance expectations by applying performance indicators defined in the SESAR performance framework.
Category	PERFORMANCE

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.07-03
<ALLOCATED_TO>	<Performance>	Civil-Military Cooperation and Coordination

4.6 Safety Requirements

[REQ]

Identifier	REQ-07.03-SPRINTEROP-SF02.0001
Title	Management of the mission trajectory
Requirement	ATCO procedures shall reflect the proper management of the iRMT
Status	<in progress>
Rationale	To ensure a unique and proper management of the mission trajectories such as to minimize the occurrence of *Hz 01: Undetected incorrect traffic load data provided by Regional ATFCM to users* and *Hz 04: Conflict-inducing lateral deviation due to ground-airborne iRMT inconsistency*
Category	<Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Monitor trajectories and assess traffic situation
<ALLOCATED_TO>	<role>	En-Route/Approach ATS
<ALLOCATED_TO>	<Sub-Operating Environment>	Network ENR TMA

4131 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF02.0002
Title	Management of the mission trajectory
Requirement	ATCO shall be properly trained in the management of the iRMT
Status	<in progress>
Rationale	To ensure the ATCO is sufficiently competent to properly manage the mission trajectories such as to minimize the occurrence of *Hz 01: Undetected incorrect traffic load data provided by Regional ATFCM to users* and *Hz 04: Conflict-inducing lateral deviation due to ground-airborne iRMT inconsistency*
Category	<Safety>

4132

4133 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Monitor trajectories and assess traffic situation
<ALLOCATED_TO>	<role>	En-Route/Approach ATS
<ALLOCATED_TO>	<Sub-Operating Environment>	Network ENR TMA

4134

4135 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF02.0003
Title	Coordination and transfer of responsibility
Requirement	Mission trajectory coordination and transfer of responsibility from one AoR to the other (i.e. ARES to ATC sector or ATC to ARES) shall be executed as a system to system – supported exchange in accordance with established standards & regulations (SYSCO)
Status	<in progress>
Rationale	iRMT shall be managed similar to iRBT in terms of coordination and transfer of responsibility in order to prevent the occurrence of *Hz 02: MIL flight inbound a sector with short notice (from adjacent sector)*, *Hz 04: Conflict-inducing lateral deviation due to ground-airborne iRMT inconsistency* and *Hz 05: Uncoordinated ARES exit leading to imminent separation infringement*
Category	<Safety>

4136

4137 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Monitor trajectories and assess traffic situation
<ALLOCATED_TO>	<role>	En-Route/Approach ATS
<ALLOCATED_TO>	<Sub-Operating Environment>	ENR TMA

4138

4139 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF03-0001
Title	iOAT FPL distribution and reception
Requirement	Regional ATFCM operator shall be alerted in case of connection failure with the relevant entities
Status	<in progress>
Rationale	To allow Regional ATFCM to identify the lack of connection with the relevant entities, thus reducing the potential occurrence of *Hz 01: Undetected incorrect traffic load data provided by Regional ATFCM to users*
Category	<Safety>

4140

4141 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Validate iSMT Distribute iSMT Publish iRMT in the NOP
<ALLOCATED_TO>	<role>	Regional ATFCM
<ALLOCATED_TO>	<Sub-Operating Environment>	Network

4142

4143 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF03.0002
Title	Local impact assessment of the mission trajectories
Requirement	Local ATFCM actor shall be trained in the proper impact assessment of the mission trajectories

Status	<in progress>
Rationale	To prevent Local ATFCM errors in the evaluation of imbalance in view of hotspot identification taking into account the mission trajectories with potential for leading to the occurrence of *Hz 03: ATFCM measures not implemented or implemented partially by local ATFCM*
Category	<Safety>

4144

4145 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Provide local impact assessment
<ALLOCATED_TO>	<role>	Local ATFCM
<ALLOCATED_TO>	<Sub-Operating Environment>	Network

4146

4147

4148 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF03.0003
Title	Demand forecast prediction
Requirement	iOAT FPLs shall be taken into account for Demand forecast prediction
Status	<in progress>
Rationale	In order to forecast a real demand prediction, iOAT FPLs need to be taken into account during the calculations
Category	<Safety>

4149

4150 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Enrich and publish demand forecast with incoming iSMT data
<ALLOCATED_TO>	<role>	Regional ATFCM
<ALLOCATED_TO>	<Sub-Operating Environment>	Network

4151

4152

4153

4154 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0001
Title	WOC iOAT FPL filing/updating
Requirement	In case of WOC system or connection failure preventing from iOAT FPL filing/updating, WOC operator shall file or update iOAT FPL by alternative means (e.g. phone, fax, mail etc.)
Status	<in progress>
Rationale	These alternative means will allow WOC the iOAT FPL filing/updating, reducing the potential occurrence of *Hz 01: Undetected incorrect traffic load data provided by Regional ATFCM to users* and *Hz 02: MIL flight inbound a sector with short notice (from adjacent sector)*
Category	<Safety>

4155

4156 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Submit iSMT Submit iRMT
<ALLOCATED_TO>	<role>	WOC
<ALLOCATED_TO>	<Sub-Operating Environment>	Network ENR TMA

4157

4158 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0002
Title	WOC iOAT FPL filing/updating
Requirement	WOC shall be alerted via a lack of acknowledgement message in case the submitted iSMT/iRMT has not been received by the Regional ATFCM system
Status	<in progress>
Rationale	To allow WOC to identify the lack of reception of the submitted iSMT/iRMT by the Regional ATFCM system, thus reducing the potential occurrence of *Hz 01: Undetected incorrect traffic load data provided by Regional ATFCM to users*
Category	<Safety>

4159

4160 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Submit iSMT Submit iRMT
<ALLOCATED_TO>	<role>	WOC
<ALLOCATED_TO>	<Sub-Operating Environment>	Network ENR TMA

4161

4162 [REQ]

Identifier	REQ-07.03-SPRINTEROP-SF04.0003
Title	iRMT update
Requirement	Final coordination with regards to iRMT update shall be always between FC and ATCO
Status	<in progress>
Rationale	iRMT shall be managed similar to iRBT in terms of update in order to prevent the occurrence of *Hz 04: Conflict-inducing lateral deviation due to ground-airborne iRMT inconsistency*
Category	<Safety>

4163

4164 [REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ07.03
<ALLOCATED_TO>	<Activity>	Revise iRMT
<ALLOCATED_TO>	<role>	WOC
<ALLOCATED_TO>	<role>	ATC
<ALLOCATED_TO>	<Sub-Operating Environment>	Network ENR TMA

4165

4166

5 References and Applicable Documents

5.1 Applicable Documents

Content Integration

1. PJ19, EATMA Guidance Material Version 9.0, D5.1, Edition 01.00.00, 05 May 2017
2. EATMA Community pages
3. SESAR ATM Lexicon
4. EATMA V10.0 Draft SESAR Integrated Roadmap Dataset 18a Draft: https://www.eatmportal.eu/
5. European ATM Master Plan Portal: https://www.atmmasterplan.eu/home

Content Development

6. PJ19, SESAR 2020 Concept of Operations Edition 2017, D19.2.1, Edition 01.00.00, 28 November 2017

System and Service Development

7. 08.01.01 D52: SWIM Foundation v2
8. 08.01.01 D49: SWIM Compliance Criteria
9. 08.01.03 D47: AIRM v4.1.0
10. 08.03.10 D45: ISRM Foundation v00.08.00
11. 08.03.10 D65: ISRM
12. B.04.03 D102 SESAR Working Method on Services
13. B.04.03 D128 ADD SESAR1
14. B.04.05 Common Service Foundation Method

Performance Management

15. PJ19: Performance Framework (2017), D4.1, Edition 00.01.00, 04 July 2017
16. PJ19: Validation Targets (2018), D4.5, Edition 01.00.00, 26 February 2018
17. B.05 D86 Guidance on KPIs and Data Collection support to SESAR 2020 transition.
18. 16.06.06-D68 Part 1 –SESAR Cost Benefit Analysis – Integrated Model
19. 16.06.06-D51-SESAR_1 Business Case Consolidated_Deliverable-00.01.00 and CBA
20. Method to assess cost of European ATM improvements and technologies, EUROCONTROL (2014)
21. ATM Cost Breakdown Structure_ed02_2014
22. Standard Inputs for EUROCONTROL Cost Benefit Analyses
23. 16.06.06_D26-08 ATM CBA Quality Checklist
24. 16.06.06_D26_04_Guidelines_for_Producing_Benefit_and_Impact_Mechanisms

Validation

25. 03.00 D16 WP3 Engineering methodology

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

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

System Engineering

28. SESAR 2020 Requirements and Validation Guidelines

Safety

29. SESAR, Safety Reference Material, Edition 4.0, April 2016

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

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

32. SESAR, Resilience Engineering Guidance, May 2016

Human Performance

33. 16.06.05 D 27 HP Reference Material D27

34. 16.04.02 D04 e-HP Repository - Release note

Environment Assessment

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

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

37. EUROCONTROL, Challenges of Growth 2013 Summary Report - 2013

Security

38. 16.06.02 D103 SESAR Security Ref Material Level

39. 16.06.02 D137 Minimum Set of Security Controls (MSSCs).

40. 16.06.02 D131 Security Database Application (CTRL_S)

5.2 Reference Documents

41. 11.01.02 D10 Final WOC Step 1 and Step 2, as available, Operational Service and Environment Definition (OSED), Project 11.01.02, Deliverable ID D10 - D11.1.2-3mb-WOC, Edition 01.00.01.

42. 11.01.02 D10 Final WOC Step 1 and Step 2, as available, Interoperability Requirements (INTEROP), Project 11.01.02, Deliverable ID D10 - D11.1.2-3mb-WOC, Edition 01.00.01.

43. 11.01.02 D10 Final WOC Step 1 and Step 2, as available, Safety and Performance Requirements (SPR), Project 11.01.02, Deliverable ID D10, Edition 01.00.01.

44. 07.05.04 D45 Advanced Flexible Use of Airspace for Step 1 OSED, Edition 00.04.01.

45. 07.06.02 D51 Step 1 Mission Trajectory OSED, Edition 00.02.05.

46. 07.05.04 D52 Step 1 Advanced Flexible Use of Airspace Validation Report (VALR), Edition 00.01.01.

47. 07.06.02 D50 Validation Report (VALR) for STEP1 Operational Air Traffic (OAT) Flight Plan Management, Edition 00.01.01.
48. 11.01.05 D26 Update Validation report for stand-alone WOC validation for Step 1 (BMT, AFUA, iOAT FPL), Edition 00.01.00.
49. Final SESAR 1 Maturity Assessment Report Executive Summary, Edition 01.00.00, 19 December 2016
50. ED-78A GUIDELINES FOR APPROVAL OF THE PROVISION AND USE OF AIR TRAFFIC SERVICES SUPPORTED BY DATA COMMUNICATIONS.
51. CFMU Interface Manual for ICAO 2012 (New Flight Plan Content Introduced by Amendment 1 to DOC 4444 (PANS-ATM))
52. (EC) Regulation 2150/2005 of 23 December 2005
53. EUROCONTROL Guidelines for a harmonised and improved OAT Flight Plan, Volume 1 – OAT FPL Harmonisation, Edition 1.0, 18/08/2016
54. EUROCONTROL Guidelines for a harmonised and improved OAT Flight Plan Volume 2 – Improvement requirements for OAT FPL
55. Network Manager IFPS User Manual – Edition Number:21.1; 24/10/2017
56. EUROCONTROL Guidelines Minimum CNS Infrastructure and Avionics Equipage for the Support of OAT Harmonisation
57. EUROCONTROL Specification for harmonized Rule for Operational Air Traffic (OAT) under Instrument Flight Rules (IFR) inside controlled Airspace of the ECAC Area (EUROAT)
58. EUROCONTROL Guidance for Military Aeronautical Information Publications Consistency with ICAO Annex 15
59. Mission Trajectory Detailed Concept EUROCONTROL document
60. SPR-INTEROP/OSED for V2, D4.1.010, Edition 00.02.01, 24/10/2018
61. Validation Report (VALR) for V2, D4.1.030, Edition 00.02.00, 25/09/2018
62. SESAR Solution PJ.07-03: Validation Plan (VALP) for V3
63. SESAR Solution PJ.07-03: Validation Report (VALR) for V3
64. SPR-INTEROP/OSED for V3 - Part II - Safety Assessment Report
65. Cost Benefit Analysis (CBA) forV3

6 Cost and Benefit Mechanisms

Benefits and Costs are closely related mechanisms as one contributes the other one in order to demonstrate consistency between the operational processes the validation targets and SESAR performance framework KPAs/KPIs.

It should be noted that the Solution does not provide the performance assessment report PJ0703-V3 PAR at this stage in the scope of D-42 data pack and relies on PJ0703-V2 PAR.

It occurs because of the V3 validation activities for SPR/INTEROP OSED V3 start from the first Validation V3 exercise that covers only the planning phase of the iMT operational lifecycle. The validation activities of the first V3 Exercise partly close Wave 1 cycle but do not produce quantified performance results as it is limited to the planning phase and does not allow to produce any additional Performance information on-top of what has been documented in the PJ0703-V2 PAR.

Consequently, series of V3 exercises will continue in SESAR Wave 2 and respective validation performance results will be produced within the scope of Solution 40 Integrated management of Mission Trajectory.

6.1 Stakeholders identification and Expectations

The following table lists the involved stakeholders, their involvement and their expectations to the Key Performance Areas (KPAs) as already described in the Validation Strategy (see [23]).

Stakeholder	Involvement	Why it matters to stakeholder
Airspace Users	• Use a common Aeronautical database as reference for planning • Use a common FPL format for centralised processing validation and distribution	Expect to have evidence of a significant improvement of quality of service allowing Airspace Users to choose the preferred way of integrating ATM constraints when required (PRD).
Military	• Create initial Mission Trajectories • Improve military/military coordination • Monitor missions • Apply CDM process	Expect to have evidence of a significant improvement of mission efficiency through the integrated planning of trajectories by the users – flight operations centre (FOC) and wing operations centre (WOC) (PRD).
ANSP	• Uses a common Environmental database as reference for planning	Expect to optimise the use of airspace capacity through better collaboration and sharing of up to date data between actors (CAP).

	• Handles Flight Plan / Trajectories from State Airspace Users • Increase awareness on the Military Demand	Expect to improve predictability thanks to better planning and traffic ordering (PRD). Expect to have evidence of improvement in cost efficiency as a result of more efficient planning of staff allocation thanks to better collaboration and sharing of up to date data between actors (CEF).
European Network Manager	• Handles Flight Plan / Trajectories from State Airspace Users	Expect to optimise the network usage thanks to better collaboration and sharing of up to date data between actors (CAP). Expect to improve predictability thanks to better planning and traffic ordering (PRD).

Table 17: Stakeholder expectations

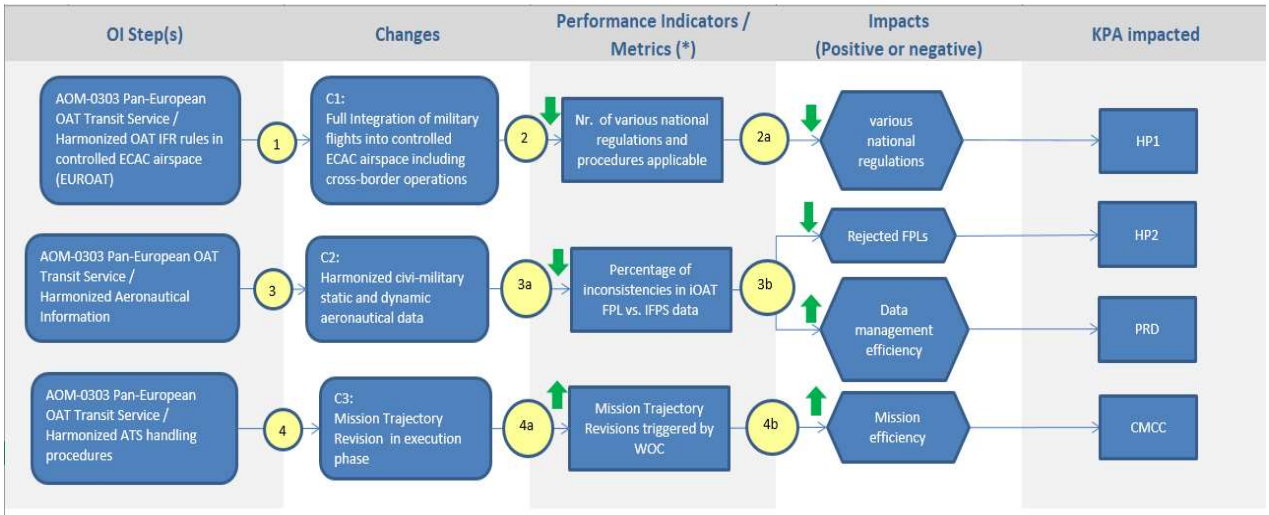
6.2 V3/TRL6 Validated Benefits Mechanisms

The aim of producing Benefit and Impact Mechanisms (BIM) is to clearly identify and describe the positive and negative impacts that each Solution is expected to have, especially on the SESAR Key Performance Areas (KPAs).

The Solution Mission Trajectory Driven Processes produces Benefit Mechanism (BIM) with focus on the SESAR KPAs En-route Capacity, Predictability, Safety, and Civil-Military cooperation. Positive and negative impacts on KPAs and operational areas are reflected in the BIM diagrams. Each diagram is associated with ATM actor and validated Operational Improvement OI step (AOM-0303, AOM-0304-A).

6.2.1 Benefit mechanism related to WOC

The diagrams below provide a consolidated result of the benefits derived from the validation results and operational improvements in the context of the solution and indicate how WOC related operational processes impact the defined by SESAR KPAs in a positive or negative way.



(*) the indicators are the metrics that will be measured in the validation exercises (validation indicators / validation metrics), where relevant these should match the B.05 Key Performance Indicator

AOM-0303 Pan-European OAT Transit Service / Harmonized OAT IFR rules in controlled ECAC airspace (EUROAT)	
1	Military flights are fully integrated into controlled ECAC airspace, including cross-border operations, and harmonized rules and procedures apply.
2	The number of various applicable national / sub-regional rules and procedures will be reduced.
2a	Fewer various national rules and regulations will lead to simplified processes the WOC personnel has to apply, which links to Human Performance.
AOM-0303 Pan-European OAT Transit Service / Harmonized Aeronautical Information	
3	Harmonized civil-military static and dynamic aeronautical data for developing mission trajectories are used in WOC.
3a	The number of inconsistent data used in WOC system vs. data used in ANSP systems will be reduced as a harmonized / common data source, which is the basis for developing the Mission Trajectory.
3b	Fewer data inconsistencies in Mission Trajectory data will lead to less rejected FPLs by ANSP which links to Human Performance and a more efficient aeronautical data mangement links to Cost Effectiveness.
AOM-0303 Pan-European OAT Transit Service / Harmonized ATS handling procedures	
4	WOC is able to trigger revision of Mission Trajectories in execution phase with ATS based on operational needs.
4a	Mission Trajectory revision triggered by WOC will be possible and time needed to get a Mission Trajectory revised by ANSP due to changed operational needs on WOC side will be reduced.
4b	The possibility to react in short time on changed operational needs in execution phase by WOC will lead to an increase of mission efficiency which links to Flexibility.

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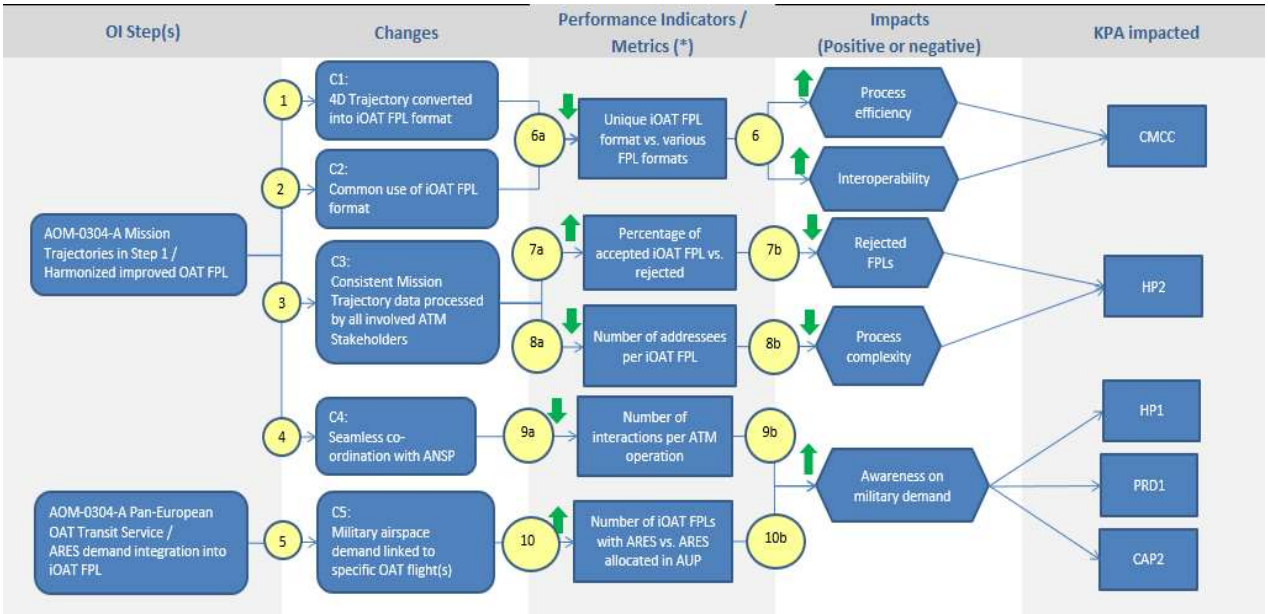
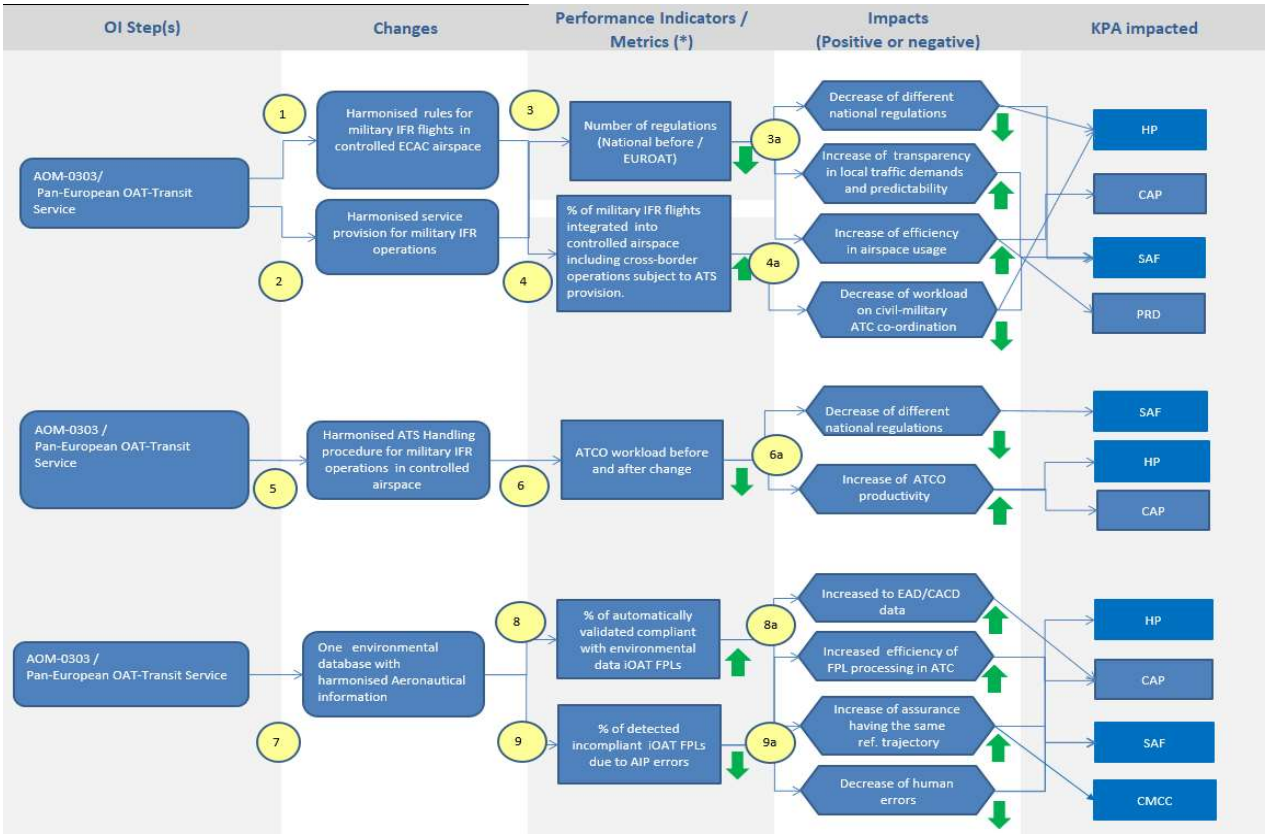
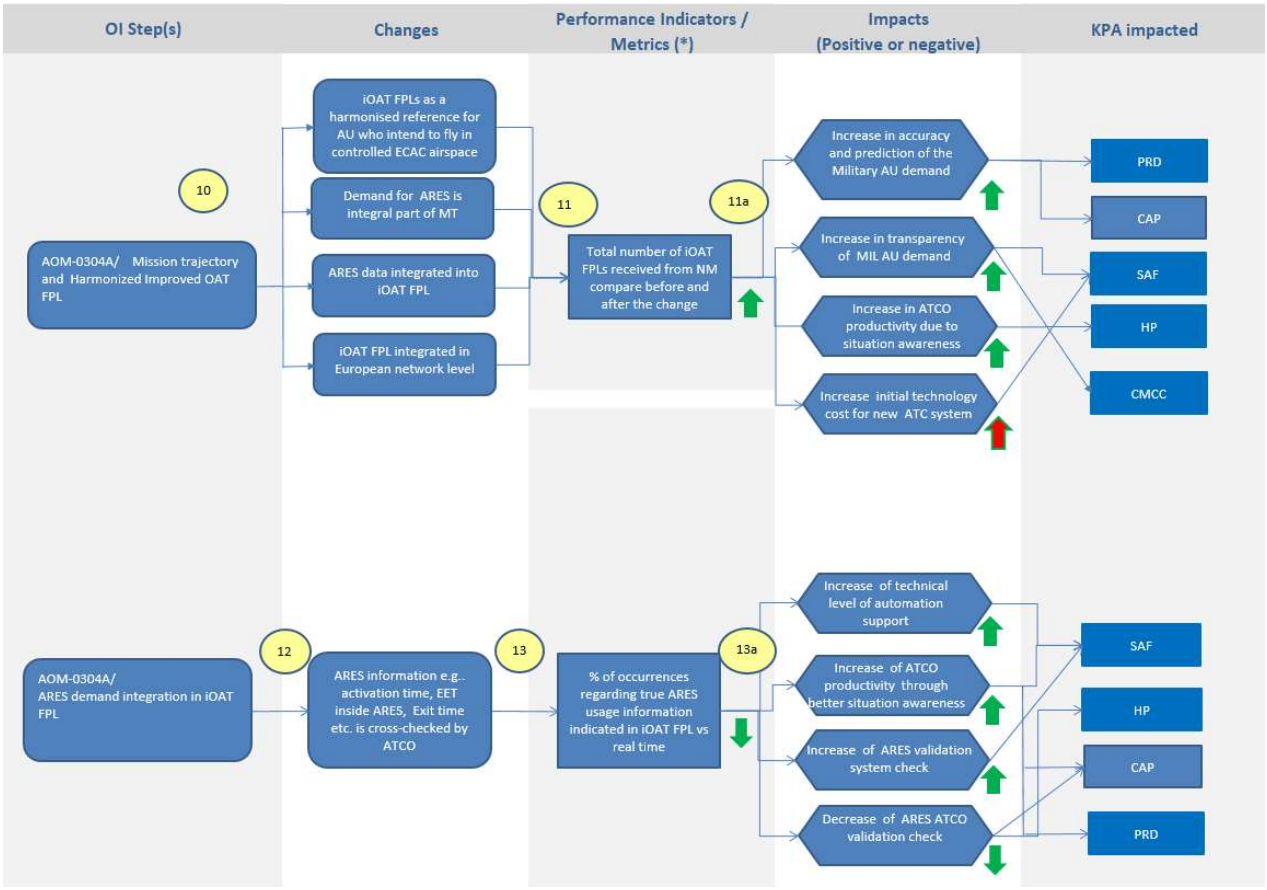


AOM-0304-A Mission Trajectories in Step 1 / Harmonized improved OAT FPL	
1	4D Trajectory developped in planning phase will be converted directly into iOAT FPL format to be shared with ATM world.
2	The iOAT FPL format will be commonly used for OAT flights.
3	With iOAT FPL format consistent Mission Trajectory data set will be provided to be processed by ANSP.
4	With integration of iOAT FPL in WOC internal processes a seamless co-ordination with ANSP will be enabled.
6a	The number of various FPL formats for OAT flights will be reduced to one harmonized FPL applicable for the whole ECAC area.
6b	The applicability of only the harmonized iOAT FPL will lead to an increased process efficiency and an increase in interoparability with the ANSPs in ECAC area wich links both to Cost Effectiveness.
7a	The percentage of accepted iOAT FPL vs. FPLs rejected due to inconsistent data will be increased.
7b	Fewer data inconsistencies in Mission Trajectory data will lead to less rejected FPLs by ANSP which links to Human Performance.
8a	The number of addressees per iOAT FPL also for cross-border missions will be reduced to only one central ANSP who will further distribute to concerned ANSPs.
8b	A central FPL addressee for all State AU flights will lead to a decrease of process complexity which is linked to Human Performance.
9a	The number of interactions required to co-ordinate with ANSP per mission will be decreased as information exchange is increased.
9b	Increased information exchange with ANSP while the number of required interactions is reduced will lead to an increased Awareness on military demand which links to Human Performance, Predictability and Capacity.
AOM-0304-A Mission Trajectory in Step1 / ARES demand integration into iOAT FPL	
5	Military airspace demand (ARES) is directly linked with mission flights via iOAT FPL.
10a	The percentage of ARES allocated in AUP and referenced in iOAT FPLs will increase.
10b	An increased percentage of allocated ARES referenced in iOAT FPLs will lead to an increased awareness on military airspace demand by ANSPs which links to Human Performance, Predictability and Capacity.

6.2.2 Benefit mechanism related to ATC

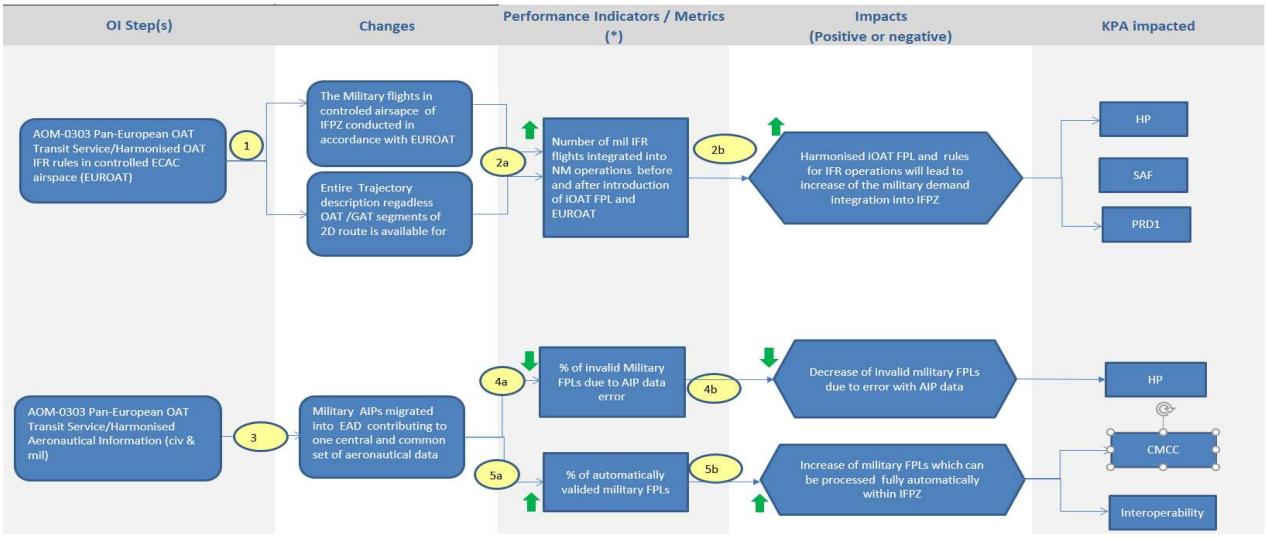


AOM-0303 / Pan-European OAT-Transit Service	
1	Military cross-border and local IFR operations in controlled airspace widely supported by air traffic service provision rendered by ATS units within their AoR. The service provision and military IFR operations are enabled through implementation of OAT IFR rules EUROAT and iOAT FPL facilitating sharing of the military flight intent between pertinent ATM actors. Additionally mission support services are available facilitating accomplishment of military specific requirements linked to e.g. formation flights, AAR operations, aerial activities, complex mission profiles etc.
2	iOAT FPL allows military AU express flight intent and military specific requirements through standard FPL format. The iOAT FPL delivers MT data specific to military IFR operations to NM and ATC for validation processing and further distribution to all ATM actors concerned. Integration of MT data in NM and ATC systems provides complete picture of the military demand and triggers all related services from relevant ATS providers. It enhances awareness contributes to predictability capacity and safety.
3	Implementation of EUROAT and iOAT FPL creates a legislative framework hence harmonising ECAC-wide usage of rules and formats . It contributes to the reduction of national regulations and ensures semantic interoperability. Number of iOAT FPLs before and after change - is expected positive impact which is transparent civ/mil coordination, number of iOAT FPL will increase
3a	It triggers decrease of different national regulations by implementing Harmonised EUROAT rules in ECAC airspace what will increase the human performance by reducing the workload (ATCO productivity and Safety). Increase of transparency in local traffic demands and predictability should have positive influence on Safety. Another positive aspect is an increase of efficiency in airspace usage flexibility due to ARES implementation into the iOAT FPL data (Airspace Capacity). Decrease of workload on civil-military ATC co-ordination (ATCO productivity).
4	Number of military IFR flights integrated into controlled airspace including cross-border operations subject to ATS provision is increasing .
4a	Increased awareness on true military demand through sharing of iOAT FPL via centralised service ensures efficient ATCO operations and decrease in civil/military coordination
AOM-0303 / Pan-European OAT-Transit Service	
5	Applied Harmonised ATS Handling procedure - this important in ECAC airspace for unique procedures understandable for Military AU and for ATS service providers.
6	Impact can be measured on ATCO workload by applying or not EU wide Harmonised ATS handling procedures at ATC level. We expect Expert judgment
6a	Harmonised ATS handling procedures will contribute to ATCO productivity by reducing workload and increasing the Human performance and Safety.
AOM-0303 / Pan-European OAT-Transit Service	
7	Harmonised and common Aeronautical data base (EAD) will be the key enabler to implement the harmonised standard iOAT FPL and Handling procedures facilitating Military IFR operations across EUROPE.
8	Usage of a single reference data base (EAD) will enable automated processing validation and distribution of iOAT FPL This will enhance the automation of flight data processing and decrease the manual interventions of the operators.
8a	Increased access to the EAD/CACD data Increase efficiency of FPL processing in ATC Increased coherency of operating environment) Increase assurance having the same reference trajectory for ATM stakeholders concerned Decreased number of human errors
9	Decrease of invalid iOAT FPLs due to AIP data error.
9a	Increased access to the EAD/CACD data Increase efficiency of FPL processing in ATC Increased coherency of operating environment Increase assurance having the same reference trajectory for ATM stakeholders concerned Decreased number of human errors

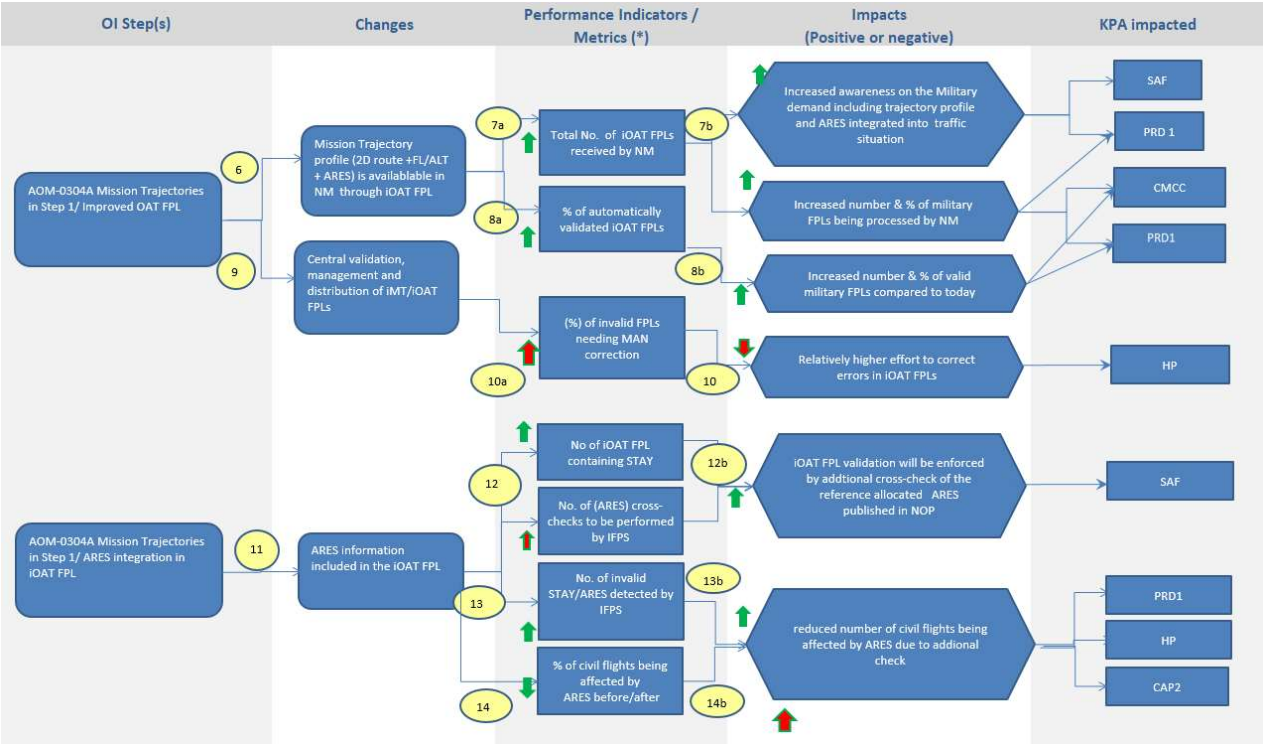


AOM-0304-A / Mission Trajectory and Harmonised improved OAT FPL	
10	Military activities planned for the long term by military Authorities will be shared with the ATM network. These activities will be further detailed to the level of individual flights for the medium-short term planning phase. An improved and harmonised OAT flight plan will represent the first description of the Mission Trajectory (MT) and will be integrated into the ATM network systems for processing and distribution. Mission Trajectory will be the specific representation of the military flights which vary from the requirements for Business Trajectory or when their needs exceed these requirements. Demand for airspace reservation/restriction (ARES) will become an integral part of MT. For the Mission Trajectories which will use airspace reservations/restrictions (ARES), this specific information will be reflected in the dedicated improved OAT flight plan fields. Description of MT will thus include the unique identification of the airspace volume and associated estimates, e.g. elapsed time in ARES or TTOs agreed upon CDM process. Improved OAT flight plans will be integrated at European network level in the short term planning phase. Typically they will be delivered at the day of operations. Input, validation, acceptance and distribution of the OAT flight plans will be performed through network level services. Once validated in NM system, Shared MT will be published in Network Operations Plan (NOP) and will become the initial Reference Mission Trajectory (RMT).
11	Automated distribution of validated by NM iOAT FPLs by NM to ATC increases quality of flight data and decreases human interventions comparing to todays local processing. Number of valid MT received fully automatically will increase if implementation of iOAT FPL/iSMT processes are implemented vs. today. Impact can be measured by applying or not harmonised format of the improved OAT FPL(iOAT FPL) by all AUs, NM and ATC especially in cross border operations. (Expert judgment)
11a	Increase in accuracy and transparency of ATCO productivity due to situation awareness and prediction of the Military AU demand also include increase in initial technology cost for enhanced and compliant ATC systems.
AOM-0304-A / Mission Trajectory and Harmonised improved OAT FPL	
12	For the Mission Trajectories which will use airspace reservations/restrictions (ARES), this specific information will be reflected in the dedicated improved OAT flight plan fields. Description of MT will thus include the unique identification of the airspace volume and associated estimates, e.g. elapsed time in ARES or TTOs . ARES flexible parameters are cross-checked by ATCO to ensure that ARES data are valid and compliant with environmental data.
13	Impact is decreasing and it can be measured through number of invalid ARES/STAY detected by system from total iOAT FPLs.
13a	Increase in the technical system level of automation support, Increase in ATCO productivity due to a better situational awareness. Increase of validation system check of ARES reservation (automated but in case of error increase of manual workload) Decrease of ARES ATCO validation check.

6.2.3 Benefit mechanism related to NM



AOM-0303 / Harmonised OAT IFR rules for OAT in the controlles ECAC airspace	
1	Military IFR operations in controlled airspace are harmonised and conducted in accordance with EUROAT specifications .This facilitates integartion of the military Demand into ATM network operations.
2a	Harmonised iOAT FPL delivers a complete information on iMT regardless of GAT/OAT segments of 2D route and ARES related information when applicable to NM for centralised processing validation and integration.
2b	The military IFR flight in controlled airspace or portion thereof submitted through iOAT FPL to NM for central harmonsied processing and distribution with enriched data set describing entire iMT . This will lead to increased awareness and predictability(PRD), increased Safety(SAF). Since there will be more FPLs overall there is a proportional increase of workload to be expected (HP).
AOM-0303 / Harmonised aeronautical information (civil & military)	
3	Military AIPs are migrated to EAD contributing to one central and common aeronautical datadase. Harmonised aeronautical information is available for ATM network operations.
4a	Harmonised common AIP data will result in less % of invalid military FPL due to AIP data errors in the FPL
4b	Less invalid iOAT FPLs will result in less need for manual correction by NM IFPS operators, which reduces workload and refers to Human Performance
5a	Harmonised common AIP data will result in higher percentage of iOAT FPLs which can be validated processed fully automatically and integrated into NM operations hence contributing to increased awareness and predictability
5b	The automatic processing of iOAT FPLs will decrease cost contributing to the optimisation of NM operations.This will reduce verbal interventions and facilitate CMCC and Interoperability



AOM-0304A / Improved OAT FPL	
6	The Harmonised format of the iOAT FPL will provide to NM iMT profile (2D route +FL/ALT + ARES)
7a	The iOAT FPL will lead to more military FPLs received by NM (i.e. in addition to mil/GAT flights, pure OAT FPLS and more mixed GAT/OAT mil FPLs are expected for validation by NM).
7b	More submitted iOAT FPLs to NM means equally the increase in processing and validation, which leads to higher cost and potentially increased workload (HP). Better Interoperability due to iOAT FPL sharing will increase level of automation in civil-military coordination cooperation. More iOAT FPLs will lead to a more complete military Traffic Demand picture and increased awareness about their full trajectory intentions contributing to increased SAF and reduced workload for co-ordination, hence HP.
8a	The IFPZ wide harmonisation of the syntax of the iOAT FPL will increase the percentage of automatically processed valid military FPLs.
8b	This will lead to an increased number and % of valid iOAT FPLs.
9	The harmonised syntax of the iOAT FPL will allow a central and common validation, management and distribution by NM.
10a	Despite the harmonised syntax, more iOAT FPLs are expected to require Manual intervention for correction compared to GAT FPLs, due to more specific and individual character of military mission compared to rather repetitive civil operations.
10b	More need for correction will need more man power or higher work load and refers to HP.
AOM-0304A/ ARES information in the iOAT FPL	
11	The ARES information as part of the iOAT FPL will enrich the military demand picture.
12a	The number of iOAT FPLs containing an ARES will provide information about the amount of addional checks which need to be done by IFPS
12b	The IFPS ARES validation will allow to validate in addition to todays procredures, whether the ARES indicated in iOAT FPL has been correctly booked and is part of the AUP mechanism. This contributes to increased SAF.
13a	The number of iOAT FPLs containing an ARES will provide information about the amount of additional checks which need to be done by the IFPS and the number of invalid iOAT FPLs due to errors with the ARES reservation can be counted.
13b	The number of detected iOAT FPLs with invalid ARES reservations will increase SAF and potentially CAP2 avoiding conflicts between mil flights using the same ARES and reducing number of constraints for civil trafic henc not waisting potential capacity. It is also expected to be beneficail as well for PRD.
14a	The newly introduced in iOAT FPL ARES check by NM mechanism will result in a reduced number of civil flights being affected by ARES .
14b	The improved ARES check is expected to be beneficial for CAP2 and PRD1.

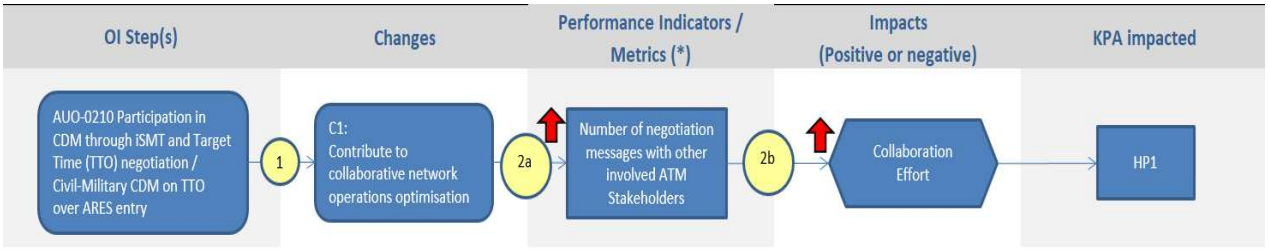
6.3 Non fully validated Benefits Mechanisms

The aim of producing Benefit and Impact Mechanisms (BIM) is to clearly identify and describe the positive and negative impacts that each Solution is expected to have, especially on the SESAR Key Performance Areas (KPAs).

The Solution Mission Trajectory Driven Processes produces Benefit Mechanism (BIM) with focus on the SESAR KPAs En-route Capacity, Predictability, Safety, and Civil-Military cooperation. Positive and negative impacts on KPAs and operational areas are reflected in the BIM diagrams. Each diagram is associated with ATM actor and the Operational Improvement OI step that did not complete V3/TRL6.

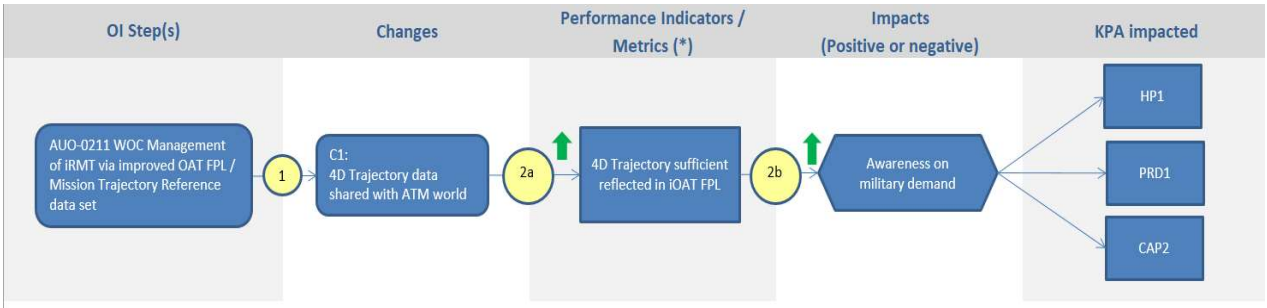
6.3.1 Benefit mechanism related to WOC

The diagrams below provide a consolidated result of the benefits derived from the validation results and operational improvements in the context of the solution and indicate how WOC related operational processes impact the defined by SESAR KPAs in a positive or negative way.



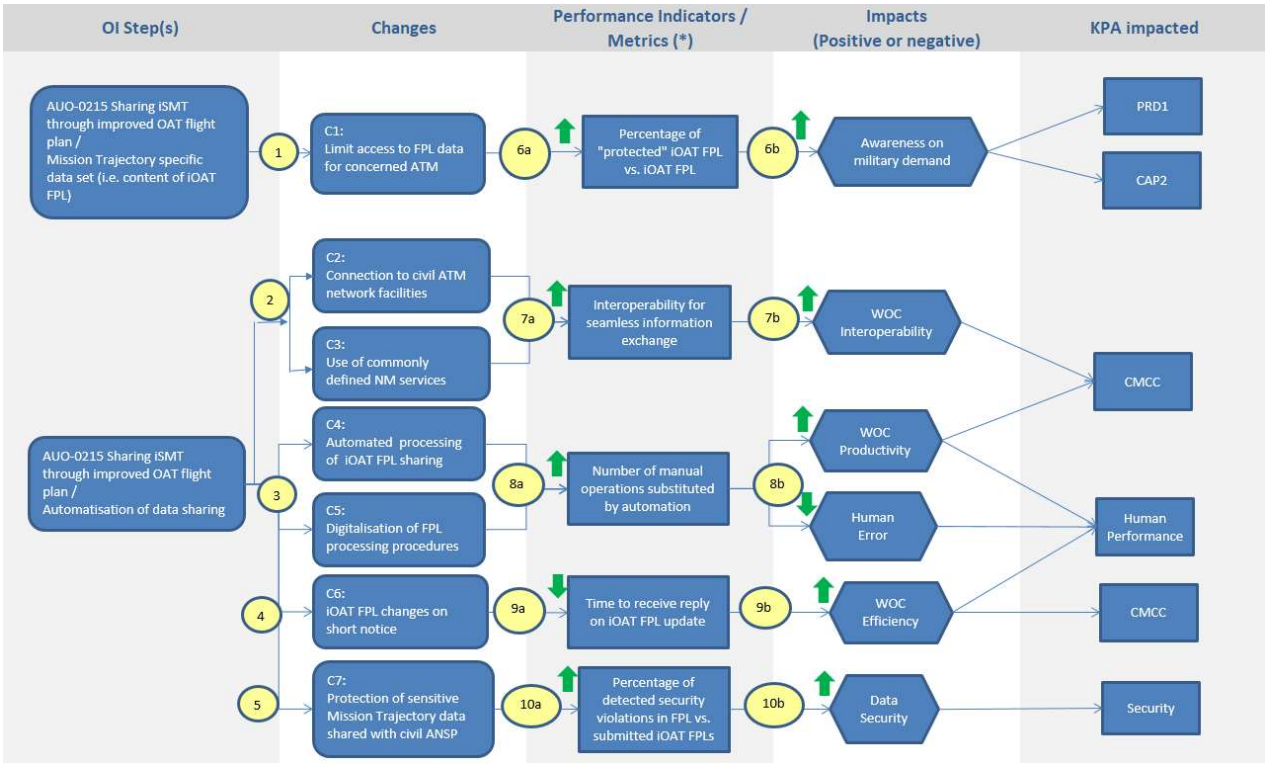
(*) the indicators are the metrics that will be measured in the validation exercises (validation indicators / validation metrics), where relevant these should match the B.05 Key Performance Indicators

AUO-0210 Participation in CDM through iSMT and Target Time (TTO) negotiation / Civil-Military CDM on TTO over ARES entry	
1	Collaborativ contribution to optimisation of the ATM network operations in the planning phase.
2a	Collaboration with ANSPs will lead to an increase of negotiation messages exchange with other ATM stakeholders concerned.
2b	An increased communication will lead to more collaboration effort with other concerned ATM Stakeholders which links to Human Performance.



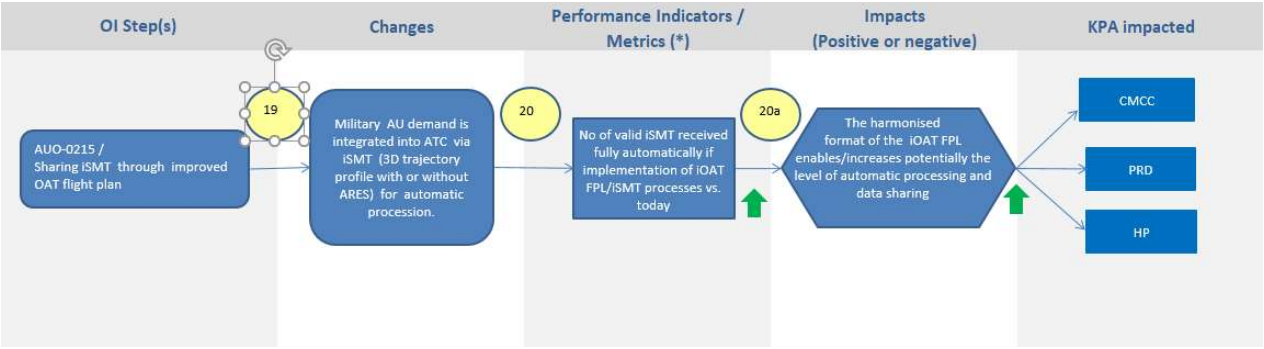
(*) the indicators are the metrics that will be measured in the validation exercises (validation indicators / validation metrics), where relevant these should match the B.05 Key Performance Indicators

AUO-0211 WOC Management of iRMT via improved OAT FPL / Mission Trajectory Reference data set	
1	4D Mission Trajectory developed by WOC in planning phase is converted directly in iOAT FPL format and shared with ATM world.
2a	Demonstrate that 4D trajectory details is sufficient reflected in iOAT FPL format to be further processed by ANSPs.
2b	A more detailed 4D mission trajectory data set will lead to an increased awareness on military airspace demand by all ATM stakeholders which is linked to Human Performance, Predictability and Capacity.



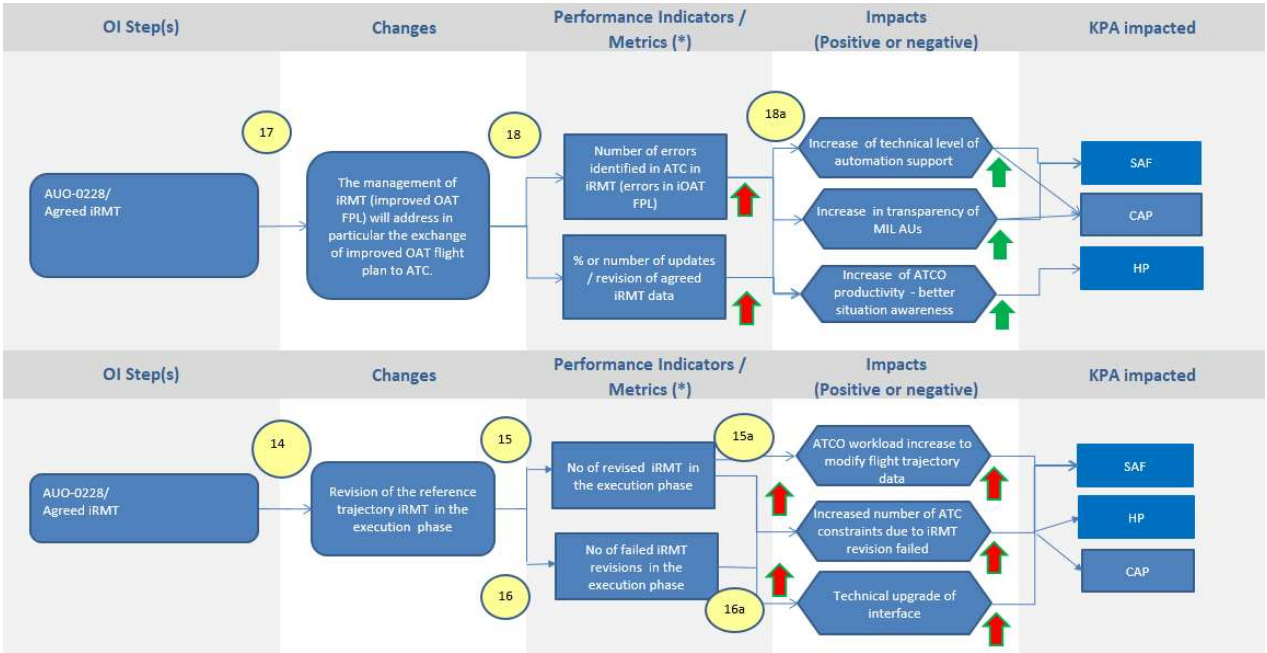
AUO-0215	**Sharing iSMT through improved OAT flight plan / Mission Trajectory specific data set (i.e. content of iOAT FPL)**
1	The Mission Trajectory specific data set enables the WOC to limit the access to FPL data for concerned ATM Stakeholder only.
6a	Increased number of Mission Trajectories shared with ANSP will increase percentage of "protected" iOAT FPLs.
6b	An increased number of even "protected" iOAT FPLPs will lead to an increased awareness on military airspace demand. This links to Predictability and Capacity.
AUO-0215	**Sharing iSMT through improved OAT flight plan / Automatisation of data sharing**
2	Automation of operational processes and usage of conmmon standards and services facilitates better connevction between WOC and stakeholders systems e.g. NM ANSP .
7a	Centralised and harmonised data exchange facilitates interoperability between military and civil ATM systems ensuring semantic interoperability through common data model and set of services.
7b	WOC will increase interoperability and will better contribute to collaborative planning providing MT data pack and participating in allocation of military demand. This links to Civil-military colaboration cooperation
3	Automation of iOAT FPL submission and message exchange will facilitate WOC sharing of Mission Trajectory data with ATM network and ATM actors concerned. Military AU will benefit from using commonly defined NM services.
8a	Automation will decrease number of human interventions and ensure higher quality of data sharing between ATM stakeholders.
8b	WOC productivity will encrease and ammount of human errors will be minimised . This links to Humane performance and Civil-military colaboration cooperation CMCC
4	iOAT FPL mechanisme ensures sharing of MT data at short notivce within predefined tolerance hence providing increased flexibility .
9a	Automation of data sharing reduces time and enhances potential probability to manage all subsiquentr changes to iMT in planning phase that increases efficiency of short term planning
9b	With enhanced automation of data sharing and exchange of the messages WOC will demonstrate enhanced effiiciency in short terme planning responding to military needs to accommodate their demand at short notice.This links HP and CMCC
5	Protection of sensitive trajectory data will be ensured by the originator of the information and exploitation of the Protect mechanism in iOT FPL to avoid sharing MT data with partners who are not concerned with this information
10a	Application of security mechanisms will reduce probability to share MT sensitive data with non participating ATM stakeholders
10b	WOC security solution "Read/Black" gates and protect mechanism in iOAT FPL will ensure that all sensitive and confidential information are thoroughly checked before sharing with pertinent ATM stackeholders.It will positvely influence protection of confidential data and will be linked to Security.

6.3.2 Benefit mechanism related to ATC



AUO-0215 / Sharing of iSMT through improved OAT flight plan

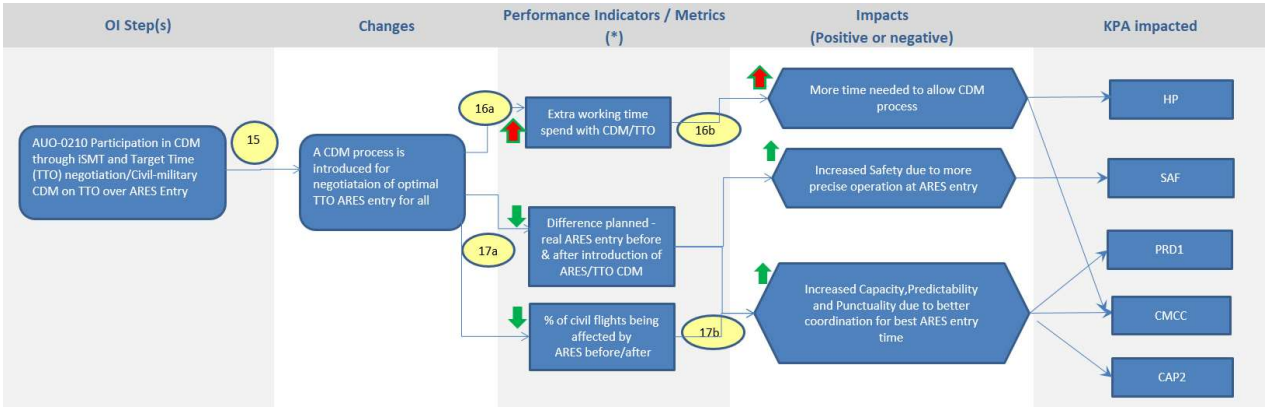
19	These flight intentions expressed as iSMT will be progressively refined and enriched with mature information regarding military operational and technical requirements, following a layered collaborative planning process. The improved OAT flight plan (iOAT FPL) will be filed incorporating data related to the allocated ARES and will be based on latest MET and AIM data plus ATM constraints, if any. iOAT FPL will be shared with NM and will contain trajectory 3D profile and mission specific data (e.g. a unique ARES identifier, STAY information, formation flight details, RPAS elements). Any subsequent changes until transformation in iRMT will follow the flight plan management processes.
20	Automation will increase number of valid iSMT received fully automatically by implementation of iOAT FPL/iSMT processes comparing to today.
20a	Standardised iOAT FPL format will enable sharing of the flight data between ATM stakeholders (civil and military) facilitating automated processing in ATC.



AUO-0228 /Agreed iRMT	
14	The iRMT will be the partial implementation of the MT, which is the reference used by all ATM partners during the flight execution for flights using ARES airspaces. Agreed iRMT will be published in NOP and will contain the 3D profile, ATM specific data, agreed upon CDM target times and associated tolerances.
15	Impact can be measured by increased ATCOs workload for modifications initiated by the WOC during execution phase. (Expert judgment)
15a	Increased need to monitor iRMT for modifications initiated by the WOC during Execution Phase (increased ATCO workload Increased risk that misunderstandings appear who is managing/is responsible for the iRMT. Finally workload increase or decrease is based on automation. Necessary Technical upgrade of interface.
16	Upon WOC request ATCO initiates iRMT revision engaging in CDM with Flight Crew that lead to the agreement on the refined trajectory 3D profile and may generate additional workload, number of the revised iRMT indicates how operational requirements can be accommodated within AoR at short notice.
16a	When initiated revision of iRMT is denied by Flight Crew then it may lead to the constraints originated by ATCO to mitigate negative impact on traffic situation within AoR.

AUO-0228/ Agreed iRMT / Reference Mission Trajectory data set in ATC	
17	The iRMT will be the partial implementation of the MT, which is the reference used by all ATM partners during the flight execution for flights using ARES airspaces. Agreed iRMT will be published in NOP and will contain the 3D profile, ATM specific data, agreed upon CDM target times and associated tolerances..
18	Impact can be measured by number of errors identified in ATC systems in the initial RMT (received iOAT FPL from NM). By number of updates/revisions received to an agreed iRMT data.
18a	Increase in the accuracy of the capacity prediction due to iRMT and better overview about concrete MIL demands. increase in transparency for MIL AUs, increase in ATCO productivity due to a better situational awareness, Increase in initial technology costs due to the need to update/adjust the new automated ANS systems.

6.3.3 Benefit mechanism related to NM



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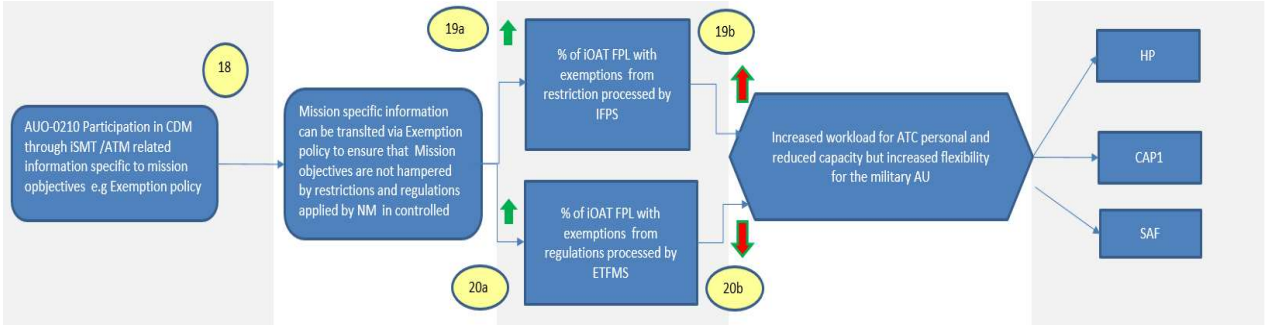

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AUO-0210 Participation in CDM through iSMT / Civil-military CDM on TTO over ARES Entry	
15	A CDM process between WOC, NM (& ATC) is introduced to negotiate time parameters associated with reference allocated ARES (TTO over ARES Entry).
16a	The negotiation process requires more effort and time as ARES flexible parameters are not negotiable compared to today.
16b	The CDM negotiation needs man power and time, hence creating impacts on KPA Human Performance (HP).
17a	The introduction of the CDM negotiation process for ARES entry TTO will minimise the difference between planned and operated ARES entry time before and after CDM negotiation process implementation. It will further reduce the % of civil flights being affected by ARES use and mitigate ATM constraints.
17b	Reduced difference between planned and operated ARES entry Time will be beneficial for KPAs CAP2, PRD1, CMCC and SAF.

4372

AUO-0210 Participation in CDM through iSMT /ATM related information specific to mission opbjectives e.g Exemption policy	
18	The Exemption policy can apply during CDM when after several iterations it is recognised that mission objectives can be hampered by restrictions and regulations NM applies in controlled airspace
19a	iOAT FPL may contain information about exemptions from Network rules and restrictions (e.g.RAD) and will follow special handling with manual intervention
19b	Indicated in iOAT FPL exemption from Network rules and restrictions (e.g.RAD) will increase time and manual processing while decrease capacity and contributing to the flexibility to accommodate military specific requirements.
20a	iOAT FPL may contain indication of exemption from ATFM regulations and will be processed automatically providing increased awareness on specific requirements in military demand
20b	Exemption from regulation may have limited impact on traffic flow regulations but efficiency of the military IFR operations consequently it will increase ATCOs workload.

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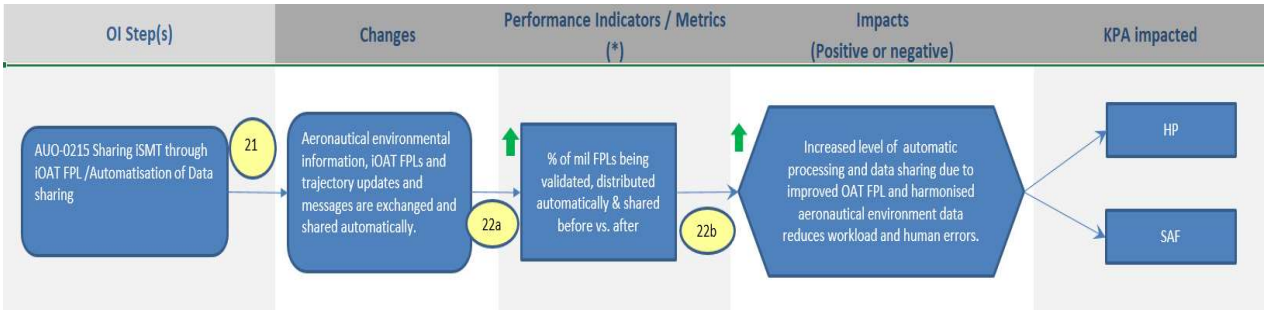

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AUO-0215 Sharing iSMT through iOAT FPL /Automation of Data sharing	
21	iSMT data are shared automatically via established mechanism with all ATM actors concerned. The iSMT data pack contains aeronautical and mission trajectory data hat create a common data reference, without need for human
22a	The number of automatically processed, validated and distributed iOAT FPLs will increase comparing with today
22b	The increased level of automation data processing and sharing will reduce workload (KPA HP) and number of errors in planning and execution as result of human data manipulation and processing errors.

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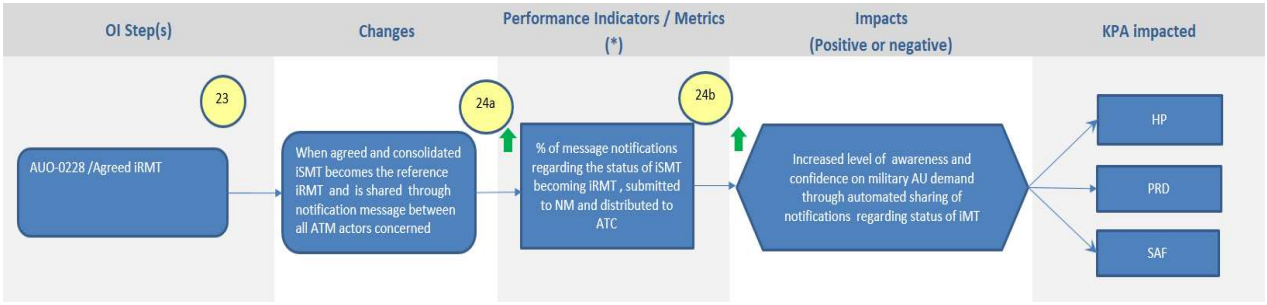

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AUO-0228 /Agreed iRMT	
23	When agreed and consolidated iSMT becomes the reference iRMT for all ATM actors concerned
24a	The number of automated notifications regarding the status of iSMT becoming iRMT will increase and distributed to all ATM actors concerned
24b	The automated notification regarding the status of iSMT becoming iRMT will increase ATCOs awareness on the trajectory and contribute to increase in predictability and safety providing consolidated information on true military demand.

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6.4 Cost mechanisms

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