



SESAR Solution PJ.06-01 Technical Specification Check (TS/IRS Check) V3/TRL6

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PJ06

PJ.06-01 – OPTIMIZED TRAFFIC MANAGEMENT TO ENABLE FREE ROUTING IN HIGH AND VERY HIGH COMPLEXITY ENVIRONMENTS.

This TS/IRS is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 734129 under European Union’s Horizon 2020 research and innovation programme.



Abstract

The SESAR Solution PJ.06-01 is about optimized traffic management to facilitate Free Routing in En-Route airspace. It is focused on the improvement of Aircraft-to-Aircraft Separation Provision to enable Free Routing operations in En-route high and very high complexity cross-border environments.

This TS/IRS Check reflects the technical requirements that are applicable to the solution.

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1 Executive summary

The SESAR Solution PJ.06-01 is about optimized traffic management to facilitate Free Routing in upper En-Route airspace. It is focused on the improvement of Aircraft-to-Aircraft Separation Provision to enable Free Routing operations in En-route high and very high complexity and cross-border environments.

The Free Routing concept seeks Airspace Users being able to plan flight trajectories without reference to a fixed route network or published directs, so they can optimise their associated flights in line with their individual operator business needs or military requirements. It is a transversal operational concept that affects many ATM activities at regional, sub-regional and local level.

The Solution PJ.06-01 is contributing to the improvement of air traffic management at local level. More precisely, it focuses on the improvement of Aircraft-to-Aircraft Separation Provision to enable Free Routing operations in En-route airspace in high and very high complexity and cross-FIR sectors environments (with minimum structural limits to manage airspace and demand complexity).

This document reflects the technical requirements needed to cover the operational requirements identified in this solution. Some of these requirements are already allocated in other Technical Specifications from other projects/solutions. New technical requirements have been identified as needed and not existing in the Technical Specifications considered as inputs, so these new technical requirements have been also defined in this document.

2 Introduction

This is the initial version of the technical specification/interface requirements specification Check for SESAR Solution PJ06-01, Main input documents have been:

- **PJ06-01 OSED** [7]
- **PJ10-02a TS/IRS** (Improved Performance in the Provision of Separation) [8]

MEGA modelling related with the improved separation tools is available. Regarding SE-DMF, it has been used only for introducing the TS/IRS requirements.

2.1 Purpose of the document

This document provides the requirements specification, covering functional, non-functional and interface requirements related to SESAR Solution PJ.06-01.

The goal is to write the technical requirements which cover the operational requirements from the OSED of the solution, defining also the traceability between the operational requirements from PJ06-01 OSED, and the technical requirements allocated in the TS of PJ10-02a used as input. New technical requirements have been defined for the case of the traceability does not exist.

In this way, the aim of this TS/IRS Check task is to check which technical requirements contained in the TS of PJ10-02a cover the operational requirements in PJ06-01. For the requirements not traced to the PJ10-02a TS/IRS, new ones have been created here.

2.2 Scope

This is the final TS/IRS Check for SESAR Solution PJ.06-01, for the TRL-6 maturity level for the prototypes to be used in the following validation activities:

- EXE-06.01-V3-VALP-001
- EXE-06.01-V3-VALP-002

It covers functional and non-functional requirements, and constitute the technical reference for the V3 Data Pack of the solution.

2.3 Intended readership

The intended audience of this initial TS/IRS check for Solution PJ.06-01 are:

- the key stakeholders targeted by the Solution, i.e.

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- Airspace Users who will benefit from the deployment of Free Routing operations in En-Route airspace including in high and very high complexity environment;
 - Air Navigation Service Provider who will be directly impacted by the Solution to enable Free Routing operations in Free Routing Airspace in En-route airspace in high and very high complexity;
 - PJ.06-01 Solution partners.
-
- The SESAR Projects developing Solutions related to advanced ATM Capabilities planned to be deployed, or that can be impacted by the deployment, of Free Routing operations in En-Route airspace.

2.4 Background

The Free Route concept aims at enabling Airspace Users to fly as closely as possible to their preferred trajectory without being constrained by fixed airspace structures or fixed route network.

Previous work was carried out in SESAR 1 under **Solution #32** (Free Route through the use of Direct Routing) and **Solution #33** (Free Route through the use of Free Routing for flights both in cruise and vertically evolving above a specified Flight Level).

At the end of SESAR 1, it was concluded that additional validation activities were required to support the implementation of Free Routing Airspace (FRA) in upper airspace of high complexity.

2.5 Structure of the document

This document is structured in these parts:

- Executive summary, which includes a brief description of the scope of the TS , contribution to the modelling activities in EATMA and the main changes to the baseline architecture,
- Section 3 addresses the scope of the Technical specification, technical systems, functional block(s) under the scope of this SESAR Solution. It includes diagrams to give an overview of the functional block(s)'s and contextualizes significant interfaces crossing the functional block's boundaries, and also includes OIs/Enablers coverage. Changes in the OIs/Ens, Use Cases -- How the technical systems, functional block(s)... used (related to operational documents (OSD/INTEROP-SPR)).
- Section 4: this section includes a description of the functions needed to achieve the solution scope and provides a functional view of how the technical systems, functional block(s), system ports and roles get the operational needs, how the relevant resources interact in different (sub)-Operating Environments to achieve the needed capabilities, and how the resources interact. A diagram describing how the systems interact at the infrastructure level. Besides, it includes a list of the service(s) used by the SESAR solution, a description of the system context in which the Services are deployed, the technology used to realise the Services, and all the functional and non-functional requirements.

- Section 5: Options (if available) that can be chosen when implementing the solution (e.g. local / central deployment, service alternatives etc.)
- Section 6: Any assumption made that have an impact on the technical specifications described in section 5.
- Section 7: Documents (name, reference, source project) the TS has to comply to or to be used as additional inputs.
- Appendix A: Requirements used from other solutions.

2.6 Glossary of terms

Term	Definition	Source of the definition
Free Routing	The ability of an Airspace User to plan/re-plan route according to the user-defined segments.	SESAR Integrated Dictionary
Free Routing Airspace	A specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) way points, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control.	ERNIP Part 1 Error! Reference source not found.

Table 1: Glossary

2.7 Acronyms and Terminology

Term	Definition
ADD	Architecture Description Document
ATM	Air Traffic Management
ATSU	Air Traffic Service Unit
CC	Capability Configuration
EATMA	European ATM Architecture



E-ATMS	European Air Traffic Management System
HP	Human Performance
IER	Information Exchange Requirement
INTEROP	Interoperability Requirements
IRS	Interface Requirements Specification
OSD/INTEROP-SPR	Operational Service and Environment Definition
SDD	Service Description Document
SESAR	Single European Sky ATM Research Programme
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SPR	Safety and Performance Requirements
TRL	Technology Readiness Level
TS	Technical Specification

Table 2: Acronyms and terminology

3 SESAR Solution Impacts on Architecture

3.1 Target Solution Architecture

3.1.1 SESAR Solution(s) Overview

SESAR Solution ID and Title	Functional Blocks/Role impacted by the SESAR Solution (from EATMA)	Enabler ID (from EATMA)	Enabler (from EATMA)	Title	Enabler coverage
PJ.06-01 Trajectory based Free Routing	Coordination and Transfer Trajectory Prediction Management	ER APP ATC 78	Update FDP to support 4D trajectory direct segments in free routing airspace beyond local AoR		Full
	Monitoring Aids	ER ATC 91	ATC System Support for Advanced Conformance Monitoring in En-route Airspace		Full
	Conflict Management Controller Human Machine Interaction Management ER/APP	ER ATC 157	Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route		Full
	Conflict Management Controller Human Machine Interaction Management ER/APP	ER ATC 157b	Enhanced ATC System Support the Planning Activity for Conflict Detection and Resolution in En-Route		Full

	Trajectory Prediction and Management			
	Trajectory Prediction and Management Conflict Management	ER APP ATC 129 (V3 maturity in SESAR I but considered essential to support ATCOs tasks)	Upgrade FDP and provide Controller Tools to provide assistance to ATC Planning for Preventing Conflicts in En-Route Airspace	Full
		PRO-046b	ATC Procedures for Using Advanced System Assistance to Medium Term Conflict Detection and Resolution	Full

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

Deviations from the EATMA have to be taken into account: the following enablers, associated to AOM-0505 in the current DS19, are not in the scope of PJ.06-01 solution and validations:

- ER APP ATC 160, ER APP ATC 104, ER ATC 94, NIMS-46, REG-0012, REG-0500, SWIM-APS-05a, SWIM-INFR-01a, METEO-06c, NIMS-36, NIMS-37, ER ATC 92, PRO-220a are considered optional
- NIMS-21b addressed by PJ07.01, PJ07.02 and PJ18.02c
- A/C-04a, A/C-31a aircraft enablers are out of PJ.06-01 scope which focuses on ground ATM aspects

3.1.1.2 Relevant Use Cases



Use Case	Functional Blocks	Description
“Solve a Problem at ATC sector entry/exit conditions in Free Routing Airspace”	Coordination and Transfer	PC-Aid shall allow the planning controller to review encounters related to a subject flight
	Trajectory Prediction Management	On the receipt of an offer of entry coordination (from an offering sector) the PC-Aid shall allow the planning controller to assess the acceptability of that offer in a context with other flights notified to the sector
	Monitoring Aids	
	Conflict Management	
	Controller Human Machine Interaction Management ER/APP	PC-Aid shall detect tentative encounters between planning and tentative trajectories When a controller applies a What-if probe to a particular flight, PC-Aid shall use the tentative trajectory of this flight for encounter detection computations The CWP shall display an alert when any conflicting trajectories are detected.
“Integrate a Flight from Free Routing Airspace (non-nominal)”	Trajectory Prediction Management	The CWP shall display to an eligible operator the current encounters related to a subject flight.
	Monitoring Aids	The CWP shall display all the flights (context flights) that are between the entry level and the proposed exit flight level along the subject flights trajectory when a potential Exit flight level is probed using the PC Aid.
	Conflict Management	
	Controller Human Machine Interaction Management ER/APP	PC-Aid shall allow the planning controller to review encounters related to a subject flight On the receipt of an offer of entry coordination (from an offering sector) the PC-Aid shall allow the planning controller to assess the

		acceptability of that offer in a context with other flights notified to the sector
“Resolve a Conflict tactically at ATC sector level in Free-Routing Airspace”	Trajectory Prediction Management	The CWP shall display an alert when any conflicting trajectories are detected.
	Monitoring Aids	The CWP shall allow an eligible operator to perform the following Probe orders (i.e. what-if, what-else) on an eligible flight:
	Conflict Management	
	Controller Human Machine Interaction Management ER/APP	<ul style="list-style-type: none"> - Flight level probes. - Route probes, either Direct probes or 2D RNP probes. - Heading probes. - Speed probes.
		The CWP shall display a notification with the related encounter data as soon as an encounter is detected, updated or deleted.
		The TC-Aid shall allow the tactical operator to probe for tactical encounters detection of a tactical clearance or a coordination proposal before applying it to the flight plan.

3.1.1.3 Applicable standards and regulations

As required by Regulation 716/2014 on the establishment of the PCP supporting the implementation of the European Air Traffic Management Master Plan and its ATM Functionality #3.2 Free Route, ATC systems adapted to operate in FRA shall support Free Routing and cross-border operations across Europe.

Besides, as required by Regulation 1032/2006 - Exchange of Flight Data Between ATC Units (and its amendment Regulation 30/2009 - Requirements for Automatic Systems for the Exchange of Flight Data Supporting Data Link Services), the OLDI protocol for co-ordination and transfer of current flight data between adjacent air traffic control units shall be in use by all ATC units providing service to general air traffic. In this context, the list of ATC systems standards applicable to the Solution PJ.06-01 are as follows:



- EUROCONTROL Specification for On-Line Data Interchange (OLDI), EUROCONTROL-SPEC-106, Edition 4.3 – in particular its Annex G: Evolution of the OLDI message exchanges and their application in FRA environment
- EUROCONTROL Specification for Medium-Term Conflict Detection, EUROCONTROL-SPEC-139, Edition 2.0 (STD-061)
- EUROCONTROL Specification for Monitoring Aids (MONA), EUROCONTROL-SPEC-142 (STD-062)
- EUROCONTROL Specification for Trajectory Prediction, EUROCONTROL-SPEC-143 (STD-063)
- EUROCONTROL Guidelines for Area Proximity Warning (APW), EUROCONTROL-GUID-161 (STD-064)
- EUROCONTROL Guidelines for Short Term Conflict Alert (STCA), EUROCONTROL-GUID-159

No need for new standards and/or regulations or update of the existing ones has been identified.

3.1.2 Capability Configurations required for the SESAR Solution

SESAR Solution ID and Title	Capability Configurations (CCs) (from EATMA)	Sub-Operating Environment(s) where the CCs operate	Capabilities (from EATMA)	Nodes (from EATMA)	Stakeholders (from EATMA)
PJ.06-01 – OPTIMIZED TRAFFIC MANAGEMENT TO ENABLE FREE ROUTING IN HIGH AND VERY HIGH COMPLEXITY ENVIRONMENTS	ER ACC	En-Route / High and Very High Complexity	Conflict Management/ Collision Avoidance / Mid-Air Collision Avoidance Conflict Management/ Separation Provision / Aircraft-to-Aircraft Separation Provision Traffic Synchronisation / Spacing / Minimum Pair Separation Provision	ATS Operations / En-Route/Approach ATS	

			<p>Traffic Synchronisation / Spacing / Aircraft-to-Aircraft Spacing Monitoring</p> <p>Information Management / Trajectory Management / Trajectory Conformance Monitoring / Free Route Airspace Design / Coordination and Transfer</p>		
	Civil Aircraft	En-Route		Flight Deck	

Table 3: List of Capability Configuration required for the SESAR Solution

3.2 Changes imposed by the SESAR Solution on the baseline Architecture

Enabler ID (from EATMA)	Enabler (from EATMA)	Title	Changes
ER APP ATC 78	Update FDP to support 4D trajectory direct segments in free routing airspace beyond local AoR		<p>The Trajectory Prediction and Management Functional Block has to support coordination 4D direct trajectory segments between ATSUs.</p> <p>The Coordination and Transfer Functional Block has to support coordination and transfer between ATC units and extend beyond local AoR across the AoI. It allows the exchange of the relevant trajectory data to support decision-making processes.</p>
ER ATC 91	ATC Support Advanced	System for	Advance Conformance Monitoring Tools might need to be upgraded to support free route operations: monitoring of

	Conformance Monitoring in En-route Airspace	direct route segments between ATSUs and applicability beyond AoR to AoI.
ER APP ATC 129	Upgrade FDP and provide Controller Tools to provide assistance to ATC Planning for Preventing Conflicts in En-Route Airspace	Existing Conflict Detection tools might need to be upgraded to support free route operations: consideration of direct route segments between ATSUs and calculation of conflicts within the AoI, instead of the AoR.
ER ATC 157	Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route	Existing Conflict Detection tools might need to be upgraded to support free route operations: consideration of direct route segments between ATSUs and calculation of conflicts within the AoI, instead of the AoR.
ER ATC 157b	Enhanced ATC System Support the Planning Activity for Conflict Detection and Resolution in En-Route	Existing Conflict Detection tools might need to be upgraded to support free route operations: consideration of direct route segments between ATSUs and calculation of conflicts within the AoI, instead of the AoR.
PRO-046b	ATC Procedures for Using Advanced System Assistance to Medium Term Conflict Detection and Resolution	No impact on technical systems, considering the modifications required by previous Enablers.

Table 4: List of changes due to the SESAR Solution



4 Technical Specifications

4.1 Functional architecture overview

This section describe the functional architecture including the following system views: resource connectivity model, resource orchestration view and the infrastructure connectivity model.

4.1.1 Resource Connectivity Model

This view describes the Resource Connectivity for PJ06-01 solution:

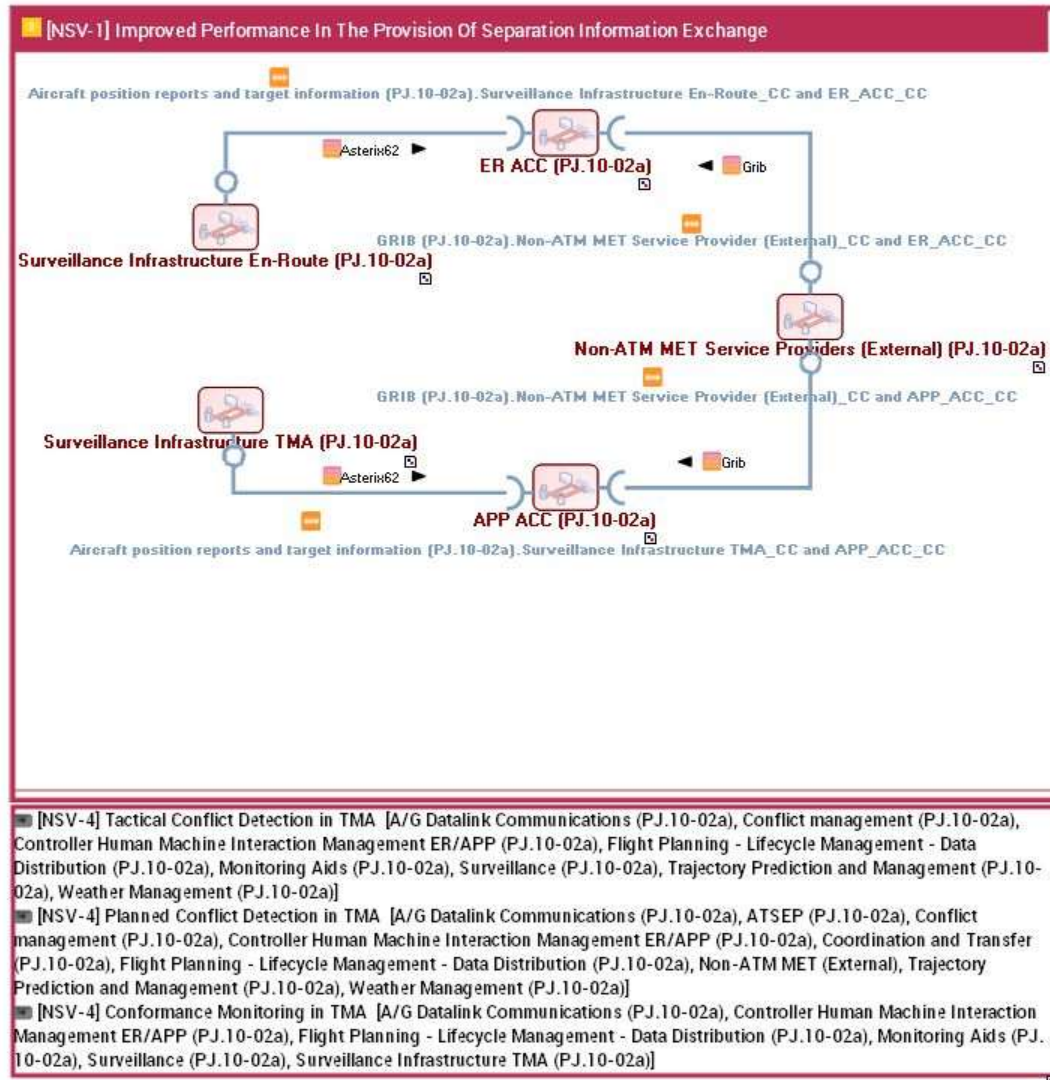
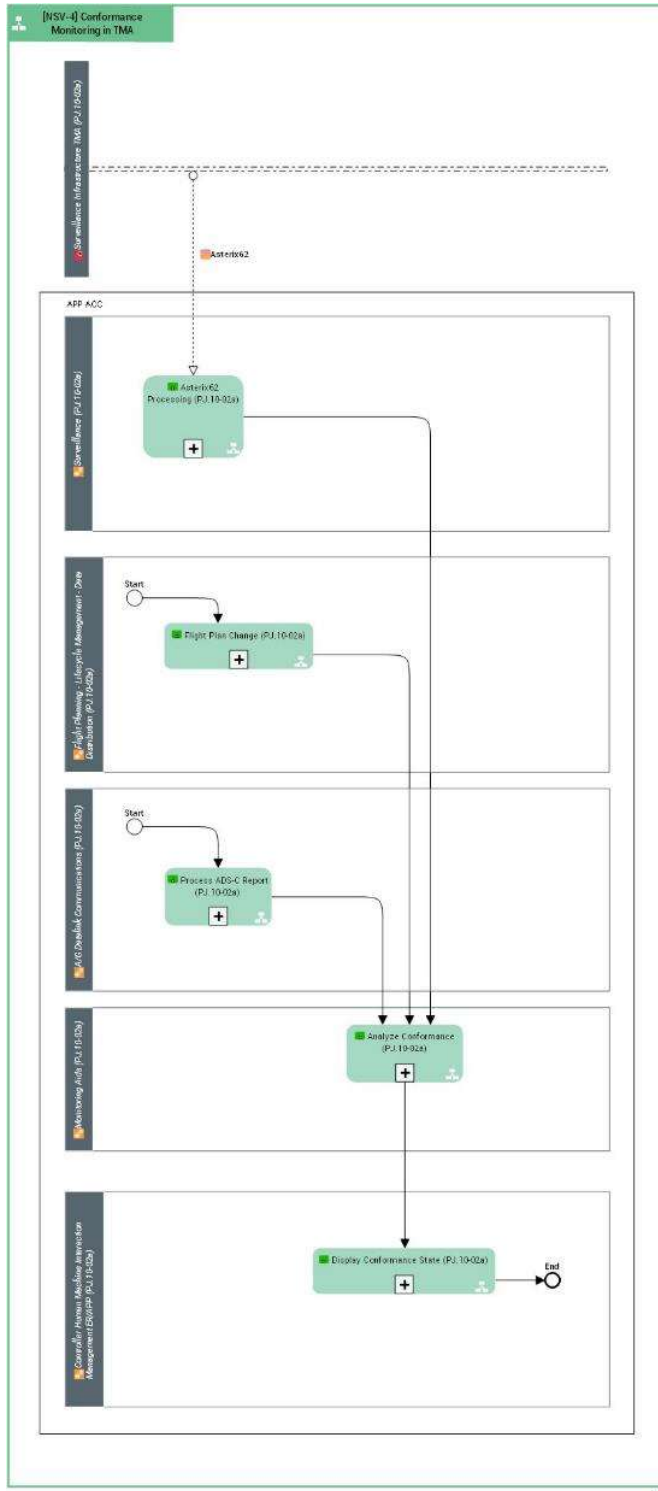
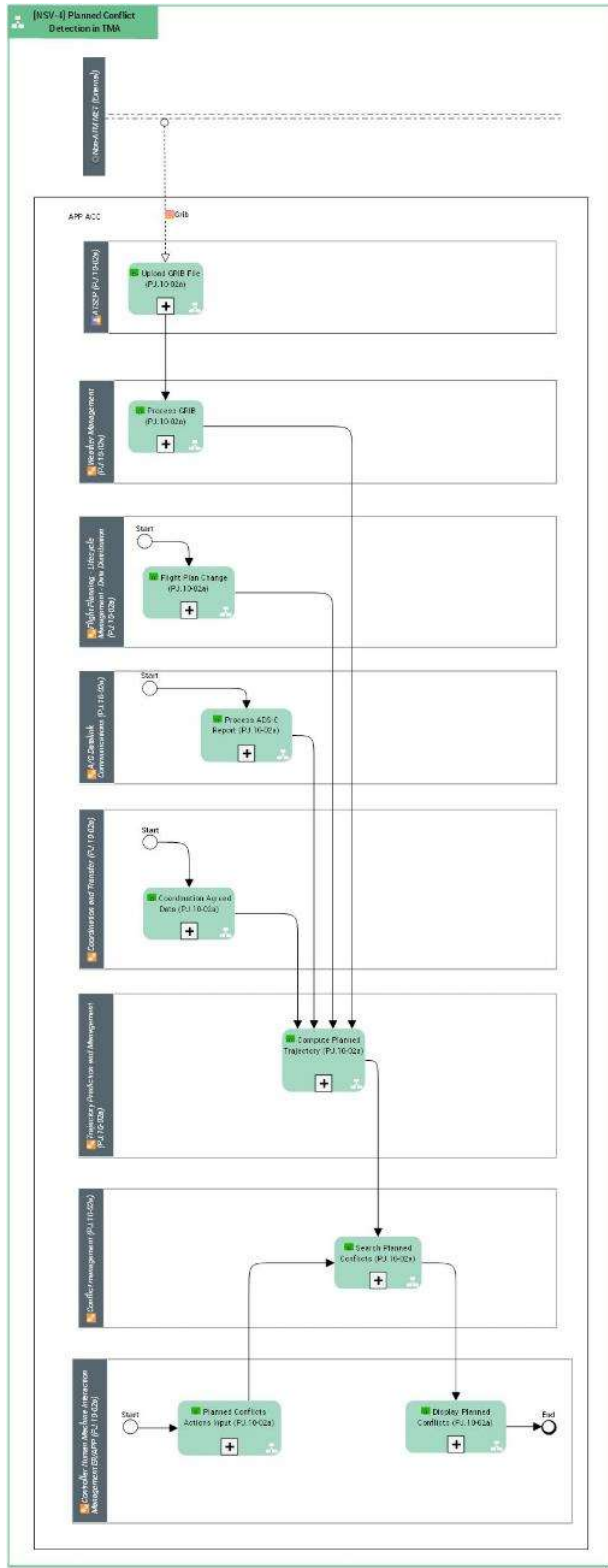


Figure 1 PJ06-01 NSV1-System View

4.1.2 Resource Orchestration view

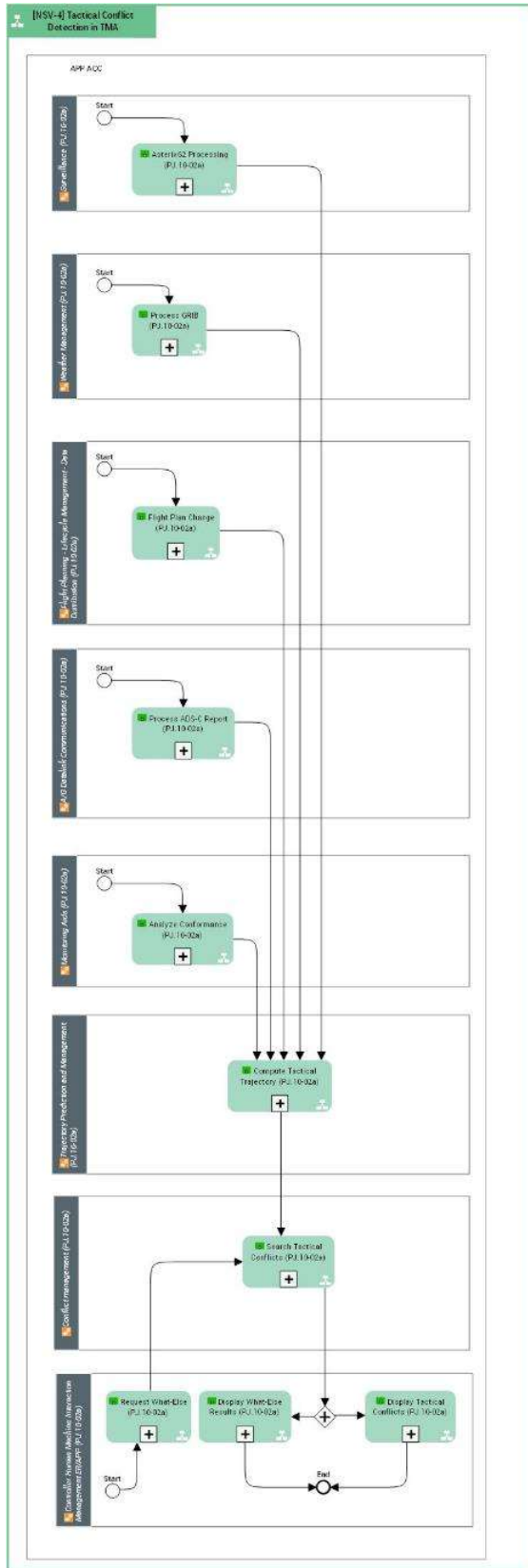
This section describes the sequence of how the resources interact.





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Note: Although the modelling used is from PJ10-02a, consider that within the scope of PJ06-01 does not apply Process Grib neither Process ADS-C report. Also, remark that the used modelling is applicable in the same way for En-Route environment, the applicable in this solution.

4.1.3 Infrastructure connectivity model

This view describes the Infrastructure Diagram for PJ06-01 solution:

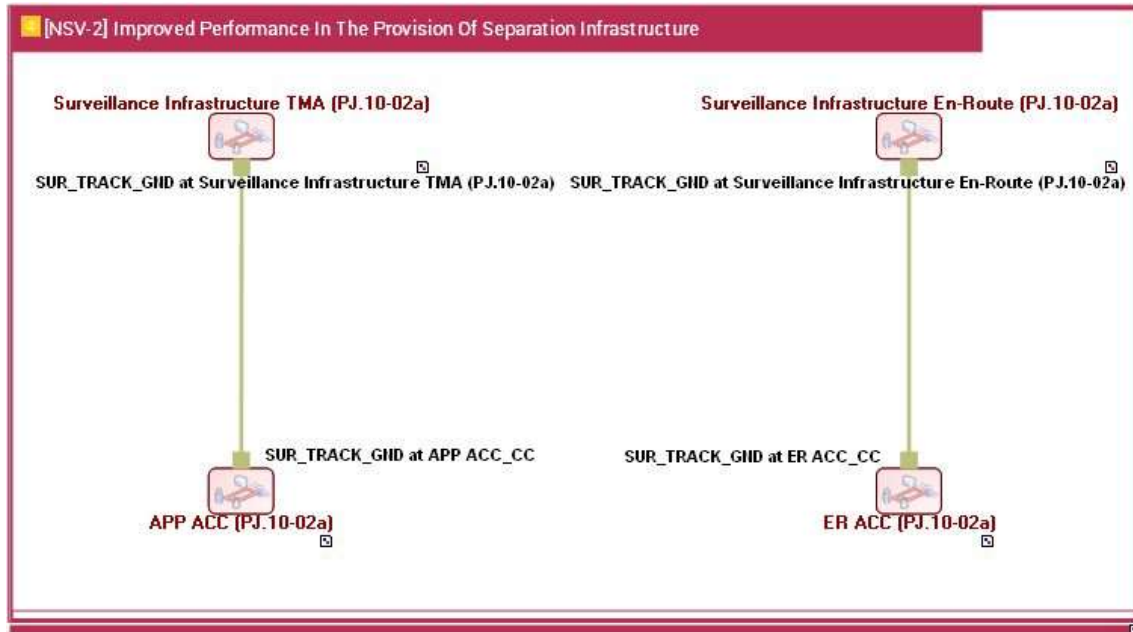


Figure 2 PJ06-01 Connectivity Model

4.2 Functional and non-Functional Requirements

Here are detailed the technical requirements, including the traceability table for the correspondence with the PJ10-2a TS used as input. The original requirements from PJ10-02a have been included in the Appendix A, in order of having a TS/IRS Check complete in itself.

4.2.1 Requirements traceability table



OSED SPR REQ ID	PJ10-02a TS coverage	BaseLine /SESAR 1 requirement
REQ-06.01-SPRINTEROP-SO01.0045	REQ-10.02a-TS-PT.021 REQ-10.02a-TS-PT.024	N.A
REQ-06.01-SPRINTEROP-SO01.0046	REQ-10.02a-TS-PTT.053 REQ-10.02a-TS-PT.037 REQ-10.02a-TS-TT.010	N.A
REQ-06.01-SPRINTEROP-SO01.0047	REQ-10.02a-TS-PT.002 REQ-10.02a-TS-PT.008 REQ-10.02a-TS-PT.010 REQ-10.02a-TS-PT.011	N.A
REQ-06.01-SPRINTEROP-SO01.0049	REQ-10.02a-TS-PT.013 REQ-10.02a-TS-PT.014 REQ-10.02a-TS-PT.049 REQ-10.02a-TS-PT.051 REQ-10.02a-TS-PT.053	N.A

REQ-06.01-SPRINTEROP-SO01.0050	REQ-10.02a-TS-PTT.015	N.A
	REQ-10.02a-TS-PTT.019	
	REQ-10.02a-TS-PTT.023	
	REQ-10.02a-TS-PTT.024	
REQ-06.01-SPRINTEROP-SO01.0051	REQ-10.02a-TS-TT.002	N.A
	REQ-10.02a-TS-TT.005	
REQ-06.01-SPRINTEROP-SO01.0052	REQ-10.02a-TS-TT.006	N.A
	REQ-10.02a-TS-TT.011	
REQ-06.01-SPRINTEROP-SO01.0054	REQ-10.02a-TS-TT.014	N.A
	REQ-10.02a-TS-TT.018	
REQ-06.01-SPRINTEROP-SO01.0056	REQ-10.02a-TS-TT.014	N.A
	REQ-10.02a-TS-TT.036	
REQ-06.01-SPRINTEROP-SO01.0058	REQ-10.02a-TS-PT.013	N.A
	REQ-10.02a-TS-PT.014	
	REQ-10.02a-TS-PT.030	



	REQ-10.02a-TS-PT.049 REQ-10.02a-TS-PT.052 REQ-10.02a-TS-PT.053	
REQ-06.01-SPRINTEROP-SO01.0079	SR_FP_OPS_036	N.A
REQ-06.01-SPRINTEROP-SO01.0080		Baseline
REQ-06.01-SPRINTEROP-SO01.0081		Baseline
REQ-06.01-SPRINTEROP-IO01.0040	REQ-10.02a-TS-PTT.037 REQ-10.02a-TS-TT.003	N.A

Table 5. Requirements traceability table.

4.2.2 New technical requirements

4.2.2.1 Interoperability Requirements

[REQ]

Identifier	REQ-06.01-TS-IO01.0001
Title	ATC to ATC Flight Data Exchange
Requirement	The system shall be able to perform a flight data exchange across ATSU AoRs using coordination point's information.
Status	validated
Rationale	<p>The information for coordination points can be one of these:</p> <ul style="list-style-type: none"> • Coordinates LAT/LONG • Bearing and distance from a navigation aid or defined COP, or • published 5 LNC (COP) <p>The system calculates the entry/exit gate as the intersection between the boundary and the flight trajectory displaying the LAT/LONG points where the flight will enter/exit the AoR. OLDI messages contain only the reference to the LAT/LONG coordination point without the gate code plus route info.</p>
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0001
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0002
Title	ATSU AoR points of interest
Requirement	The system shall be able to consider all the points of interest for an ATSU.
Status	validated
Rationale	<p>Included in these points of interest are the points outside the ATSU area of responsibility necessary for ATC purposes.</p> <p>It is necessary to define the airspace outside Cross border FRA area (= Cross border Free Route Area of Interest) to be able to calculate trajectories prior entering and after exiting the Cross border FRA area.</p>
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0010
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-SO01.0116
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0003
Title	Coordination messages
Requirement	The system shall be able to process the coordination messages included in the OLDI standard
Status	validated

Rationale	In Free Routing cross-border environment, ATM systems have to be able to process the coordination messages defined in EUROCONTROL Specification for On-Line Data Interchange (OLDI), in accordance with the local letters of agreement.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0011
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0004
Title	Trajectory extraction
Requirement	In a cross border FRA, the system shall be able to extract the route from the flight plan considering only two points defined as ENTRY/EXIT points to/from the FRA.
Status	validated
Rationale	This route will be the 2D route and the extraction of this will be possible even if these points are beyond the area of responsibility of the respective ATSU.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier

<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0030
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0006
Title	PC-Aid coordination beyond ATSU AoR
Requirement	The system shall be able to provide PC inter-ATSU coordination based on associated working methods/procedures across several ATSUs.
Status	validated
Rationale	The system will perform the coordination needed with others ATSUs basing on the current procedures and operating methods.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0041
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0061
Title	Conflict detection beyond ATSU AoR
Requirement	The system shall be able to provide a conflict detection satisfying working methods/procedures beyond ATSU AoR
Status	validated
Rationale	The system will detect the conflicts needed with others ATSUs beyond AoR considering the external flights data.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0041
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0007
Title	Data exchange in the proximity of the AoR
Requirement	The system shall be able to exchange the ground-ground situational awareness messages for flights in close proximity to the adjacent ATSU/AoR
Status	validated

Rationale	Capability of exchanging BFD and CFD messages due to FRA operation requires that ATS units need to be aware of the traffic flying in close proximity to their Area of Responsibility (AoR) but not actually planned to penetrate their sectors, in order to support conflict probing during FRA clearances. The flight data exchange consists of the exchange of a basic set of information when a flight is about to enter the area of interest of the concerned unit. The Basic Flight Data (BFD) message provides more detailed data, supplemented with updates and additions to that information (Change of Flight Data (CFD) message) as the flight progresses through the concerned airspace. The additions may include, when agreed nationally, the controller's intention. The availability of this information will reduce the need for controller-to-controller co-ordination. Although in principle the data exchange should be automatic, in certain cases it may be desirable to initiate the exchange by a specific controller input.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0050
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0008
Title	Exchange of OLDI Route, cruising speed and level information.
Requirement	The system shall be able to exchange the route, cruising speed and level information by through OLDI messages.
Status	validated

Rationale	The route, cruising speed and level data are included in the field number 15 of the flight plan. The updated route info within the OLDI messages is a prerequisite for having an accurate planned trajectory required for the proper functioning of ATC tools. The content of route information provided by the OLDI messages should also be enhanced by using the interactive graphical trajectory editing tools that supports the LAT/LONG point as well as the route points with range and bearing from the published fixes.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0060
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0061
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0081
Title	Processing of OLDI Route, cruising speed and level information.
Requirement	The system shall be able to process the route, cruising speed and level information exchanged by through OLDI messages.
Status	validated
Rationale	The route, cruising speed and level data are included in the field number 15 of the flight plan. The updated route info within the OLDI messages is a prerequisite for having an accurate planned trajectory required for the proper functioning of ATC tools. The content of route information provided by the OLDI messages should also be enhanced by using the interactive graphical trajectory editing tools that supports the LAT/LONG point as well as the route points with range and bearing from the published fixes.

Category	Interoperability
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0060
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0061
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0009
Title	Graphical trajectory editing tools
Requirement	The system shall provide interactive graphical trajectory editing tools to define LAT/LONG points as well as the route points with range and bearing from the published fixes.
Status	validated
Rationale	These tools give support to define LAT/LONG points and the route points with range and bearing in an easy and graphical way.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0061



<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution Controller Human Machine Interaction Management (ER/APP)
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0010
Title	Abrogate coordination with the original accepting ATSU
Requirement	The system shall be able to abrogate the coordination with the original accepting ATSU if the flight has been rerouted to another downstream ATSU.
Status	validated
Rationale	In case of tactical rerouting initiated by upstream unit, the MAC message is considered beneficial for the improved ATCO situational awareness of the change flight intent in the downstream unit.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0080
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0011
Title	Coordination requests initiated by the downstream unit to the upstream unit
Requirement	The system shall be able to perform the coordination requests initiated by the downstream unit to the upstream unit via OLDI CDN (Coordination) message.
Status	validated
Rationale	<p>Coordination request can be a proposed transfer Flight Level, Route or direct routing request. This will be performed via OLDI CDN message, which message satisfies the following:</p> <ul style="list-style-type: none"> • To forward a counter proposal from the accepting controller to the transferring controller as a reply to an ACT, a RAP, a REV or an RRV message; • To initiate a proposed modification to agreed transfer conditions by the accepting controller to the transferring controller.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0090
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0012
Title	SDM reception messages from the accepting unit
Requirement	The transferring unit system shall be able to receive SDM messages from the accepting unit.

Status	Validated
Rationale	<p>The primary purpose of the SDM is to transmit control data and changes thereto from the transferring unit to the accepting unit.</p> <p>The SDM message may also be used by the accepting unit to notify the transferring unit of the radio telephony frequency to which the flight is to be transferred.</p> <p>The use of SDM (Supplementary Data Message) from the Accepting to the Transferring Unit will help in bringing situational awareness about the sector and frequency to which the flight has to be transferred. Implementing this message may support “skipping” the default entry sector without implementing the SCO / SKC messages.</p>
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0100
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0121
Title	SDM processing messages from the accepting unit
Requirement	The transferring unit system shall be able to process SDM messages from the accepting unit.
Status	Validated
Rationale	The primary purpose of the SDM is to transmit control data and changes thereto from the transferring unit to the accepting unit.

	<p>The SDM message may also be used by the accepting unit to notify the transferring unit of the radio telephony frequency to which the flight is to be transferred.</p> <p>The use of SDM (Supplementary Data Message) from the Accepting to the Transferring Unit will help in bringing situational awareness about the sector and frequency to which the flight has to be transferred. Implementing this message may support “skipping” the default entry sector without implementing the SCO / SKC messages.</p>
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0100
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0013
Title	Display of activated TRA/TSA of downstream ATSU
Requirement	The system of transferring unit shall be able to display the relevant activated TRA/TSA of downstream ATS Unit(s)
Status	validated
Rationale	<p>Free Routing cross border operation needs full awareness at the transferring ATSU of activated TRA/TSAs within the AoR of the accepting unit(s).</p> <p>Although in Free routing operations the filed flight plan is actually checked by IFPS, if trajectory runs through an active TRA/TSA, ATCOs need to be aware of the status of downstream TRA/TSA for the purpose of preplanning and specific route clearances beyond the AoR.</p>
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0110
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management (ER/APP)
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-IO01.0015
Title	Processing of trajectories beyond ATSU AoR
Requirement	The system shall be able to process alternative trajectories to a next waypoint outside the sector/ATSU area of responsibility
Status	validated
Rationale	The processing of alternative trajectories to a next waypoint outside the sector/ATSU area of responsibility is needed for the coordination and transfer in a FRA environment.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0061
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution

<ALLOCATED_TO>	<Function>	
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[REQ]

Identifier	REQ-06.01-TS-IO01.0151
Title	Display of trajectories beyond ATSU AoR
Requirement	The system shall be able to display alternative trajectories to a next waypoint outside the sector/ATSU area of responsibility
Status	validated
Rationale	The displaying of the processed alternative trajectories to a next waypoint outside the sector/ATSU area of responsibility is needed for the coordination and transfer in a FRA environment.
Category	Interoperability

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	REQ-06.01-SPRINTEROP-IO01.0061
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management (ER/APP)
<ALLOCATED_TO>	<Function>	

4.2.2.2 Safety Requirements

4.2.2.2.1 Functional

[REQ]

Identifier	REQ-06.01-TS-SF01.0001
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Title	Coordination and Transfer function to perform coordination
Requirement	Coordination and Transfer function (e.g. LoA, operating procedure...) shall enable the PC to perform coordination of flights across ACC/sector boundaries not necessarily supported by fixed coordination points
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_001]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0002
Title	Coordination and Transfer function for proposed coordination
Requirement	Coordination and Transfer function shall support the ATCO in the management of proposed coordination condition (negotiation of coordination conditions)
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_002]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0003
Title	Coordination and Transfer function to remove a sector
Requirement	Coordination and Transfer function shall enable to remove a sector from the ordered list of the flight sequence (SKIP function)
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_003]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier

<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0004
Title	Trajectory Prediction function for planned trajectory
Requirement	Trajectory Prediction function shall perform planned trajectory prediction of a selected flight within the area of interest of the sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_004]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Trajectory Prediction and Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0005
Title	Trajectory Prediction function to perform alternate planned trajectory
Requirement	Trajectory Prediction function should perform alternate planned trajectory prediction of a selected flight, based on Controller input.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_005]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Trajectory Prediction and Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0006
Title	Trajectory Prediction function to perform tactical trajectory
Requirement	Trajectory Prediction function shall perform tactical trajectory prediction of a selected flight not necessarily on a fixed ATS route network
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_006]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Trajectory Prediction and Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0007
Title	Trajectory Prediction function to perform alternate tactical trajectory prediction
Requirement	Trajectory Prediction function shall perform alternate tactical trajectory prediction of the displayed trajectory revision options across ATSU/sector boundaries
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_007]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Trajectory Prediction and Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0008
Title	Trajectory Prediction function for skip function
Requirement	Trajectory Prediction function shall enable to remove a sector from the ordered list of the flight sequence (SKIP function)
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_008]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Trajectory Prediction and Management

<ALLOCATED_TO>	<Function>	
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[REQ]

Identifier	REQ-06.01-TS-SF01.0009
Title	Conflict Detection function for minimal predicted separation
Requirement	Conflict Detection function shall determine the minimal predicted separation between two selected flights on their planned trajectories within the area of interest of the sector.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_009]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0010
Title	Flight Planning Management function providing flight plan

Requirement	Flight Planning Management function shall provide flight plan data within the area of interest of the sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_010]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	
<ALLOCATED_TO>	<Functional block>	Flight Planning - Lifecycle Management - Data Distribution
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0011
Title	Conflict Management function mid-term encounters detection
Requirement	Conflict Management function shall detect mid-term encounters between flights along their planned trajectories within the ATC sector area of interest.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_011]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0012
Title	Conflict Management function planned conflict detection
Requirement	Conflict Management function shall detect planned conflict of a selected flight along its alternate planned trajectory, based on Controller input
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_012]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management

<ALLOCATED_TO>	<Function>	
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[REQ]

Identifier	REQ-06.01-TS-SF01.0013
Title	Conflict Management function tactical encounters detection
Requirement	Conflict Management function shall detect tactical encounters between two or more flights not necessarily on a fixed ATS route network
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_013]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0014
Title	Conflict Management function tactical conflicts detection

Requirement	Conflict Management function shall detect tactical conflicts of the displayed trajectory revision options across ATSU/sector boundaries
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_014]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0015
Title	Monitoring aids function deviation detection
Requirement	Monitoring aids function shall detect lateral or vertical deviation of the flight from their planned trajectory
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_015]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 91
<ALLOCATED_TO>	<Functional block>	Monitoring Aids
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0016
Title	Controller Human Machine interaction management function highlight
Requirement	Controller Human Machine interaction management function shall include a function to highlight fights from PC to TC and vice versa.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_016]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<SATISFIES>	<Enabler>	ER APP ATC 129

<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0017
Title	Controller Human Machine interaction management function displaying planned trajectory
Requirement	Controller Human Machine interaction management function shall be able to display the planned trajectory of a selected flight beyond the ATSU boundary to PC and TC
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_017]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<SATISFIES>	<Enabler>	ER APP ATC 129
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0018
Title	Controller Human Machine interaction management function displaying predicted separation
Requirement	Controller Human Machine interaction management function shall be able to display to PC and TC predicted separation between two selected flights on their planned trajectories within the area of interest of the sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_018]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0019
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Title	Controller Human Machine interaction management function displaying mid-term encounters
Requirement	Controller Human Machine interaction management function shall be able to display to PC and TC mid-term encounters between two flights along their planned trajectories within the ATC sector area of interest.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_019]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0020
Title	Controller Human Machine interaction management function for entry/exit conditions
Requirement	Controller Human Machine interaction management function shall enable the input of alternate entry/exit conditions by the Controller.

Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_020]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0021
Title	Controller Human Machine interaction management function alternate planned conflict displaying
Requirement	Controller Human Machine interaction management function shall display planned conflict of a selected flight along its alternate planned trajectory, based on Controller input.
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_021]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0022
Title	Controller Human Machine interaction management function for new exit conditions
Requirement	Controller Human Machine Interaction management function shall enable the input of new proposed exit conditions by the Controller for flights exiting his/her sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_022]

Category	Safety, Functional
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0023
Title	Controller Human Machine interaction management function for proposed coordination condition
Requirement	Controller Human Machine Interaction management function shall enable the PC to accept or reject a proposed coordination condition
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_023]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	

Founding Members



<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0024
Title	Controller Human Machine interaction management function for proposed exit conditions
Requirement	Controller Human Machine Interaction management function shall enable the input of new proposed exit conditions by the Controller for flights not yet assumed
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_024]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0025
Title	Controller Human Machine interaction management function displaying tactical encounters
Requirement	Controller Human Machine interaction management function shall be able to display tactical encounters between two or more flights not necessarily on a fixed ATS route network
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_025]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0026
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Title	Controller Human Machine interaction management function for ARES activation
Requirement	Controller Human Machine interaction management function shall be able to display in due time the ARES activation status (active/not active/released) within the area of interest of the sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_026]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0027
Title	Controller Human Machine interaction management function displaying tactical trajectory revision
Requirement	Controller Human Machine interaction management function shall display the possible tactical trajectory revision options to the Tactical Controller

Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_027]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0028
Title	Controller Human Machine interaction management function selection and implementation of trajectory revisions
Requirement	Controller Human Machine interaction management function shall enable selection and implementation of the possible trajectory revisions by the Tactical Controller
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_028]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0029
Title	Controller Human Machine interaction management function skip support
Requirement	Controller Human Machine Interaction function shall enable ATCo to request the removal a sector from the ordered list of the flight sequence (SKIP function)
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_029]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0030
Title	Controller Human Machine interaction management function frequency of displaying planned trajectory
Requirement	Controller Human Machine interaction management function should automatically display the planned trajectory for a short period of time (2 or 3 seconds) when assuming a flight
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_030]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157

<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0031
Title	Controller Human Machine interaction management function deactivation of mid-term encounter displaying
Requirement	Controller Human Machine interaction management function shall enable TC to de-activate the display of mid-term encounters between two flights along their planned trajectories
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_031]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management

<ALLOCATED_TO>	<Function>	
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[REQ]

Identifier	REQ-06.01-TS-SF01.0032
Title	Controller Human Machine interaction management function alerting in case of deviation
Requirement	Controller Human Machine interaction management function shall display an alert in case of detection of deviation of a flight from its planned trajectory
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_032]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 91
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0033
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Title	Airspace management function ARES status
Requirement	Airspace management function shall provide in due time the ARES activation status (active/not active/released) within the area of interest of the sector
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_033]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0034
Title	Area Proximity Warning function
Requirement	Area Proximity Warning function shall detect imminent infringement of active En Route stack by flights along their tactical trajectories within the ATC sector area of interest
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_034]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Safety Nets
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0035
Title	Area Proximity Warning function parameters
Requirement	Area Proximity Warning shall be adapted (tool parameters) to Free Routing environment
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_035]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Safety Nets
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0036
Title	Sector skipping
Requirement	Controller Human Machine interaction management function shall support sector skipping by providing additional awareness on skipped traffics
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_036]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78

<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF01.0037
Title	Display of the source of the conflicts
Requirement	Controller Human Machine interaction management function shall display the source of the conflicts calculated by the system
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_FP_SYS_037]
Category	Safety, Functional

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER APP ATC 157
<SATISFIES>	<Enabler>	ER APP ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP
<ALLOCATED_TO>	<Function>	

4.2.2.2.2 Performance

[REQ]

Identifier	REQ-06.01-TS-SF02.0001
Title	Frequency of occurrence of ATC Sector Planning Role not being informed
Requirement	The frequency of occurrence of ATC Sector Planning Role not being informed of tactical controller actions (failure of tactical-planner information sharing tools), shall not be greater than 3.33E-05 per flight hour.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_003]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	
<ALLOCATED_TO>	<Functional block>	
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0002
Title	Frequency of occurrence of a loss of display

Requirement	The frequency of occurrence of a loss of display of the planned trajectory in FRA (tool/function unavailable), shall not be greater than 3,33E-05 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_004]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0003
Title	Frequency of occurrence of a discrepancy
Requirement	The frequency of occurrence of a discrepancy between ground and airborne trajectory in FRA, shall not be greater than 3,33E-05 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_005]

Category	Safety, Performance
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 91
<ALLOCATED_TO>	<Functional block>	Monitoring Aids
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0004
Title	Frequency of occurrence of a loss of the mid-term conflict detection tool
Requirement	The frequency of occurrence of a loss of the mid-term conflict detection tool in FRA (tool unavailable), shall not be greater than 3,33E-04 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_006]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b

<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0005
Title	Frequency of occurrence of a corruption of the mid-term conflict detection
Requirement	The frequency of occurrence of a corruption of the mid-term conflict detection in FRA where one conflict is not detected by the tool, shall not be greater than 3,33E-04 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_007]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0006
Title	Frequency of occurrence of a loss of the inter sector/ACC coordination tool

Requirement	The frequency of occurrence of a loss of the inter sector/ACC coordination tool in FRA (tool unavailable), shall not be greater than 1,00E-03 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_008]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 78
<ALLOCATED_TO>	<Functional block>	Coordination and Transfer
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0007
Title	Frequency of occurrence of a loss of the tool determining the minimum predicted separation
Requirement	The frequency of occurrence of a loss of the tool determining the minimum predicted separation between two selected flights on their planned trajectories within the area of interest of the sector, shall not be greater than 1,00E-03 per flight hour
Status	validated



Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_009]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0008
Title	Frequency of occurrence of a corruption of the tool determining the minimum predicted separation
Requirement	The frequency of occurrence of a corruption of the tool determining the minimum predicted separation between two selected flights on their planned trajectories within the area of interest of the sector resulting in a wrong minimum separation calculation, shall not be greater than 3,33E-04 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_010]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0009
Title	Frequency of occurrence of a loss of the ATC Sector Planning Role What-If Tool
Requirement	The frequency of occurrence of a loss of the ATC Sector Planning Role What-If Tool, shall not be greater than 1.00E-03 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_011]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management

<ALLOCATED_TO>	<Function>	
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[REQ]

Identifier	REQ-06.01-TS-SF02.0010
Title	Frequency of occurrence of a corruption of the ATC Sector Planning Role What-If Tool
Requirement	The frequency of occurrence of a corruption of the ATC Sector Planning Role What-If Tool, shall not be greater than 1.00E-03 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_012]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER APP ATC 129
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0011
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Title	Frequency of occurrence of a loss of the ATC Sector Executive Role Conflict Detection tool
Requirement	The frequency of occurrence of a loss of the ATC Sector Executive Role Conflict Detection tool (CDT) in FRA, shall not be greater than 4.00E-06 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_013]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0012
Title	Frequency of occurrence of a corruption of the ATC Sector Executive Role Conflict Detection tool
Requirement	The frequency of occurrence of a corruption of the ATC Sector Executive Role Conflict Detection tool (CDT) in FRA where one conflict is not detected by the tool, shall not be greater than 4.00E-06 per flight hour
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_014]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0013
Title	Frequency of occurrence of a loss of the tool detecting potential crossings
Requirement	The frequency of occurrence of a loss of the tool detecting potential crossings between the planned trajectory of the aircraft and the active stack En Route in the sector, shall not be greater than 4,00E-06 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_015]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0014
Title	Frequency of occurrence of a corruption of the tool detecting potential crossings
Requirement	The frequency of occurrence of a corruption of the tool detecting potential crossings between the planned trajectory of the aircraft and the active stack En Route in the sector, shall not be greater than 4,00E-06 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_016]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0015
Title	Frequency of occurrence of a loss of the tool informing the ATCOs
Requirement	The frequency of occurrence of a loss of the tool informing the ATCOs (ATC Sector Planning and Executive Roles) of ARES activation status (active/not active/released) within the area of interest of the sector, shall not be greater than 3.33E-04 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_017]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0016
Title	Frequency of occurrence of a corruption of the tool informing the ATCOs
Requirement	The frequency of occurrence of a corruption of the tool informing the ATCOs (ATC Sector Planning and Executive Roles) of ARES activation status

	(active/not active/released) within the area of interest of the sector, consisting in a late provision of information, shall not be greater than 3.33E-04 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_018]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0017
Title	Frequency of occurrence of a loss of the prediction of infringement of active ARES
Requirement	The frequency of occurrence of a loss of the prediction of infringement of active ARES (within the area of interest) by flights (Conflict Detection / Resolution Aid to Planning Controller), shall not be greater than 4,00E-06 per flight hour
Status	validated

Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_019]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0018
Title	Frequency of occurrence of a corruption of the prediction of infringement of active ARES
Requirement	The frequency of occurrence of a corruption of the prediction of infringement of active ARES (within the area of interest) by flights (Conflict Detection / Resolution Aid to Planning Controller), shall not be greater than 4,00E-06 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_020]

Category	Safety, Performance
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157b
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0019
Title	Frequency of occurrence of a loss of the ATC Sector Executive Role What-If/What-Else
Requirement	The frequency of occurrence of a loss of the ATC Sector Executive Role What-If/What-Else, where an ATCO is unable to assess tactical trajectory revision options, including alternative trajectory across sector boundaries, shall not be greater than 1.00E-03 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_021]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	

<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0020
Title	Frequency of occurrence of a corruption of the ATC Sector Executive Role What-If
Requirement	The frequency of occurrence of a corruption of the ATC Sector Executive Role What-If, where an ATCO is provided with a wrong assessment of tactical trajectory revision options, including alternative trajectory across sector boundaries, shall not be greater than 3.33E-05 per flight hour
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_022]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 157
<ALLOCATED_TO>	<Functional block>	Conflict Management
<ALLOCATED_TO>	<Function>	

[REQ]

Identifier	REQ-06.01-TS-SF02.0021
Title	Frequency of occurrence of a loss of the route adherence monitoring tool
Requirement	The frequency of occurrence of a loss of the route adherence monitoring tool in FRA (tool unavailable), shall not be greater than 3,33E-04 per flight hour while in high / very high complexity Free Routing Operations.
Status	validated
Rationale	This requirement takes as reference the safety requirement of SESAR solution PJ06.01 Final Safety Assessment Report [SR_IR_SYS_026]
Category	Safety, Performance

[REQ Trace]

Relationship	Linked Element Type	Identifier
<SATISFIES>	<SESAR Solution>	PJ06-01
<SATISFIES>	<ATMS Requirement>	
<SATISFIES>	<Enabler>	ER ATC 91
<ALLOCATED_TO>	<Functional block>	Monitoring Aids
<ALLOCATED_TO>	<Function>	



5 Implementation Options

The improvements performed under the scope of this solution, related mainly with advanced separation tools and interoperability mechanisms through OLDI electronic coordination, can be introduced on an ATC system to enable Free Routing in high and very high complexity En-Route environments.



6 Assumptions

N/A.



7 References and Applicable Documents

7.1 Applicable Documents

Content Integration

- [1] B.04.01 D138 EATMA Guidance Material
- [2] EATMA Community pages
- [3] SESAR ATM Lexicon

Content Development

- [4] SESAR2020 Concept of Operations Edition 2017 dated Nov 17

Environment Assessment

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

7.2 Reference Documents

- [7] PJ06.01 SPR-INTEROP OSED for V3 Part I, Edition 00.02.04
- [8] PJ10-02a Technical Specification (TS IRS) V2 , Edition 00.02.01

Appendix A Requirements used from other solutions

These requirements from PJ10-02a have been used as input in this Technical Specification to avoid duplication of new requirements.

[REQ]

Identifier	REQ-10.02a-TS-PT.021
Title	Single flight display
Requirement	PC-Aid shall allow the controller to select a single flight as subject of CD&R presentation and actions.
Status	<validated>
Rationale	<p>The controller should be able to make specific flights a target of the CD&R actions.</p> <p>This requirement does not refer to force a manual conflict detection, it just aims to say that the selected flight will become the subject of conflict detection and resolution at the workstation at which the selection is made.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a)

Founding Members

<ALLOCATED_TO>	<Enabler>	<p>ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route</p> <p>APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA</p>
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[REQ]

Identifier	REQ-10.02a-TS-PT.024
Title	Plan View
Requirement	<p>PC-Aid shall allow to display to the controller the trajectory of a controller-selected flight on the horizontal plane, together with any aircraft to aircraft encounters and aircraft to airspace encounters in which the flight is involved.</p>
Status	<validated>
Rationale	<p>PC-Aid to support display of trajectory and encounter data for a controller-selected flight in the horizontal plane. The presentation of flight trajectories and encounter in the horizontal plane corresponds to the plan view; the plan view is simultaneous to the general radar picture.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 (partly, the DSNA implementation do not take into account aircraft to airspace encounters) - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a

Founding Members



<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route

[REQ]

Identifier	REQ-10.02a-TS-PT.053
Title	CWP to facilitate Coordination acceptability within different sectors
Requirement	The CWP shall display the tentative encounters between a flight involved in an entry coordination dialogue to a sector and any other flight already assumed in the same sector, in order to advise the ATCO about the offer acceptability.
Status	<validated>
Rationale	CWP has to display PC-Aid support to planning controller in assessing the suitability of sector entry and exit condition for a flight reviewing the encounters related to that flight. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Founding Members



Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a) Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PT.037
Title	Encounter data display
Requirement	<p>The CWP shall make available for display at least the most updated information related to each detected encounter:</p> <ul style="list-style-type: none"> a) Involved aircraft b) Unique encounter ID c) Start of separation infringement (time and position) d) Closest lateral point of approach (time and position) – both laterally and vertically e) End of separation infringement (time and position) f) Closest lateral distance g) Encounter typology h) Encounter geometry j) Severity classification
Status	<validated>

Rationale	<p>The Conflict Management functional block provides the data related to each detected encounter.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
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<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-SAFE.0007
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0013
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0006
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0005
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	<p>APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA</p> <p>ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route</p>

[REQ]

Identifier	REQ-10.02a-TS-TT.010
Title	Tactical Encounter Calculated Data.

Requirement	<p>For each detected tactical encounter, TC-Aid shall calculate an encounter identity, the identity of flights involved, the class of trajectories involved, the closest approach distance, and the time and nominal position of:</p> <ul style="list-style-type: none"> - Loss of separation of interest - Loss of Assured Separation - Closest point of Approach - Regaining of Assured Separation - Regaining of separation of interest.
Status	<validated>
Rationale	<p>This requirement specifies the data to be provided for each tactical encounter. "Assured Separation" refers to the point at which the separation minima (legal separation) are infringed.</p> <p>The time of loss of Assured Separation and/or the time of Closest point of Approach can be used to define urgency of encounters.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 (partially) - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0013
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0042
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

Founding Members

[REQ]

Identifier	REQ-10.02a-TS-PT.002
Title	PC-Aid trajectory assessment criteria
Requirement	The PC-Aid shall provide CD&R services for each flight which has a valid planning trajectory.
Status	<validated>
Rationale	<p>A valid planning trajectory for a particular flight is needed in order to predict encounters for that flight. (Note that this technical requirement addresses only the CD&R scope of the OSED requirement, and does not include the actual trajectory generation).</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0007
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0012
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route

Founding Members



		APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA
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[REQ]

Identifier	REQ-10.02a-TS-PT.008
Title	Planning Encounter Detection
Requirement	PC-Aid shall declare a planning encounter for a pair of flights, if uncertainties around the predicted aircraft positions are separated by less than the separation of interest in the longitudinal, lateral and vertical axis.
Status	<validated>
Rationale	<p>Uncertainties refer to applicable uncertainty volume around the predicted aircraft position(s).</p> <p>PC-Aid will take into account the off-line/fixed uncertainties depending on the particular flight phase (climb, descent or cruise) of the flights involved in the encounter.</p> <p>PC-Aid will take into account also different uncertainties depending on the navigational capabilities of the flights involved in the encounter.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Founding Members

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-IERO.0005
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PERF.0001
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PT.010
Title	PC-Aid Used Trajectories
Requirement	PC-Aid shall process the following trajectories provided by Trajectory Prediction and Management: - Planned Sequence Trajectories - Coordination Trajectories - Speculative Trajectories - Tentative Trajectories
Status	<validated>

<p>Rationale</p>	<p>PC-Aid must be able to process all trajectories which can be involved in planning encounters. Coordination trajectories are associated to flights which are coordinated into and out of the sector, therefore, if PC-Aid can process coordination trajectories, it means that it is able to provide CD&R services for aircraft as they are coordinated into or out of the sector.</p> <p>Tentative trajectories reflect what-if flight data selected by the controller.</p> <p>Speculative trajectories reflect flight data other than those committed or tentatively selected by the controller (they are produced for the purpose of what-else probing).</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005 partially (no speculative)
<p>Category</p>	<p><Functional></p>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0007
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-IER0.0002
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0004
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a) Coordination and Transfer (PJ.10-02a)

		Trajectory Prediction and Management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a) Coordination Agreed Data (PJ.10-02a) Compute Planned Trajectory (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route

[REQ]

Identifier	REQ-10.02a-TS-PT.011
Title	Planning encounters detection
Requirement	PC-Aid shall detect planning encounters comparing - either planned sequence trajectories of the flights; - or coordination trajectories of the flights.
Status	<validated>
Rationale	The planning encounters are generated by comparing the specific trajectories of the subject flight and the environmental flights. The characterization of the trajectories is made on the basis of operational concepts provided by the operative project. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Founding Members



Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0005
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PT.013
Title	Coordination within different sectors
Requirement	PC-Aid shall allow the planning controller to review encounters related to a subject flight.
Status	<validated>
Rationale	<p>The PC-Aid to enable a planning controller encounters review which is typically done for a flight before setting and agreeing to its entry/exit coordination contracts with neighbouring sectors.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0010
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0014
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a) Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PT.014
Title	Coordination acceptability within different sectors
Requirement	On the receipt of an offer of entry coordination (from an offering sector) the PC-Aid shall allow the planning controller to assess the acceptability of that offer in a context with other flights notified to the sector.
Status	<validated>

Rationale	<p>PC-Aid shall support planning controller in assessing the suitability of sector entry and exit condition for a flight reviewing the encounters related to that flight.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0014
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a) Trajectory Prediction and Management (PJ.10-02a) Controller Human Machine Interaction Management ER/APP (PJ.10-02a) Coordination and Transfer (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a) Display Planned Conflicts (PJ.10-02a) Coordination Agreed Data (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PT.049
Title	CWP as help to the coordination within different sectors
Requirement	The CWP shall display to an eligible operator the current encounters related to a subject flight.
Status	<validated>
Rationale	<p>The PC-Aid to enable a planning controller encounters review which is typically done for a flight before setting and agreeing to its entry/exit coordination contracts with neighbouring sectors.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	<p>ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route</p> <p>APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA</p>

[REQ]

Identifier	REQ-10.02a-TS-PT.051
Title	Context flights display between entry and exit flight levels when probing a PC Aid Exit level.
Requirement	The CWP shall display all the flights (context flights) that are between the entry level and the proposed exit flight level along the subject flights trajectory when a potential Exit flight level is probed using the PC Aid.
Status	<validated>
Rationale	<p>Controller needs to be aware of all the environment flights when probing a potential flight level.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a) Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a) Display Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route

[REQ]

Identifier	REQ-10.02a-TS-PT.053
Title	CWP to facilitate Coordination acceptability within different sectors
Requirement	The CWP shall display the tentative encounters between a flight involved in an entry coordination dialogue to a sector and any other flight already assumed in the same sector, in order to advise the ATCO about the offer acceptability.
Status	<validated>
Rationale	<p>CWP has to display PC-Aid support to planning controller in assessing the suitability of sector entry and exit condition for a flight reviewing the encounters related to that flight.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	<ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a) Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)

Founding Members

<ALLOCATED_TO>	<Enabler>	<p>ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route</p> <p>APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA</p>
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[REQ]

Identifier	REQ-10.02a-TS-PTT.015
Title	CWP to clearly identify encounters detected using What-if probes
Requirement	The CWP shall display an encounter detected in a What-If-Probing in a different way than those detected using just operationally valid flight plans.
Status	<validated>
Rationale	<p>The what-if probes are displayed in a different manner to allow the controller the correct distinction between the real trajectories and the tentative ones. CWP, when performing a what-if, need to display tentative interactions and other interactions in a different manner, so that the controllers can distinguish them properly and not provoke any misunderstanding.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0001
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a) Display Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.019
Title	The CWP to display What-if/What-else probes for a flight
Requirement	The CWP shall allow an eligible operator to perform the following Probe orders (i.e. what-if, what-else) on an eligible flight: <ul style="list-style-type: none"> - Flight level probes. - Route probes, either Direct probes or 2D RNP probes. - Heading probes. - Speed probes.
Status	<validated>
Rationale	The CWP displays and allows the controller to interact with the Probe orders functionalities. This requirement has been implemented in project prototypes used in the following validation exercises: <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 (partially) - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005 (partially)

Category	<Functional>
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0012
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0021
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0013
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.023
Title	Conflict management what-if capacity
Requirement	The conflict management function shall be able to manage simultaneously at least 1 tentative trajectory per each controller working position.
Status	<validated>

Rationale	<p>Capacity requirement for what-if conflict management.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0009
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a) Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.024
Title	Conflict management what-if capacity
Requirement	The conflict management function shall be able to manage simultaneously 1 tentative trajectory per flight plan.
Status	<validated>

Rationale	<p>A controller could request a what-if (so a tentative trajectory) per each flight plan. They won't be assessed between them for conflicts (only a tentative with “real” trajectories).</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0009
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.002
Title	Availability of the Tactical Trajectory
Requirement	The TC-Aid shall provide CD&R services for each flight which has a valid tactical trajectory.
Status	<validated>

Rationale	<p>A valid tactical trajectory for a particular flight is needed in order to predict tactical encounters for that flight. Note that this technical requirement addresses only the CD&R scope of the OSED requirement, and does not include the actual trajectory generation.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0004
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0012
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a) Trajectory Prediction and Management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Compute Tactical Trajectory (PJ.10-02a) Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.005
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Title	TC-Aid activation when trajectory list is modified.
Requirement	The TC-Aid shall perform encounter detection when a tactical trajectory or deviation trajectory or entry trajectory is created, updated or deleted.
Status	<validated>
Rationale	<p>When the trajectory list is modified (a new trajectory appears, a trajectory is modified or a trajectory is removed) the conflict calculation must be performed.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0003
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.006
Title	Used trajectories crossings.

Requirement	TC-Aid shall compare tactical, deviation and entry trajectories of a flight with tactical, deviation and entry trajectories of all other flights, except in any of the following cases: - Pairs of deviation trajectories derived from intruder VFR flights. - Entry trajectories entering different executive CWP.
Status	<validated>
Rationale	Specifies the trajectory crossings that are used to search for conflicts. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-MONA.0001
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0032
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a) Trajectory Prediction and Management (PJ.10-02a) Monitoring Aids (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a) Compute Tactical Trajectory (PJ.10-02a) Analyze Conformance (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.011
Title	Tactical Encounter Geometry.
Requirement	For each detected tactical encounter, the TC-Aid shall determine the geometry of the encounter, as either head-on, crossing, catch-up or not applicable.
Status	<validated>
Rationale	<p>This requirement specifies the encounter horizontal geometry in 2D in order to provide to the controller an overview of the encounter.</p> <p>The “not applicable” geometry will be assigned to encounters when at least one of the interacting aircraft’s predictions has no defined direction of flight, for example when being in a hold volume.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0014
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0042
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.014
Title	What-if is probed against all the trajectories and active TSAs.
Requirement	When a what-if is proposed for a flight, the TC-Aid shall probe that flight's tentative trajectory against all other flights' tactical and deviation trajectories, and against all active TSAs.
Status	<validated>
Rationale	<p>The what-if probes against all the real flights (note that this excludes the other what-if flights) in order to find the impact of a command before the command is performed.</p> <p>Tentative encounters are tactical encounters that involve Tentative Trajectories (generated by a What-if probe) and Tactical or Deviation Trajectories for other flights.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	<ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0010
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

Founding Members

[REQ]

Identifier	REQ-10.02a-TS-TT.018
Title	Speculative Trajectories used for What-else probing.
Requirement	The TC-Aid shall use speculative trajectories against all other trajectories for What-else probing, excluding all speculative and tentative trajectories, and against all active TSAs.
Status	<validated>
Rationale	<p>For what-else probing for a flight plan the TC-Aid will use the speculative trajectories against Tactical, Deviation and Entry trajectories of other flight plans.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 (partially)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0008
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Founding Members



Identifier	REQ-10.02a-TS-PTT.013
Title	Alert display when conflicting trajectories are detected.
Requirement	The CWP shall display an alert when any conflicting trajectories are detected.
Status	<validated>
Rationale	<p>In order to capture the controller's attention, the detection of conflicting trajectories should generate an alert that can be either acoustic and/or visual.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0012
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0016
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Tactical Conflicts (PJ.10-02a) Display Planned Conflicts (PJ.10-02a)

<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA
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[REQ]

Identifier	REQ-10.02a-TS-PTT.015
Title	CWP to clearly identify encounters detected using What-if probes
Requirement	The CWP shall display an encounter detected in a What-If-Probing in a different way than those detected using just operationally valid flight plans.
Status	<validated>
Rationale	<p>The what-if probes are displayed in a different manner to allow the controller the correct distinction between the real trajectories and the tentative ones. CWP, when performing a what-if, need to display tentative interactions and other interactions in a different manner, so that the controllers can distinguish them properly and not provoke any misunderstanding.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
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Founding Members



<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0001
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Planned Conflicts (PJ.10-02a) Display Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.016
Title	Display differently what-else speculative encounters than other encounters.
Requirement	The CWP shall provide the result of the what-else probe function, displaying the speculative encounters in a different way from the other encounters detected for the planning and tactical trajectories.
Status	<validated>
Rationale	To avoid the misunderstanding of the Controller and to help an easier and faster understanding of the situation, speculative encounters should be displayed differently from planning/tactical encounters. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-002
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0008
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Tactical Conflicts (PJ.10-02a) Display What-Else Results (PJ.10-02a) Display Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.035
Title	CWP to display What-if probes
Requirement	The CWP shall allow the operator to probe for tactical encounters detection (i.e. what-if, what-else functions) before issuing a tactical clearance or a coordination proposal to the flight plan.
Status	<validated>
Rationale	The CWP allows performing a probe before applying a tactical command. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-002 (partially) - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-004

Category	<HMI>
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	<ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0008
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Request What-Else (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.036
Title	The CWP to display What-if probes for a flight
Requirement	The CWP shall provide access to the tactical What-if probes for any flight having a tactical trajectory.
Status	<validated>
Rationale	<p>The CWP allows that What-if can be performed for every tactical trajectory in order to probe a command.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003
Category	<HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0009
<ALLOCATED_TO>	<Functional block>	Controller Human Machine Interaction Management ER/APP (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Display Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.038
Title	Separation of interest parameters per type of airspace
Requirement	The Conflict Management functional block shall provide the capability to configure different lateral and vertical separation of interest parameters and trajectory look-ahead horizon for different airspace volumes.
Status	<validated>
Rationale	<p>This may reflect military areas, holding volumes or certain parts of a sector for which other separation minima apply.</p> <p>For planning conflict detection, a possible choice of parameters could be a trajectory look-ahead horizon starting from the end of tactical conflict detection horizon, and up to at least 15 minutes.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005

Category	<Functional>
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PERF.0001
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0010
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<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0034
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a) Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-PTT.039
Title	Encounter Detection scope
Requirement	<p>The Conflict Management functional block shall perform encounter detection for pairs of flights within a configurable trajectory look-ahead horizon for all the eligible trajectories based on the following defined separation of interest criteria:</p> <ul style="list-style-type: none"> - Lateral separation of interest - Longitudinal separation of interest - Vertical separation of interest - Vertical separation of interest in RVSM region for RVSM-equipped flights
Status	<validated>

<p>Rationale</p>	<p>Proximity between flights is computed considering the separation criteria. Note that the separation of interest is always greater than or equal to the separation minima. Also, a lower vertical separation of interest can be used in RVSM regions, but only for RVSM-equipped flights.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-001 - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
<p>Category</p>	<p><Functional></p>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0006
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0002
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<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0032
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
		Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Founding Members



Identifier	REQ-10.02a-TS-PTT.019
Title	The CWP to display What-if/What-else probes for a flight
Requirement	<p>The CWP shall allow an eligible operator to perform the following Probe orders (i.e. what-if, what-else) on an eligible flight:</p> <ul style="list-style-type: none"> - Flight level probes. - Route probes, either Direct probes or 2D RNP probes. - Heading probes. - Speed probes.
Status	<validated>
Rationale	<p>The CWP displays and allows the controller to interact with the Probe orders functionalities.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 (partially) - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005 (partially)
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0012
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0021
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0013
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)

<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA
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[REQ]

Identifier	REQ-10.02a-TS-PT.030
Title	CD&R coordination service availability in the CWP
Requirement	The CWP shall allow to manually select a flight, whose planned trajectory passes through the AOR sector, for CD&R services processing.
Status	<validated>
Rationale	<p>The ability to select relevant flights for CD&R processing and CWP display is a basic requirement for the proposed CD&R concept.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0019
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Planned Conflicts (PJ.10-02a)

<ALLOCATED_TO>	<Enabler>	<p>APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA</p> <p>ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route</p>
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[REQ]

Identifier	REQ-10.02a-TS-PT.052
Title	Remove coordination rejected from PC-Aid consideration
Requirement	CWP shall remove any coordination that has been rejected from PC-Aid consideration.
Status	<validated>
Rationale	<p>In order not to provoke misunderstandings, all rejected coordinations from the PC-Aid have to be deleted from the CWP.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-003
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0008
<ALLOCATED_TO>	<Functional block>	<p>Controller Human Machine Interaction Management ER/APP (PJ.10-02a)</p> <p>Conflict management (PJ.10-02a)</p> <p>Coordination and Transfer (PJ.10-02a)</p>

<ALLOCATED_TO>	<Function>	Coordination Agreed Data (PJ.10-02a) Display Planned Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA ER ATC 157_Enhanced ATC System Support to the Tactical Controller for Conflict Detection and Resolution in En-Route

[REQ]

Identifier	REQ-10.02a-TS-PTT.037
Title	CD&R coordination service availability
Requirement	The Conflict Management functional block shall provide CD&R services for an aircraft if one of the following is true: 1. The planned trajectory of the aircraft passes through the sector AOI 2. The aircraft is manually selected.
Status	<validated>
Rationale	A basic requirement for the proposed CD&R concept that limits the CD&R service to the relevant flights. This requirement has been implemented in project prototypes used in the following validation exercises: - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-003 - EXE-10.02a-V3-VALP-005
Category	<Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0005
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-SAFE.0004
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-PC00.0004
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0004
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-HPRF.0002
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a) Search Planned Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA

[REQ]

Identifier	REQ-10.02a-TS-TT.003
Title	TC-Aid trajectory truncated.
Requirement	The TC-Aid shall provide tactical encounter detection on that part of the trajectory which falls within the centre AOI as laid down in the environmental data (static data).
Status	<validated>
Rationale	<p>Only the part of the trajectory inside the AOI will be used for conflict search.</p> <p>This requirement has been implemented in project prototypes used in the following validation exercises:</p> <ul style="list-style-type: none"> - EXE-10.02a-V3-VALP-002 - EXE-10.02a-V3-VALP-004



Category	<Functional>
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[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	Pj10-02a
<SATISFIES>	< ATMS Requirement>	REQ-10.02a-SPRINTEROP-TC00.0005
<ALLOCATED_TO>	<Functional block>	Conflict management (PJ.10-02a)
<ALLOCATED_TO>	<Function>	Search Tactical Conflicts (PJ.10-02a)
<ALLOCATED_TO>	<Enabler>	APP ATC 155_ATC System Support to Medium-Term Conflict Detection and Resolution in the TMA



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THALES