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PJ.02-W2 AART

AIRPORT, AIRSIDE AND RUNWAY THROUGHPUT

Abstract

This document collects and describes the Technical System Requirements (functional and non-functional) which shall guide the development and implementation of addressing the WTS (for Arrivals) based on Static Aircraft Characteristics concept. These System Requirements are derived from the Operational Requirements collected by the specification of previous R&D projects and studies, and from SESAR project PJ.02-01-04 WTS (for Arrivals) based on Static Aircraft Characteristics. Technical System Requirements have been made in SESAR 2020 Wave 2.

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1 Executive summary

This document lists and details the Technical System Requirements (functional and non-functional) that shall guide the development and implementation of prototypes involved in PJ.02-01-04 Validation exercises. This document addresses Interface Requirements as well.

In line with the SPR/INTEROP-OSED [40], functional and non-functional are addressing three concepts. Technical System Requirements have been made in SESAR 2020 Wave 2.TS/IRS for the PJ.02-01-04 solution has not changed since SESAR 2020 Wave 1.The arrivals concepts solutions consist of Wake Turbulence Separations for Arrivals based on Static Aircraft Characteristics (PWS-A), Optimised Runway Delivery on Final Approach (ORD) and Weather-Dependent Reductions of Wake Turbulence Separations for Final Approach (WDS-A).

ORD is the ATC support tool to enable consistent and efficient delivery of the required separation or spacing between arrival pairs on final approach to the runway landing threshold through providing Target Distance Indicators (TDIs) to the controllers.

PWS-A is the efficient aircraft type pairwise wake separation rules for final approach consisting of both the aircraft type based pairwise wake separation minima and the twenty wake category (20-CAT) based wake separation minima for arrival pairs involving other aircraft types.

WDS-A is the conditional reduction or suspension of wake separation minima on final approach, applicable under pre-defined wind conditions, so as to enable runway throughput increase compared to the applicable standard weather independent wake separation minima. This is on the basis that under the pre-defined wind conditions the wake turbulence generated by the lead aircraft is either wind transported out of the path of the follower aircraft on final approach, or has decayed sufficiently to be acceptable to be encountered by the follower aircraft.

The wake separation minima on final approach are defined as both distance-based minima and time-based minima, and so may be applied as either distance-based minima or time-based minima.

Revising the wake separation minima aims to increase arrival runway capacity, efficiency, predictability and resilience while maintaining or increasing safety.

2 Introduction

2.1 Purpose of the document

This TS/IRS document [1]provides the requirements specification of the PJ.02-01-04 Solution addressing Wake vortices separation reduction, covering functional, non-functional and interface requirements related to SESAR Solution PJ.02-01-04 . This document focuses on specifying the functional description and the logical interfaces with other functional blocks

2.2 Scope

This TS/IRS covers functional, non-functional and interface requirements related to SESAR Solution PJ.02-01-04 .

The listed requirements shall comply with the operational requirements listed in the SPR-INTEROP/OSED [40].

2.3 Intended readership

The intended readership is the SESAR Solution PJ.02-01-04 project members, the other solutions in SESAR Project PJ.02 Increased Runway and Airport Throughput, the related solutions in SESAR Project PJ.01 Enhanced Arrivals and Departures, the related solutions in SESAR Project PJ.04 Total Airport Management, the related solutions in SESAR Project PJ.09 Advanced Demand & Capacity Balancing, the related transversal SESAR Projects PJ.19 and PJ.22, and all impacted and interested stakeholders.

2.4 Background

For this solution, the baseline from which this document has been written partly consists of SESAR 1 Technical Specification documents

- SESAR 1, 12.02.02-D56

Technical System Requirements have been made in SESAR 2020 Wave 2.TS/IRS for the PJ.02-01-04 solution has not changed since SESAR 2020 Wave 1.

2.5 Structure of the document

[1] The opinions expressed herein reflect the authors view only. Under no circumstances shall the SESAR Joint Undertaking be responsible for any use that may be made of the information contained herein.

The document is organised as described hereafter:

- *Section 1 gives a brief summary of this Technical Specification document*

- *Section 2 gives an introduction to how the document is organised*

- *Section 3 describes the links between Functional blocks, Enablers and Roles coming from the EATMA models*

- Section 4 describes the Functional Architecture and lists the Technical Requirements

- *Section 5 lists the options*

- Section 6 explains the assumptions for the technical feasibility of the solution

- Section 7 lists the Applicable documents and the references

- Appendix C describes how Optimised separation delivery in mixed mode operations are specified

2.6 Glossary of terms

Term	Definition	Source of the definition
DBS	Refers to applying wake separations on final approach which are based on distances. This is how wake separations are applied in the majority of current operations.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]
In-trail aircraft pair	Refers to consecutive aircraft pairs that are landing on the same runway.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]
Not-in-trail aircraft pair	Refers to consecutive aircraft pairs that are landing on different parallel runways.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]
ORD	Refers to the Optimised Runway Delivery concept which intends to provide additional tool support to show the Controller the required spacing on the approach to take into account the effect of compression primarily caused by aircraft decelerating to land.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]
S-PWS	A wake separation concept where wake separations are optimised by defining them between aircraft type pairs rather than between wake categories.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]

TBS	Refers to the generic TBS concept that was developed in SESAR 1 Project P06.08.01 which included tool support to show the Controller the required separation.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]
WDS (arrivals)	There are two versions: WDS (total wind) and WDS (crosswind). WDS (total wind) aims to allow reduced Wake Turbulence (WT) separations based on the argument that WT is more rapidly decayed as the wind magnitude increases. WDS (crosswind) aims to allow the reduction of WT separations based on the argument that WT is transported out of the path of follower aircraft.	OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED [39]

Table 1: Glossary of terms

2.7 Acronyms and Terminology

Term	Definition
3-CAT	Three Wake Category
6-CAT	Six Wake Category
7-CAT	Seven Wake Category
14-CAT	Fourteen Wake Category
20-CAT	Twenty Wake Category (Fourteen Wake Category with Six Wake Category)
A-CDM	Airport Collaborative Decision Making
A-SMGCS	Advanced Surface Movement Guidance and Control System
ACC	Area Control Centre
ADI	Average Departure Interval
ADS-B	Automatic Dependent Surveillance Broadcast
AFTN	Aeronautical Fixed Telecommunication Network
AIP	Aeronautical Information Publication
AO	Aircraft Operations
AOCC	Aircraft Operations Control Centre

AoR	Area of Responsibility
AMAN	Arrival Manager (System)
APOC	Airport Operations Centre
AROT or aROT	Arrival Runway Occupancy Time
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFCM	Air Traffic Flow and Capacity Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Service
ATSA	Air Traffic Services Assistant
CAP	Capacity
CAT	Category (for aircraft classification for wake)
CAT <n>	Category of ILS System (CAT I, CAT II, CAT III)
CBA	Cost Benefit Assessment
CDM	Collaborative Decision Making
CNS	Communication Navigation and Surveillance
CONOPS	Concept of Operations
CR	Change Request
CREDOS	Crosswind-Reduced Separation for Departure Operations
CTOT	Calculated Take Off Time
CWP	Controller Working Position
D-ATIS	Digital Automatic Terminal Information Service
DBS	Distance Based Separation
DC	Data Collection
DER	Departure End of the Runway
DF	Deceleration Fix (for landing stabilisation)
DLR	Deutsches Zentrum für Luft- und Raumfahrt

DMAN	Departure Manager (System)
DME	Distance Measuring Equipment
EASA	European Aviation Safety Agency
EATMA	European ATM Architecture
E-ATMS	European Air Traffic Management System
EC 6FP	European Commission 6th Framework Programme
EFPS	Electronic Flight Progress Strip
EU	European Union
EXE	Exercise
FAF	Final Approach Fix
FAP	Final Approach Point
FOC	Flight Operations Centre
FPL	Flight Plan
ft	feet
FTD	Final Target Distance
FTS	Fast Time Simulation
GH	Ground Handlers
GMC	Ground Movement Controller
GMP	Ground Movement Planner
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GWCS	Glideslope Wind Conditions Service
HEAVY	ICAO Heavy Wake Category
HMI	Human Machine Interface
HPAR	Human Performance Assessment Report
Hz	Hertz
IAF	Initial Approach Fix
ICAO	International Civil Aviation Organisation
IAS	Indicated Air Speed
ILS	Instrument Landing System

INTEROP	Interoperability Requirements
ITD	Initial Target Distance
kg	kilograms
KPA	Key Performance Area
kt or kts	knots
LiDAR	Light Detection and Ranging
LIGHT	ICAO Light Wake Category
LT	Live Trial
m	metres
m/s	metres per second
MDI	Minimum Departure Interval
MEDIUM	IACO Medium Wake Category
MET	Meteorological
MHz	Megahertz (1,000,000 Hz)
MLS	Microwave Landing System
MRS	Minimum Radar Separation
MTOM	Maximum Take Off Mass
MTOW	Maximum Take Off Weight
N/A	Not applicable
NDB	Non Directional Beacon
NM	Nautical Mile (1852m)
NMF	Network Management Function
NPR	Noise Preferential Route
OFA	Operational Focus Area
OI	Operational Improvement
OM	Outer Marker (final approach)
OPAR	Operational Performance Assessment Report
ORD	Optimised Runway Delivery (arrivals)
OSD	Optimised Separation Delivery (departures)
OSED	Operational Service and Environment Definition

PANS	Procedures for Air Navigation Services
PAR	Performance Assessment Report
PCP	Pilot Common Project
PFS	Paper Flight Strip
PIRM	Programme Information Reference Model
PJ	Project
PSR	Primary Surveillance Radar
PWS	Pair Wise Separation
PWS-A	Pair Wise Separation for Arrivals
PWS-D	Pair Wise Separation for Departures
QoS	Quality of Service
R&D	Research & Development
R/C	Radio Communications
RBT	Reference Business Trajectory
RECAT	Re-categorisation (wake scheme)
RECAT-EU	RECAT Europe
RECAT-EU-PWS	RECAT Europe Pair Wise Separation
REQ	Requirement
RMT	Reference Mission Trajectory
ROT	Runway Occupancy Time
RSVA	Reduced Separation in the Vicinity of the Aerodrome
RT (or R/T)	Radio Telephone or Radiotelephony
RTS	Real-Time Simulation
s	seconds
S-PWS	Static Pair Wise Separation
S-PWS-A	Static Pair Wise Separation for Arrivals
SAC	Safety Criteria
SAR	Safety Assessment Report
SBT	Shared Business Trajectory
SecAR	Security Assessment Report

SESAR	Single European Sky ATM Research Programme
SESAR 1	SESAR from 2010 to 2016
SESAR 2020	SESAR from 2016 (to 2020)
SID	Standard Instrument Departure
SJU	SESAR Joint Undertaking
SMT	Shared Mission Trajectory
SPR	Safety and Performance Requirements
SSR	Secondary Surveillance Radar
STAR	Standard Terminal Arrival Route
SWIM	System Wide Information Model
TAS	True Air Speed
TB	Time Based
TBA	To be added
TBD	To be determined
TBS	Time Based Separation
TBS-A	Time Based Separation for Arrivals
TDI	Target Distance Indicator
TIS-B	Traffic Information Services - Broadcast
TOBT	Target Off Blocks Time
TMA	Terminal Manoeuvring Area
TS	Technical Specification
TSAT	Target Start-up Approval Time
TT	Target Time
TTOT	Target Take-Off Time
UTC	Universal Coordinated Time
V APP	Approach Speed
VCR	Visual Control Room
VOR	VHF Omnidirectional Range
V_R	Rotation Speed (for Take Off)
WDS	Weather Dependent Separation

WDS-A	Weather Dependent Separation for Arrivals
WDS-D	Weather Dependent Separation for Departures
WT	Wake Turbulence
WTE	Wake Turbulence Encounter
WVE	Wake Vortex Encounter

Table 2: Acronyms and terminology

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3 SESAR Solution Impacts on Architecture

3.1 Target Solution Architecture

The following tables are extracted from MEGA modelling activities that were conducted for the concepts addressed by this Solution. The following OIs are covered:

- AO-0328: Optimised Runway Delivery on Final Approach;
- AO-0306: Wake Turbulence Separations (for Arrivals) based on Static Aircraft Characteristics;
- AO-0310: Weather-Dependent Reductions of Wake Turbulence Separations for Final Approach.

3.1.1 SESAR Solution(s) Overview

PJ.02-01-04 : WTS (for Arrivals) based on Static Aircraft Characteristics

PJ.02-01-04 Solution aims to optimise wake turbulence separation minima for arrivals to enhance airport runway throughput. It focuses on development of:
- Wake turbulence separations based on static aircraft characteristics and weather dependent reductions;
- Separation delivery support tools for ATCOs.

OI Step		OI description	Open CR
AO-0306		Wake Turbulence Separations (for Arrivals) based on Static Aircraft Characteristics	CR 03430 Update AO-0306 (PJ.02-01)
	EN code	EN description	Open CR
	AIRPORT-08	Decay Enhancing Devices	
	APP ATC 118	ATC System to support static pair-wise wake separation (S-PWS) on approach	CR 02022 Update APP ATC 118 (AO-0306 - PJ02-01)
	AERODROME-ATC-60	Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	CR 02027 Unset AERODROME-ATC-60 V3 date (PJ02-01)
	PJ.02-W2-14	Evolution of separation minima for increased runway throughput	CR 02992 Set OI list for PJ02-W2-14
	AERODROME-ATC-42a	Airport ATC tool to support static pair-wise wake separation (S-PWS) in final approach	CR 03242 Update AERODROME-ATC-42a (PJ02-01)

PJ.02-01	Wake Turbulence Separation Optimization	CR 03504 Amend PJ02-01 Solution description
REG-0523	Regulatory provisions (AMC) for static pair-wise wake separation minima (S-PWS)	CR 03520 Update REG-0523 (PJ02-01)
AO-0310	**Weather-Dependent Reductions of Wake Turbulence Separations for Final Approach**	**CR 03431 Update AO-0310 (PJ02-01)**
EN code	**EN description**	**Open CR**
A/C-47	On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	
AIRPORT-08	Decay Enhancing Devices	
APP ATC 74	ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach	
METEO-03	Provision and monitoring of real-time airport weather information (PCP)	
METEO-04b	Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	
METEO-05b	Generate and provide MET information relevant for TMA and En-route related operations (PCP)	
SWIM-APS-07a	Stakeholder systems consumption of G/G Meteorological Information services	
AERODROME-ATC-60	Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	CR 02027 Unset AERODROME-ATC-60 V3 date (PJ02-01)
APP ATC 99	ATC System to use Real-Time Meteo Information Received From Met Systems	CR 03424 Update APP ATC 99 (PJ.02-01)
PJ.02-01	Wake Turbulence Separation Optimization	CR 03504 Amend PJ02-01 Solution description
AO-0328	**Optimised Runway Delivery on Final Approach**	**CR 03432 Update AO-0328 (PJ02-01)**

EN code	EN description	Open CR
A/C-47	On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	
AERODROME-ATC-17	Airport ATC tool to Support Time-Based Separation in Final Approach	
APP ATC 156	ATC System to Support Time-Based Separation in Final Approach	
METEO-03	Provision and monitoring of real-time airport weather information (PCP)	
METEO-04b	Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	
SWIM-APS-07a	Stakeholder systems consumption of G/G Meteorological Information services	
AERODROME-ATC-68	ATC System to support Optimised Runway Delivery on Final Approach	CR 02028 Update AERODROME-ATC-68 (AO-0328 - PJ02-01)
APP ATC 120	ATC System to support Optimised Runway Delivery on Final Approach	CR 02029 Update APP ATC 120 (AO-0328 - PJ02-01)
AERODROME-ATC-55	Aerodrome ATC System to support Optimised Runway Delivery on Final Approach based on Aircraft ROT categorisation	CR 03413 Update AERODROME-ATC-55 (PJ02-01-PJ02-08)
APP ATC 99	ATC System to use Real-Time Meteo Information Received From Met Systems	CR 03424 Update APP ATC 99 (PJ.02-01)
PJ.02-01	Wake Turbulence Separation Optimization	CR 03504 Amend PJ02-01 Solution description
APP ATC 169	Approach ATC System to support Optimised Runway Delivery on Approach based on Aircraft ROT categorisation	CR 03506 Create APP ATC 169 (AO-0337 - PJ02-08)
STD-093	EUROCONTROL Guidelines for Optimised Runway Delivery	CR 03525 Create STD-093 (PJ02-01)

Table 3 : SESAR Solution Overview

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SESAR Solution ID and Title	Functional Blocks/Role impacted by the SESAR Solution (from EATMA)	Enabler ID (from EATMA)	Enabler Title (from EATMA)	Enabler coverage
PJ.02-01-04 : WTS (for Arrivals) based on Static Aircraft Characteristics	Aerodrome Weather Information Management	STD-066	Standard related to weather-dependent separation minima (WDS)	
		APP ATC 99	ATC System to use real time meteo information received from met systems	Fully
		METEO-03	Provision and monitoring of real-time airport weather information, Step 1	
		METEO-04b	Generate and provide MET information services relevant for Airport and final approach related operations, Step 1	
	Runway and Taxiway Usage Management	AERODROME-ATC-17	Airport ATC tool to support time based separation in final approach	Fully
		AERODROME-ATC-68	ATC system to support optimized runway delivery on final approach	Fully

The applicable roles and responsibilities for the arrivals concepts solutions include:

- Tower ATC Roles
  - o Tower ATC Supervisor
  - o Tower Runway Controller
- Approach ATC Roles
  - o Approach Supervisor
  - o Final Approach Controller
  - o Intermediate Approach Controller
- Flight Crew Roles
  - o Flight Crew
- System Roles
  - o Operation Technicians / System Engineers

These roles and the specific/additional role responsibilities are detailed below.

Role	Current Responsibility	Specific/additional role
Tower ATC Supervisor	Has overall responsibility for the planning of the tower operation. Monitors operations. Decides on arrival rates. Decides on staffing and manning of CWPs in accordance with expected traffic demand. Proposes runway configuration. Gives permission for maintenance, etc.	Is aware of the wind conditions, and for determining and deciding on the application (if required) of the arrivals concept (TBS-A, PWS-A, WDS-A) in consultation with the Approach Supervisor. Responsible for ensuring the duty runways-in-use information, and the separation policy information, and planned changes to these, is available, set up, and maintained consistently in the arrival Separation Delivery tool support for Tower ATC. Responsible for ensuring runway conditions, and planned and forecast changes to the runway conditions, are reflected in the separation policy information.
Tower Runway Controller	The Tower Runway Controller is responsible for the provision of air traffic services to aircraft within the control zone, or otherwise operating in the vicinity of controlled aerodromes (unless transferred to Approach Control/ACC, or to the Tower Ground Controller), by issuing clearances, instructions and permission to aircraft, vehicles and persons as required for the safe and efficient flow of traffic.	Uses the Separation Delivery tool to monitor that separation / spacing remain consistent as aircraft descend on final approach, so as to enable timely intervention action to be taken when there is separation infringement. Monitors runway occupancy, and runway conditions, and ensures separation policy is consistently maintained to support the runway conditions, and changes to the runway conditions. Receives, from different sources, and disseminates to the flight deck, critical WT and weather information, when needed.
Approach Supervisor	Plans and monitors operation in the TMA.	Is aware of the wind conditions, and for deciding and agreeing to the application (if required) of the applicable arrivals concept (TBS-A, PWS-A, WDS-A), in consultation with the Tower Supervisor. Responsible for ensuring the duty runways-in-use information, and the separation policy information, and planned changes to these, is available, set up, and maintained

Role	Current Responsibility	Specific/additional role
		consistently in the arrival Separation Delivery tool support for Approach ATC. Responsible for ensuring that flight crew are informed of the application of the applicable arrivals concept (TBS-A, PWS-A, WDS-A), for example, through D-ATIS.
Final / Intermediate Approach Controller	Are in charge of safe and efficient processing of arrivals to the runway.	Responsible for ensuring that the arrival aircraft information used by the Separation Delivery tool to calculate the TDIs is correct. This includes the arrival sequence order intent, and the flight specific aircraft information such as the aircraft type, the landing speed intent, and in the case of parallel active duty runways-in-use, the landing runway intent of each aircraft. Uses the Separation Delivery tool to ensure final approach separations are set up consistently and efficiently. Uses the Separation Delivery tool to monitor that separations remain consistent as aircraft descend on final approach, so as to enable timely intervention action to be taken when there is separation infringement.
Flight Crew	The Flight Crew remains ultimately responsible for the safe and orderly operation of the flight.	Is aware of the applicable arrivals concept (TBS-A, PWS-A, WDS-A) in operation and the impact on the distance separation set up on final approach. Is informed of when the applicable arrivals concept (TBS-A, PWS-A, WDS-A) is being employed on final approach, for example, through D-ATIS. Reports critical weather and WT information to ATC.
Operation Technicians / System Engineers	Monitors the health of the systems used to provide air traffic control services and restore them in case of failure.	Monitors the health and when necessary, restores the Separation Delivery Tool support, and the associated support tools and system services, such as the glideslope wind conditions service.

Table 4 : Roles and responsibilities for the Arrival concept

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

Enabler	Opt/Req	Deviation
A/C-47_On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	Optional	
A/C-48a_Air broadcast of aircraft position/vector (ADS-B OUT) compliant with DO260B	Optional	
METEO-03_Provision and monitoring of real-time airport weather information (PCP)	Required	
METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	Required	
METEO-05b_Generate and provide MET information relevant for TMA and En-route related operations (PCP)	Optional	
SWIM-APS-07a_Stakeholder systems consumption of G/G Meteorological Information services	Optional	
AERODROME-ATC-60_Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	Optional	
APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems	Required	
PJ.02-01_Wake Turbulence Separation Optimization	Required	
AIRPORT-08_Decay Enhancing Devices	Optional	
APP ATC 118_ATC System to support static pair-wise wake separation (S-PWS) on approach	Required	
AERODROME-ATC-60_Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	Optional	
PJ.02-W2-14_Evolution of separation minima for increased runway throughput	Required	
AERODROME-ATC-42a_Airport ATC tool to support static pair-wise wake separation (S-PWS) in final approach	Required	
PJ.02-01_Wake Turbulence Separation Optimization	Required	
REG-0523_Regulatory provisions (AMC) for static pair-wise wake separation minima (S-PWS)	Required	
A/C-47_On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	Optional	
AIRPORT-08_Decay Enhancing Devices	Optional	
APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach	Required	

METEO-03_Provision and monitoring of real-time airport weather information (PCP)	Required
METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	Required
METEO-05b_Generate and provide MET information relevant for TMA and En-route related operations (PCP)	Required
SWIM-APS-07a_Stakeholder systems consumption of G/G Meteorological Information services	Optional
AERODROME-ATC-60_Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	Optional
APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems	Required
PJ.02-01_Wake Turbulence Separation Optimization	Required
AERODROME-ATC-60_Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	Optional
PJ.02-W2-14_Evolution of separation minima for increased runway throughput	Required
PJ.02-01_Wake Turbulence Separation Optimization	Required
REG-0523_Regulatory provisions (AMC) for static pair-wise wake separation minima (S-PWS)	Required
AIRPORT-08_Decay Enhancing Devices	Required
PJ.02-01_Wake Turbulence Separation Optimization	Required
A/C-48a_Air broadcast of aircraft position/vector (ADS-B OUT) compliant with DO260B	Required
AERODROME-ATC-60_Airport ATC system to monitor wake turbulence risk using ground-based LIDAR/Radar	Optional
PJ.02-01_Wake Turbulence Separation Optimization	Required
A/C-48b_Air broadcast of aircraft data (ADS-B OUT) compliant with new DO260C standard	Required
A/C-47_On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	Optional
AERODROME-ATC-17_Airport ATC tool to Support Time-Based Separation in Final Approach	Optional
APP ATC 156_ATC System to Support Time-Based Separation in Final Approach	Optional

METEO-03_Provision and monitoring of real-time airport weather information (PCP)	Required	
METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	Required	
SWIM-APS-07a_Stakeholder systems consumption of G/G Meteorological Information services	Optional	
AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach	Required	
APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach	Required	
AERODROME-ATC-55_Aerodrome ATC System to support Optimised Runway Delivery on Final Approach based on Aircraft ROT categorisation	Required	
APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems	Required	
PJ.02-01_Wake Turbulence Separation Optimization	Required	
APP ATC 169_Approach ATC System to support Optimised Runway Delivery on Approach based on Aircraft ROT categorisation	Optional	
STD-093_EUROCONTROL Guidelines for Optimised Runway Delivery	Required	
A/C-37a_Downlink of trajectory data according to contract terms (ADS-C) compliant to ATN baseline 2 (FANS 3/C)	Optional	
A/C-47_On-board management of meteorological data from on-board sensors for sharing and integration by ATM and ATM-MET systems	Optional	
METEO-03_Provision and monitoring of real-time airport weather information (PCP)	Required	
METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)	Required	
METEO-05b_Generate and provide MET information relevant for TMA and En-route related operations (PCP)	Optional	
SWIM-APS-07a_Stakeholder systems consumption of G/G Meteorological Information services	Optional	
AERODROME-ATC-55_Aerodrome ATC System to support Optimised Runway Delivery on Final Approach based on Aircraft ROT categorisation	Required	
AERODROME-ATC-93_Aerodrome ATC system to support optimised runway separation delivery in mixed mode operations	Optional	
PJ.02-01_Wake Turbulence Separation Optimization	Required	

Table 5 : Deviations from SESAR Solution

3.1.1.2 Relevant Use Cases

This section lists and describes the relevant operational Use cases covered in this solution

Operational Use Case	Description
[NOV-5][ARR-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals (ORD, PWS-A, WDS-A)	This Use Case takes place in the planning or tactical execution phase. It describes the coordination workflow and exchanges between ATC supervisors (Tower and Approach) and Controllers when a scenario change is detected. The following scenarios change are identified: • Conditional usage of WDS, based on nowcast and forecast weather conditions • Degraded mode of operations, where the ATCO Separation Delivery Tool or supporting services like GWCS are no longer suitable for operations. Other specific non-nominal/alternative flows in addition to the cases mentioned above (e.g. planned or unplanned change of runway in-use) are detailed in the SESAR1 OFA01.03.01 Enhanced Runway Throughput OSED. The use case starts when the Tower or Approach Supervisor identifies the need for a change in the scenario. The nominal flow ends when the new scenario is implemented. **General Conditions (Scope and Summary)** Approach and Tower controllers make use of ORD and related SESAR1 and SESAR2020 concepts (e.g. TBS-A, PWS-A, WDS-A) as described in [NOV-5][ARR-02]. Approach and Tower Supervisors put in place a coordination process that can lead to the following scenarios change: • Conditional usage of WDS, based on nowcast and forecast weather conditions • Degraded mode of operations, where the ATCO Separation Delivery Tool or supporting services like GWCS are no longer suitable for operations. **Pre Conditions** The Separation Delivery tool and all applicable alerting / monitoring tools are operational. The GWCS is operational.

	The Approach Arrival Sequence Service is operational.
	
	Post Conditions
	
	Post conditions are depending on the change scenario implemented:
	
	• WDS
	
	  The Approach and Tower Supervisors have coordinated the activation/deactivation of the WDS-A concept considering the current wind conditions (and coordinated with the MET service if needed).
	
	• Degraded Mode
	
	  The Approach and Tower Supervisors have coordinated the reversion to DBS with or without TDI.
	
	  The Separation Delivery tool and/or all applicable alerting / monitoring tools and/or GWCS and/or Approach Arrival Sequence Service are no longer operational.
	
	For all the scenarios changes an updated flow of arrival aircraft for the aerodrome into the TMA is established. The new flow matches the runway capacity in the prevailing operating conditions.

[NOV-5][ARR-02] Airport Operational Scenario Execution Phase for PWS, WDS and ORD for Arrivals (ORD, PWS-A, WDS-A)	This use case takes place in the execution phase. It describes the operational flow involved in sequencing and delivering arrival aircraft on the approach phase with an Optimised Runway Delivery (ORD) Separation tool, which is available for Approach and Tower Control use. This ORD tool computes two indicators on the HMI (Initial and Final Target Distance Indicators -ITD, FTD-). Indicators are computed according to the different SESAR1 and SESAR2020 concepts which are applied (e.g. ORD, TBS, PWS-A, and/or WDS-A). The use case starts when the flight enters the TDI Area (taking into account that the Flight Deck has prepared and briefed the approach at the end of cruise). The nominal flow ends when the aircraft has landed. **General Conditions (Scope and Summary)** This Use Case describes the steps involved in sequencing and delivering arrival aircraft using the applicable SESAR1 and SESAR2020 concepts (e.g. TBS, PWS-A, ORD and / or WDS-A) on final approach with the aid of TDIs displayed on the extended runway centreline of the Final Approach Controller radar display and Tower Runway Controller air traffic monitor display. This Use Case takes place from the arrival aircraft entering the TDI area until the arrival aircraft lands and vacates the runway.

The Approach Operations in this Use Case are equipped with (some are optional subject to a local safety case):

- Separation Delivery tool;
- Approach Arrival Sequence Service;
- Approach Arrival Sequence Display;
- Wrong aircraft turned on TDI alert;
- Aircraft turned onto wrong localiser;
- Speed conformance alert;
- ITD catch-up alert;
- Separation Delivery tool monitor;
- GWCS monitor;
- Approach Arrival Sequence monitor;
- GWCS and distance display;
- Wind monitor / alert.

The Tower Operations in this Use Case are equipped with (some are optional subject to a local safety case):

- Separation Delivery tool;
- Approach Arrival Sequence Display;
- Speed conformance alert;
- ITD catch-up alert;
- Separation Delivery tool monitor;
- GWCS monitor;
- Approach Arrival Sequence monitor.

Pre Conditions

Airport Medium / Short Term Planning and Demand and Capacity Balancing have established a flow of arrival aircraft for the aerodrome into the TMA that matches the runway capacity in the prevailing operating conditions.

The approach arrival sequence into the IAFs is optimised as far as reasonable and if applicable is reflected in the AMAN.

The Separation Delivery tool and all applicable alerting / monitoring tools are operational.

The GWCS is operational.

The Approach Arrival Sequence Service is operational.

If applicable, the Approach and Tower Supervisors have coordinated the activation of the concept (TBS-A or WDS-A) considering the current wind conditions (and coordinated with the MET service if needed).

	The Flight Crew are aware that an alternative WT scheme (TBS-A, PWS-A or WDS-A) is being employed on final approach through notification via the Aeronautical Information Publication (AIP), the pre-departure briefing, the top of descent briefing, and from the D-ATIS notification as the aircraft enters the TMA. The Flight Crew establish the landing stabilisation speed required for the landing weight, cockpit stabilisation procedures including approach flap setting, and D-ATIS reported runway surface wind conditions soon after the aircraft enters the TMA. The Flight Crew are aware of the runway in use and the approach type. **Post Conditions** The arrival aircraft has landed and vacated the runway. **Actors** Approach Supervisor, Tower Supervisor, TMA Sector Controllers, Intermediate Approach Controller, Final Approach Controller, Tower Runway Controller, Flight Crew. **Trigger** Coordination of an arrival aircraft into the assigned IAF is initiated between the TMA Sector Controller and the Intermediate Approach Controller.
[NOV-5][MIX-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A)	This Use Case takes place in the planning or tactical execution phase. It describes the coordination workflow and exchanges between ATC Supervisors (Tower and Approach) and Controllers when a scenario change is detected. The following scenarios change are identified: • Mix Mode of operations, applying tactical or planned specific scenario spacing (GAP management) • Degraded mode of operations, where the ATCO Separation Delivery Tool or supporting services like GWCS are no longer suitable for operations. Other specific non-nominal/alternative flows in addition to the cases mentioned above (e.g. planned or unplanned change of runway in-use) are detailed in the SESAR1 OFA01.03.01 Enhanced Runway Throughput OSED. The use case starts when the Tower or Approach Supervisor identifies the need for a change in the scenario. The nominal flow ends when the new scenario is implemented.

	General Conditions (Scope and Summary) Approach and Tower Controllers make use of ORD and related SESAR1 and SESAR2020 concepts (e.g. TBS-A, PWS-A) as described in [NOV-5] [ARR-02]. Approach and Tower Supervisors put in place a coordination process that can lead to the following scenarios change: • Mix Mode of operations, applying tactical or planned specific scenario spacing (GAP management) • Degraded mode of operations, where the ATCO Separation Delivery Tool or supporting services like GWCS are no longer suitable for operations. **Pre Conditions** The Separation Delivery tool and all applicable alerting / monitoring tools are operational. The GWCS is operational. The Approach Arrival Sequence Service is operational. **Post Conditions** Post conditions are depending on the change scenario implemented: • Mix Mode The Approach and Tower Supervisors have coordinated the application of specific scenario spacing. • Degraded Mode The Approach and Tower Supervisors have coordinated the reversion to DBS with or without TDI. The Separation Delivery tool and/or all applicable alerting / monitoring tools and/or GWCS and/or Approach Arrival Sequence Service are no longer operational. For all the scenarios changes an updated flow of arrival aircraft for the aerodrome into the TMA is established. The new flow matches the runway capacity in the prevailing operating conditions.
[NOV-5][MIX-02] Airport Operational Scenario Execution Phase for PWS, WDS	This use case takes place in the execution phase. It describes the operational flow involved in sequencing and delivering arrival aircraft on the approach phase with an Optimised Runway Delivery (ORD) Separation tool and the applicable SESAR1 and SESAR2020 concepts (e.g. TBS, PWS-A, and /or WDS-A)

and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A)	including additional specific spacing requests previously coordinated by Approach and Tower Supervisors in the [NOV-5][MIX-01] Use Case.
	Spacing requests are called GAP in the Use Case.
	The use case starts when the flight enters the TDI Area (taking into account that the Flight Deck has prepared and briefed the approach at the end of cruise). The nominal flow ends when the aircraft has landed.
	General Conditions (Scope and Summary)
	As per [NOV-5][ARR-02].
	Pre Conditions
	As per [NOV-5][ARR-02]
	In addition the Approach and Tower Supervisors have coordinated the provision of scenario specific spacing (GAP) between two or more aircraft and they agreed on the position in the sequence (see [NOV-5][MIX-01]).
	Post Conditions
	The arrival aircraft after the spacing has landed and vacated the runway.
	The aircraft(s) planned for departure within the arrival sequence has been cleared for take-off

Table 6 : Relevant Use Cases - NOVs

System Process	Description
[NSV-4][ARR-02] Airport Operation Scenario for PWS, WDS and ORD for Arrivals (PWS-A, WDS-A and ORD)	
[NSV-4][ARR/MIX-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals or Mix-mode (ORD, PWS-A, WDS-A)	
[NSV-4][DEP-01] Airport Operational Scenario Execution Phase for Optimised Separation Delivery (OSD) for Pairwise Separation for Departures (PWS-D) and Weather Dependent Separation for Departures (WDS-D)	This NSV-4 reflects the Use Case [DEP-01] Airport Operational Scenario Execution Phase for Optimised Separation Delivery (OSD) for Pairwise Separation for Departures (PWS-D) and Weather Dependent Separation for Departures (WDS-D).
[NSV-4][DEP-02] Airport Operational Scenario Execution Phase for Transitioning to and from Weather Dependent Separation for Departures (WDS-D)	This diagram reflects the technical layer of the Use Case [DEP-02] Airport Operational Scenario Execution Phase for Transitioning to and from Weather Dependent Separation for Departures (WDS-D)

[NSV-4][MIX-02] Airport Operational Scenario Execution Phase for PWS, WDS and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A)	
[NSV-4][WDE-01] Airport Operational Scenario Execution Phase for Wake Decay Enhancing Devices	
[NSV-4][WRM-01] Airport Operational Scenario Execution Phase for Wake Risk Monitoring	

Table 7 : Relevant Use Cases – NSVs

3.1.2 Capability Configurations required for the SESAR Solution

WTS (for Arrivals) based on Static Aircraft Characteristics (ARR)				
CC	Op Env	Capability	Node	Stakeholder
Aerodrome ATM-MET (PJ.18-04b)	Airport;	Aeronautical and Meteorological Information Management; Meteorological Observation and Forecasting Provision;	Meteorological Service Provision;	Civil MET Service Provider; Military MET Service Provider;
APP ACC (PJ.02-01-04)			Air Traffic Flow and Capacity Management; Airspace Management; Airspace Organisation; En-Route/Approach ATS;	Civil ATS Approach Service Provider;
Civil Aircraft		Adverse Condition Operations Provision; ATSAW-Spacing Monitoring Execution; Clearance/Instruction Management; CTA/CTO Management; Ground Collision Avoidance; Interval Management (IM); Meteorological Observation and Forecasting Provision; Mid-Air Collision Avoidance; Optimised Climb Execution;	Airspace User Operations; Flight Deck;	Civil Scheduled Aviation;

		Optimised Descent Execution; Optimised Take-Off / Landing Execution; PinS Operations Execution; RNP based Operations Execution; Separation Technique Management; Surface Route Management; Trajectory Information Synchronisation; Trajectory Revision in Execution; Wake Turbulence Separation Provision;		
Communication Infrastructure		Airport Operations Management;	Aerodrome ATS;	Civil CNS Service Provider; Military CNS Service Provider;
TWR (PJ.02-01-04)			Aerodrome ATS; Network Operations;	Civil ATS Aerodrome Service Provider; Military ATS Aerodrome Service Provider;

Table 8 : Capability Configurations

3.2 Changes imposed by the SESAR Solution on the baseline Architecture

Enabler	Element type	Element name	Impact	Change
APP ATC 118 (CR)	ATC System to support static pair-wise wake separation (S-PWS) on approach			
	Function	Compute TDI	Update	
	Function	Display Approach applicable separation	Update	
	Function	Display TDI	Update	
	Function	Manage Inputs	Update	
	Function	Record Inputs	Update	
	Function	Support Traffic Separation	Update	
AERODRO ME-ATC-68 (CR)	ATC System to support Optimised Runway Delivery on Final Approach			
	Function	Display applicable separation	Update	
	Function	Support Final Approach Traffic Spacing	Update	
APP ATC 120 (CR)	ATC System to support Optimised Runway Delivery on Final Approach			
	FB	Approach Traffic Separation (PJ.02-01-04)	Introduce	This FB computes the applicable separation between arrivals according to an ICAO-based or RECAT-EU based separation scheme.
	Function	Compute TDI	Update	
	Function	Display Approach applicable separation	Update	
	Function	Display TDI	Update	
	Function	Manage Inputs	Update	
	Function	Record Inputs	Update	
	Function	Support Traffic Separation	Update	
AERODRO ME-ATC-42a (CR)	Airport ATC tool to support static pair-wise wake separation (S-PWS) in final approach			
	Function	Display applicable separation	Update	

	Function	Support Final Approach Traffic Spacing	Update	
APP ATC 99 (CR)	ATC System to use Real-Time Meteo Information Received From Met Systems			
	Function	Compute TDI	Update	
	Function	Display Wind Conditions	Introduce	
	Function	Manage Inputs	Update	
	Function	Record Inputs	Update	
	Function	Support Traffic Separation	Update	
AIRPORT-08 (CR)	Decay Enhancing Devices			
	Function	Analyse Wake Vortex Decay Data	Introduce	
	Function	Measure Wake Vortex	Introduce	
	Function	Provide Wake Vortex Decay Data	Introduce	
APP ATC 74 (CR)	ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach			
	Function	Compute TDI	Update	
	Function	Display Approach applicable separation	Update	
	Function	Display TDI	Update	
	Function	Manage Inputs	Update	
	Function	Record Inputs	Update	
	Function	Support Traffic Separation	Update	

Table 9 : Changes on the baseline PJ.02-01-04 Architecture

4 Technical Specifications

4.1 Functional architecture overview

This section describes the new system method to achieve the WTS (for Arrivals) based on Static Aircraft Characteristics.

A functional architecture overview is provided for the different concepts of the WTS (for Arrivals) based on Static Aircraft Characteristics.

Role	Functional Block	Function
[NSV-4][ARR-02] Airport Operation Scenario for PWS, WDS and ORD for Arrivals (PWS-A, WDS-A and ORD)		
	Aerodrome Safety Nets	Aerodrome Safety Nets;
	Approach Traffic Separation (PJ.02-01-04)	Manage Inputs; Support Traffic Separation;
	Arrival Traffic Separation (PJ.02-01-04)	Support Final Approach Traffic Spacing;
ATC Executive Controller (PJ.02-01-04)		Check conditions for gap insertion; Insert GAP Spacing; Monitor and separate traffic; Provide Approach Clearance; Transfer Flight;
	Controller Human Machine Interaction Management Aerodrome ATC (PJ.02-01-04)	Display applicable separation;
	Controller Human Machine Interaction Management ER/APP (PJ.02-01-04)	Display Approach applicable separation; Record Inputs; Release Flight;
	Coordination and Transfer	Coordination and Transfer;

	Legacy G/G Datalink Communications	Legacy G/G Datalink Communications;
	Safety Nets	Safety Nets;
Sequence Manager (Sequencer) (PJ.02-01-04)		Update Sequence;
Tower Runway Controller (PJ.02-01-04)		Monitor Spacing during Final Approach; Provide Landing Clearance;
[NSV-4][ARR/MIX-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals or Mix-mode (ORD, PWS-A, WDS-A)		
ACC/Approach/TMA Supervisor (PJ.02-01-04)		Assess Operational Situation and Conditions at the Approach; Coordinate with Tower Supervisor; Switch to New Mode Operations in APP Control;
Airport Tower Supervisor (PJ.02-01-04)		Assess Operational Situation and Conditions at the Airport; Coordinate with Approach Supervisor; Switch to New Mode Operations in TWR Control;
	Operational Supervision Aerodrome ATC (PJ.02-01-04)	Display Wind Conditions;
	Operational Supervision ER/APP ATC (PJ.02-01-04)	Display Wind Conditions;
[NSV-4][MIX-02] Airport Operational Scenario Execution Phase for PWS, WDS and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A)		
	Aerodrome Safety Nets	Aerodrome Safety Nets;
	Approach Traffic Separation (PJ.02-01-04)	Manage Inputs; Support Traffic Separation;

	Arrival Traffic Separation (PJ.02-01-04)	Support Final Approach Traffic Spacing;
ATC Executive Controller (PJ.02-01-04)		Identify Aircraft; Insert GAP Spacing; Monitor and separate traffic; Provide Approach Clearance; Transfer Flight;
	Controller Human Machine Interaction Management Aerodrome ATC (PJ.02-01-04)	Display applicable separation;
	Controller Human Machine Interaction Management ER/APP (PJ.02-01-04)	Display Approach applicable separation; Display TDI; Record Inputs; Release Flight;
	Coordination and Transfer	Coordination and Transfer;
	Legacy G/G Datalink Communications	Legacy G/G Datalink Communications;
	Safety Nets	Safety Nets;
Sequence Manager (Sequencer) (PJ.02-01-04)		Update Sequence;
Tower Runway Controller (PJ.02-01-04)		Assess Departures versus GAP Spacing; Hold Departing Aircraft; Line-up Departing Aircraft; Monitor Spacing during Final Approach; Provide Landing Clearance; Request Cancel GAP; Request New GAP Spacing and/or Position;

Table 10 : Functional Architecture Overview

4.1.1 Resource Connectivity view

The following diagrams represent the high-level interactions between the CCs involved. The Resource Connectivity for Solution PJ.02-01-04 : Arrivals concepts are described.
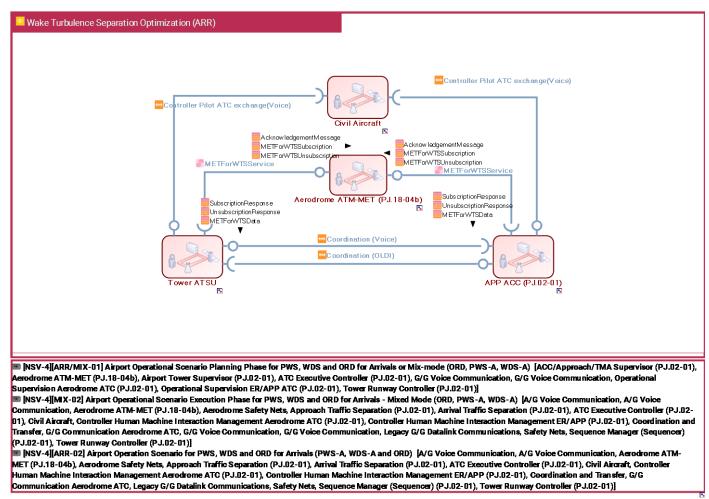
Figure 1 : Resource connectivity for Arrivals

The high-level interactions between Capability Configurations are simple in this case, since the process and main interactions happen within the TWR CC.

METforWTS Service was created by PJ.18-04b. This Service intends to provide relevant MET data to the calculations computed by departures separation related FB within TWR CC. No other Services were created within PJ.02-01-04 framework.
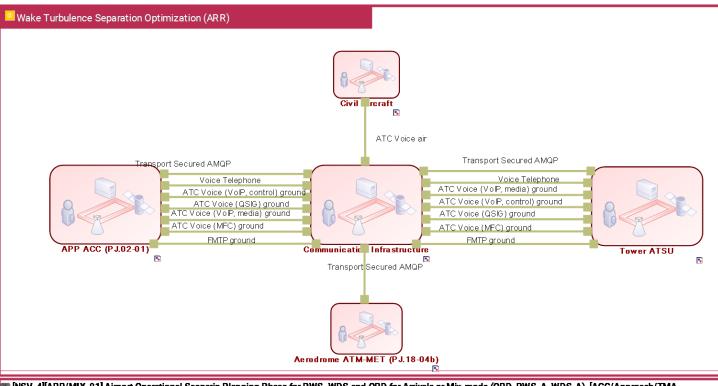
4.1.2 Resource Infrastructure Connectivity view

Figure 2 : Infrastructure Connectivity Model for Arrivals

The diagram contains:

Wake Turbulence Separation Optimization (ARR)

- Civil Aircraft
- APP ACC (PJ.02-01)
- Communication Infrastructure
- Tower ATSU
- Aerodrome ATM-MET (PJ.18-04b)

Connection labels:
- ATC Voice air
- Transport Secured AMQP
- Voice Telephone
- ATC Voice (VoIP, control) ground
- ATC Voice (QSIG) ground
- ATC Voice (VoIP, media) ground
- ATC Voice (MFC) ground
- FMTP ground
- Voice Telephone
- ATC Voice (VoIP, media) ground
- ATC Voice (VoIP, control) ground
- ATC Voice (QSIG) ground
- ATC Voice (MFC) ground
- FMTP ground
- Transport Secured AMQP

[NSV-4][ARR/MIX-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals or Mix-mode (ORD, PWS-A, WDS-A) [ACC/Approach/TMA Supervisor (PJ.02-01), Aerodrome ATM-MET (PJ.18-04b), Airport Tower Supervisor (PJ.02-01), ATC Executive Controller (PJ.02-01), G/G Voice Communication, G/G Voice Communication, Operational Supervision Aerodrome ATC (PJ.02-01), Operational Supervision ER/APP ATC (PJ.02-01), Tower Runway Controller (PJ.02-01)]

[NSV-4][MIX-02] Airport Operational Scenario Execution Phase for PWS, WDS and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A) [A/G Voice Communication, A/G Voice Communication, Aerodrome ATM-MET (PJ.18-04b), Aerodrome Safety Nets, Approach Traffic Separation (PJ.02-01), Arrival Traffic Separation (PJ.02-01), ATC Executive Controller (PJ.02-01), Civil Aircraft, Controller Human Machine Interaction Management Aerodrome ATC (PJ.02-01), Controller Human Machine Interaction Management ER/APP (PJ.02-01), Coordination and Transfer, G/G Communication Aerodrome ATC, G/G Voice Communication, G/G Voice Communication, Legacy G/G Datalink Communications, Safety Nets, Sequence Manager (Sequencer) (PJ.02-01), Tower Runway Controller (PJ.02-01)]

[NSV-4][ARR-02] Airport Operation Scenario for PWS, WDS and ORD for Arrivals (PWS-A, WDS-A and ORD) [A/G Voice Communication, A/G Voice Communication, Aerodrome ATM-MET (PJ.18-04b), Aerodrome Safety Nets, Approach Traffic Separation (PJ.02-01), Arrival Traffic Separation (PJ.02-01), ATC Executive Controller (PJ.02-01), Civil Aircraft, Controller Human Machine Interaction Management Aerodrome ATC (PJ.02-01), Controller Human Machine Interaction Management ER/APP (PJ.02-01), Coordination and Transfer, G/G Communication Aerodrome ATC, Legacy G/G Datalink Communications, Safety Nets, Sequence Manager (Sequencer) (PJ.02-01), Tower Runway Controller (PJ.02-01)]

This supporting infrastructure is the set of:

- Capability Configurations:
  - TWR
  - Civil Aircraft
  - Aerodrome ATM-MET (PJ.18-04b)
- Main Technical Systems
  - Aerodrome ATC
  - Voice
  - Aircraft
- System Ports:
  - ATC Voice Air
  - Voice Radio Air
  - ATC Voice Ground
  - Transport Secured AMQP
  - IP Ground

4.1.3 Resource Orchestration view

The diagrams within this section represent the interactions of the main FBs involved. The logical architecture is modelled in MEGA, and therefore compliant with EATMA, and lists all functional components of the PJ.02-01-04 solution and their dependencies and relations.

The models are available in MEGA. For a better resolution, refer to:

https://www.srvs.nm.eurocontrol.int/mega_prod/hopex/default.aspx#start

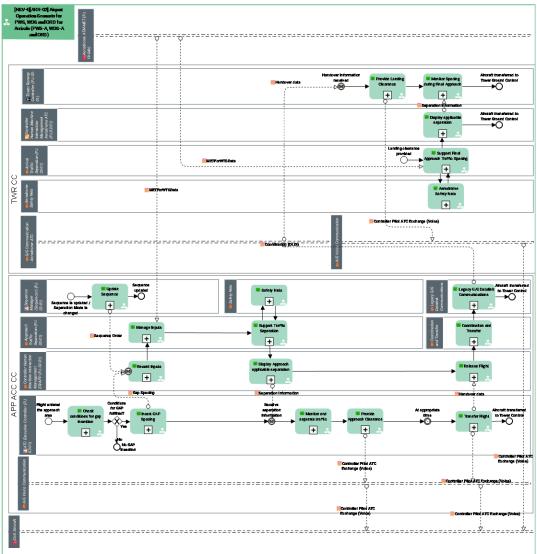Please, refer to Section 3.1.1 to read the description for each model.

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4.1.3.1 [NSV-4][ARR-02] Airport Operation Scenario for PWS, WDS and ORD for Arrivals (PWS-A, WDS-A and ORD)

Figure 3: [NSV-4][ARR-02]

4.1.3.2 [NSV-4][ARR/MIX-01] Airport Operational Scenario Planning Phase for PWS, WDS and ORD for Arrivals or Mix-mode (ORD, PWS-A, WDS-A)
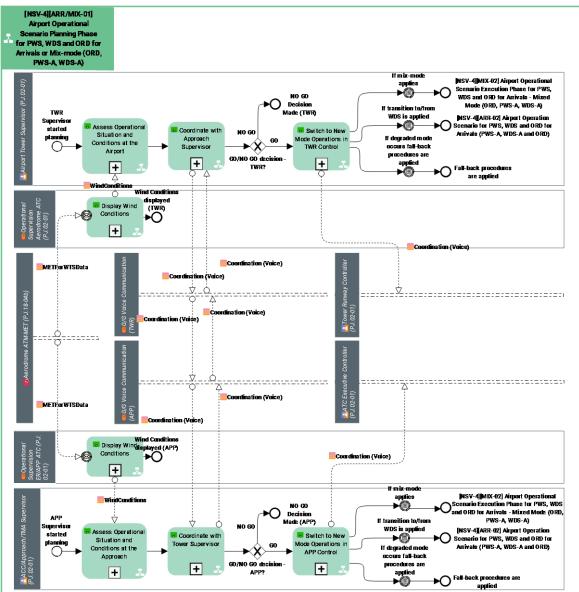

Figure 4: [NSV-4][ARR/MIX-01]

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4.1.3.3 [NSV-4][MIX-02] Airport Operational Scenario Execution Phase for PWS, WDS and ORD for Arrivals - Mixed Mode (ORD, PWS-A, WDS-A)
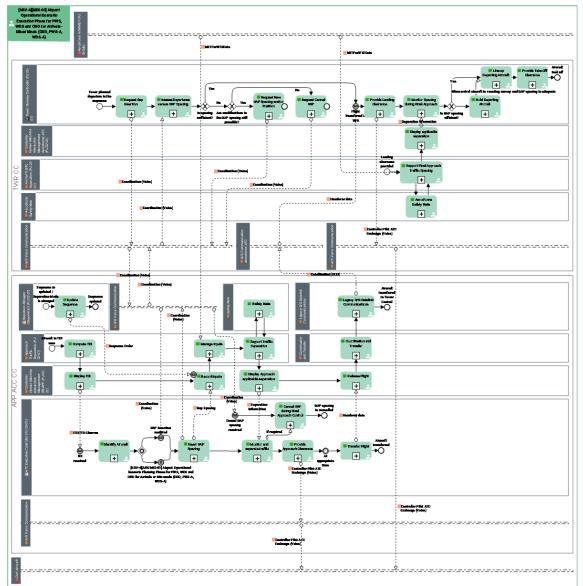

Figure 5: [NSV-4][MIX-02]

4.1.4 Resource Composition

Service view METforWTS Service was created by PJ.18-04b Meteorological (MET) information in relation with PJ.02-01-04 WTS (for Arrivals) based on Static Aircraft Characteristics (Departures).

METforWTS Service addresses the dependency with PJ.02-01-04 where needs for detailed wind information has been identified. Wind information comprises head- and crosswind components along the glide path which will be used for optimising the runway throughput by addressing new arrival and departure concepts. Therefore, a glide path wind profile will be provided as service including current, nowcast and forecast wind information.

4.2 Functional and non-Functional Requirements

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0040
Title	Runway Intent
Requirement	Each aircraft's runway intent shall be provided by the Flight Data Processing
Status	<validated>
Rationale	Aircraft live FPL data in appropriate category is necessary for display on the HMI
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0910
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

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Identifier	REQ-12.02.02-TS-INT1.0030
Title	Flight data
Requirement	The Flight Data Processing shall provide to the separation delivery tool - a unique identifier - aircraft type - wake category for each arrival aircraft that is correlated in the traffic
Status	<validated>
Rationale	Aircraft live FPL data in appropriate category is necessary for display on the HMI
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0220
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0430
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0510
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1440
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1441
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0020
Title	Traffic data
Requirement	The surveillance system shall provide to the separation delivery tool - a unique identifier - a position value - altitude information - ground speed for each arrival aircraft that is correlated in the traffic
Status	<validated>
Rationale	Aircraft live track data in appropriate category is necessary for display on the HMI
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0180
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0190
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for

		processing static wake-turbulence information
		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0013
Title	Forecast runway surface wind
Requirement	The MET data provider shall send the forecast runway surface wind heading and wind speed to the separation delivery tool
Status	<in progress>
Rationale	MET forecast data are necessary for separation provision
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0290
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1170
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1190
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1770
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1760
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0530
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1210
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP) METEO-03_Provision and monitoring of real-time airport weather information (PCP)

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0012
Title	Runway surface wind
Requirement	The MET data provider shall send the current runway surface wind heading and wind speed to the separation delivery tool
Status	<validated>
Rationale	MET current data are necessary for separation provision
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1770
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1760
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1210
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	METEO-03_Provision and monitoring of real-time airport weather information (PCP) METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0011
Title	Input wind format for prediction
Requirement	The separation delivery tool should receive the following wind data - forecast heading - forecast speed from the MET data provider
Status	<in progress>
Rationale	MET data are necessary for separation provision
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1160
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.0144
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.0145
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0280
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1130
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1140
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1150
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1670
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1680
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1210
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP) METEO-05b_Generate and provide MET information relevant for TMA and En-route related operations (PCP) METEO-03_Provision and monitoring of real-time airport weather information (PCP)

[REQ]

Identifier	REQ-12.02.02-TS-INT1.0010
Title	Input Wind format for separation
Requirement	The separation delivery tool shall receive at each online update the following wind data for each Runway and for each predefined altitude layer - current heading to apply - current speed to apply from the MET data provider
Status	<validated>

Rationale	heading and speed are needed to be provided to the separation delivery tool
Category	

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0146
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	METEO-04b_Generate and provide MET information services relevant for Airport and final approach related operations (PCP)

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0170
Title	System failure
Requirement	The separation delivery tool shall send to the HMI an error message in case of system failure
Status	<in progress>
Rationale	Controllers need to be aware of any system failure
Category	<Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1640
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1730
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1720
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1721
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0520

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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1010
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0450
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1310
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1600
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0160
Title	Sequence alert
Requirement	The separation delivery tool shall send a sequence alert to the HMI when the order of arrival in the arrival sequence list differs from the order of aircraft position on the extended runway centreline starting from the Runway threshold
Status	<validated>
Rationale	Sequence order on the final approach need to be correct for safety
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1530
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1560
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1450
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1570
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1260
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1710
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0150
Title	Catch-up alert
Requirement	The Separation delivery tool may send a catch-up alert to the HMI when a follower aircraft is expecting to reach the ITD in less than T seconds, T being an offline defined parameter.
Status	<validated>

Rationale	Controller may need to be aware of any potential separation infringement in the near future
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.1540
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1350
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0140
Title	Speed conformance alert
Requirement	The Separation Delivery Tool shall send to CWP HMI a speed conformance alert when an aircraft's ground speed exceeds its offline defined air speed - corrected by the wind value - by a predefined offline tolerance value
Status	<validated>
Rationale	Controller needs to aware of any inconsistency between offline data and real data
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0143
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1500
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1510
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1700
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0132
Title	TDIs display on the centreline 3
Requirement	If - the Leader aircraft is eligible for TDIs display - the Leader aircraft is not established on the centreline - the Leader aircraft's projected position on the centreline is in front of its targeted ITD Then its TDIs shall be displayed on the extended centreline at the correct distance behind the position of the leader's ITD on the extended centreline
Status	<validated>
Rationale	Controllers need an aiming point on the extended centreline
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0490
<ALLOCATED_TO>	<Function>	Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0130
Title	TDIs display on the centreline 1
Requirement	TDIs shall be displayed on the extended centreline at the correct distance (FTD and ITD) behind the Leader.
Status	<validated>
Rationale	Controllers need an aiming point on the extended centreline
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0050
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0120
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0139
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0133
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0170
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0860
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0410
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1282
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1281

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1283
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0890
<ALLOCATED_TO>	<Function>	Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0131
Title	TDIs display on the centreline 2
Requirement	If - the Leader aircraft is eligible for TDIs display - the Leader aircraft is not established on the centreline - the Leader aircraft's projected position on the centreline is behind its targeted ITD Then its TDIs shall be displayed on the extended centreline at the computed distance behind the projected position of the Leader on the extended centreline
Status	<validated>
Rationale	Controllers need an aiming point on the extended centreline
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0490
<ALLOCATED_TO>	<Function>	Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0121
Title	Wake separation Definition for TBS mode
Requirement	In any TBS and WDS mode – ICAO, RECAT-EU or S-PWS - the wake constraint shall match the time to fly defined in the separation table
Status	<validated>
Rationale	Offline data and displayed data need to be consistent in time and in distance
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0020
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.0030
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1240
<ALLOCATED_TO>	<Function>	Manage Inputs Assess WDS-A Inputs Assess PWS-A Inputs Assess ORD Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0120
Title	Wake separation Definition for DBS mode
Requirement	In any DBS mode – ICAO, RECAT-EU or S-PWS - the wake constraint shall match the distance to fly defined in the separation table
Status	<validated>
Rationale	Offline data and displayed data need to be consistent in time and in distance
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0020
<ALLOCATED_TO>	<Function>	Manage Inputs Assess WDS-A Inputs Assess PWS-A Inputs Assess ORD Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0110
Title	ITD greater than FTD
Requirement	For a pair of (Leader;Follower) aircraft, if the initially computed ITD value is smaller than the FTD, the ITD shall automatically take the same value as the FTD

Status	<validated>
Rationale	FTD is the minimum applicable separation between 2 consecutive aircraft
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0163
<ALLOCATED_TO>	<Function>	Compute TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0103
Title	Sequence arrival
Requirement	The Sequencing tool shall provide one arrival sequence per runway to the Separation delivery tool
Status	<validated>
Rationale	Each runway needs one and only one sequence as input
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0300

<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0102
Title	Sequence change
Requirement	For each pair of consecutive arriving aircrafts,(Leader ; Follower), if either the Leader or the Follower changes, TDIs shall be recomputed at the next update
Status	<validated>
Rationale	TDIs must be updated upon any input change
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0560
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0941
<ALLOCATED_TO>	<Function>	Update Sequence Record Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

		APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0100
Title	Required data for FTD update in TBS mode
Requirement	For a pair of consecutive arriving aircraft (Leader;Follower), the system shall update the FTD upon any online change among the following data - Glide slope wind data (strength and direction) - Wake separation value to apply - Leader's ROT - Follower's Speed Profile - MRS value - Any potential Gap request behind the leader - Leader's position
Status	<validated>
Rationale	TDIs must be updated upon any input change
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0010
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0460
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1090
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1650
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1660
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0142

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0161
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0570
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0101
Title	Required data for ITD update in TBS mode
Requirement	For a pair of consecutive arriving aircraft (Leader;Follower), the system shall update the ITD upon any online change among the following data - Glide slope wind data (strength and direction) - Wake separation value to apply - Leader's ROT - Leader's True Air Speed profile on the glideslope - Follower's True Air Speed Profile on the glideslope - MRS value - Any potential Gap request behind the leader - FTD position
Status	<validated>
Rationale	TDIs must be updated upon any input change
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0010
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0460
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1090
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1650
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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0142
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0161
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0270
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0257
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0570
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0091
Title	Required data for ITD computation in TBS mode
Requirement	For a pair of consecutive arriving aircraft (Leader;Follower), the system shall compute the ITD based on the following data - Glide slope wind data (strength and direction) - FTD position - Follower's Air Speed Profile - Leader's Air Speed profile
Status	<validated>
Rationale	ITD needs wind and speed information on top of FTD data

Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0160
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0280
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0060
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0040
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0320
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0321
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.1000
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0500
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0870
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1270
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1581
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0090
Title	Required data for FTD computation in TBS mode

Requirement	For a pair of consecutive arriving aircraft (Leader;Follower), the system shall compute the FTD based on the following data - Glide slope wind data (strength and direction) - Wake separation value to apply (in time or distance depending on the chosen mode) - Leader's ROT - Follower's Air Speed Profile - MRS value - Any potential Gap request behind the leader
Status	<validated>
Rationale	FTD computation needs all applicable constraints
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0130
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.0141
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0060
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0270
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0310
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1410
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0970
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1360
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1370
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1421
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1400
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1420
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1430
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach
		APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach
		AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information
		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach
		APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0070
Title	FTD computation with constraints
Requirement	For each pair of arriving aircraft, in case one set of TDIs is computed by the system, the FTD shall take the value of the greatest separation constraints among ROT, Gap request, MRS, Wake separation and any other offline defined specific separation involving one of the aircraft in the pair
Status	<validated>
Rationale	FTD represents the most constraining separation to respect between 2 consecutive aircraft
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0110
<ALLOCATED_TO>	<Function>	Compute TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach
		APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters
		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach
		AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information
		APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0071
Title	Second FTD computation with constraints
Requirement	For each pair of arriving aircraft, in case a second set of TDIs is computed by the system (infringement of Gap or ROT ITD), the FTD of the second set shall take the value of the greatest separation constraints among MRS and Wake separation.
Status	<validated>
Rationale	Safety critical separation need to be displayed even if not the most constraining separation
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0110
<ALLOCATED_TO>	<Function>	Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

		APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters
		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach
		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach
		APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems
		AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0080
Title	Arrival Sequence
Requirement	The system shall be provided with the online current arrival sequence, updated at least at each change in the sequence among the following - Aircraft removed from the sequence - Aircraft added in the sequence - Change of index of an Aircraft in the sequence - Runway Intent for each aircraft in the sequence
Status	<validated>
Rationale	Any update in the sequence needs to be sent to the separation delivery tool
Category	<Functional> , <Interoperability> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1390
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0560
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0440

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0441
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0960
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0550
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0561
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0540
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0950
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0940
<ALLOCATED_TO>	<Function>	Update Sequence Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0061
Title	Traffic data
Requirement	The System shall be provided with the following online data for each aircraft, updated at each system timestamp - position - altitude - time of the system - current ground speed
Status	<validated>
Rationale	Aircraft live track data in appropriate category is necessary for display on the HMI

Category	<Data> , <Safety> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0180
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0060
Title	Aircraft Data
Requirement	The Separation delivery tool shall be provided with the following online data for each aircraft in the traffic - ICAO Aircraft Type - Wake Turbulence Category - True air speed profile on the final glide slope - Runway Occupancy Time - Runway Intent
Status	<validated>
Rationale	Aircraft offline data in appropriate category is necessary for display on the HMI
Category	<Interoperability> , <Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0070
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0100
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0080
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0050
Title	TDIs display
Requirement	The CWP HMI shall be able to display the TDIs sent by the system
Status	<validated>
Rationale	Controllers need to visualize separations to apply
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier

<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0140
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0630
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0580
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0590
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0470
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0480
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0620
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0690
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0700
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0730
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0740
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0770
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0750
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0760
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0830
<ALLOCATED_TO>	<Function>	Display Approach applicable separation Display TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0040

EUROPEAN PARTNERSHIP

Co-funded by the European Union

Title	TDIs transmission in all modes
Requirement	The system shall send to CWP HMI the TDIs values for each pair of arriving aircraft in the sequence for one selected mode among the following TBS WDS S-PWS
Status	<validated>
Rationale	Controllers need to visualize separations to apply
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0920
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0880
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1284
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1300
<ALLOCATED_TO>	<Function>	Safety Nets Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0030
Title	Buffer for uncertainties on wind and speed profile
Requirement	The system shall be provided with offline defined "buffer" separation values - in distance for DBS mode and in time for TBS mode - representing combined impact of the uncertainties for aircraft air speed profile and glideslope wind values
Status	<validated>
Rationale	Uncertainties need to be taken into account for safety matters
Category	<Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0132
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0150
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0152
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0130
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1690
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0131
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0151
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0169
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

		APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0021
Title	MRS value
Requirement	Offline modifiable Minimum Radar Separation values shall be provided to the system
Status	<validated>
Rationale	Safety separations to apply need to be input to the separation delivery tool
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0230
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

EUROPEAN PARTNERSHIP

Co-funded by the European Union

Identifier	REQ-12.02.02-TS-OPS1.0022
Title	Runway Spacing
Requirement	Offline modifiable specific Spacing values shall be provided to the system
Status	<validated>
Rationale	Specific separations to apply need to be input to the separation delivery tool
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0200
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0250
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0240
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

EUROPEAN PARTNERSHIP

Co-funded by the European Union

Identifier	REQ-12.02.02-TS-OPS1.0020
Title	Wake separation value
Requirement	Wake separations values shall be provided to the system both - in distance and - in corresponding time to fly
Status	<validated>
Rationale	Safety separations to apply need to be input to the separation delivery tool
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0070
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0080
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0100
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0380
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0400
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0390
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0420
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR3.0030
Title	Visual Approach
Requirement	Upon a Visual Approach clearance for aircraft A, CWP HMI shall inhibit the display of the following indications - ITD display - FTD display - Catch-up alert - Speed alert - Infringement alert
Status	<validated>
Rationale	Visual approach separation is under pilot's responsibility
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0850
<ALLOCATED_TO>	<Function>	Display Approach applicable separation Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-12.02.02-TS-OPS1.0010
Title	Wake separation provision
Requirement	The system shall allow to define wake separation tables among the following - ICAO - RECAT-EU - RECAT-PWS - WDS
Status	<validated>
Rationale	Necessary inputs to the separation delivery tool must be offline configurable
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR1.0020
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1250
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1280
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR3.0024
Title	EAP TDI's recomputation for follower
Requirement	Upon confirmed change of approach procedure for aircraft A, and if A has a follower in the arrival sequence, the system shall recompute the TDIs of aircraft A, updating - the separation table taking into account aircraft A's new approach and aircraft A's follower approach and - the new speed profile for aircraft A corresponding to its new selected approach
Status	<validated>
Rationale	TDIs must be updated upon any input change
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<ALLOCATED_TO>	<Function>	Determine the Largest DDI-D Determine the Largest NBTOT Record Inputs

[REQ]

Identifier	REQ-02.01-TS-ARR3.0023
Title	EAP TDI's recomputation for leader
Requirement	Upon confirmed change of approach procedure for aircraft A, and if A has a leader in the arrival sequence, the system shall recompute the TDIs targeted by A , updating - the separation table taking into account aircraft A's leader approach and aircrafts A's new selected approach and - the new speed profile for aircraft A corresponding to its new selected approach
Status	<validated>

Rationale	TDIs must be updated upon any input change
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<ALLOCATED_TO>	<Function>	Record Inputs

[REQ]

Identifier	REQ-02.01-TS-ARR3.0022
Title	Air Speed profiles
Requirement	For each aircraft, the system shall include offline defined air speed profiles for each of the procedures applicable to this aircraft among the following ILS VFR IGS SRAP CSPR-DT A-IGS IGS-to-SRAP
Status	<in progress>
Rationale	The separation delivery tool needs inputs related to all applicable enhanced approach procedures
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<ALLOCATED_TO>	<Function>	Manage Inputs

[REQ]

Identifier	REQ-02.01-TS-ARR3.0021
Title	Offline tables
Requirement	The separation delivery tool shall be provided with the approach separation minima for each combination of published approach procedure (i.e. GLS Z 32R or ILS Y 32R) with different glideslopes, which takes into account the associated navigation means and corresponding vertical accuracy around the published profile
Status	<in progress>
Rationale	The separation delivery tool needs inputs related to all applicable enhanced approach procedures
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<ALLOCATED_TO>	<Function>	Manage Inputs

[REQ]

Identifier	REQ-02.01-TS-ARR3.0020
Title	List of approaches
Requirement	For each aircraft, the expected and cleared approach procedure selected by the approach controller shall be communicated to the separation delivery tool in order to use the appropriate separation minima between the leader and follower aircraft.
Status	<in progress>
Rationale	The separation delivery tool needs inputs related to all applicable enhanced approach procedures
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04

| <ALLOCATED_TO> | <Function> | Manage Inputs |

[REQ]

Identifier	REQ-02.01-TS-ARR3.0010
Title	Approach procedure HMI
Requirement	For each aircraft in the arrival sequence, the HMI shall display all selectable approach procedures applicable to this aircraft.
Status	<validated>
Rationale	The HMI must display all applicable enhanced approach procedures
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing

[REQ]

Identifier	REQ-02.01-TS-ARR1.0130
Title	Display approach arrival sequence
Requirement	The HMI may display the approach arrival sequence on all CWPs
Status	<validated>
Rationale	Approach arrival sequence is an additional information needed by the ATCO
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04

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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0920
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0930
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1351
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing Support Traffic Separation Display Approach applicable separation Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0140
Title	Wind display
Requirement	CWPs HMI may display glideslope and surface wind information
Status	<in progress>
Rationale	Wind information may be useful to approach controllers
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1330
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing Support Traffic Separation

		Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-02.01-TS-ARR1.0121
Title	TDI value
Requirement	The HMI may display the TDIs values
Status	<in progress>
Rationale	TDIs are displayed, their values may be needed for additional awareness
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0720
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0810
<ALLOCATED_TO>	<Function>	Display Approach applicable separation Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0122
Title	Distance to TDI
Requirement	The HMI may display the distance between TDIs and the associated follower aircraft
Status	<in progress>
Rationale	Distance values might be useful to controllers
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0793
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0795
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0796
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0792
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0820
<ALLOCATED_TO>	<Function>	Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0120
Title	TDI association

Requirement	The HMI shall be able to show the association between each TDI and its follower aircraft
Status	<validated>
Rationale	Controllers may need to identify which aircraft is associated to each TDI
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0800
<ALLOCATED_TO>	<Function>	Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0110
Title	Distance step resolution
Requirement	The Separation Delivery tool HMI shall display indicators to at least a distance step resolution of 0.1NM
Status	<validated>
Rationale	Resolution needs to be high enough to avoid lack of situational awareness
Category	<Safety> , <Performance>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0780
<ALLOCATED_TO>	<Function>	Display Approach applicable separation Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0102
Title	Display of infringement alert
Requirement	HMI shall display the FTD upon reception of an infringement alert on an ITD
Status	<validated>
Rationale	Infringement alert of the ITD is needed to be displayed
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0796
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0795
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.0971

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0990
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0091
Title	Hide TDIS
Requirement	The HMI shall be able to hide selected TDIs
Status	<validated>
Rationale	Controller may need to unselect some displays
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0168
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.0660
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0900
<ALLOCATED_TO>	<Function>	Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

		APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters
		AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach
		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0100
Title	Infringement alert 1
Requirement	An infringement alert shall be sent by the separation delivery tool to HMI as soon as the Follower aircraft established on the centreline goes beyond its targeted ITD
Status	<validated>
Rationale	Infringement alert triggered by the separation delivery tool needs to be sent to HMI
Category	<Interoperability> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0795
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0792
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.1520
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0101
Title	Infringement alert 2
Requirement	An infringement alert shall be sent by the separation delivery tool to HMI if both if the following conditions are met - the difference between ITD and FTD is less than x NM - the follower aircraft established on the centreline goes beyond x NM from its targeted FTD
Status	<validated>
Rationale	Controllers need to be warned if the infringement is close but undetectable because of low compression
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR3.1540
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0650
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0710
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0090
Title	Display Option

Requirement	The HMI may display the TDIs in different shapes depending on the type of TDI
Status	<validated>
Rationale	Controllers preferences need to be taken into account by the HMI
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0257
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0670
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0680
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0681
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0691
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1771
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1772
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1773
<ALLOCATED_TO>	<Function>	Display Approach applicable separation Display applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0072
Title	Mode Change Display
Requirement	The HMI shall show for each aircraft the mode of operation applied
Status	<validated>
Rationale	Controllers need to be aware of the current mode of operation
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1090
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1021
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1222
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0080

Title	Runway wind
Requirement	The current Runway surface wind may be provided to the Separation delivery tool
Status	<validated>
Rationale	Runway surface wind is not necessary fort TDIs computation but may increase controllers situational awareness
Category	<Data> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0290
<ALLOCATED_TO>	<Function>	Display Wind Conditions Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 99_ATC System to use Real-Time Meteo Information Received From Met Systems

[REQ]

Identifier	REQ-02.01-TS-ARR1.0071
Title	Mode Change
Requirement	Upon each mode change, impacted TDIs shall be recomputed in consistency with the new mode applied
Status	<validated>
Rationale	TDIs must be recomputed upon each input change
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1090

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1021
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1222
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1020
<ALLOCATED_TO>	<Function>	Compute TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0070
Title	Mode Change HMI
Requirement	The HMI shall allow the following mode change from DBS to TBS from TBS to DBS for each arrival runway
Status	<validated>
Rationale	Controllers need to be able to activate or deactivate TBS mode on demand
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1021

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1222
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1221
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1022
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0980
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1023
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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR2.1050
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1070
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1080
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1033
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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1034
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1100
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1110
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1290
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0011
Title	Sending Aircraft distance to FTD
Requirement	For each aircraft in the arrival sequence which has a leader aircraft in the arrival sequence, the system shall send the distance value between the aircraft and its targeted FTD to the Tower CWP and to the Approach CWP.
Status	<validated>
Rationale	Distance Aircraft - FTD can improve situational awareness for controllers
Category	<HMI> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0165
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0166
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing Manage Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

		APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0010
Title	Display of Aircraft distance to FTD
Requirement	If an aircraft is - eligible for TDIs display - established on the centreline - infringing its targeted ITD, and the separation delivery tool shall send the distance value between the aircraft and the targeted FTD to the HMI
Status	<validated>
Rationale	If the aircraft has infringed ITD, Tower CWP needs to display distance to FTD to verify that the aircrafts does not go beyond the FTD
Category	<Interoperability> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0164
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0490
<ALLOCATED_TO>	<Function>	Display Approach applicable separation
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0020
Title	Gap HMI input

Requirement	The HMI shall provide the possibility to input a gap spacing value, in distance or in time, behind any aircraft eligible for TDI computation
Status	<validated>
Rationale	ATCO needs to be able to insert a gap behind an aircraft for departure or other reason
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0255
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0254
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0251
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1380
<ALLOCATED_TO>	<Function>	Record Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-02.01-TS-ARR1.0026
Title	Feedback following gap insertion

Requirement	The tool shall provide a feedback on whether or not the gap insertion or update is successful
Status	<in progress>
Rationale	Several reasons could lead to the gap insertion to fail, such as insufficient time between two aircrafts on the centre line for the gap value to be inserted, etc.
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0253
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0021
Title	Gap transmission
Requirement	Upon reception of a gap spacing instruction behind an aircraft, CWP HMI shall send the instruction along with the value to the Separation delivery tool
Status	<in progress>

Rationale	The separation delivery tool takes into account gap requests from HMI
Category	<Safety> , <HMI> , <Interoperability>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0570
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1027
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1025
<ALLOCATED_TO>	<Function>	Record Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0023
Title	Gap HMI cancel
Requirement	The HMI shall provide the possibility to cancel a gap spacing value previously requested for an aircraft.
Status	<validated>
Rationale	ATCO needs to be able to cancel a gap behind an aircraft
Category	<HMI> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0255
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0254
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1026
<ALLOCATED_TO>	<Function>	Record Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-02.01-TS-ARR1.0024
Title	Gap cancel recomputation
Requirement	Upon reception of a gap cancel instruction behind an aircraft, the system shall recompute the TDIs attached to the concerned aircraft taking into account the absence of Gap constraint
Status	<validated>
Rationale	Gap cancellations instructed by controllers need to be taken into account by the separation delivery tool
Category	<Safety> , <Functional>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0162
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0570
<ALLOCATED_TO>	<Function>	Compute TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

[REQ]

Identifier	REQ-02.01-TS-ARR1.0030
Title	Constraint information transmission
Requirement	For each aircraft, the system shall send to Tower and Approach CWP HMI the constraint type MRS, or GAP, or WAKE, or ROT along with the sent TDIs
Status	<validated>
Rationale	HMI must be able to display the chevron differently taking into account the associated constraint
Category	<Interoperability> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0110

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1320
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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1301
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1302
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1340
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing
<ALLOCATED_TO>	<Enabler>	APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0031
Title	TDIs display with constraint
Requirement	The Tower CWP HMI and the Approach CWP HMI shall be able to apply different shapes to the displayed TDIs taking into account the applied constraint
Status	<validated>
Rationale	ATCO must be able to differentiate the constraint behind the TDIs
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04

<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0167
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0851
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0651
<ALLOCATED_TO>	<Function>	Display TDI
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information

AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach |

[REQ]

Identifier	REQ-02.01-TS-ARR1.0040
Title	TDIs computation WAKE and MRS
Requirement	If the most constraining separation type is of ROT or GAP type, then the system shall automatically compute a second set of TDIs related to the most constraining separation value between MRS and WAKE.
Status	<in progress>
Rationale	System must be able to send the Safety constraint behind non safety constraints
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0791

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<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0790
<ALLOCATED_TO>	<Function>	Support Final Approach Traffic Spacing Support Traffic Separation
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0041
Title	TDIs display WAKE and MRS
Requirement	If an infringement event is triggered on an ITD representing ROT or GAP constraint, the CWP HMI shall display the ITD related to the second set of TDIs sent by the System.
Status	<in progress>
Rationale	ATCO needs to know what is the Safety constraint behind the non safety constraint
Category	<Safety> , <HMI>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0790
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0791
<ALLOCATED_TO>	<Function>	Safety Nets
<ALLOCATED_TO>	<Enabler>	APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach

		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0050
Title	Runway change
Requirement	The HMI shall allow each aircraft in one arrival sequence to be assigned to another arrival sequence corresponding to a different runway.
Status	<validated>
Rationale	ATCO needs to have the possibility to change the assigned runway for al aircrafts
Category	<HMI> , <Interoperability> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0560
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0550
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0910
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0950
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0561
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0852
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.1380
<ALLOCATED_TO>	<Function>	Update Sequence
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach

		APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach

[REQ]

Identifier	REQ-02.01-TS-ARR1.0060
Title	CSPR offline
Requirement	The offline configuration file for the system shall allow to specify if 2 runways are CSPR or not
Status	<in progress>
Rationale	Offline configuration of CSPR
Category	<Safety> , <Data>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0200
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0370
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

[REQ]

Identifier	REQ-02.01-TS-ARR1.0061

Title	CSPR application
Requirement	For each pair of consecutive arrivals on 2 CSPR the TDIs shall apply an additional longitudinal constraint of a configurable minimum longitudinal separation between the 2 aircrafts.
Status	<in progress>
Rationale	Computation of TDIs in CSPR
Category	<Functional> , <Safety>

[REQ Trace]

Relationship	Linked Element Type	Identifier
<ALLOCATED_TO>	<SESAR Solution>	PJ.02-01-04
<SATISFIES>	< ATMS Requirement>	REQ-02.01-SPRINTEROP-ARR0.0200
<ALLOCATED_TO>	<Function>	Manage Inputs
<ALLOCATED_TO>	<Enabler>	AERODROME-ATC-68_ATC System to support Optimised Runway Delivery on Final Approach AERODROME-ATC-42a_Airport ATC Runway Usage Management sub-system enhanced for processing static wake-turbulence information APP ATC 74_ATC System Support for Reduced, Weather-Dependent Separation Standards in Final Approach APP ATC 120_ATC System to support Optimised Runway Delivery on Final Approach APP ATC 118_ATC System to Support Pairwise Separation in Specific Conditions based on static parameters

5 Recommendation for Implementation

N/A

6 Assumptions

N/A

7 References and Applicable Documents

7.1 Applicable Documents

Content Integration

[1] EATMA Guidance Material, Project PJ19-W2-CI, Deliverable ID D2.15, Edition 01.00.00, 2020

[2] EATMA Community pages

[3] SESAR ATM Lexicon

Content Development

[4] SESAR 2020 Concept of Operations 2019;

System and Service Development

[5] 08.01.01 D52: SWIM Foundation v2

[6] 08.01.01 D49: SWIM Compliance Criteria

[7] 08.01.03 D47: AIRM v4.1.0

[8] 08.03.10 D45: ISRM Foundation v00.08.00

[9] B.04.03 D102 SESAR Working Method on Services

[10] B.04.03 D128 ADD SESAR1

[11] B.04.05 Common Service Foundation Method

Performance Management

[12] D4.7 SESAR Performance Framework, Edition 01.00.01 - 2019

[13] PJ19-W2: Validation Targets – SESAR 2020 Wave 2 &3, Edition 00.01.00

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

[15] 16.06.06-D68 Part 1 –SESAR Cost Benefit Analysis – Integrated Model

[16] 16.06.06-D51-SESAR_1 Business Case Consolidated_Deliverable-00.01.00 and CBA

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

[18] ATM Cost Breakdown Structure_ed02_2014

[19] Standard Inputs for EUROCONTROL Cost Benefit Analyses

[20] 16.06.06_D26-08 ATM CBA Quality Checklist

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[21] 16.06.06_D26_04_Guidelines_for_Producing_Benefit_and_Impact_Mechanisms

Validation

[22] 03.00 D16 WP3 Engineering methodology

[23] VALS SESAR 2020, Deliverable ID D2.6, Project PJ.19-CO, Edition 00.01.00, 2019

[24] European Operational Concept Validation Methodology (E-OCVM) - 3.0, Volume I, February 2010

[25] European Operational Concept Validation Methodology (E-OCVM) – Version 3.0, Volume II, February 2010

System Engineering

[26] SESAR 2020 Requirements and Validation Guidelines

Safety

[27] SESAR, Safety Reference Material, Deliverable ID D4.0.060, Edition 00.04.01, December 2018

[28] SESAR, Guidance to Apply the Safety Reference Material, Deliverable ID D4.0.050, Edition 00.03.01, December 2018

[29] SESAR, Final Guidance Material to Execute Proof of Concept, Deliverable ID 16.01.04-D07, Edition 00.04.00, August 2015

[30] SESAR, Resilience Engineering Guidance Final Deliverable, May 2016

Human Performance

[31] 16.06.05 D 27 HP Reference Material D27

[32] 16.04.02 D04 e-HP Repository - Release note

Environment Assessment

[33] SESAR, Environment Reference Material, alias, "Environmental impact assessment as part of the global SESAR validation", Project 16.06.03, Deliverable D26, 2014.

[34] ICAO CAEP – "Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes" document, Doc 10031.

Security

[35] 16.06.02 D103 SESAR Security Ref Material Level

[36] 16.06.02 D137 Minimum Set of Security Controls (MSSCs).

[37] 16.06.02 D131 Security Database Application (CTRL_S)

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7.2 Reference Documents

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

[39] OFA 01.03.01 Enhanced Runway Throughput Consolidated Final Step 1 OSED

[40] D1.1.01 – PJ.02-01-04 OSED-SPR-INTEROP (Final) Part I – 01.00.00

[41] D1.1.01 – PJ.02-01-04 OSED-SPR-INTEROP (Final) Part II – 01.00.00

[42] D1.1.01 – PJ.02-01-04 OSED-SPR-INTEROP (Final) Part IV – 01.00.00

[43] D1.1.01 – PJ.02-01-04 OSED-SPR-INTEROP (Final) Part V – 01.00.00

[44] D1.1.03 – PJ.02-01-04 VALP (Final) Part I – 00.01.00

[45] D1.1.03 – PJ.02-01-04 VALP (Final) Part II – 00.01.00

[46] D1.1.03 – PJ.02-01-04 VALP (Final) Part IV – 00.01.00

[47] D1.1.04 – PJ.02-01-04 VALR (Final) – 01.00.00

[48] D1.1.05 – PJ.02-01-04 CBA – 01.00.00

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