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Procurement and Integration of a Support Tool for Arrival Sequencing on Major Airports (Arrival Manager) *Technical Appendix*

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1 DATA CONFIDENTIALITY

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2 INTRODUCTION

2.1 PURPOSE AND CONTENTS OF THE DOCUMENT

The present document identifies Technical Appendix of “Procurement and Integration of a Support Tool for Arrival Sequencing on Major Airports (Arrival Manager)” project that aims to put into operations AMAN Tool in the SATCAS environment.

The main objective is to describe the Tender rules, award criteria and practical information on the required contents of the offer : Structure, Compliance matrix, Etc.

2.2 CONTEXT OF THE PROGRAM

The Program is articulated in terms of the implementation phases of the functionality provided by the PCP, with particular reference to *ATM Functionality 1 (AF1 – Extended AMAN and PBN in high density TMAs)*. The main objective is to provide an incremental approach for the integration of AMAN in SATCAS through an external dedicated AMAN HMI, in ROMA and MILANO ACC’s, with subsequent integration in CWP within the 4-Flight program.

2.3 APPLICABLE DOCUMENTS

- [1] AMAN Technical/Operational Requirements ENAV 31/07/2014
- [2] AMAN_Technical_Specifications_SPR14017-22-0004TEC v.1.0 ENAV
- [3] ICAO DOC 4444 PANS ATM parte messaggi ATS
- [4] ISO 27001:2005
- [5] Regulation (EC) N.482/2008
- [6] Regulation (EC) N.1035/2011
- [7] Regulation (EC) N.552/2004
- [8] Regulation (EC) N.1033/2006
- [9] Regulation (EC) N.1206/2011
- [10] Regulation (EC) N.929/2010
- [11] Regulation (EC) N.633/2007
- [12] Regulation (EC) N.30/2009
- [13] Regulation (EC) N.1032/2006
- [1] Regulation (EC) N.29/2009
- [14] Regulation (EC) N.1032/2006
- [15] Regulation (EC) N.1079/2012
- [16] Spec-0107 Edition 3.1 - EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP)
- [17] Spec-0100 Edition 2.0 - EUROCONTROL Specification of Interoperability and performance requirements for the Flight Message Transfer Protocol (FMTP)
- [18] Spec-0106 Edition 4.2 - EUROCONTROL Specification for On-Line Date Interchange (OLDI)
- [19] Spec-0101 Edition 1.1 - EUROCONTROL Specification for the Initial Flight Plan

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3 ACRONYMS LIST

Acronym	Definition
ABI	Advance Boundary Information
ACC	Area Control Center
ATA	Actual Time of Arrival
AMAN	Arrival Manager
ANSP	Air Navigation Service Provider
APP	Approach Control (Office)
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
BADA	Base of Aircraft Data
CAS	Calibrated Airspeed
CTA	Controlled Time of Arrival
DMAN	Departure Manager
ETA	Estimated Time of Arrival
ETFMS	Enhanced Tactical Flow Management System
ETO	Estimated Time Over
ETOT	Estimated Take-Off Time
EXIT	Estimated Taxi In Time
FCFS	First Come First Served
FDP	Flight Data Processing
FIR	Flight Information Region
FL	Flight Level
FLS	Flight Suspension
FMS	Flight Management System
FPL	Flight Plan
GND	Ground Control
IAF	Initial Approach Fix
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organization
HMI	Human Machine Interface

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LAT	Look-Ahead Time
LoA	Letter of Agreement
LVP	Low Visibility Procedures
NM	Nautical Miles
OLDI/AIDC	On-Line Data Interchange / ATS Interfacility Data Communication
OTP	On-time Performance
PBN	Performance Based Navigation
PCP	Pilot Common Project
PMS	Point Merge System
RBT	Reference Business Trajectory
RNAV	Area Navigation
RTA	Required Time of Arrival
RWY	Runway
SESAR	Single European Sky ATM Research
SID	Standard Instrumental Departure Route
SSR	Secondary Surveillance Radar
STAR	Standard Arrival Route
TMA	Terminal Manoeuvring Area
TSAT	Target Start-Up Approval Time
TTG	Time To Gain
TTL	Time To Lose
TTA	Target Time of Arrival
TTO	Target Time Over
TTOT	Target Take-Off Time
TWR	(Aerodrome Control) Tower
UTC	Universal Time Coordinated
WTC	Wake Turbulence Category

Table 1: Acronyms list

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4 GLOSSARY

Terms	Description
AMAN Runway	Landing runway proposed by AMAN
Correlated Flight	A flight which is linked to a radar track.
Flight in deviation	FDP shall consider a flight as in deviation when the difference between the current position of the aircraft and the predicted one is greater than an off-line configurable threshold (e.g. 10NM for lateral deviation, $\pm 300\text{ft}$ (non RVSM) e $\pm 200\text{ft}$ (RVSM) between C-Mode and CFL for vertical deviation).
Flight Plan Status	<ul style="list-style-type: none"> • PENDING: flight plan pre-activated by FDP without departure/entrance clearance; • ACTIVE : flight plan with departure/entrance clearance but not yet owned by any sector; • LIVE: flight plan that has been reported at least on one fix; • CONTROLLED: ACTIVE or LIVE flight plan that owned by a sector.
Geographical Volume	Airspace with defined dimension. A logical sector is defined with the aggregation of one or more geographical volumes.
Logical Position	It is the set of EXE and PLN operating on the same geographical volumes
Logical Sector	It is the combination of one or more geographical volumes controlled by the same logical position.
Multi Sector Planner	It is a Logical Position consisting of only 1 PLN and 2 different EXE where the geographical volumes controlled by PLN are the union of geographical volumes controlled by each EXE.

Table 2: Glossary

5 DEVELOPMENT AND MAINTENANCE PROCESS

This process is applied to any Modification/Addition of the Software and shall be supported by two main activities :

- Technical Evaluation
- Preliminary Operational Evaluation

Work plan activities that requires access to Any Operational Room shall be planned during the night shift.

5.1 Main processes

The process operates under the ENAV policy related to Quality and Safety assurance, based upon EC Regulation no. 482/2008 of the Commission of 30 May 2008 establishing a system of software safety assurance and Regulation EC 552/2004 on " Interoperability 'of the European network of air traffic management", in order to manage Software Configuration Management processes of ATM infrastructure technology.

ENAV has the main task to control the approval steps of the process in order to keep a global, definite and verified view of Software Operational Configuration.

Requests for Modification/Addition of the Software are raised directly by the ENAV Unit where the Software is in operation and entrusted to the Contractor. The modification management process will follow ENAV internal approval process until the put in operation.

Two main processes are identified :

- Corrective Modification Management
- Evolutionary Modification Management

5.2 Corrective Modification Management

Corrective modifications consists on the analysis , identification and correction of errors and/or malfunctioning that prevent or degrade , entirely or partially, the ATM system utilization. The latter include also the migration , where applicable, of any corrective modifications on Software components to different ENAV Unit.

The request for corrective modification are formalized through a Trouble Report (TR) that triggers the corrective maintenance activity.

5.2.1 Notification of modification request

Following the identification of Software malfunctioning raised during the operation of the ATM System or the migration of a previously corrective modification the Contractor/ENAV, supported by the outcome of the corrective maintenance activity, provides a malfunctioning analysis with the following:

- Resolution modality
- Software Release Delivery Plan
- Software portability (if applicable)

5.2.2 Modification Technical Evaluation

Following the modification implementation and test execution the Contractor provides Software Version Document with the CSCI list and associated version

- Software assurance level (SWAL) of the impacted components
- Test descriptions and results on the test bed
- New Baseline Version Identifier
- Cutover plan for Hot Swapping

ENAV analyses the Technical Evaluation based upon the listed documentation in order to optimize the Software Configuration Management process and assure the expected performance of the put in operation of the corrective modification.

In details ENAV examines :

- Baseline delivery
- Software Version Document
- Modification request status
- Software Safety Assurance assessed by ENAV internal procedure
- Right executions of tests, including no regression
- Rightness of Cutover Plan for Hot Swapping and the definition of operational procedure for roll-back activities.

5.2.3 Work Plan Approval and Request Closure

ENAV Software Configuration Control Board (SCCB) receives the Modification Work Plan from Contractor and on the basis of the Technical Evaluation can either approve it or refuse it

together with refusal justifications. In case of approval the corrective modification will take place and Contractor notifies ENAV SCCB of the modification outcome.

Upon positive outcome the Modification Request is closed.

5.3 Evolutionary Modification Management

Evolutionary modifications consists of Software adaptation to changed operational needs or to satisfy new requirements that imply development of new functionalities.

In case the modification has an impact on Software functionalities or on the HMI, ENAV will assess the Preliminary Operational Evaluation in order to verify if the modification:

- Has an operational effect
- Comply with Software standardization
- Software Safety Assurance assessed by ENAV internal procedure

Following the Preliminary Operational Evaluation the request for corrective modification are formalized through a Change Proposal (CP) that triggers the adaptive maintenance activity.

5.3.1 Evolutionary Modification Evaluation

Following the approval the evolutionary modification by ENAV, the Contractor provides :

- Software Version Document with the CSCI list and associated version
- New Baseline Version Identifier
- Software assurance level (SWAL) of the impacted components
- New functionality allocation, if any and relevant software assurance level (SWAL) of the impacted components
- Test descriptions and results on the test bed with IOP verification compliance and traceability
- Cutover plan for Hot Swapping
- Relevant certification (DSU / DOC), where applicable
- Modification technical description to verify system design compliance to IOP regulation, where applicable

ENAV analyses the Modification Evaluation based upon the listed documentation in order to optimize the Software Configuration Management process and assure the expected performance of the put in operation of the corrective modification.

In details ENAV examines :

- Right executions of tests, including no regression and IOP verification compliance
- Software Safety Assurance assessed by ENAV internal procedure
- Software Version Document
- Baseline delivery
- Modification request status
- Rightness of Cutover Plan for Hot Swapping and the definition of operational procedure for roll-back activities.

5.3.2 Work Plan Approval and Request Closure

ENAV SCCB receives the Modification Work Plan from the Contractor and on the basis of the Technical Evaluation can either approve it or refuse it together with refusal justifications. In case of approval the evolutionary modification will take place and Contractor notify ENAV SCCB of the modification outcome.

Upon positive outcome the Modification Request is closed.

6 SOFTWARE ACCEPTANCE PROCESS

The verification and acceptance process is applied on both Corrective Maintenance, including also the migration of any corrective modifications on Software components to different ENAV Units, and Evolutionary Maintenance.

All activities

6.1 Modification Technical Evaluation

Upon corrective modification request, not over 20 days from TR formalization, ENAV elaborates, with Contractor support on modification elaboration and test plan definition, the Technical Evaluation containing the following information:

- Clear and unique reference to the modification request
- Resolution modality and impacted components
- Software Release Delivery Plan and TR classification (priority release, minor release)
- Software assurance level (SWAL) of the impacted CSCI

The Contractor analyse the modification and answer with an approval, cancellation or suspension. In case of suspension the modification is analysed by Contractor and forwarded, for approval, to the ENAV Unit where the Software is in operation.

6.1.1 Modification Elaboration

The Contractor upon modification approval starts the following activities:

- Start development notification
- Modification elaboration
- Factory acceptance test (FAT)

Downstream of FAT positive result , the Contractor define the Test Plan (Software Test Description [STD]) and deliver to the release (CSCI and /or configuration files) together with the following documentation:

- Software Version Document with CSCI list and relevant version identifier
- Test Plan to run on site (STD including no regression and functional tests)
- Factory test results and description (Software Test Report [STR])

Tests quality must be suitable to the declared software assurance level (SWAL) of the impacted components.

Modification elaboration must be finalized with the Software release delivery no later than 60 days for a priority release and no later than 180 days for a minor release.

6.1.2 Modification Verification

The ENAV Unit where the Software is in operation, supported by Contractor, provide installation and testing activities plan. Following the plan approval , Contractor proceeds with the Software installation on the Test Bed, if any, and runs the STD including no regression and functional tests.

Upon Verification positive results, the Contractor prepares the Work Plan containing :

- TR and Software release references
- Installation modality
- Risks evaluation
- Rollback modality , if any

ENAV SCCB analyses Work Plan, Technical Evaluation Documentation, Test results and eventually the rollback modality. ENAV SCCB may request Work Plan modification and subsequent re-approval.

6.1.3 Put in Operation and Modification Closure

Contractor, upon work plan approval reception, by the ENAV Unit where the Software is in operation, attaches the work plan to the release and proceed to put in operation the modification together with configuration update.

Then Contractor notifies work plan results to the ENAV Unit where the Software is in operation that will monitor the system for 15 days after work plan execution (Operational Observation).

At the end of the observation period, in case of system malfunctioning, the ENAV Unit where the Software is in operation notifies it to the Contractor that proceeds with the following activities:

- Previous Software configuration restore
- Operational Observation registration
- Modification re-elaboration

In case of positive result of the Operational Observation the modification is closed.

6.2 Evolutionary Technical Evaluation

Upon evolutionary modification request formalized through a CP, ENAV elaborates, with Contractor support, the Technical Evaluation containing the following information:

- Resolution modality analysis and study
- Software Release Delivery Plan
- Related IOP regulation
- Technical description of impacted constituents to verify IOP regulation compliance, if any
- Software assurance level (SWAL) of the impacted CSCI
- Change proposal check list

After ENAV SCCB approval, the Contractor analyses the modification and answer with an approval, cancellation or suspension.

In case of suspension the modification is analysed by Contractor and forwarded to the ENAV Unit where the Software is in operation for approval.

In addition the Contractor analyse the weight of the change proposal notifying, through weight evaluation checklist, if the modification is within maintenance contract boundaries.

If the weight exceeds the limit the Change Proposal is cancelled and ENAV will set-up a different contract.

6.2.1 Evolutionary Elaboration

The Contractor upon evolutionary approval starts the following activities:

- Start development notification
- Evolutionary elaboration
- Factory acceptance test (FAT)

Downstream of FAT positive result , the Contractor define the Test Plan (Software Test Description [STD]) and deliver to the release (CSCI and /or configuration files) together with the following documentation:

- Software Version Document with CSCI list and relevant version identifier
- Relevant certification (DSU / DOC), where applicable
- Test Plan to run on site (STD including no regression and functional tests)
- Factory test results and description (Software Test Report [STR])
- New Baseline Version Identifier

Tests quality must be suitable to the declared software assurance level (SWAL) of the impacted components.

6.2.2 Evolutionary Verification

The ENAV Unit where the Software is in operation, supported by Contractor, provides installation and testing activities plan. Following the plan approval , Contractor proceeds with the Software installation on the Test Bed, if any, and runs together with ENAV the STD including no regression and functional tests.

Upon Verification positive results, the Contractor prepares the Work Plan containing :

- TR and Software release references
- Installation modality
- Risks evaluation
- Rollback modality , if any

ENAV SCCB analyses Work Plan, Technical Evaluation Documentation, Test results and eventually the rollback modality. ENAV SCCB may request Work Plan modification and subsequent re-approval.

6.2.3 Put in Operation and Evolutionary Closure

Contractor, upon work plan approval reception, by the ENAV Unit belonging the modification, attaches the work plan to the release and proceeds to put in operation the evolutionary modification together with configuration update.

Then Contractor notifies work plan results to the ENAV Unit where the Software is in operation the evolutionary modification that will monitor the system for 15 days after work plan execution (Operational Observation).

At the end of the observation period, in case of system malfunctioning, the ENAV Unit where the Software is in operation notifies it to the Contractor that proceeds with the following activities:

- Previous Software configuration restore
- Operational Observation registration
- Modification re-elaboration

In case of positive result of the Operational Observation the evolutionary modification is closed.

7 MAINTENANCE AND EVOLUTION SERVICE

The service shall be structured with the following level of service:

- Initial Set-up
- Support
- Corrective Maintenance and development of a new release
- Evolution Development of an Upgrade

7.1 Initial Set-up Service

This service provisions is intended to enable the Contractor to acquire an adequate level of knowledge of the ENAV system as well as the processes applied by ENAV or in which the ENAV take part, to ensure the other service provisions described in the present document, relating to Software integration.

7.2 Support Service

This service provisions covers the development of on-line support for the Contractor especially during test phases ensured by ENAV, or on technical questions put by ENAV to the Contractor. ENAV reserve the option of on-site support on request.

7.3 Corrective Maintenance and Development of a New Release Service

This service provisions covers the Trouble Report analysis activities and development of an upgrade of the Software (New Release) related to the correction of any anomaly discovered on the Software on a technical condition or a version whose verification (FAT,SAT) phases are completed. The Contractor shall provide the Trouble Report analysis within 20 days and Software upgrade within 60 days by the end of analysis for major release and 180 days by the end of analysis for minor release.

7.4 Evolution Development of an Upgrade Service

This service provisions covers all activities associated with the development and delivery of an upgrade of the Software (New Version) related to the product Roadmap.

8 LICENSES

The Awarded shall provide, at software delivery, the Software Licenses with any limitation on number of managed flight and Software client positions that cover the Software usage in:

- 4 Operational Environment (ROMA ,MILANO,PADOVA, BRINDISI)
- 5 Simulation and Pre-Operational Testing Environment (SIMU/PSA)
- 1 Training Environment (ENAV ACADEMY)

The License shall in addition cover the following service efforts:

- Right-to-copy for testing purpose
- Release related to the correction of any anomaly discovered on the Software
- HMI customization
- Software configuration for ENAV Airspace adaptation
- Integration and testing on National Pre-Operational Testing Environment
- On-site support during Software operational exploitation.

9 INTERFACE

The Awarded shall provide, at software delivery, the Interface Software Requirements (IRS) or Interface Control Document to enable the Software integration in the ENAV 4-Flight platform.

10 PLANNING

AMAN Tool shall be put into operations by the end of 2017

11 AWARD CRITERIA

The entry criteria, under penalty of exclusion, is the compliance of the software to the following minimum requirements to provide in the technical proposal :

- Multi Airport Sequence Management (Multi Airport)
- Delay distribution through different routes and /or sectors (Delay Sharing)
- Extension of sequence management horizon (Extended Horizon)
- Optimization strategy definition and implementation (Runway Allocation Strategy)
- The references that the software is currently in operation for at least one ANSP

Subsequently, the evaluation is pondered as follow:

- Up to 70 points for Technical Ranking
- Up to 30 points for Economic Ranking

The economic evaluation will be conditioned by the most economical convenient offer.

The passage to economic evaluation, under penalty of exclusion, is the provision of a technical score of 42 points, on the following criteria.

Up to 40 points of the final score is assigned on weight distribution as detailed in Requirements Weight Criteria (Section§11.1) and Additional Requirements Criteria (Section§11.2).

Up to 30 of the final score will be assigned at the discretion of Tender Commission in relation to the following criteria:

- Up to 4 points on the evaluation of product customization features in relation with the flexibility to modify, without the competitor involvement, the set of configuration parameters including the HMI (Section§11.3)
- Up to 2 points on the evaluation of references provision about the operational exploitation of the Software at other ANSP's premises with Cross border operations and / or High density Airports management features (Section§11.4)
- Up to 2 points on the evaluation the Software Evolution Roadmap according to SESAR objectives (Section§11.5)
- Up to 8 points on the evaluation of Software Maintenance Policy (Section§11.6)



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- Up to 10 points on the evaluation of Demonstration Session to take place in Europe (Section§11.7)
- Up to 4 points on the evaluation of improvement with respect to Technical Specification [2] (Section§11.8)

11.1 Requirements Weight Criteria

Up to 34 points of the final score is assigned on weight distribution provided in the following table :

ID	Description	Weight
R-CFG-0010	AMAN shall be able to manage multi-runway configuration and multi airport environment.	0,20
R-CFG-0020	AMAN shall be able to manage the MILANO TMA with three airports (Linate, Malpensa, Orio al Serio) and the ROMA TMA with two airports (Fiumicino, Ciampino).	0,20
R-CFG-0030	AMAN shall perform its computations on the data received from FDPS, RDPS and on the static ENV data (e.g. operational configuration, type and performance of the aircrafts, ATS geography and volumes).	0,20
R-CFG-0040	AMAN shall update all sequence information according to the following events: * On reception of new SFPL * On reception of SFPL updating * On reception of Radar data update * On execution of an AMAN Order.	0,20
R-CFG-0050	AMAN shall allow off-line definition of Managed Airports List.	0,20
R-CFG-0060	AMAN shall allow off-line definition of Inner Airports List containing a selection of all airports inside the related ATSU.	0,20
R-CFG-0070	AMAN shall allow off-line definition of the following Reference Points for each defined airport : * Runways (with the associated airport) * Metering Fixes (e.g. COP, IAF, FAF, Sector Entry/Exit Fix).	0,20
R-CFG-0080	AMAN shall allow off-line definition of the following Reference Routes: * Route Network * STARS * SIDs. * Arrival Transition Routes * Holding Patterns	0,20
R-CFG-0090	AMAN shall allow off-line definition of Runway Allocation Strategies for each defined airport.	0,20

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R-CFG-0100	<p>On each Runway Allocation Strategy, AMAN shall allow the definition of the following Runway Allocation Rules:</p> <ul style="list-style-type: none"> * Single runway operation * Multiple runway operation (non-exclusive): <ul style="list-style-type: none"> Dependent Independent * Minimum Taxi * No Crossing (e.g. East-East, West-West) * Airline * Aircraft Type. * WTC * Flight Type 	0,20
R-CFG-0110	AMAN shall allow off-line definition of Arrival Rate (flights per hour) for each configured runway.	0,20
R-CFG-0120	AMAN shall allow off-line definition of Arrival Spacing (NM) for each configured runway.	0,20
R-CFG-0150	<p>AMAN shall allow off-line definition of the following AMAN Horizon for each configured airport:</p> <ul style="list-style-type: none"> * Operational Horizon * Active Advisory Horizon * Frozen Horizon * Common Path Horizon. <p>Each AMAN Horizon shall be configurable asymmetrical.</p>	0,20
R-CFG-0170	AMAN shall allow off-line definition of Routes Weight Table, enabling the Delay Management Strategy distributing the flight total delay among different flight path for each configured airport.	0,20
R-CFG-0180	AMAN shall allow off-line definition of Flight Path Weight Table, enabling the Delay Sharing Distribution among different flight path for each configured airport.	0,20
R-CFG-0190	<p>On Flight Path Weight Table, AMAN shall allow the definition of the following information:</p> <ul style="list-style-type: none"> * Flight Path * For Each Flight Path : <ul style="list-style-type: none"> o Delay Weight (Total Delay %) o Maximum Delay allowed o Gain Weight (Total Gain %) o Maximum Gain allowed 	0,20
R-CFG-0200	AMAN shall allow off-line definition of Maximum Delay absorbed by the ATSU.	0,20
R-CFG-0210	AMAN shall allow off-line definition of Shared Delay that can be distributed to any adjacent ATSU.	0,20
R-CFG-0220	AMAN shall allow off-line definition of WTC Minimum Separations Table based on ICAO Document 4444 standards [2].	0,20



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R-CFG-0230	<p>AMAN shall allow off-line definition of Runway Separation Matrix including the following values :</p> <ul style="list-style-type: none"> * Minimum separation in NM (distance that successor must have when the predecessor arrives at same runway) * Minimum diagonal separation in NM ("diagonal" separation, considering the runway geometry to specify separations between flights on parallel, dependent runways). * WTC Minimum Separations Table based on ICAO Document 4444 standards [2]. 	0,20
R-CFG-0240	<p>AMAN shall allow off-line definition of Sectors Distribution List Mapping (Geographical Volume /Metering Fix), associating each geographical volumes with the relevant metering fix to manage timelines and lists visualization.</p>	0,20
R-CFG-0250	<p>AMAN shall allow off-line definition of Maximum Time to Gain Limit.</p>	0,20
R-CFG-0260	<p>For each defined airport, AMAN shall allow modification of Runway Allocation Strategy.</p>	0,20
R-CFG-0270	<p>For each defined airport, AMAN shall allow modification of Flight Path Weight Table.</p>	0,20
R-CFG-0280	<p>For each ACC, AMAN shall allow modification of Maximum Delay.</p>	0,20
R-CFG-0290	<p>For each ACC, AMAN shall allow modification of Shared Delay that can be distributed to adjacent ACC.</p>	0,20
R-CFG-0300	<p>For each configured runway, AMAN shall allow modification of Arrival Spacing.</p>	0,20
R-CFG-0310	<p>For each configured runway, AMAN shall allow modification of Arrival spacing for an individual flight.</p>	0,20
R-CFG-0320	<p>For each configured runway, AMAN shall allow modification of Arrival Rate.</p>	0,20
R-CFG-0350	<p>For each configured runway, AMAN shall allow modification of Maximum Time to Gain Limit.</p>	0,20
R-CFG-0360	<p>AMAN shall distribute to all positions, according to Sectors Distribution List Mapping, the following information:</p> <ul style="list-style-type: none"> * Runway timelines (one for each Runway) * Airport timelines (one for each Metering Fix) * COP lists (one for each COP) to the Adjacent ACC (ROMA, MILANO,BRINDISI or PADOVA). 	0,20
R-CFG-0370	<p>Upon Sectors band-boxing/splitting, AMAN shall re-distribute sequence information according to Sectors Distribution List Mapping.</p>	0,20
R-FUN-0010	<p>AMAN shall be able to receive SFPL creation and updates, provided by SA-ADAPTER.</p>	0,20
R-FUN-0020	<p>AMAN shall be able to receive Radar Tracks updates provided by SA-ADAPTER.</p>	0,20



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R-FUN-0030	AMAN shall be able to receive ENV data updates provided by SA-ADAPTER.	0,20
R-FUN-0040	AMAN shall extract ETA for each inbound flight in the configured airports as results of received trajectory prediction.	0,40
R-FUN-0050	AMAN shall extract, for each inbound flight, the ETO's at Reference Points included in the related received trajectory.	0,40
R-FUN-0060	AMAN shall consider a flight, departing outside AoR, as eligible for elaboration if all the following conditions are satisfied: * The flight enter the operational horizon configured with a look-ahead time (e.g. 60 or 120 minutes) * The flight plan is Active (e.g ABL message received for adiajent ACCs)	0,40
R-FUN-0070	AMAN shall consider a flight, departing inside the AoR, as eligible for elaboration at Take-Off.	0,40
R-FUN-0080	AMAN shall enable to select from different pre-defined Runway Allocation Strategies	0,40
R-FUN-0090	AMAN shall allow to set Runway Allocation Strategy at a given time in the future or after a given flight in the sequence.	0,20
R-FUN-0100	Upon selection of Runway Allocation Strategy, AMAN shall allocate an AMAN Runway for each inbound flight, following the pre-configured Runway Allocation Rules.	0,40
R-FUN-0120	AMAN shall assign, for each inbound flight, the corresponding Standard Arrival Route (STAR) extracted by received SFPL.	0,20
R-FUN-0130	AMAN shall take into account any change of planned runway provided by received SFPL updates, re-allocating the flight on the related sequence.	0,20
R-FUN-0140	AMAN shall be able to manage independent runway operation based on arrival spacing and WTC separation, as pre-defined in the Runway Separation Matrix.	0,40
R-FUN-0150	AMAN shall be able to manage dependent runway operation based on the minimum staggered separation between two subsequent flights on two different runways, as pre-defined in the Runway Separation Matrix. (Note : A staggered separation of 0 NM means the two runways are operated independently from each other, moreover a value greater than 0 NM means that subsequent arrivals on the two runways should maintain a diagonal minimum separation of the specified value)	0,40
R-FUN-0160	AMAN shall optimize arrival sequences in accordance of the following criteria: * ETA comparison following the first come, first served principle * Routes Weight Table * Defined Runway Allocation Strategy	0,40
R-FUN-0170	AMAN shall calculate and provide Target Time of Arrival (TTA) for each inbound flight based on the optimized arrival sequence on each configured landing runway.	0,40



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R-FUN-0180	<p>AMAN shall calculate TTA with the following constraint:</p> <ul style="list-style-type: none"> * Equal to ETA, if no delay absorption is Desired * Later then ETA, if delay absorption is Desired * Earlier then ETA, taking into account the Maximum Time to Gain Limit, if gain is Desired. 	0,40
R-FUN-0200	<p>AMAN shall provide Target Time Over (TTO) on any pre-defined Reference Point and for each inbound flight.</p>	0,40
R-FUN-0210	<p>AMAN shall distribute the total delay at the runway and provide Time To Lose/Time To Gain (TTL/TTG) advice, on any pre-defined Reference Point and for each inbound flight, according the Flight Path Weight Table.</p>	0,40
R-FUN-0220	<p>AMAN shall provide three kind of sequence:</p> <ul style="list-style-type: none"> * Runway Arrival Sequence (containing all the flights landing at a specified runway) * Airport Arrival Sequence (containing all flights landing at a specified airport, with one or more runways, whom trajectories match a set of pre-defined Reference Points) * COP list (containing all inbound flights whom trajectories match a set of pre-defined Reference Points) to adjacent ACC (ROMA, MILANO,PADOVA or BRINDISI) * Removed Flight List (containing all flight temporary removed from the arrival sequence. e.g missed approach, late appearing flight). 	0,40
R-FUN-0230	<p>AMAN shall be able to manage following flight priorities :</p> <ul style="list-style-type: none"> * Priority: the concerned flight is re-sequenced with the constraint that its TTA is as close as possible to its ETA (TTG remains applicable) * Emergency: the concerned flight is the only landing at the allocated runway 	0,40
R-FUN-0240	<p>AMAN shall updates flight related data, sequence and metering advices upon reception of the following data updates :</p> <ul style="list-style-type: none"> * radar data updates * flight plan updates * manual user input. 	0,20



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R-FUN-0250	<p>AMAN shall enable to modify the sequence by the following manual inputs:</p> <ul style="list-style-type: none"> * Change flight position in the sequence * Set TTA for a flight * Remove a flight from the sequence * Re-Insert a removed flight * Insert Reservation Slot * Change flight priority * Change Arrival Spacing for a runway * Change Arrival Spacing for a flight * Change Arrival Rate for a runway * Change Runway for a flight * Change runway direction * Freeze one or more flight in the sequence * Unfreeze one or more frozen flight in the sequence * Runway Closure. 	0,40
R-FUN-0260	<p>AMAN shall divide the arrival sequence into three sections according the pre-defined AMAN Horizons:</p> <ul style="list-style-type: none"> * Free Section of the sequence * Frozen Section of the sequence * Common Path Section of the sequence. 	0,40
R-FUN-0270	<p>AMAN shall insert flights that enter the operational horizon into the Free Section of the sequence based on the optimization criteria, the initial delays of the sequenced flights, and the actual delay distribution.</p>	0,40
R-FUN-0280	<p>AMAN shall freeze the position of flights entering the Frozen Section of the sequence and allow only automatic TTO shifts to adjust the target times, with the exception of priority flights.</p>	0,40
R-FUN-0290	<p>AMAN shall adapt the sequence according to the actual passing times of inbound flights on a pre-defined Reference Point at the beginning of the Common Path Section, (e.g. 6 NM out), for a given runway, without exception or further optimization of the flights to ensure that the actual landing order is always reflected.</p>	0,40
R-FUN-0310	<p>AMAN shall sequence all flights departing form the pre-defined Inner Airports List (short route flights) at take-off.</p>	0,40
R-FUN-0320	<p>AMAN shall sequence a flight departing inside the pre-defined Frozen Horizon as the last flight in the frozen section of the sequence.</p>	0,40
R-FUN-0330	<p>AMAN shall manage a short-route flight as normal inbound flight.</p>	0,40
R-FUN-0340	<p>AMAN shall support delay sharing between en-route and TMA sectors based on a weighted distribution of delay inside the pre-defined maximum delay that each sector can absorb.</p>	0,40

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R-FUN-0350	AMAN shall distribute, starting from the total delay at the runway (TTA-ETA), the TTL among the crossed sectors, following the pre-defined Flight Path Weight Table that associates a weight and a maximum absorbed delay for each sector and/or flight path.	0,40
R-FUN-0360	If the total delay exceed Maximum Delay allowed of the current ATSU, AMAN shall distribute the Shared Delay portion to the upstream ATSU, if any.	0,40
R-HMI-0030	On each working position, AMAN HMI shall be configured according to one of the foreseen AMAN roles.	0,04
R-HMI-0040	It shall be possible to on-line modify the role assigned to an AMAN HMI working position.	0,04
R-HMI-0060	AMAN HMI shall display the following windows: * Timeline Window * Flight Information Window * Removed Flight List Window * Configuration Window.	0,08
R-HMI-0070	AMAN HMI shall display the Timeline Window as the main interface element.	0,08
R-HMI-0080	AMAN HMI shall display (when active) Removed Flight List Windows and Configuration windows in an off-line configured position of the Timeline Window.	0,08
R-HMI-0100	It shall be possible to interact with the AMAN HMI windows by means of a three-button mouse with a mouse wheel defined as follows: * AB= Action Button * IB= Information Button * WB= Window Button.	0,04
R-HMI-0110	Each button of the mouse shall be associated to the following functions: * CLICK LEFT BUTTON (AB): allows to interact with objects (e.g. selection of objects, pressing buttons, selecting among multiple options, designating points in time on a timeline) * DRAG&DROP: allows to relocate objects to a different point in time or to a different timeline * DRAG: allows to move windows within the Timeline Window * MOUSE WHEEL: allows to scroll the visible part of the window or list or allows to alter the value of a selected input field * RIGHT BUTTON (WB): allows to open the context window of an object.	0,04



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R-HMI-0120	<p>AMAN HMI shall display, in the Timeline Window, the following information:</p> <ul style="list-style-type: none"> * Configured Timelines (Airport/Runway) * COP Lists * Button Bar * Current Parameters * Status Bar * Range Scale * Default scale settings. 	0,04
R-HMI-0140	<p>AMAN HMI shall display, in the Timeline Window, the following off-line configurable Timelines:</p> <ul style="list-style-type: none"> * Runway Timelines (one for each selected Runway), representing the Runway Arrival Sequence containing all flights landing at a specific runway * Airport Timelines (one for each selected Airport), representing the Airport Arrival Sequence containing all flights, whose trajectory matches a set of predefined reference points, landing at a specified airport * COP Lists (one for each selected COP), representing all inbound flights whose trajectory matches a set of predefined COPs. 	0,08
R-HMI-0170	<p>AMAN HMI shall display each Timeline in the Timeline Windows as vertical scale marked at regular off-line defined time intervals.</p>	0,04
R-HMI-0180	<p>AMAN HMI shall display on each Timeline in the Timeline Window the Current Time Marker according to off-line customization.</p>	0,04
R-HMI-0190	<p>AMAN HMI shall display in the Timeline Window the Current Time Marker on a fixed point of the vertical scale.</p>	0,04
R-HMI-0200	<p>AMAN HMI shall display on each Timeline in the Timeline Window the UTC Time next to the Current Time Marker.</p>	0,04
R-HMI-0220	<p>AMAN HMI shall display in the Timelines future events above or below the Current Time Marker, according to off-line configuration.</p>	0,04
R-HMI-0240	<p>AMAN HMI shall allow to simultaneously scroll (up and down) all Timelines displayed in the Timeline Window, by means of the mouse wheel. The name of the corresponding Airport/Runway shall always remain visible.</p>	0,04
R-HMI-0250	<p>AMAN HMI shall allow, at any time, to return to the current time position by clicking on a dedicated button.</p>	0,04
R-HMI-0260	<p>AMAN HMI shall display, for each Timeline, the name of the reference Airport/runway at the top/bottom of the Timeline, according to off-line configuration.</p>	0,04
R-HMI-0270	<p>AMAN HMI shall display sequenced flights, in the Timeline Window, as Flight Labels.</p>	0,04
R-HMI-0280	<p>AMAN HMI shall display Flight Strips connected to the Timeline at the point corresponding to the TTO (Target Time Over) of the configured metering FIX or the TTA (Target Time of Arrival) at the runway, by means of an off-line defined Connector Line.</p>	0,04

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R-HMI-0300	<p>For each flight in the Timeline Window, AMAN HMI shall display the following textual flight information in the corresponding Flight Label:</p> <ul style="list-style-type: none"> * CALLSIGN (up to 8 characters) * CURRENT DELAY (minutes): up to 3 characters <ul style="list-style-type: none"> o "0" – if there is no delay o "+XX" – if there is a TTL (in minutes) o "-XX" – if there is a TTG (in minutes) o "--" (two dashes) - in case the delay calculation is not possible. * ICAO AIRCRAFT TYPE CODE (up to 6 characters) or TTO on the Metering FIX (5 characters) e.g. Holding Exit (Configurable) * WTC (up to 1 character) * METERING FIX (up to 3 characters) * SEQUENCE NUMBER (only for Runway Timelines), up to 2 characters * FURTHER INDICATION (if any): 1 character with coloured background. 	0,08
R-HMI-0340	<p>AMAN HMI shall highlight the Flight Label when hovering over it with the mouse. If the same flight is displayed on other Timelines , their Flight Labels are also highlighted.</p>	0,08
R-HMI-0360	<p>AMAN HMI shall highlight flights with Priority or Emergency Status in the Flight Label callsign field as follows:</p> <ul style="list-style-type: none"> * ORANGE Callsign: Priority Flights * RED Callsign: Emergency Flights. 	0,04
R-HMI-0390	<p>AMAN HMI shall display SLOTS on the Timelines representing a time interval in which special events occur.</p>	0,04
R-HMI-0400	<p>AMAN HMI shall display SLOTS positioned on the corresponding Timeline and according to its start time and duration.</p>	0,04
R-HMI-0410	<p>AMAN HMI shall display SLOTS as a coloured line as follows:</p> <ul style="list-style-type: none"> * RUNWAY CLOSURE SLOT (Time Interval during which the runway will not be used by AMAN): Red Line * SPACING SLOT (Manually assigned separation (NM) after a selected flight): White Line * RESERVATION SLOT (Placeholder for a specific flight): Yellow Line. 	0,04
R-HMI-0420	<p>AMAN HMI shall display a dedicated label for each SLOT on the Timeline indicating the type and duration of the SLOT.</p>	0,04
R-HMI-0430	<p>AMAN HMI shall display Indicators indicating a change of global sequencing and spacing AMAN parameters.</p>	0,04
R-HMI-0440	<p>AMAN HMI shall highlight Indicators on the Timeline with an off-line configured label indicating the type and value of the change at the point of time at which the change becomes effective.</p>	0,04

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R-HMI-0450	<p>AMAN HMI shall display the following INDICATORS:</p> <ul style="list-style-type: none"> • RUNWAY STRATEGY INDICATOR representing a change of the runway strategy usage; • RUNWAY SPACING INDICATOR representing a change in the minimum separation between two subsequent flights on the runway; • RUNWAY RATE INDICATOR representing a change in the arrival rate on the runway; • SPACING SLOT INDICATOR representing a change in the minimum separation between the selected flight and its predecessor; • RUNWAY DIRECTION INDICATOR representing a change in the runway direction; • RESERVATION SLOT representing a label that identifies the type and value of a reservation time slot; • RUNWAY CLOSURE SLOT INDICATOR representing the closure of a runway. 	0,04
R-HMI-0460	<p>AMAN HMI shall display, at the bottom of the Timeline Window, a button bar with the following selectable buttons:</p> <ul style="list-style-type: none"> • CONFIGURATION button: to open a window which allows to configure the displayed timelines; • REMOVED FLIGHTS button: to open the window containing the non-sequenced flights; • COP LIST button: to open the window containing the estimated times over the FIR or Sector Exit FIX; • SM button: to enable/disable the sequence manager authority for the AMAN HMI. 	0,04
R-HMI-0510	Each flight in the Removed Flights List Window shall be represented by its Flight Label.	0,04
R-HMI-0520	Non-sequenced flights in the Removed Flights List Window shall be ordered according to their de-sequencing time and shall contain the CALLSIGN and reason for de-sequencing.	0,04
R-HMI-0560	AMAN HMI shall display, in a dedicated area at the bottom of the Timeline Window, the parameters currently in use for AMAN.	0,04

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R-HMI-0570	<p>AMAN HMI shall display the following parameters:</p> <ul style="list-style-type: none"> • RUNWAY STRATEGY; • ARRIVAL RATE; • ARRIVAL SPACING; • RUNWAY CLOSURE; • TOTAL DELAY; • AVERAGE DELAY (optional) over one or more Metering Fixes; • NUMBER OF SEQUENCED FLIGHTS. 	0,04
R-HMI-0590	<p>AMAN HMI shall display a Status Bar which allows to visualize the availability of network connection between AMAN and other systems (input data) at the bottom right side of the Timeline Window.</p>	0,04
R-HMI-0600	<p>AMAN HMI shall display the following connection information in the Status Bar:</p> <ul style="list-style-type: none"> • Reception of Track Data (SSR); • Reception of Flight Plan Data (FPL); 	0,04
R-HMI-0620	<p>AMAN HMI shall display in the lower right side of the Timeline Window the RANGE SCALE buttons which allow to increase/decrease the currently displayed scale on the Timelines.</p>	0,04
R-HMI-0630	<p>AMAN HMI shall display a DEFAULT SCALE button which allows to return to the off-line defined range scale of the Timelines.</p>	0,04
R-HMI-0640	<p>AMAN HMI shall foresee the following different user rights related to different roles:</p> <ul style="list-style-type: none"> • SEQUENCE MANAGER; • SUPERVISOR; • EXECUTIVE; • TECHNICAL. 	0,08
R-HMI-0650	<p>AMAN HMI configured as SEQUENCE MANAGER shall have full authorization to modify the runway sequence and an off-line defined set of global sequencing parameters.</p>	0,04
R-HMI-0660	<p>AMAN HMI configured as SEQUENCE MANAGER shall display runway timelines, Airport Timelines and COP Lists.</p>	0,04
R-HMI-0670	<p>For each ACC one or more positions can be in SEQUENCE MANAGER role at the same time.</p>	0,04
R-HMI-0680	<p>AMAN HMI configured as SUPERVISOR shall display runway timelines, Airport Timelines and COP Lists.</p>	0,04
R-HMI-0690	<p>AMAN HMI configured as SUPERVISOR shall have full authorization to modify a set of off-line defined global sequencing parameters.</p>	0,04



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R-HMI-0700	It shall be possible to switch to SEQUENCE MANAGER the AMAN HMI configured as SUPERVISOR by using a message box confirmation.	0,04
R-HMI-0710	AMAN HMI configured as EXECUTIVE shall be read-only.	0,04
R-HMI-0720	AMAN HMI configured as EXECUTIVE shall display Runway Timelines, Airport Timelines and COP Lists.	0,04
R-HMI-0730	AMAN HMI configured as TECHNICAL shall be dedicated to maintenance.	0,04
R-HMI-0740	<p>AMAN HMI configured as TECHNICAL shall allow to perform:</p> <ul style="list-style-type: none"> • AMAN System Monitoring; • AMAN System Control; • AMAN System Failover. 	0,04
R-HMI-0750	AMAN HMI configured as TECHNICAL shall display the Timeline as displayed on the SEQUENCE MANAGER and SUPERVISOR positions (read-only).	0,04
R-HMI-0760	AMAN HMI configured as TECHNICAL shall not be authorized to modify the AMAN sequence or sequencing parameters.	0,04
R-HMI-0770	There shall be only one AMAN HMI fixed position configured as TECHNICAL	0,04
R-HMI-0840	Manual changes to individual flights shall always have priority on automatic sequencing advices.	0,04
R-HMI-0850	AMAN HMI shall allow authorized users to manually modify the ARRIVAL RATE (flights per hour), by selecting Start Time, Runway and Rate. The arrival rate change shall be displayed as Runway Rate Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section.	0,04
R-HMI-0860	AMAN HMI shall allow authorized users to manually modify the ARRIVAL SPACING by setting the minimum separation (NM) between two subsequent flights on the same runway, selecting Start Time, Runway and Distance. The arrival spacing change shall be displayed as Runway Spacing Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section.	0,04
R-HMI-0870	AMAN HMI shall allow authorized users to manually modify the RUNWAY DIRECTION by setting the direction of runway, selecting Start Time and Runway. The runway direction change shall be displayed as Runway Direction Indicator in the Timeline Window.	0,04



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R-HMI-0880	AMAN HMI shall allow authorized users to manually modify the RUNWAY STRATEGY by defining which runway is currently assigned to accommodate incoming flights. It shall be possible to select among different off-line defined strategies and the corresponding starting time. A runway strategy change shall be displayed in the Timeline Window as Runway Strategy Indicator and shall also be displayed at the bottom of the Timeline Window in the parameter Section. It shall also be possible to attach a runway strategy change to a flight, affecting all the subsequent flights. Runway strategies can be modified and terminated.	0,04
R-HMI-0890	AMAN HMI shall allow authorized users to manually modify the DELAY SHARING by setting the delay sharing distribution among sectors. It shall be possible to modify the default flight path weight table.	0,04
R-HMI-0920	AMAN HMI shall allow authorized users to manually assign/modify the RESERVATION SLOT used to occupy a slot in the sequence for a flight that did not show up yet (e.g. planned departure from a nearby airport or incoming flight). For each reservation slot it shall be possible to insert the start time, the runway and the WTC. When the flight shows up it shall be possible to replace the reservation slot with the flight. The reservation slot insertion shall be displayed as a Reservation Slot Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section.	0,04
R-HMI-0930	AMAN HMI shall allow authorized users to manually assign/modify the RUNWAY CLOSURE by specifying the start time and the time interval when a runway shall not be used by AMAN. The runway closure shall be displayed as Runway Closure Slot Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section. It shall be possible to relocate runway closure slots on the same timeline by "drag & drop", to update the runway closure slot and remove it.	0,04
R-HMI-0940	It shall be possible to off-line define the number of simultaneously displayed Timelines.	0,04
R-HMI-0950	It shall be possible to off-line define the reference points (runways and/or metering FIX) for which the flights are displayed.	0,04
R-HMI-0960	It shall be possible to off-line define the time horizon to be displayed in the Timeline Window.	0,04

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R-HMI-0970	<p>It shall be possible to off-line define the information content to be displayed in the Flight Strips among the following:</p> <ul style="list-style-type: none"> • CALLSIGN • Delay (TTL/TTG) • ICAO aircraft type code • WTC (Wake Turbulence Category) • Metering FIX • Sequence Number • ... 	0,04
R-HMI-1010	<p>It shall be possible to off-line define the colours associated to the Flight Strip state (Flight strip columns and connector line).</p>	0,04
R-HMI-1020	<p>It shall be possible to off-line define the label associated to an Indicator.</p>	0,04
R-HMI-1030	<p>It shall be possible to off-line configure the data to be displayed in the extended Flight Information.</p>	0,04
R-HMI-1040	<p>It shall be possible to off-line configure the default runway separation values for each runway.</p>	0,04
R-HMI-1050	<p>It shall be possible to off-line configure the following access rights and related layout:</p> <ul style="list-style-type: none"> • SEQUENCE MANAGER; • SUPERVISOR; • EXECUTIVE; • TECHNICAL. 	0,08
R-HMI-1060	<p>It shall be possible to off-line define the configuration for each sector and sector combination. The configuration shall include:</p> <ul style="list-style-type: none"> • Timelines to be displayed • Timescale 	0,04
R-HMI-1070	<p>It shall be possible to off-line define the default sector associated with a specific EXECUTIVE role.</p>	0,04

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R-HMI-1080	<p>It shall be possible to off-line define the color coding according to the flight plan state as follows:</p> <ul style="list-style-type: none"> • Concerned Flight = Light Green; • Pending Flight = Yellow; • Flight with STCA Alarm = Red; • Light under Transfer of Control (TOC) = Magenta; • AIS = Dark Green; • Nearby Flight = White. 	0,04
R-IRQ-0010	<p>AMAN shall include in any Sequence Update message the following information :</p> <ul style="list-style-type: none"> • Reference Point name; • Reference Point spacing; • Reference Point type. <p>For each flight in the Arrival Sequence:</p> <ul style="list-style-type: none"> • Arrival Sequence Number; • CALLSIGN; • Planned Runway (runway extracted from the SFPL); • Type of Aircraft; • WTC; • ETA/ETO if Reference Point type is respectively Runway / Metering Fix; • Flight Priority (Emergency, Priority, No priority); • Flight Status (Active, Frozen, Common Path); • Suggested Runway, if any; • TTA/TTO if Reference Point type is respectively Runway / Metering Fix; • Total delay; • TTL (Time to lose) / TTG (Time to gain). 	0,5
R-IRQ-0050	<p>The FDPS Interface shall be able to receive the following data:</p> <ul style="list-style-type: none"> • Flight plan data; • Operational sectors configuration data; 	0,5
R-IRQ-0060	<p>The FDPS Interface shall exchange data via EUROCONTROL FMTP ("Flight Message Transfer Protocol").</p>	0,5

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R-IRQ-0070	The FDPS Interface shall exchange data using ADEXP format as defined in the community specification N.0107 Edition 3.1, following the specification provided by ENAV during Project Definition Phase.	0,5
R-IRQ-0080	<p>The FDPS Interface shall be able to receive at least the following flight plan data :</p> <ul style="list-style-type: none"> • Flight Plan Status (new, update, terminated); • SSR Code; • ICAO Code (aircraft type); • Wake Turbulence Category; • ADEP • ADES • 4D Trajectory (4D trajectory of FDP used to extract the route of the flight: waypoints defined by name, latitude and longitude, including speed and level constraints at the waypoints, route up to TMA Feeder Fix at least); • RFL; • CFL; • ICAO flight rule (I, V, Y, Z); • ICAO Flight type (G, M, N, S, X); • Aircraft equipment (field 10 of ICAO flight plan); • ATA (Actual Time of Arrival); • ATD (Actual Time of Departure); • Sector (Controlling the flight); • Flight Track Status (Assumed, AIS, Tentative, Hand Over, Nearby, Pending, STCA Alarm); 	0,5
R-IRQ-0090	The RDPS Interface shall be able to receive radar tracks data.	0,5
R-IRQ-0100	The RDPS Interface shall exchange data via UDP.	0,5
R-IRQ-0110	The RDPS Interface shall be able to receive data using ASTERIX CAT62 format.	0,5

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R-IRQ-0120	<p>The RDPS Interface shall be able to receive at least the following radar tracks data items:</p> <ul style="list-style-type: none"> • I062/010 (Data Source Identifier); • I062/015 (Service Identification); • I062/040 (Track Number); • I062/060 (Track Mode 3/A Code); • I062/070 (Time Of Track Information); • I062/080 (Track Status); • I062/100 (Calculated Track Position); • I062/120 (Track Mode 2 Code); • I062/135 (Calculated Track Barometric Altitude); • I062/136 (Measured Flight Level); • I062/185 (Calculated Track Velocity); • I062/200 (Mode Of Movement); • I062/220 (Calculated Rate Of Climb/Descent); • I062/340 (Measured Information); • I062/380 (Ground Speed); • I062/390 (Flight Plan Related Data); • SP (Special Purpose field). 	0,5
R-SPV-0010	The AMAN supervision shall be able to monitor and provide the status of AMAN, automatically detecting failures and solving it.	0,20
R-SPV-0030	The AMAN supervision shall allow the Operational/Technical Supervisor to enable/disable AMAN services on all operational room configuration.	0,20
R-SPV-0040	The AMAN supervision shall allow the Technical Supervisor to switch on/off the AMAN tool.	0,20
R-SPV-0050	The AMAN supervision shall notify to the ATCO and the Technical Supervisor the AMAN status (e.g. enable/disable, on/off) on all the related HMI.	0,20
R-SPV-0060	The failure of AMAN Supervision system shall not affect the normal operation of the monitored AMAN system.	0,20
R-SPV-0080	The AMAN Supervision system shall provide a Supervision HMI to display all configured information of interest exchanged with managed objects.	0,10



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R-SPV-0090	The AMAN Supervision HMI, shall display the following data to be managed by the Supervisor: <ul style="list-style-type: none"> • Alarms; • Relevant Events; • Commands/Actions; • Technical and Functional data; • Instant indicators; • Status of managed objects. 	0,10
R-SPV-0100	The AMAN supervision shall store commands and components status for later analysis.	0,10
R-SPV-0110	The AMAN supervision HMI shall be provided for 3 positions on each ACC (OPS + SIM + PSA).	0,20
R-RBP-0030	AMAN shall store diagnostic and application data.	0,10
R-RBP-0040	AMAN shall make available recorded and stored data for a period of 30 days.	0,10
R-DAF-0030	AMAN shall record statistical data into daily log files.	0,10
R-TEC-0030	AMAN platform (both full and reduced) shall run on a hardware platform based on Intel x86 processor with operating system LINUX.	0,10
R-TEC-0040	AMAN full platform shall be based on a hardware solution that ensures full fault tolerance capabilities and a very fast recovery operations (see performance requirements)	0,10
R-TEC-0050	All envisaged hardware shall be connected via dedicated ATC Tools LAN.	0,10
R-TEC-0060	AMAN servers shall be connected with two ETHERNET network switches set in redundant mode, utilizing an interconnection among each other and using "Rapid Spanning Tree" protocol.	0,10
R-TEC-0070	The network switches provide redundancy by utilizing an interconnection among each other and using "Rapid Spanning Tree" protocol (RSTP). It is still to be decided whether FDPS LAN or ATC Tools LAN shall be used.	0,10
R-TEC-0080	AMAN Clients from any ACC to any other ACC shall be connected via WAN (E-NET).	0,10
R-TEC-0090	The WAN (E-NET) require a continuously available bandwidth of at least 2Mbit/s.	0,10
R-TEC-0100	The suppliers must draw up a list of all host/server belonging to the new supply contract and produce a proper connectivity matrix, with details of all local and geographical communication needs within E-NET network.	0,10



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R-TEC-0110	All Site system IP addresses must be connected to the ENAV national numbering plan, available in CGE-NET and ICT Security department.	0,10
R-TEC-0120	While using local sub-networks, Provider must avoid any overlapping with sub-networks already deployed at national level.	0,10
R-TEC-0130	In order to properly convey traffic flows onto E-NET geographical network, Provider must respect VPN logical partition and VPN/IP numbering plan/service association.	0,10
R-TEC-0140	All the servers and front-end systems belonging to a site and dedicated to geographical communication for a service must be shown toward geographical network on the unique assigned LAN as default gateway network. Network range and addresses will be chosen by CGE-NET and ICT Security department following ENAV national network planning rules.	0,10
R-TEC-0150	LAN network redundancies shall be managed by duplicating network devices and fault tolerance protocols. Moreover, server and front-end systems must interconnect following active/stand-by bonding criteria, in order to guarantee the expected high reliability constraints.	0,10
R-TEC-0160	Provider must provide the LAN infrastructure equipment (it should be a network resource upgrade or a new HW resource supply) to interconnect server and front-end systems, in total agreement with current technology	0,10
R-TEC-0170	Systems interfacing methods with LAN access infrastructure must respect E-NET program (ENAV geographical network) defined criteria.	0,10
R-TEC-0180	Systems Interconnection criteria (port assignment) and necessary configuration (IP addressing, interfacing rules, etc.) must be shared with E-NET & ICT Security management centre.	0,10
R-TEC-0190	Port configuration must be set by forcing ETH specific negotiation (i.e. ETH 100 full-duplex) in order to minimize possible interfacing problems.	0,10
R-TEC-0200	End-to-end communication between systems/services within geographical environment must be enabled exclusively on ports/protocols necessary to a correct service operation.	0,10
R-TEC-0210	All application exchanges between different LANs must be implemented and managed at level 3 ISO/OSI. Application equipment with two or more different ports connected to different Operation LANs must not be allowed to exchange traffic.	0,10
R-TEC-0220	Within system implementation scope, any kind of interconnection (application or network level) between Operational LAN and third parties LAN (Companies Intranet, internet, etc.) can only be realized passing through E-NET Security modules.	0,10
R-TEC-0230	In respect of guarantee a correct correlation between events, server and front-end systems must be synchronized with NTP server.	0,10



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R-TEC-0240	All server and front-end systems must be compatible with standard LDAP authentication protocol. Moreover, a local authentication method must be provided in order to protect from unauthorized access to the systems. Configuration details and integration with authentication server must be shared with CGE-NET & ICT Security department.	0,10
R-TEC-0250	Each provided switch must be SNMPv3 embedded in order to be remotely monitored via RTDM from ENAV. Concerning this, each switch must be provided with a Management VLAN and cabling must be prepared for interconnection towards E-NET network security modules (MS E-NET). Systems configuration and integration details must be shared with CGE-NET & ICT Security department.	0,10
R-TEC-0260	Server and front-end Windows systems must be prepared for antivirus configuration by ENAV SOC. Systems configuration and integration details must be detailed in SDD document.	0,10
R-TEC-0270	System Design and implementation stages must be scheduled respecting ISO 27001 Standard, for information security management system.	0,10
R-TEC-0280	Hardware and LAN equipment shall be redundant in their power supply components.	0,10
R-TEC-0290	Each rack hosting the active equipment shall be powered by two multiple sockets connected to different slots on electric box.	0,10
R-REF-001	References about the operational exploitation of the Software at other ANSP's premises with Multi runway management	1
R-REF-002	References about the operational exploitation of the Software at other ANSP's premises with Multi airports management	1
R-SFW-0010	Suppliers shall use all necessary means to ensure the configuration control of installed software and verify non-regression of the modified CSCIs. The choice of tools to perform these activities shall be approved by ENAV during Project Definition.	0,4
R-SFW-0020	Suppliers shall provide the Software Maintenance Policy and Evolution Roadmap.	0,4
R-SFW-0030	All software changes provided for this project shall at least ensure the maintenance of functional and performance characteristics of the system already in operation (no functional regression).	0,4
R-SFW-0050	The Software shall be respected what is indicated in ESARR 6 and adopted by European Regulation (EC) 482/2008 relating to the Software in ATM systems.	0,4

Table 3: Requirements Weight Criteria

11.2 Additional Requirements Criteria

Up to 6 points of the final score is assigned on weight distribution provided in the following table :

ID	Description	Weight
R-CFG-0130	AMAN shall allow off-line definition of LVP rate (flights per hour) for each configured runway.	0,20
R-CFG-0140	AMAN shall allow off-line definition of LVP spacing (NM) for each configured runway.	0,20
R-CFG-0160	AMAN shall allow off-line definition of Stability Interval Set associated to different configurable geographical areas in order to support sequence stability.	0,20
R-CFG-0330	For each configured runway, AMAN shall allow modification of LVP rates.	0,20
R-CFG-0340	For each configured runway, AMAN shall allow modification of LVP spacing.	0,20
R-FUN-0110	If planned runway of an inbound flight differ from the AMAN Runway, AMAN shall suggest a new Runway.	0,20
R-FUN-0190	AMAN shall provide total delay at the runway advice, for each inbound flight, as difference between TTA and ETA.	0,20
R-FUN-0300	AMAN shall change the sequence position of a flight only if the difference between the calculated ETA and TTA is outside the pre-defined Stability Interval in the associated geographical area.	0,20
R-FUN-0370	If the total delay exceed a pre-defined amount (Maximum Delay allowed of current ATSU + Shared Delay of adjacent upstream ATSU), AMAN shall re-distribute remaining delay to the TMA.	0,20
R-HMI-0010	AMAN HMI shall be deployed on a dedicated Working Position (narrow vertical monitor with the following dimensions: 40x60 cm).	0,02



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R-HMI-0020	<p>AMAN HMI shall be deployed on:</p> <ul style="list-style-type: none"> * 25 working positions in ROMA ACC OPS * 22 working positions in MILANO ACC OPS * Up to 14 working positions in PADOVA ACC OPS * Up to 7 working positions in BRINDISI ACC OPS * 9 working positions in ROMA ACC Simulation Environment * 5 working positions in MILANO ACC Simulation Environment * 5 working positions in PADOVA ACC Simulation Environment * 5 working positions in BRINDISI ACC Simulation Environment * 9 working positions in ENAV Academy * 2 working positions in ROMA PSA * 2 working positions in MILANO PSA. <p>The precise number will be provided by ENAV during Definition Phases.</p>	0,02
R-HMI-0050	<p>AMAN HMI shall be configured in order to follow (on the CALLSIGN field) the following colour coding currently implemented in SATCAS CWP:</p> <ul style="list-style-type: none"> * LIGHT GREEN --> Flights assumed under the sector control (CONCERNED Flights) * YELLOW -->Flights in Pending Status * RED --> Flights for which an STCA Alarm is detected * MAGENTA --> Flights under Transfer of Control (TOC), i.e. Tentative Flights * DARK GREEN -->Concerned AIS Flights * LIGHT GREEN (CALLSIGN) & WHITE --> Exit Handover Flights * WHITE -->Nearby Flights. 	0,02
R-HMI-0090	<p>It shall be possible to on-line select the window to be displayed by clicking on a dedicated button.</p>	0,02
R-HMI-0130	<p>AMAN HMI shall display the Timeline Window with a dark grey background.</p>	0,02
R-HMI-0150	<p>AMAN HMI shall allow to on-line select the Timelines to be displayed on each working position by selecting the corresponding Runway/Airport.</p>	0,02
R-HMI-0160	<p>AMAN HMI shall allow to on-line select the COP Lists to be displayed</p>	0,02

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	on each working position by selecting the corresponding COP.	
R-HMI-0210	AMAN HMI shall display the planning situation in the Timeline Window on both sides of the Timeline, according to off-line configuration. West-bound flights shall be displayed on the left part of the Timeline and East-bound flights shall be displayed on the right.	0,02
R-HMI-0230	AMAN HMI shall allow to on-line change the orientation of the Timelines according to the orientation of the corresponding runways.	0,02
R-HMI-0290	AMAN HMI shall display the AMAN Flight State by means of the following off-line defined colours associated to the Connector Line: * WHITE: for flights in the Active Horizon * GRAY: for flights in the Frozen Horizon * DASHED GRAY: For flights in the Common Path.	0,04
R-HMI-0310	AMAN HMI shall display the fields of each Flight Label with the following colour coding: * CALLSIGN: Flight Status * TTL: Yellow or Orange (if TTL>Maximum delay) * TTG: Cyan * NO DELAY: white * All other fields: white.	0,04
R-HMI-0320	AMAN HMI shall display, according to the off-line configured Metering fixes, on the Airport Timeline both flights under control and flights not under control, belonging to neighbouring sectors and which are sequenced on the same airport. The flight labels shall follow the Flight status colour coding.	0,04
R-HMI-0330	On selecting a flight Label, its background colour shall change according to off-line configuration.	0,04
R-HMI-0350	AMAN HMI shall indicate manually sequenced flights in the last field of the Flight Label.	0,04
R-HMI-0370	When the current TTL assigned to a flight is greater than an off-line configured threshold, the corresponding TTL/TTG field in the Flight Label shall change colour.	0,04
R-HMI-0380	AMAN HMI shall allow to acknowledge an highlighted TTL field.	0,04

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R-HMI-0470	AMAN HMI shall allow, by clicking with the left mouse button on the buttons of the button bar, to display the corresponding content information window.	0,02
R-HMI-0480	On selecting one of the buttons of the button bar, a specific dedicated window shall open in an off-line defined position displaying the related information content.	0,02
R-HMI-0490	By clicking with the left mouse button on the CONFIGURATION button in the Button Bar, AMAN HMI shall display a dedicated AMAN configuration window which allows to change the following HMI settings related to the displayed Timelines: <ul style="list-style-type: none"> • NUMBER OF DISPLAYED TIMELINES; • RUNWAYS/METERING FIXES displayed on the Timelines; • Displayed TIME HORIZON; • Orientation of Flight Labels on the Timeline. 	0,02
R-HMI-0500	By clicking with the left mouse button on the REMOVED FLIGHTS button in the Button Bar, AMAN HMI shall display non-sequenced flights in a dedicated Removed Flights List Window.	0,02
R-HMI-0530	AMAN HMI shall display in the Removed Flights List Window the following possible de-sequencing reasons: <ul style="list-style-type: none"> • Manual removal from the sequence; • Flights with invalid or unknown route; • Automatically de-sequenced flights. 	0,02
R-HMI-0540	AMAN HMI shall display the Removed Flights button in the Button Bar with the following colours: <ul style="list-style-type: none"> • GRAY: when the Removed flights list is empty; • ORANGE: when the Removed Flights List Window contains at least one flight. 	0,02

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R-HMI-0550	<p>For each flight in the non-sequenced flight list, AMAN HMI shall display the following information in the flight label:</p> <ul style="list-style-type: none"> • CALLSIGN; • ICAO Aircraft Type code; • WTC; • Metering FIX; • Reason for de-sequencing; • ADEP; • ADES; • ETA (if available); • TTO (EAT 4 CHARS). 	0,02
R-HMI-0580	<p>Each time a parameter changes value, the corresponding information is highlighted in the Timeline Window.</p>	0,02
R-HMI-0610	<p>AMAN HMI shall display the fields in the Status Bar as follows:</p> <ul style="list-style-type: none"> • GRAY: all data is available; • ORANGE: data reception is interrupted; • RED: no connection is established/no data is available. 	0,02
R-HMI-0780	<p>AMAN HMI shall allow to change the position of a flight on the current runway as follows:</p> <ol style="list-style-type: none"> 1. AB press & hold on the CALLSIGN field of the Flight Label; 2. AB release on desired position (before or after a flight). 	0,02
R-HMI-0790	<p>AMAN HMI shall allow to change the TTA for a flight on the current runway as follows:</p> <ol style="list-style-type: none"> 1. AB press & hold on connector line; 2. Current TTA is highlighted; 3. Timeline displays 1 minute step timing; 4. On mouse move the Time is highlighted related to the position; 5. AB release on desired TTA. 	0,02



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R-HMI-0800	<p>AMAN HMI shall allow to change the runway for a flight as follows:</p> <ol style="list-style-type: none"> 1. AB press & hold on CALLSIGN field; 2. On mouse move on the other runway: <ul style="list-style-type: none"> o Timeline displays 1 minute step timing; o Time is highlighted related to the position. 3. AB release: <ul style="list-style-type: none"> o A window is displayed with three choices: <ul style="list-style-type: none"> - Change runway: AMAN shall automatically re-sequence the flight on the new runway; - Change runway at specified position: AMAN shall insert the flight in the released position (after or before a flight); - Change runway at specified TTA : AMAN shall insert the flight at the highlighted TTA. 	0,02
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R-HMI-0810	<p>On WB click on CALLSIGN field of the Flight Label, AMAN HMI shall display a window with the following choices:</p> <ul style="list-style-type: none"> • Remove: the selected flight is removed from the sequence and inserted in the non-sequence flight window; • Freeze: the flight position is locked; • Unfreeze: the flight position is unlocked; • Spacing: <ol style="list-style-type: none"> 1. A window is displayed that allows the definition of a flight-dependent separation <ul style="list-style-type: none"> in NM after the selected flight; 2. A spacing indicator is displayed on the Timeline; 3. AB click on Spacing Indicator : <ul style="list-style-type: none"> o A window is displayed that allows to change or remove the flight-dependent separation; • Priority: the flight is re-sequenced in such a way that its TTA is as close as possible to its ETA (TTG remains applicable); • Emergency: the concerned flight is the only landing a the allocated runway; 	0,02
R-HMI-0820	<p>On IB click on the CALLSIGN field of the Flight Label, the latter shall be extended with additional flight information.</p>	0,02

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R-HMI-0830	<p>AMAN HMI shall allow to Re-Insert a non-sequenced flight, except for flights with invalid or unknown route by the following interaction with the Removed Flights List:</p> <ol style="list-style-type: none"> 1. AB press & hold on CALLSIGN field; 2. On mouse move on a runway Timeline: <ul style="list-style-type: none"> o Timeline displays 1 minute step timing; o Time is highlighted related to the position. 3. AB release: <ul style="list-style-type: none"> o A window is displayed with three choices: <ul style="list-style-type: none"> -Change runway: AMAN shall automatically re-sequences the flight on the new runway; - Change runway at specified position: AMAN shall insert the flight in the released position (after or before a flight); - Change runway at specified TTA : AMAN shall insert the flight at the highlighted TTA. 	0,02
R-HMI-0900	<p>AMAN HMI shall allow authorized users to manually modify the LVP RATE by setting runway arrival rate (flight per hour), selecting from a pre-defined set of LVP rates. The runway rate change shall be displayed as Runway Rate Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section.</p>	0,02
R-HMI-0910	<p>AMAN HMI shall allow authorized users to manually modify the LVP SPACING by setting the minimum separation (NM) between two subsequent flights on the same runway, selecting from a pre-defined set of LVP spacing. The arrival spacing change shall be displayed as Runway Spacing Indicator in the Timeline Window and shall also be displayed at the bottom of the Timeline Window in the parameter Section.</p>	0,02

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R-IRQ-0020	<p>The ENV Interface shall be able to receive the following environmental data:</p> <ul style="list-style-type: none"> • Fixes; • Aerodromes; • Sectors; • Geographical Volumes; 	0,2
R-IRQ-0030	<p>The ENV Interface shall exchange data via EUROCONTROL FMTP ("Flight Message Transfer Protocol") as defined in the community specification N.0100 Edition 2.0[.].</p>	0,2
R-IRQ-0040	<p>The ENV Interface shall be able to receive data using the XML format following the specification provided by ENAV during Project Definition Phase.</p>	0,1
R-SPV-0020	<p>The Supervision shall monitor the actual status of the following components:</p> <ul style="list-style-type: none"> • AMAN hardware (Client, Server, LAN); • AMAN software; • AMAN interface with SATCAS (FDPS, RDPS, ENV). <p>specifying when any of it has a failure.</p>	0,10
R-SPV-0070	<p>The AMAN Supervision system shall allow the Technical Supervisor to perform the following class of actions towards managed objects:</p> <ul style="list-style-type: none"> • stop, start, restart, enable, disable : <ul style="list-style-type: none"> o RDPS acquisition; o FDPS acquisition; o HMI communication; • start, stop, restart one or more logical sector; • stop, (re)start : <ul style="list-style-type: none"> o AMAN HW o AMAN SW; o Any server; o Any AMAN process • restart NTP synchronization on a server; 	0,10
R-RBP-0010	<p>Video recording & playback system shall encompass all the data</p>	0,10

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	produced and managed by AMAN and displayed on dedicated AMAN HMI.	
R-RBP-0020	Video recording & playback system shall allow the replay of all AMAN operations for each Logical Position.	0,10
R-DAF-0010	<p>AMAN shall collect statistical data for the following sources:</p> <ul style="list-style-type: none"> • FDPS (flight plan data including actual landing time); • RDPS (ModeS and path monitoring data); • AMAN (Sequence and advisory data) . 	0,10
R-DAF-0020	<p>AMAN shall record, for each inbound flight, at least the following data :</p> <ul style="list-style-type: none"> • CALLSIGN; • SSR CODE; • Aircraft ModeS; • Aircraft Type; • Departure Aerodrome; • Entry Fix; • Time/date and level at Entry fix; • Initial Estimated Time of Landing; • Initial Track Miles inside a pre-defined area; • Initial Delay; • Initial Runway in use; • Initial flight route; • Landing rate; • Actual time/date of landing; • Actual landing Runway; • Actual flown radar tracks; • Actual Track Miles inside a pre-defined area. 	0,10
R-NOF-0010	The System shall notify that AMAN server has a failure, removing all the obsolete information if the failure holds for more than 10 seconds.	0,10
R-NOF-0020	The System shall notify that SA adapter has a failure, removing all the obsolete information if the failure holds for more than 10 seconds.	0,10

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R-NOF-0030	The System shall be able to manage up to 128 geographical volumes aggregated into a maximum of 50 logical sectors.	0,10
R-NOF-0040	The System shall be able to manage up to 900 active flights (up to 120 flights for each logical sector)	0,10
R-NOF-0050	The System shall be able to manage up to 1024 radar track	0,10
R-NOF-0060	The System shall be able to manage up to 100 dedicated AMAN HMIs	0,10
R-NOF-0070	The System shall be able to manage up to 50 geographical points for each trajectory.	0,10
R-NOF-0080	The System shall, at initialization, compute the whole situation and to distribute it to dedicated AMAN HMIs in less than 2,5 minutes.	0,10
R-NOF-0090	The System shall, upon any connection lost, re-compute the whole situation and to re-distribute it to dedicated AMAN HMIs in less than 30 seconds without any resource locking.	0,10
R-NOF-0100	The System shall, upon AMAN server failure, re-compute the whole situation and to re-distribute it to dedicated AMAN HMIs in less than 30 seconds without any resource locking.	0,10
R-NOF-0110	The System shall, upon FDPS failure, re-compute the whole situation and to re-distribute it to dedicated AMAN HMIs in less than 2,5 minutes without any resource locking.	0,10
R-NOF-0120	The System shall manage a change of Sector configuration in less than 15 seconds.	0,10
R-NOF-0130	The System shall be able to accept up to 11 dedicated AMAN HMIs requests per minute.	0,10
R-NOF-0140	The System shall compute a dedicated AMAN HMIs request in less than 1000 milliseconds (of which 700 milliseconds spent for AMAN server elaboration).	0,10
R-NOF-0150	The System shall update, upon new flight plan insertion or flight plan modification, the presented information in less than 2,5 seconds.	0,10
R-NOF-0160	The System shall elaborate a sector absorption/splitting in less than 15 seconds.	0,10
R-NOF-0170	The Availability of AMAN system shall be greater than 0.9999.	0,10

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	Note: 0.9999 is more or less 5 minutes per month.	
R-TEC-0010	AMAN server shall be able to synchronize its clock with other SATCAS components via NTP protocol.	0,10
R-TEC-0020	Each HW component of the system (both servers and clients) shall maintain a CPU occupancy less than 50%.	0,10
R-SFW-0060	The Software developed in this program shall be developed with a technology that ensures an high degree of portability and uses COTS hardware.	0,4

Table 4: Additional Requirements Criteria

11.3 Customization Criteria

The evaluation of customization features of the Software will score from 0 up to 4 points in relation with the flexibility to modify, without the competitor involvement, the set of configuration parameters including the HMI.

The score is assigned at the discretion of Tender Commission in relation to the provision of one or more of the following customization features :

ID	Feature
R-CUS-001	Arrival Lists configuration
R-CUS-002	Color configuration
R-CUS-003	Environment configuration
R-CUS-004	Delay distribution configuration

Table 5: Customization Criteria

11.4 References Criteria

The evaluation of references will score from 0 up to 2 points in relation to provision of references about the operational exploitation of the Software at other ANSP's premises.

The score is assigned at the discretion of Tender Commission in relation to the provision of one or more of the following references:

ID	References
R-REF-003	References about the operational exploitation of the Software at other ANSP's premises with Cross border operations

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R-REF-004	References about the operational exploitation of the Software at other ANSP's premises with High density Airports management
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Table 6: References Criteria

11.5 Evolution Roadmap Criteria

The evaluation of evolution roadmap score from 0 up to 2 points.

The score is assigned at the discretion of Tender Commission in relation to the provision of an Evolution Roadmap according to SESAR objectives.

ID	Evolution
R-EVO-001	Evolution Roadmap vs SESAR

Table 7: Roadmap Criteria

11.6 Maintenance Policy Criteria

The Tenderer shall provide 4 years' Software maintenance and evolution with the option to extend the service twice for a period of 3 years each.

The evaluation of Software maintenance policy score from 0 up to 8 points.

The score is assigned at the discretion of Tender Commission in relation to quality and number of service provision.

The Tenderer score:

- From 0 to 2 point on provision of corrective maintenance with a Service Level Agreement.
- From 3 to 6 point on provision of new Software version included in the evolution Roadmap
- From 7 to 8 point in relation to seniority and member's amount of a Software user group

11.7 Demonstration Criteria

The evaluation of demonstration session score from 0 up to 10 points.

The session shall take place in Europe on a Test Bed or a Simulator that duplicate the operational environment to demonstrate software compliance to the minimum requirements provided in the technical proposal.

The score is assigned at the discretion of Tender Commission in relation to the following criteria:

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- Flexibility
- Usability
- Improvement on the following minimum requirements:
 - Multi Airport Sequence Management
 - Delay distribution through different routes and /or sectors
 - Extension of sequence management horizon
 - Optimization strategy definition and implementation

11.8 Software Improvement Criteria

The evaluation of Software Improvement score from 0 up to 4 points.

The score is assigned at the discretion of Tender Commission in relation to the provision of improvement with respect to Technical Specification [2]