



SJU/LC/0102-CFP

SESAR Large Scale Demonstration Activities – Technical Specifications

Contents

1. INTRODUCTION	3
1.1. THE EUROPEAN ATM MASTER PLAN	3
1.2. SESAR RESEARCH AND DEVELOPMENT	3
1.3. DEMONSTRATION ACTIVITIES TO BRIDGE R&D AND DEPLOYMENT	4
2. OVERVIEW OF THE CALL FOR PROPOSAL	5
2.1 LOTS	5
2.2 TIMETABLE	5
2.3 AVAILABLE BUDGET	6
2.4 PLANNED START AND COMPLETION DATE OF THE SELECTED PROJECTS	6
3. TERMS OF REFERENCE	6
3.1 LOT 1: FEATURES IDENTIFIED IN THE PILOT COMMON PROJECT OBJECTIVES AND THEIR PRE-REQUISITES IDENTIFIED FROM THE INTERIM DEPLOYMENT PROGRAMME	7
3.2 LOT 2: SOLUTIONS TARGETING IMPROVEMENTS IN PARTICULAR, BUT NOT NECESSARILY LIMITED TO, AT SMALL/MEDIUM SIZE AIRPORTS (TARGETING IN PARTICULAR BUSINESS AND GENERAL AVIATION, INCLUDING ROTORCRAFT)	8
3.3 LOT 3: GLOBAL INTEROPERABILITY, IN PARTICULAR SESAR GOING GLOBAL (TARGETING IMPROVEMENTS IN DIFFERENT AREAS AND INTEROPERABILITY BETWEEN ICAO REGIONS)	9
4. DELIVERABLES AND PROJECT MANAGEMENT REQUIREMENTS	9
4.1 GENERAL REQUIREMENTS	9
4.2 PROJECT INITIATION	10
4.3 DELIVERABLES AND PROGRESS REVIEWS	11
4.4 MANAGEMENT OF DEPENDENCIES WITH THE SESAR PROGRAMME	12
4.5 CLOSURE OF DEMONSTRATION ACTIVITIES	12
5. DURATION OF THE DEMONSTRATION ACTIVITIES	12
6. PARTICIPATION OF CONSORTIA IN THIS PROCEDURE - CONSORTIA	12
7. PLACE OF PERFORMANCE	12
8. ASSESSMENT OF THE PROPOSALS – SJU GRANT AWARD	13
8.1. INTRODUCTION	13
8.2. ASSESSMENT IN THE LIGHT OF EXCLUSION CRITERIA	13
8.3. ASSESSMENT IN THE LIGHT OF SELECTION CRITERIA	14
8.3.1 <i>Assessment of the legal capacity</i>	14
8.3.2 <i>Assessment of the economic and financial capacity</i>	15
8.3.3 <i>Assessment of the technical and professional capacity</i>	15
8.4. ASSESSMENT IN THE LIGHT OF AWARD CRITERIA	16
APPENDIX A – DECLARATION ON HONOUR WITH RESPECT TO THE EXCLUSION CRITERIA AND ABSENCE OF CONFLICT OF INTEREST	19
APPENDIX B – MANDATE CONSORTIUM COORDINATOR	21
APPENDIX C – TEMPLATE FOR THE SUBMISSION OF THE TECHNICAL PROPOSAL IN RESPONSE TO CALL REF. SJU/LC/0102-CFP	23
APPENDIX D – LOT 1 FOCUS AREAS	24
APPENDIX E – LOT 2 FOCUS AREAS	27
APPENDIX F – LOT 3 FOCUS AREAS	30

APPENDIX G – TEMPLATE FOR THE SUBMISSION OF THE FINANCIAL PROPOSAL IN RESPONSE TO CALL REF. SJU/LC/0102-CFP.....	1
APPENDIX H – DEMONSTRATION PLAN TEMPLATE.....	1
APPENDIX I – DEMONSTRATION REPORT TEMPLATE.....	1

1. INTRODUCTION

The Single European Sky Air Traffic Management Research (SESAR) Project is a European initiative aiming at modernising and harmonising the European Air Traffic Management (ATM) systems ensuring sustainable, safe and efficient air transport development through a performance driven approach.

1.1. The European ATM Master plan

The ATM Master Plan was endorsed by the Council of the European Union on 30 March 2009 and became the European ATM Master Plan. The European ATM Master Plan is the commonly agreed European roadmap for the development and deployment of the future ATM systems in Europe.

The European ATM Master Plan 2012 outlines the essential operational and technological changes, as well as standardisation and regulatory activities that are required to contribute to achieving the European SES performance objectives making the European ATM Master Plan a key tool in the context of SESAR development and deployment. It is the agreed European “roadmap” connecting research and development with deployment, scenarios and the Operational Concept, underlying the essential operational changes, and is aligned with ICAO’s Global Operational Concept and its Aviation System Block Upgrades (ASBUs) for global interoperability.

The ATM Master Plan is available on a dedicated web portal (<https://www.atmmasterplan.eu/>).

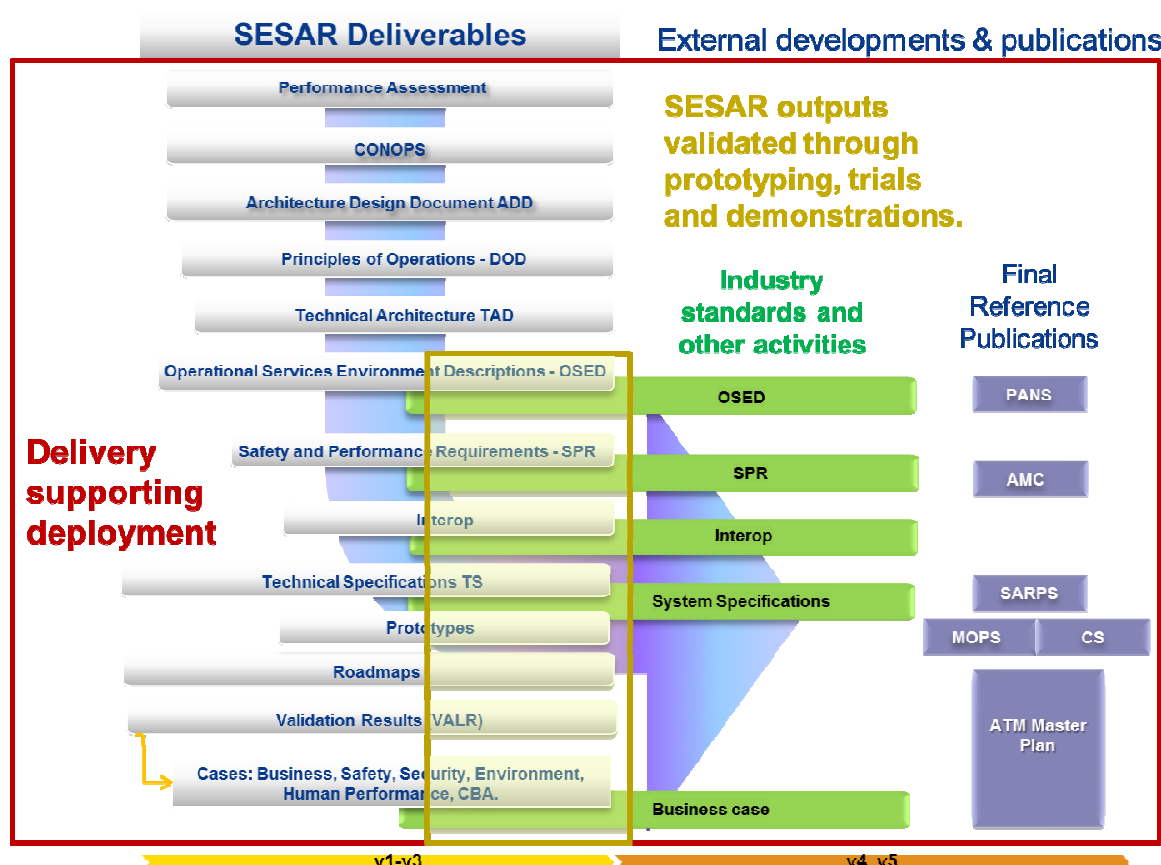
1.2. SESAR Research and Development

The SESAR Programme aims at building up Europe’s future Air Traffic Management system as outlined by the European ATM Master Plan, inter alia through SESAR Solutions.

SESAR Solutions stems from the results achieved in the research and development Programme. A SESAR Solution consists mainly of a set of documents part of the overall SESAR Deliverable per Project, namely:

- the Operational Services Environment Descriptions (OSED),
- the Safety and Performance Requirements (SPR),
- the Interoperability document (INTEROP),
- the Technical Specifications (TS), and
- the Validation Results (VALR)

which acts the development achieved and the contribution to the Master Plan (as described in the illustration below).



1.3. Demonstration activities to bridge R&D and Deployment

It is essential that the core elements of the ATM concept are synchronised, contain the necessary elements to demonstrate their full benefits to the ATM investors and deployed in a timely and consistent manner in the European ATM network.

In 2013, the European Commission adopted the legal framework to ensure the deployment of the SESAR Programme results. In accordance with Article 15a of Regulation (EC) 550/2004, the European Commission shall establish common projects which will become a primary instrument for the SESAR deployment. For this purpose, common projects should cover those essential operational changes identified in the European ATM Master Plan with the sufficient maturity and justification to be deployed at European level.

Consequently, the deployment of SESAR systems and procedures can be seen as a gradual process, where R&D will continue running in parallel to some of the earlier deployment activities and it will also be fed by deployment results.

At the request of the European Commission, the SJU delivered in 2013 a proposal for a first Common Project, the so called Pilot Common Project (hereinafter PCP).

Constructed from the SESAR Solutions, the PCP constitutes the first batch of technical and/or operational changes to be implemented in the 2014-2020 timeframe, based on several essential operational changes identified in the European ATM Master Plan 2012, whose need and maturity are demonstrated.

Further information on the establishment of the "Pilot Common Project" can be found at: http://ec.europa.eu/transport/modes/air/consultations/2014-01-31-sesar_en.htm

In this respect, Demonstration activities are pulling together stakeholders from airspace users, air navigation service providers, the manufacturing industry and airports to show in a real life environment the benefits of SESAR solutions, to bridge R&D and Deployment. Demonstrations are seen as a very powerful tool to engage operational users in SESAR, and continue to identify technical and operational issues which can be obstacles to deployment. Demonstration activities are in this respect an R&D and innovation tool to ensure the bridge between R&D and deployment, contributing to reduce the time to market.

2. OVERVIEW OF THE CALL FOR PROPOSAL

2.1 Lots

The need for SESAR Demonstration Activities has been identified in order to show on a larger scale the benefits of the SESAR Solutions in day-to-day operations. This particular call for proposal is aiming at covering SESAR Demonstration Activities in the period 2014-2016.

The SJU intends to select indicatively 20 projects covering the following lots:

- Lot 1 - Features identified in the Pilot Common Project objectives and their pre-requisites identified from the Interim Deployment Programme
- Lot 2 - Solutions targeting improvements in particular, but not necessarily limited to, at small/medium size airports (targeting in particular Business and General Aviation, including rotorcraft)
- Lot 3 - Global Interoperability, in particular SESAR Going Global (targeting improvements in different areas and interoperability between ICAO Regions).

In preparing the proposals, there is a need to ensure complementarity with activities performed in the SESAR Programme and take into account the possible additional added value when addressing transversal themes like Safety, Cyber-Security, etc.

Each proposal shall address one of the Lots here above. Where a proposed project covers more than one Lot, each Lot shall be the subject of one proposal, which will be evaluated separately. The SJU retains the right to accept the full project (covering several lots), to reject the full project or to accept/reject only part of the project under one of the Lots.

2.2 Timetable

Milestone	Deadline
Ex-ante publication regarding this call for proposal	19 December 2013
Publication of the detailed specifications and launch of this call for proposal	04 February 2014
Information Day organised in Brussels	17 February 2014
Information Session organised at the World ATM Congress	5 March 2014
Deadline for requesting additional information/clarification from the SJU	No later than 15 calendar days before the closing date for submission of proposals
Last date on which clarifications are issued by SJU	No later than 6 calendar days before the closing date for submission of proposals
Closing date for submission of project proposals	28 April 2014

Notification of grant award	June 2014 (indicative)
Grant agreement signature	After standstill period of at least 14 calendar days following the date on which notification of the grant award decision is sent

2.3 Available budget

The SESAR Joint Undertaking has committed a total maximum budget for this call for proposal of 30.000.000 EUR in terms of co-financing. Following the outcome of the call, the SJU expects to award indicatively 20 grants.

Each selected project shall be co-financed up to a maximum of 50% of the maximum estimated project cost as presented in the submitted financial proposal.

At the end of the project, where the actual project eligible costs would be lower than the maximum estimated project eligible costs in the financial proposal, the selected projects shall be co-financed up to 50% of the actual project eligible costs. Where, on the contrary, the actual project eligible costs would be higher than the maximum estimated project eligible cost, the maximum SJU co-financing shall remain unchanged and correspond to the amount established in the grant agreement. Schedule 8 of the Draft Grant Agreement *"Eligibility of costs"* attached to this call for proposal details the criteria for determining the costs of the Projects.

It should be noted that the maximum amount of co-financing under a SJU grant for a proposed project in a lot cannot exceed EUR 4.000.000 (four million). The minimum value of a proposed Project below EUR 300.000 (three hundred thousands) will not be considered.

The SJU co-financing shall be in accordance with the SJU Financial Rules adopted by the Administrative Board on 12 December 2013, in particular the provisions of Title VIII, *"Grants and Prizes Awarded by the SJU"*¹.

2.4 Planned start and completion date of the selected projects

The projects cannot start before signature of their respective grant agreements (i.e. expected by end of July 2014).

The projects shall be completed at the latest by 31 December 2016, last date of cost eligibility including for any complementary activities (project audit, winding up activities, etc.). The interim dates of the performance of the projects set-out in the selected proposals shall not be substantially changed at a later stage.

There will no possibility to extend the projects beyond 31 December 2016.

3. TERMS OF REFERENCE

The Terms of Reference will become part of the grant agreement(s) that may be awarded as a result of this call for proposal.

Proposed projects shall specifically address one of the following Lots:

- Lot 1 - Features identified in the Pilot Common Project objectives and their pre-requisites identified from the Interim Deployment Programme

¹ SJU Financial Rules ref. SJU-ADB-028-13-DOC-16 adopted by the SJU Administrative Board on 12th December 2013

- Lot 2 - Solutions targeting improvements in particular, but not necessarily limited to, at small/medium size airports (targeting in particular Business and General Aviation, including rotorcraft)
- Lot 3 - Global Interoperability, in particular SESAR Going Global (targeting improvements in different areas and interoperability between ICAO Regions).

Proposed projects within each Lot shall:

- identify and report the environmental, safety, capacity and economic benefits that the adoption of the solution object of the demonstration in the project will bring to air transport;
- allow for the performance of a maximum amount of flight trials in order to be able to draw relevant conclusions. A minimum of 50 flight trials is expected and where a lower number is proposed, the necessary justifications shall be provided;
- highlight the solution advantages compared to the current situation;
- raise awareness regarding SESAR activities related to ATM performance issues and their results;
- provide any necessary feedback to related SESAR projects;
- provide additional inputs to related standardization and/or regulatory activities, if any.

3.1 Lot 1: Features identified in the Pilot Common Project objectives and their pre-requisites identified from the Interim Deployment Programme

The proposed projects within this Lot shall focus on demonstrating on a large scale the benefits of the SESAR Solutions in day-to-day operations. They should pave the way for the deployment of the following 6 ATM Functionalities (AFs), which may be presented in the context of the European Commission proposal for the Implementing Regulation on the establishment of the Pilot Common Project (PCP) supporting the implementation of the ATM Master Plan (including their pre-requisites identified from the Interim Deployment Programme):

AF#1	Extended AMAN and PBN in high density TMAs, which is expected to improve the precision of approach trajectory as well as to facilitate traffic sequencing at earlier stage, thus allowing to reduce fuel consumption and environmental impact in descent/arrival phases
AF#2	Airport Integration and Throughput, which is expected to improve runway safety and throughput, ensuring benefits in terms of fuel consumption and delay reduction as well as airport and airspace capacity
AF#3	Flexible Airspace Management and Free Route, which is expected to enable a more efficient use of airspace, thus providing significant benefits linked to fuel consumption and delay reduction;
AF#4	Network Collaborative Management, which is expected to improve the quality and the timeliness of the network information shared by all ATM stakeholders, thus ensuring significant benefits in terms of ANS productivity gains and delay cost savings
AF#5	iSWIM: ground-ground integration and aeronautical data management & sharing, which consists of a set of services that are delivered and consumed through an IP-based network by SWIM

	enabled systems, enabling significant benefits in terms of ANS productivity
AF#6	Initial Trajectory Information Sharing: air-ground integration towards i4D with enhanced Flight Data Processing performances, which is expected to improve predictability of aircraft trajectory for the benefit of airspace users, Network Manager and ANSPs implying less tactical interventions and improved de-confliction situation. This would have a positive impact on ANS productivity, fuel saving and delay variability.

Further information on the specifications of the “Pilot Common Project” can be found at: http://ec.europa.eu/transport/modes/air/consultations/2014-01-31-sesar_en.htm

To ensure the maximum level of complementarity with the Programme, particular attention shall be given to the demonstration of the full operational and technical scope of at least one or a combination of the following related focus areas, resulting from R&D activities, considered the most mature for demonstrations in the targeted timeframe for this call:

- Arrival Management extended to en-route Airspace (high-density TMAs)
- Enhanced Terminal Airspace using RNP-Based Operations (high-density TMAs)
- Time-Based Separation for Final Approach (high-density TMAs)
- Integrated Surface Movement and Departure Management (high-density TMAs)
- Airspace Management and Advanced Flexible Use of Airspace in fixed and direct-route environments at Functional Airspace Blocks (FAB) level
- Collaborative Network Operations Plan (NOP)

These focus areas are described in Appendix D.

3.2 Lot 2: Solutions targeting improvements in particular, but not necessarily limited to, at small/medium size airports (targeting in particular Business and General Aviation, including rotorcraft)

The purpose of this lot is to demonstrate the value of SESAR solutions in particular, but not necessarily limited to, at small/medium size airports. The proposed projects within this lot shall focus on the demonstration of the full operational and technical scope of at least one or a combination of the focus areas further described in Appendix E.

- Remote Towers
- Collaborative Airport Operations Management
- Precision Arrival and Departure Procedures
- Enhanced Flight Planning and Aeronautical Information for airspace users without their own Flight/Wing Operations Center (FOW/WOC)
- Low-cost innovative cockpit solutions supporting the implementation of the SESAR Concept of Operations

3.3 Lot 3: Global Interoperability, in particular SESAR Going Global (targeting improvements in different areas and interoperability between ICAO Regions)

The projects within this lot shall focus on the demonstration of the operational and safety benefits that can be derived from improvements in flight planning, flight briefing and flight following through global interoperability of the SWIM B2B services identified in Appendix F.

In support of these global interoperability SWIM demonstrations, the SJU will, where relevant, work with EUROCONTROL and the FAA in order to ensure the information provision of European Aeronautical, Network and Meteorological information through SWIM services as specified in Appendix F. A comprehensive initial set of these targeted ATM information services will be made available to the selected project consortia before the end of 2014 and regularly updated till end of Q2 2016. The “SESAR registry” will also be made available for the time of the demonstration to service consumers to register and access services documentation. The SJU will provide SWIM foundation material and will organise support to the usage of this material.

Project activities under this lot will be embedded in a global SWIM demonstration setup that is targeted to also be supported from other ICAO regions. Further information with regards to arrangements for partnering regions similar to those in Europe initiated through this call will be made available on the SJU website by 17 March 2014. Each bidder shall ensure that the objectives of the project cover the use of SWIM Services identified in Appendix F that will be provided for Europe and subject to confirmation of timely availability in at least one other ICAO Region by the SJU by 17 March 2014.

As part of these global demonstrations, the projects performed under this lot shall target the consumption and operational use of European and non-European information by airspace users acting on a global level and flying in and out of a minimum of 2 major international hubs in Europe. Information exchange shall be ensured by using SWIM compliant services.

Interested parties may contact the SESAR SWIM Project (swim@sesarju.eu) to ensure compatibility of the proposed projects with the targeted information services for the European Region that will be provided to support the activities of this lot.

4. DELIVERABLES AND PROJECT MANAGEMENT REQUIREMENTS

This section is about essential project management activities the selected Project shall implement in order to execute SESAR Demonstration activities.

4.1 General Requirements

For the execution of the activities covered by this call, the following requirements shall be taken into consideration:

- During the project initiation phase the SJU will discuss with the selected project(s) the execution of the live trials in particular on execution of “proof of concept” and methodologies for performance assessment to ensure the achievement of the SESAR Programme objectives. In particular, the following elements shall be taken into consideration:
 - o The regulatory requirements to be applied will be those contained in the SES framework and in the EASA framework, or their equivalent in non-EU member States. In all cases the applicable regulations shall be referenced in the documentation.
 - o The required safety arguments and/or safety assessments shall be documented. This documentation shall contain references to the contingency procedures and reversion to conventional modes of operation to be used where applicable.

- While the full responsibility for the performance of the Demonstration activities lies with each Project consortium respectively, the necessary agreements with EASA and the affected National Authorities, as well as the required approvals or permissions should be documented.
- The Demonstration Report should contain, where applicable, the following information:
 - o Any identified need for new or to modify regulation, with due justification
 - o Any identified need for new or to modify standards, with due justification
 - o Any element to be taken into account in the elaboration of regulated safety arguments in the deployment of the solution.

4.2 Project initiation

Within 45 days from the kick off meeting, (which shall take place as soon as possible from the signature of the grant agreement or in anticipation of the signature of the grant agreement under the aforementioned conditions) the selected Project shall deliver a detailed project Demonstration Plan. This plan shall take into consideration any remark and inputs given by the SJU at the kick-off meeting, which shall not substantially change the content of the selected project, or duly motivate a different approach compared to the SJU indications.

In order to ensure the SESAR Demonstration activities are initiated and planned as expected the following meetings shall be held with the SJU:

Meeting	Format / timing	Objectives of the meeting
Kick-off	web-conference meeting / following grant agreement signature	Start the project initiation phase . Ensure the Project has information required to plan its activities and especially comments formulated by the SJU when selecting the project.
Initiation review	Face to face meeting / within 30 days from the kick-off	Review the initiation phase complies with the SJU expectations.

Where, in accordance with the procedure established in Article 12.1 (iii) (“Acceptance of Reports”) of the draft grant agreement attached to this call for proposal, the SESAR Demonstration Plan would be rejected by the SJU, the grant agreement may be terminated and no costs shall be eligible for the calculation of the SJU co-financing from the date of the SJU notification of rejection as per Article 27 of the draft grant agreement attached to this call for proposal.

Upon acceptance of the final Demonstration Plan, the SJU shall agree to the launch of the Demonstration activities in accordance with the Plan. The final Demonstration Plan shall replace any previous version and shall be binding on the parties.

In order to ensure the consistency of the Demonstration Activities with the SESAR Programme, the Demonstration Activities Projects awarded by the SJU which enter in the execution phase shall use the Programme Management tools made available by the SJU in terms of document management, risk management, reporting, dependency management, etc. A presentation of these tools and related procedures will be explained at Kick-Off meeting. Project shall consider the costs related to the reporting in line with the Programme management tools in the preparation of their proposals.

4.3 Deliverables and progress reviews

During the execution of the grant agreement, the Project shall provide the SJU with the deliverables listed hereafter.

Deliverable	Description
Demonstration Plan 1 st review	<p>Contains all elements essential to understand the plan of the project</p> <p>Further demonstrates the complementarity with the programme (in particular SESAR Projects, SESAR Operational Focus Areas and prototypes developed/platforms) and is deployment oriented</p> <p>Contains a comprehensive communication plan</p> <p>It is the Demonstration Plan resulting from the Initiation Phase of the Project and at the base of the launch of the Execution Phase</p> <p>This document shall be drafted in accordance with the SJU Demonstration plan Template attached hereto as Appendix G.</p>
Demonstration Plan 2 nd review (if applicable)	<p>Before the project starts the 1st flight trial, the Demonstration plan may be subject to an update. This would allow including in particular all elements essential to understand the design of the scenarios including the information about the developed procedures, software and/or hardware.</p>
Quarterly Progress Reports	<p>The reporting for a given quarter shall be made in the second week of the month following the end of that period and shall contain:</p> <ul style="list-style-type: none"> • Key developments, • Key risks and associated management plan, and • Expected duration and number of trials. <p>The relevant template will be made available to the Project</p>
Demonstration Report	<p>It describes the results of demonstration exercises defined in <i>the demonstration plan (1st and 2nd releases)</i> and how they have been conducted.</p> <p>This document shall be drafted in accordance with the SJU Demonstration Report Template attached hereto as Appendix H.</p>

All Deliverables shall be in English, in electronic format (in principle Microsoft Office format or compatible formats) and compliant with SJU templates. The final version of the Deliverables shall also be submitted in PDF version and/or paper copy.

Based on the Project milestones and at least twice during the life of the Project a Project Review shall be held with the SJU.

- Intermediary Project Review shall assess:
 - Readiness of the elements necessary to execute the trials including the verification results
 - Safety assessment
 - Compliance with general requirements (refer to section 4.1) for the execution of the activity
 - Risks and related mitigation actions
 - Progress made on the execution of the Demonstration Plan
 - The refined demonstration objectives and plans

- The exercise scenarios and the design
- A Final Project Review objectives are linked to:
 - Review of the results of the flight trials
 - Lessons learned
 - Transition to deployment related issues

4.4 Management of dependencies with the SESAR Programme

As far as possible, during the proposal preparation taking into account the material available on the SJU website, proposed Projects shall identify dependencies with SESAR Projects and Operational Focus Areas that are in relation with the scope of the Demonstration Activities. During the Project life, the SJU will complement the information as far as needed to ensure consistency.

4.5 Closure of Demonstration activities

Closure of Demonstration Project Activities shall result from the acceptance of the Demonstration Report by the SJU in accordance with Article 12 of the Draft Grant agreement attached to this call for proposal.

5. DURATION OF THE DEMONSTRATION ACTIVITIES

The Demonstration Project Activities proposed to the SJU shall be performed in a period of maximum 24 months and in any case to be finalised by no later than 31 December 2016, last day of cost eligibility. No derogations or amendments will be possible with regard to the termination date of 31 December 2016.

6. PARTICIPATION OF CONSORTIA IN THIS PROCEDURE – CONSORTIA COMPOSITION

Due to the nature of the Demonstration Project Activities to be performed, applicants should be set up as a consortium and composed of at least two independent legal entities. The members of this consortium shall include at least:

- one airspace user or, specifically with regard to Projects involving General Aviation and/or Business Aviation and/or Rotorcrafts (Lot 2), one entity with the necessary airspace user competence provided in other forms than through airspace users directly, and
- one air navigation service provider, airport operator or system manufacturer.

Consortia shall comply with the rules of competition. For the purpose of this call, a consortium is defined as a permanent, legally-established grouping or a grouping which has been constituted informally for this specific procedure.

In order to facilitate the coordination of the Demonstration Project, the consortium members shall designate one of them as “Coordinator” and single point of contact towards the SJU.

Upon grant award, the SJU shall sign the Grant Agreement with the Coordinator duly authorised by the other consortium members via a mandate (see template attached hereto as Appendix B). The Consortium Members shall then accede to the agreement in accordance with Article 3 of the Draft Grant Agreement attached to this Call for proposal.

All members of a consortium (i.e., the leader and all other members) are jointly and severally liable to the SJU.

7. PLACE OF PERFORMANCE

The proposed Projects of Lot 1 and 2 shall be performed on the territory of EU and/or ECAC Member States. For Lot 3 projects, due consideration for major long-haul traffic flows to/from Europe shall be taken into consideration and where available, SWIM B2B services provided by information service providers in other ICAO regions shall be used to optimize targeted international flights.

8. ASSESSMENT OF THE PROPOSALS – SJU GRANT AWARD

8.1. Introduction

The assessment will be strictly based on the content of the received proposals and in the light of the criteria set out hereunder.

The assessment procedure will be carried out in three consecutive stages:

- Stage 1 – assessment in the light of exclusion criteria (see section 8.2. below),
- Stage 2 – assessment in the light of selection criteria (see section 8.3. below) and
- Stage 3 – assessment in the light of award criteria (see section 8.4. below).

The aim of each of these stages is:

- To check on the basis of the exclusion criteria, whether bidder can take part in the procurement procedure;
- To check on the basis of the selection criteria, i.e. legal, economic and financial, technical and professional capacity of each bidder;
- To assess on the basis of the award criteria each offer which has passed the exclusion and selection stages.

8.2. Assessment in the light of exclusion criteria

To be eligible for participating in this grant award procedure, the bidder² (i.e., the coordinator and each consortium member) cannot be in any of the following exclusion grounds:

- (a) They are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
- (b) They have been convicted of an offence concerning their professional conduct by a judgement which has the force of *res judicata*;
- (c) They have been guilty of grave professional misconduct proven by any means which the granting authority can justify;
- (d) They have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established or with those of the country of the granting authority or those of the country where the grant is to be performed;

Accordingly, bidders (i.e., the coordinator and each consortium member) must provide a Declaration on Honour (see Appendix A), duly signed and dated, stating that they are not in one of the situations referred to above.

Nota Bene:

² Where parts of the activities are intended to be subcontracted, the bidder has also to ensure that the subcontractors satisfy the exclusion criteria as indicated in section 4.3 below.

The bidder (i.e., the coordinator and each consortium member) to which the grant is to be awarded shall provide, within 15 days following notification of award and preceding the signature of the grant agreement, the following documentary proofs (originals) to confirm the declaration referred to above:

- For points a) and b) above a recent extract from the judicial record or, failing that, an equivalent document recently issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied.
- For point d) recent certificates issued by the competent authorities of the States concerned.

Where the document or certificate referred to above is not issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in its country of origin or provenance.

The SJU may waive the obligation for a bidder to submit documentary evidence if such evidence has already been submitted for another procedure and provided the documents were issued not more than one year earlier and are still valid. In such cases, the bidder must declare on his honour that the documentary evidence has already been provided in a previous procedure with the SJU, provide reference to that procedure, and confirm that there has been no change in the situation. The above-mentioned information must be included in the tender specifications.

Please refer to the following web page for additional information regarding the relevant requirements and model documents under national laws of the EU Member States:

<http://ec.europa.eu/markt/ecertis/searchDocument.do>

8.3. Assessment in the light of selection criteria

The bidder must have the overall capabilities (legal, economic, financial, technical and professional) to perform the activities covered by the grant agreement. All the requirements listed below must be met in order to enter the next phase of the assessment in the light of award criteria.

Please note that in the selection phase, assessment focuses strictly on the quality of the track record and not on the quality of the (technical) offer.

The SJU may waive the obligation for a candidate or tenderer to submit the documentary evidence requested under Sections 8.3.1, 8.3.2 and 8.3.3 below if such evidence has already been submitted for another procedure and provided the documents were issued not more than one year earlier and are still valid. In such cases, the candidate or tenderer must declare on his honour that the documentary evidence has already been provided in a previous procedure with the SJU, provide reference to that procedure, and confirm that there has been no change in the situation. The above-mentioned information must be included in the tender specifications.

8.3.1 Assessment of the legal capacity

Bidders (i.e., the coordinator and each consortium member) are requested to prove that they are authorised to perform the activities covered by the grant agreement under the national law as evidenced by inclusion in a trade or professional register, or a sworn declaration or certificate, membership of a specific organisation, express authorisation or entry in the VAT register.

The bidder (and in case of consortium, the coordinator and each consortium member) shall provide a duly filled in and signed Legal entities' form (see section 8 (b)) of the invitation to tender Ref. SJU/LC/0102-CFP).

8.3.2 Assessment of the economic and financial capacity

In order to prove its sufficient economic and financial capacity to perform the activities covered by the grant agreement, the bidder (i.e., the coordinator and each consortium member) shall present one of the following documentation:

- Evidence of professional risk indemnity insurance;
- Balance sheets (or extracts from balance sheets) for at least the last two years for which accounts have been closed;
- Statement of overall turnover during the last three financial years.

If, for some exceptional reason which the SJU considers justified, the bidder (i.e., the coordinator and each consortium member) is [are] unable to provide the references requested here above, the bidder (and in case of consortium, the coordinator and each consortium member) may prove the economic and financial capacity by any other means which the SJU considers appropriate.

8.3.3 Assessment of the technical and professional capacity

The consortium shall establish that it has sufficient technical and professional capacity to perform the activities covered by this grant agreement.

In order to establish its technical and professional capacity, the consortium is requested to present the following information:

- a presentation of its main current activities, with details for any entity constituting the consortium,
- a brief presentation of the consortium structure and how the different entities will organize themselves to achieve the project activities ,
- the evidence of skills and expertise in developing studies on similar subjects (i.e., demonstration of the delivery of proven results in the concerned field by providing references to participation to similar projects),
- demonstration that the bidder has the research and demonstration tools' capacity needed to execute the proposed project, by providing:
 - the curriculum vitae for each of the key members of staff who will work on the project being proposed.
 - a description of the facilities and/or material to be used for the project being proposed, etc.), taking in particular into account the different phases of the project.

8.4. Assessment in the light of award criteria

The SJU will evaluate, mark and establish a ranking of the submitted proposals on the basis of the criteria listed below.

Only the proposals meeting the requirements of the exclusion and selection criteria will be evaluated in terms of quality for the award of the Grants. The evaluation in light of the award criteria and evaluation in terms of quality will be performed for each proposal respectively.

N°	Award criteria	Weighting
1	<p>Quality of the proposed project in particular with regards to:</p> <ul style="list-style-type: none"> ▪ Understanding of the requirements and completeness of the response to the requirements ▪ Description, relevance and objectives of the proposed project ▪ Planning of the proposed project, including consortium organization, resources, feasibility, level of involvement of key stakeholders ▪ Proposed collection and analysis of data and results ▪ Proposed communication activities 	30
2	<p>Added value to the SESAR Programme and benefits in bridging R&D towards deployment, in particular:</p> <ul style="list-style-type: none"> ▪ To what extent is the project deployment oriented and likely to have tangible impact on the execution of the EU ATM Master Plan? ▪ To what extent does the proposed project identify the links to the SESAR Programme and is complementary to ongoing SESAR Projects? ▪ To what extent does the proposed project aims at demonstrating the full operational and technical scope of at least one or a combination of the targeted focus areas ▪ To what extent the proposed project contributes to the future industrialisation of the SESAR results and link with relevant standardization activities? 	45
3	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> ▪ To what extent is the estimated budget clear and detailed? ▪ Are the estimated expenditures based on tangible elements/information (number of flight trials, FTEs involved, airports involved, aircraft(s) involved, etc.)? ▪ Do the presented results of the project reflect a reasonable relationship to the estimated budget costs and the requested amount? ▪ Is the estimated amount earmarked for management within the financial capping foreseen for each project (indicatively 5 to 10% of total project cost)? If beyond, is this duly justified? ▪ Are the estimated costs all necessary for the running of the proposed project? 	25

In order to be considered for SJU co-financing, a proposal must score:

- **50 %** or more per award criterion, and
- **70 %** or more globally as a result of the assessment in light of the award criteria.

9. LIST OF ABBREVIATIONS AND ACCRONYMS

AMAN	Arrival Manager
ANSP	Air navigation service provider
APV	Approach Procedures with Vertical guidance
ASBU	Aviation System Block Upgrade
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATFCM	Advanced Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
CDM	Collaborative Decision Making
EASA	European Aviation Safety Agency
EC	European Commission
ECAC	European Civil Aviation Conference
EU	European Union
FOC	Flight Operations Center
FUA	Flexible Use of Airspace
ICAO	International Civil Aviation Organisation
MET	Meteorological
PBN	Performance-Based Navigation
PCP	Pilot Common Project
R&D	Research and Development

RNP	Required Navigation Performance
SES	Single European Sky
SESAR	Single European Sky ATM Research Programme
SID	Standard Instrument Departure
SJU	SESAR Joint Undertaking
STAM	Short Term Air traffic flow and capacity management Measure
STAR	Standard Arrival Procedure
SWIM	System Wide Information Management
TMA	Terminal Manoeuvring Area
WOC	Wing Operations Center

APPENDIX A – Declaration on honour with respect to the exclusion criteria and absence of conflict of interest

(Complete or delete the parts in grey italics in parentheses)

[Choose options for parts in grey between square brackets]

The undersigned *(insert name of the signatory of this form)*:

☐ in *[his][her]* own name *(for a natural person)*

or

☐ representing the following legal person: *(only if the economic operator is a legal person)*

full official name:

official legal form:

full official address:

VAT registration number:

➤ declares that *[the above-mentioned legal person][he][she]* is not in one of the following situations:

- a) is bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
- b) has been convicted of an offence concerning professional conduct by a judgment of a competent authority of a Member State which has the force of *res judicata*;
- c) has been guilty of grave professional misconduct proven by any means which the SJU can justify including by decisions of the European Investment Bank and international organisations;
- d) is not in compliance with all its obligations relating to the payment of social security contributions and the payment of taxes in accordance with the legal provisions of the country in which it is established, with those of the country of the SJU and those of the country where the grant agreement is to be performed;
- e) has been the subject of a judgement which has the force of *res judicata* for fraud, corruption, involvement in a criminal organisation, money laundering or any other illegal activity, where such activity is detrimental to the Union's financial interests;
- f) is subject to an administrative penalty for being guilty of misrepresenting the information required by the SJU as a condition of participation in a grant award procedure or another procurement procedure or failing to supply this information, or having been declared to be in serious breach of its obligations under contracts or grants covered by the Union's budget.

➤ *(Only for legal persons other than Member States and local authorities, otherwise delete)* declares that the natural persons with power of representation, decision-making or control³ over the above-mentioned legal entity are not in the situations referred to in b) and e) above;

➤ declares that *[the above-mentioned legal person][he][she]*:

- g) has no conflict of interest in connection with the grant agreement; a conflict of interest could arise in particular as a result of economic interests, political or national affinity, family, emotional life or any other shared interest;

³ This covers the company directors, members of the management or supervisory bodies, and cases where one natural person holds a majority of shares.

- h) will inform the SJU, without delay, of any situation considered a conflict of interest or which could give rise to a conflict of interest;
 - i) has not granted and will not grant, has not sought and will not seek, has not attempted and will not attempt to obtain, and has not accepted and will not accept any advantage, financial or in kind, to or from any party whatsoever, where such advantage constitutes an illegal practice or involves corruption, either directly or indirectly, inasmuch as it is an incentive or reward relating to award of the grant;
 - j) provided accurate, sincere and complete information to the SJU within the context of this procurement procedure ;
- acknowledges that [the above-mentioned legal person][he][she] may be subject to administrative and financial penalties⁴ if any of the declarations or information provided prove to be false.

In case of award of the grant, the following evidence shall be provided upon request and within the time limit set by the SJU:

For situations described in (a), (b) and (e), production of a recent extract from the judicial record is required or, failing that, a recent equivalent document issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied. Where the bidder is a legal person and the national legislation of the country in which the bidder is established does not allow the provision of such documents for legal persons, the documents should be provided for natural persons, such as the company directors or any person with powers of representation, decision making or control in relation to the bidder.

For the situation described in point (d) above, recent certificates or letters issued by the competent authorities of the State concerned are required. These documents must provide evidence covering all taxes and social security contributions for which the bidder is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions.

For any of the situations (a), (b), (d) or (e), where any document described in two paragraphs above is not issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance.

If the bidder is a legal person, information on the natural persons with power of representation, decision making or control over the legal person shall be provided only upon request by the SJU.

Full name

Date

Signature

⁴ As provided for in Article 109 of the Financial Regulation (EU, Euratom) 966/2012 and Article 145 of the Rules of Application of the Financial Regulation

APPENDIX B – Mandate consortium coordinator

I, the undersigned, [forename and surname of the legal representative of the consortium member signing this mandate], representing,
[full official name of the consortium member] [ACRONYM]
[official legal status or form]⁵
[official registration No]⁶
[full official address]
[VAT number],

hereinafter referred to as "the consortium member",

for the purposes of the signature and the implementation of the grant agreement resulting of call for proposal ref. SJU/LC/0102-CFP with the SESAR Joint Undertaking (hereinafter referred to as "the agreement")

hereby:

1. Mandate

[full official name of the coordinator] [ACRONYM]
[official legal status or form]
[official registration No]⁷
[full official address]
[VAT number],

represented by [forename, surname and function of the legal representative of the coordinator]
(hereinafter referred to as "the coordinator")

to sign in my name and on my behalf the agreement and its possible subsequent amendments with the SESAR Joint Undertaking.

2. Mandate the coordinator to act on behalf of the consortium member in compliance with the agreement.

I hereby confirm that the consortium member accepts all terms and conditions of the co-financing agreement and, in particular, all provisions affecting the coordinator and the other consortium members. In particular, I acknowledge that, by virtue of this mandate, the coordinator alone is entitled to receive funds from the SESAR Joint Undertaking and distribute the amounts corresponding to the consortium member's participation in the agreement.

I hereby accept that the consortium member will do everything in its power to help the coordinator fulfil its obligations under the agreement, and in particular, to provide to the coordinator, on its request, whatever documents or information may be required.

I hereby declare that the consortium member agrees that the provisions of the agreement, including this mandate, shall take precedence over any other agreement between the consortium member and the coordinator which may have an effect on the implementation of the agreement.

This mandate shall be annexed to the agreement as part of the tender, in case of award of agreement to the consortium, and shall form an integral part thereof.

SIGNATURE

[forename, surname, function of the legal representative of the mandating consortium member]
[signature]

⁵ To be deleted or filled in according to the "Legal Entity" form

⁶ To be deleted or filled in according to the "Legal Entity" form

Done at [place], [date], In duplicate in English

APPENDIX C – Template for the submission of the technical proposal in response to call ref. SJU/LC/0102-CFP

Published on the SJU procurement webpage

<http://www.sesarju.eu/about/procurement>

APPENDIX D – Lot 1 focus areas

Arrival Management extended to en-route Airspace (high-density TMAs)

This activity shall demonstrate the extension of the AMAN horizon from the TMA to the upstream En-Route sectors allowing traffic sequencing to be conducted in the en-route and early descent phases. The existing techniques to manage the AMAN constraints, in particular “Time to Lose” or “Gain” and “Speed Advice” may be used to demonstrate this functionality.

System requirements

AMAN systems shall provide arrival sequence time information into en-route ATC systems. ATC systems of upstream air traffic service (ATS) units shall manage AMAN constraints. Data exchange, data processing and information display at the relevant controller working positions in the ATS units shall support the management of arrival constraints. Data exchange between ATS units may be achieved with existing technology pending the implementation of System-Wide Information Management (SWIM) services.

Enhanced Terminal Airspace using RNP-Based Operations (high-density TMAs)

Enhanced Terminal Airspace using RNP-Based Operations consists of the demonstration of environmental friendly procedures for arrival/departure and approach using PBN in high-density TMAs.

System Requirements

ATC systems and ATC Safety Nets shall enable the Terminal Area and Approach PBN operations. Aircraft shall be RNP 1 capable.

Time-Based Separation for Final Approach (high-density TMAs)

Radar separation minima and vortex separation parameters shall be demonstrated in a Time-based Separation (TBS) support tool providing guidance to the air traffic controller to enable time-based spacing of aircraft during final approach that considers the effect of the headwind.

System Requirements

The flight data processing and AMAN systems shall be compatible with the TBS support tool and able to switch between time and distance based wake turbulence radar separation rules. Safety nets will support TBS operations.

Integrated Surface Movement and Departure Management (high-density TMAs)

Pre-departure management consists of metering the departure flow to a runway by managing Off-block-Times (via Start-up-Times) which take account of the available runway capacity. In combination with Airport – Collaborative Decision Making (A-CDM), Pre-departure management reduces taxi times, increases ATFM-Slot adherence and predictability of departure times. Departure management aims at maximising traffic flow on the runway by setting up a sequence with minimum optimised separations.

Optimised departure sequencing making use of calculated taxi times and automatic routing functions derived from A-SMGCS shall be demonstrated in coordination with operational stakeholders involved in A-CDM. The

departure sequence at the runway shall be optimised according to the real traffic situation reflecting any delay off gate or during taxi to the runway.

System Requirements

Departure Management (DMAN) and A-CDM systems shall be integrated and shall support optimised pre-departure sequencing with information management systems for airspace users (Target Off Block Time (TOBT) feeding) and airport (contextual data feeding). DMAN will integrate A-SMGCS constraints using Electronic Flight Strips (EFS). A-SMGCS routing information shall be made available to the flight data processing systems (FDPS) for departure sequencing and routing computation.

Airspace Management and Advanced Flexible Use of Airspace in fixed and direct-route environments at Functional Airspace Blocks (FAB) level

Airspace Management (ASM) and Advanced Flexible Use of Airspace (A-FUA) aim to enable a more flexible approach to management of airspace to better meet airspace user requirements, while avoiding permanent airspace segregation and optimising network performance. The aim of this sub-lot is to demonstrate the value to airspace users of more direct routes, optimised by better coordination of the activation and de-activation of airspace reservations.

In this demonstration, flights shall be conducted across an entire FAB and, where possible, between neighbouring FABs, where aircraft fly as closely as possible to a direct route between top of SID at the departure airport to the start of the STAR at the destination airport. The ability for airspace users to plan and execute such direct flights shall be demonstrated, including where no published direct routes or fixed-route currently exists. The ability to take full account of updated airspace utilization plan information shall be demonstrated, including where this is regularly updated as part of a rolling process. Where Dynamic Airspace Management is implemented, the demonstration shall integrate with relevant processes.

System requirements

The ASM support system shall support the fixed and CDR networks currently in place, as well as published DCTs and flights following non-published routes, as envisaged in this sub-lot. The system shall be able to respond to changing demands for airspace. Enhancements to the efficiency of the NOP shall be achieved through a cooperative decision-making process between all involved operational stakeholders. The system shall support cross-border activities, resulting in shared use of segregated airspace regardless of national boundaries.

In addition to the current fixed-route and CDR environments, FDPS shall support A-FUA and direct routes, including where such DCTs are not published in the AIP.

Flight data processing systems may make use of downlinked trajectory data (ADS-C EPP) and exchange trajectory information through the use of Flight Object, if available and supported by the relevant systems.

The IFPS shall be able to process the changes in the definition of airspace and routes, fixed and direct, so that the routes, flight-progress and associated information are available to ATC and airspace user systems. Appropriate mechanisms for integration of civil and military ATC systems shall be demonstrated.

Systems, such as the EAD and the NOP Portal, shall make available information on changes to airspace status to all involved operational stakeholders in a timely manner. This enables planning to be undertaken based on accurate information relevant to the time of the planned operations. Local AIS systems shall enable this capability and the upload of changing local data. Through the integration of Airport Operations Plan (AOP) and Network Operations Plan (NOP), as specified in Point 2, operational stakeholders shall be able to interface with the NOP. Interfaces shall be defined to allow updated data to be sent to operational stakeholder systems, and for those stakeholders to be able to communicate information in an accurate and timely manner. The systems of these stakeholders shall be modified to enable these interfaces.

Collaborative Network Operations Plan (NOP)

The aim of this sub-lot is to demonstrate the use of accurate information to enable NOP planning to address arrival-airport congestion at the point of congestion, rather than by applying delays at the departure airport that are not coordinated with the arrival airport, which risks the aircraft receiving additional delay on arrival.

The Collaborative NOP shall be updated through data exchanges between the Network Manager and operational stakeholder systems. Arrival airport constraints, and weather and airspace information, shall be integrated into the NOP. Where available, the airport constraints shall be derived from the AOP. The development of a Collaborative NOP shall focus on the availability of shared operational data and shall be able to be read and modified by operational stakeholders participating in managing and operating the network. Target Times of Arrival (TTA) shall be used to support airport arrival sequencing processes in the en-route phase.

Airspace Users shall be able to access relevant NOP information to support effective planning that takes into consideration constraints that have been shared as described above.

System requirements

Mechanisms shall be available to provide all operational stakeholders with operational information to support their needs. Operational stakeholder ground systems shall be adapted to interface with network management systems. AOP systems shall interface with the NOP systems. Interface between operational stakeholder systems and network management systems shall be demonstrated using System-Wide Information Management (SWIM) services. Network Manager's systems shall support target time sharing. Flight data processing systems may make use of downlinked trajectory data (ADS-C EPP), if available and supported by the relevant systems.

APPENDIX E – Lot 2 focus areas

Remote Tower

This activity shall demonstrate the provision of ICAO-standard Aerodrome ATS/ATC services from a location not collocated with the airport in question. The project team shall demonstrate how they intend to achieve the support of the regulator and the service provider/s at the demonstration site(s), with a view to ensuring that any systems and/or procedures developed and demonstrated meet appropriate safety and service efficiency requirements.

System requirements

The system shall enable visual observation of the Aerodrome area to a resolution necessary and required for the provision of safe and expeditious Aerodrome ATS/ATC services. The system shall have communication facilities and performance equivalent to those required for conventional Aerodrome ATS/ATC services. These shall include systems required to control mobiles in the air and on the ground, as well as those required to interact with other stakeholders, both on and off the airport. The system shall provide the capability to influence airport activities to a degree equivalent to conventional Aerodrome ATS/ATC services at an airport of a similar size, for example airfield lighting, traffic lights, binoculars etc. The system shall enable the controller to be aware of the status of all relevant airport facilities to a degree that is equivalent to Aerodrome ATS/ATC services being performed at the same airport.

Collaborative Airport Operations Management

With the increased participation of airports in the management of the ATM network as a whole, stakeholders at larger airports are increasingly working together to create an Airport Operations Plan (AOP) that is linked to the NOP. This is often conducted from a dedicated Airport Operations Centre (APOC) equipped with dedicated complex systems that enable airport stakeholders to work together. Small airports will need to connect to the ATM network to a degree that enables them to meet their own operational and business objectives without requiring the development of the large, complex and expensive systems available to the larger airports. The purpose of this activity is to demonstrate the ability of stakeholders at small airports to work collaboratively and to interact with the NOP using existing telecommunications systems, locally agreed procedures and the internet in order to improve the accuracy of information in the network (e.g. take-off time/status). The operational requirements are:

- Stakeholders at the airport shall include airspace users, ATC, airport engineers, emergency services, ground handlers, de-icing agents, flight planning and the airport operator.
- AOP information shall be shared with all airport stakeholders.
- AOP access shall be granted from local (e.g. APOC) or remote locations (e.g. stakeholders premises).
- Schedule information shall be shared with the NOP.
- Flight trajectories shall be developed in collaboration with the Network Manager.
- It shall be possible to submit and modify Flight Plans in accordance with agreed protocols.
- Refined departure times shall be inserted into the NOP.
- The Airport shall be in electronic communication with Network Manager operations center regarding the departure status of aircrafts under their control.

- Stakeholders at the small airport shall be able to interact with the Network Manager to refine target arrival times to suit local pressures, such as stand availability or ground-handling capacity.
- Airport status information shall be shared with the NOP.
- Network status information that will support flight planning and that could affect airport operations shall be made available from the NOP for distribution to relevant airport stakeholders.
- Airport stakeholders shall collaborate in accordance with procedures to be agreed amongst themselves.
- Quality of information exchanged with NOP shall be similar to the information shared with large airports.

System requirements

Telecommunications systems shall be available to allow airport stakeholders to collaborate to a degree commensurate with their operational need. Airport stakeholders shall be able to connect to the Network Manager's systems via an internet-based system. Information exchange shall be accomplished using SWIM services available over the internet connection.

Precision Arrival and Departure Procedures

Small/medium size airports frequently do not have the landing aids found at larger airports, and this can significantly limit operations in bad weather, or make it impossible to conduct certain types of operation without compromising safety. Other small airports are located in geographical locations where IFR departures and/or approaches are difficult or impossible due to their proximity to high terrain or other obstacles. SESAR is developing concepts and technologies that enable aircraft to operate, or operate more safely, without the need for expensive permanent landing aids. Use of these developments is of particular value to operators at smaller airports where precision facilities are often not installed.

The purpose of this activity is to demonstrate:

- Use of RNP procedures to enable IFR departures in constricted terrain areas; and
- Use of RNP procedures to enable IFR approaches to lower minima than current non-precision aids.

The project team shall demonstrate how they intend to achieve the support of the regulator and the ANSP at the demonstration site(s), with a view to ensuring that any procedures developed and demonstrated meet appropriate safety standards.

System Requirements

The aircraft involved in the demonstration shall be equipped with a certified navigation capability commensurate with the aim of the trial. If augmentation systems are used, these must be appropriately certified.

Enhanced Flight Planning and Aeronautical Information for airspace users without their own FOC

Many airspace users at smaller airports, for example General Aviation, do not routinely interact with the wider General Air Traffic Network, often flying VFR outside controlled airspace. Others do so, but in a non-repetitive manner, depending on very specific requirements; this includes military and business aviation operators. Typically, such operators also do not have access to their own Flight Operations Centre (FOC). However, in SESAR's increasingly dynamic environment, it will become more important for such airspace users to be able to plan their flights, and to monitor their progress, in such a way as to be compatible with the evolving SESAR environment. Furthermore, they should have access current information on airspace and network activity that could affect their operations. This could include activation of Airspace Reservations (ARES), such as Danger

Areas or special use airspace, CDR activation and unusual air activities, as well as meteorological information, all supplied in a more intuitive and interactive manner than the current NOTAM system. The type of MET data that will be available is evolving and this could enhance the safety and efficiency of operations, if made available to AUs in a timely fashion, and this is equally true for all airspace users, from larger airlines down to private pilots.

The purpose of this activity is to demonstrate:

- The ability of operators at small airports, who do not have their own FOC, to undertake flight planning and to monitor the progress of their aircraft, by connection to the NOP.
- The value to typical operators at small airports, including GA, of accessing and using the increasing range of dynamic information that is becoming available in digital form. The demonstration shall include provision and use of aeronautical information and advanced meteorological information.

System Requirements

The system shall connect to the NOP using SWIM Services, to make available to general/business aviation airspace users:

- Access to flight planning information and flight progress monitoring;
- Current aeronautical information; and
- Current and advanced meteorological information.

The system shall display the information to targeted airspace users via an HMI optimised for use by non-specialists. The system shall make use of information services via an internet connection. Proposals may also suggest other types of information to be included in the demonstration.

Low-cost innovative cockpit solutions supporting the implementation of the SESAR Concept of Operations

The purpose of this activity is to investigate how emerging SESAR concepts and technologies could be exploited to provide benefit to end users in the form of low-cost solutions for the cockpit. The following examples show some ideas that could be pursued, but they are offered as illustrations only. Bidders are encouraged to identify and propose demonstrations of innovative ideas that could realistically be brought into production in order to provide benefit to the cockpit, particularly for GA, rotorcraft and small-business use. The focus should be on the value that the proposal would bring to the end-user, and in demonstrating the feasibility of the proposal.

Examples include:

- Aircraft using portable ADS-B receivers to increase airborne situational awareness in a VFR environment; and
- Display of advanced and dynamic MET information to pilots.

System Requirements

System requirements will depend on the nature of the proposed activity, but the following points should be considered:

- Technology should be available in the short term and at a moderate cost.
- Stringent certification requirements may exist for any proposal that attempts to address safety-critical tasks, and these may prove to be prohibitive.

APPENDIX F – Lot 3 focus areas

Introduction

In order to optimise their flights, airspace users need access to the both static information and the latest updates and forecasts of dynamic information in the domains of meteorological, aeronautical and network information. Flight optimisation is a continuous process that starts with flight planning and continuous through flight briefing and flight following (and therefore flight execution) processes. This is illustrated in figure 4.1.

Easy and flexible access to such information creates efficiency and safety benefits for airspace users. Automatic filtering of flight-specific information significantly reduces the manual labour required to find relevant information for a specific flight. Automated triggers on updates of dynamically changing information may trigger timely route changes and/or fuel changes keep a flight optimized in changing circumstances, leading to further efficiency benefits for airspace users.

Due to increased accuracy of the filtering of information, information overload is avoided, allowing important information to be better noticed. This increases situational awareness and reduces the risk of missing vital information due to information overload, ultimately leading to an increased level of safety.

By providing updates of dynamically changing information during flight execution, adaptation of a flight plan during flight execution is triggered in time allowing optimizing a flight to the changing circumstances. This leads to efficiency and / or safety benefits while being airborne, particularly for long haul flights: the longer a flight is, the more updates of dynamic information will become relevant. This requires information from different (ICAO) regions.

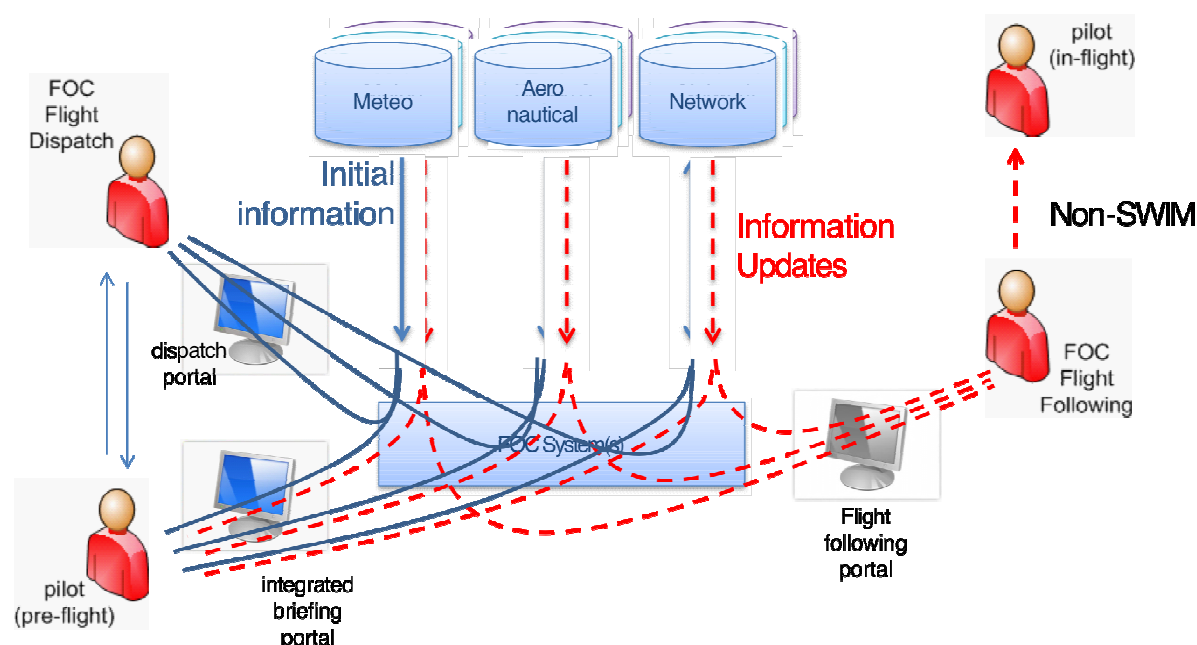


Figure 4.1 Targeted airspace users processes

If other regions of the world provide similar access to information and information updates, global interoperability is achieved. Efficiency benefits of global interoperability are demonstrated by the minimal additional effort that is required to acquire similar type of information from non-European regions. In figure 4.2 it is illustrated that Flight Operations Centres gather information from different regions.

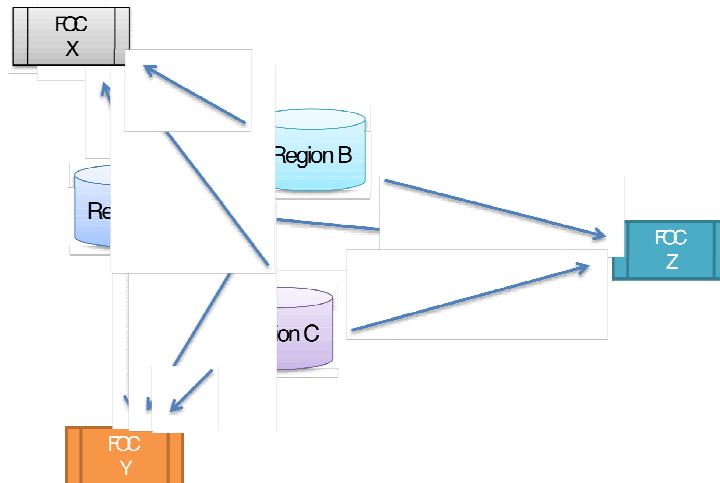


Figure 4.2 Global interoperability

In technical terms, this lot concerns the exchange of static and dynamic information with a particular focus on the domains of meteorological, aeronautical and network management, by applying SWIM standards. The scope of SWIM is illustrated in the figure below.

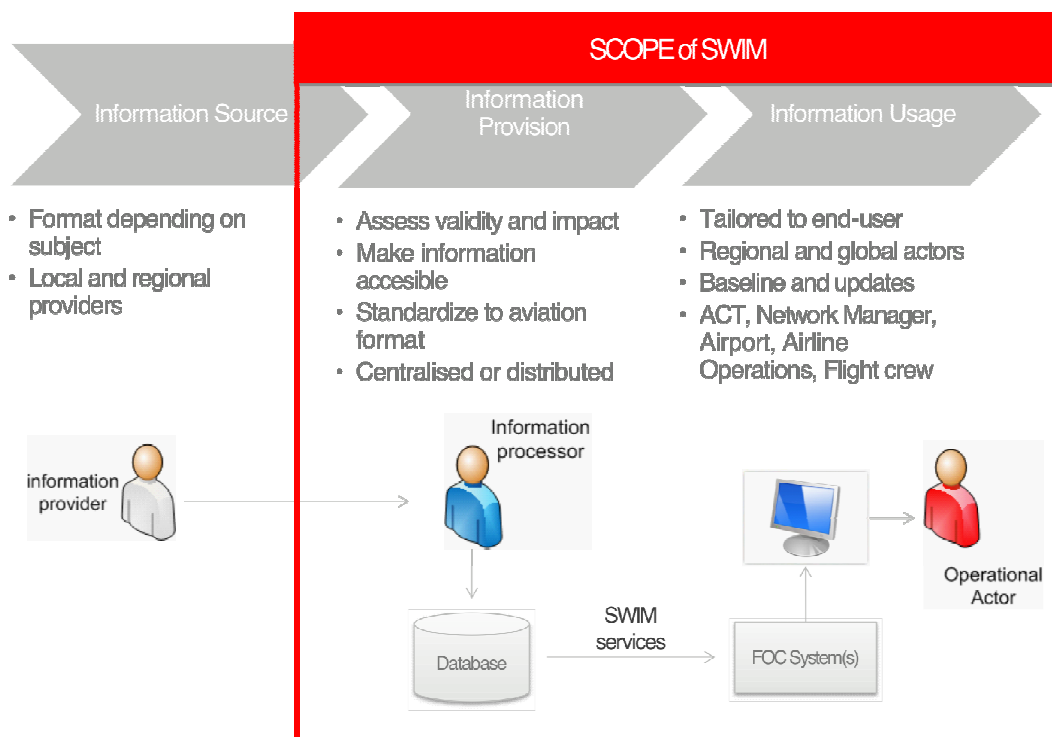


Figure 4.3 Information Management Processes

Systems providing meteorological, aeronautical and network information will provide their information through services compliant to SWIM standards. Airspace users systems using this information shall consume this information through these SWIM compliant services.

Purpose of this Lot

founding members



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Information shall be exchanged through the consumption of meteorological, aeronautical and network services defined in sub sections below. European meteorological, aeronautical and network information shall be consumed through services provided by the SJU. Non-European meteorological, aeronautical and network information shall be consumed from similar services, when available, provided by other ICAO regions within the context of the global SWIM demonstrations.

Operational and technical actors that need to be involved are:

1. *Flight dispatch, for preparing and optimizing a flight based on static and dynamic meteorological, aeronautical and network information*
2. *Pilots during crew briefing. Besides the pre-flight information bulletins prepared by flight dispatch, pilots may want to do additional querying on static and dynamic information provided by meteorological, aeronautical and network information providers.*
3. *Flight following, for monitoring relevant updates to dynamic meteorological, aeronautical and network information that may impact a flight, or provide opportunities for a flight and require action to optimize the flight under execution. Since the scope of the Global Demonstrations does not cover air ground data link services, these updates need to be provided to the flight operations center (FOC) that then can coordinate with the flight deck when required through existing means to be decided by the airline (for example voice or ACARS).*
4. *The relevant flight planning/operations control system manufacturers.*
5. *Relevant SWIM B2B information providers to support the demonstrations.*

Limited to the context of these global demonstrations, effort will be required for coordination with other global information consumers and regional meteorological, aeronautical and network information providers on the details of the service definition. Project proposals shall describe how the necessary coordination is intended to be achieved.

Experience of using the SWIM services and the benefits gained from doing so shall be captured in the demonstration report and include details on service performance, technical problems experienced, for each individual flight which services of which providers were used how many times for which flight and what benefits have been achieved.

In support of the targeted global SWIM demonstrations, EUROCONTROL on behalf of the SJU will organize the information provision of European Aeronautical, Network and Meteorological information through SWIM services. Interested parties may contact the SESAR SWIM Project (swim@sesarju.eu) to ensure compatibility of the proposed projects with the information services described below.

Aeronautical information that will be made available for Europe

Aeronautical information will be provided through an aeronautical information feature service.

- Services will be accessible via the internet
- Service features will include aerodromes, identification with associated Runways; Airspaces (FIR, UIR, TMA, P-D-R); Routes, Nav aids and Waypoints, Digital NOTAM, Digital SNOTAM, AIP charts (like airspace and airport maps) and AMDB (EUROCAE ED-119)
- Service capabilities include :
 - *Querying of static and dynamic information, based on geospatial and temporal aspects and feature types and associations defined by the information consumer*
 - *Subscription to updates of dynamic information, based on geospatial and temporal aspects defined by the information consumer*
 - *Provision of updates of dynamic information to subscribed consumers*
- The geographical scope will cover all of Europe.

- Service(s) will be compliant to AIXM 5.1.
- Information updates will be provided by Digital NOTAM as defined in AIXM 5.1.
- Service(s) will be compliant with the SWIM-TI Yellow Profile Technical Specification 2.1 (SESAR Deliverable 14.01.04 D51-005, edition 00.01.00)
- Geospatial and temporal aspects will be based on GML standards
- Service contract(s) will be published in the SWIM registry

Network information that will be made available for Europe

Network information will be provided through a network information feature service.

- Services will be accessible via the internet
- Service features will include congested areas causing ATFCM delays
- Service capabilities will include:
 - *Querying of static and dynamic information, based on geospatial and temporal aspects and feature types and associations defined by the information consumer*
 - *Subscription to updates of dynamic information, based on geospatial and temporal aspects defined by the information consumer*
 - *Provision of updates of dynamic information to subscribed consumers*
 - *Creation, validation and distribution a flight plan*
 - *Monitoring of real traffic situation within a specific region*
 - *Charts with congested areas for a specific region*
- The geographical scope will cover all of Europe.
- Service will be compliant to AIXM 5.1
- Service will be compliant to FIXM 3.0 if that standard is available by August 2014
- Service(s) will be compliant with the SWIM-TI Yellow Profile Technical Specification 2.1 (SESAR Deliverable 14.01.04 D51-005, edition 00.01.00)
- Geospatial and temporal aspects will be based on GML standards
- Service contract(s) will be published in the SWIM registry

Meteorological information that will be made available for Europe

Meteorological information will be provided through a meteorological information feature service.

- Services will be accessible via the internet
- Service features will include TAF, METAR, SIGMET and wind aloft (wind grid)
- Service features may include charts describing information on wind, temperature, pressure, turbulence and volcanic ash
- Service capabilities will include :
 - *Querying of static and dynamic information, based on geospatial and temporal aspects and feature types and associations defined by the information consumer*
 - *Subscription to updates of dynamic information, based on geospatial and temporal aspects defined by the information consumer*

- *Provision of updates of dynamic information to subscribed consumers*
- Service(s) will be compliant to WXXM (METCE v1 LDM, IWXXM v1 LDM, WXXM v1 LDM)
- Service(s) will be compliant with the SWIM-TI Yellow Profile Technical Specification 2.1 (SESAR Deliverable 14.01.04 D51-005, edition 00.01.00)
- Geospatial and temporal aspects will be based on GML standards

Service contract(s) will be published in the SWIM registry and defined according to the SESAR Service Description Document (SDD) template.

APPENDIX G – Template for the submission of the financial proposal in response to call ref. SJU/LC/0102-CFP

Published on the SJU procurement webpage

<http://www.sesarju.eu/about/procurement>

APPENDIX H – Demonstration Plan template

Published on the SJU procurement webpage

<http://www.sesarju.eu/about/procurement>

APPENDIX I – Demonstration Report Template

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<http://www.sesarju.eu/about/procurement>