



Tender Specifications
annexed to
Invitation to Tender
Ref. SJU/LC/61-CFT
SESAR Military Avionics Study

Date 24 March 2011

Edition 00.01.00

1. INTRODUCTION

1.1. Overview of this call

The subject of the present call for tenders is the performance of a Military Avionics Study” (hereinafter referred to as the “Study”). Detailed description of the requested services is given in Section 2 below (“Terms of reference”). Fact sheets and reference documents have been attached to these tender specifications to provide background information.

1.2. What is SESAR

The Single European Sky Air Traffic Management Research Programme (SESAR) 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. The Programme is composed of three phases: *(for more detailed information please see Annex II - Fact sheet n°1 attached hereto).*

- the **definition phase (2005-2008)** whose objective was to develop and deliver the SESAR ATM Master Plan and the SESAR Work Programme. In this phase the future concept of operations was defined based on the 4D business and mission trajectories, time based operations and wide information sharing system among all the relevant stakeholders. The cost of this phase was 60 million €, financed with 50% funding from the EU and 50% from EUROCONTROL.
- The **development phase (2008-2013)** of the Programme is characterised by coordinated and focussed research, development and validation activities according to the Master Plan and the SESAR work Programme that aim at developing the equipment, standards and procedures that will constitute the new systems. This phase is currently on-going and is managed by the SESAR Joint Undertaking, a Union body established by Council Regulation (EC) 219/2007 of 27.02.2007, as amended by Regulation (EC) 1361/2008. The estimated cost of the development phase is 2.1 billion €. The EU, Eurocontrol and the ATM industry have committed to fund each 33% (700 million € each) of the estimated cost of development.
- The **deployment phase (2014-2020)**, based on the results of the development phase, will consist of large scale production, procurement and implementation of the new ATM infrastructure and the corresponding aircraft equipment.

A. The European ATM Master plan

The definition phase resulted in a set of deliverables, the main one being the SESAR Master plan (D5), which is the commonly agreed roadmap for the accomplishment of research activities and gradual deployment of the results. The SESAR Master plan has been endorsed by the Council of the European Union on 30 March 2009 and became the European ATM Master plan (hereinafter referred to as the ATM Master plan). Since it has been endorsed by the Ministers of Transport of 27 Member States, the ATM Master plan, although not being a legally binding document, is a commonly agreed European roadmap for the development and deployment of the future ATM systems in Europe.

The ATM Master plan in fact defines a new ATM concept identifying functions and processes and their corresponding interactions and information flows, concerned actors, their roles and responsibilities.

The ATM Master plan, besides being the commonly agreed roadmap for the development and deployment of the technologies, standards and procedures, also contains the initial costs and investment estimate for the major categories of the stakeholders (initial business case). These initial figures will be validated and verified by the SESAR Work Programme activities through detailed cases of Safety, Business, Security, Environment and Human Performance impacts.

B. What is deployment of SESAR?

The SESAR Definition phase concluded implementation readiness for continued work in the SESAR Development phase based in three implementation packages defined in the ATM Master plan:

- (a) **The Implementation Package I (IP 1)** containing the basic functionalities of the SESAR system, sets the baseline for the future deployment of more advanced functionalities, which are however required and necessary for the future achievement of the full paradigm shift towards the 4D trajectories and time based operations.

The IP 1 functionalities and technologies are those which prepare for the SESAR time based operations and which do not require any further research efforts as they have been validated, and are available to be deployed now among the stakeholders.

- (b) **Implementation Package II** (corresponding to the service levels 2 and 3 of the European ATM Master plan), is composed of ATM elements for initial 4 D trajectory based operations which need further research and development and which can be proposed for standardisation and implementation in the timeframe as of 2014.
- (c) **Implementation Package III** (corresponding to the service levels 4 and 5 of the European ATM Master plan) is composed of the most advanced elements of the SESAR's Concept of Operations allowing the full transition to the SWIM based 4 D trajectory management and trajectory based aircraft operations, whose deployment reaches the timeline beyond 2020.

C. The timeline for the deployment of SESAR

It is essential that the core elements of the ATM concept are synchronised and implemented timely and consistently throughout the European ATM network based on the investors needs to enjoy their full benefits. This requires coordination and synchronization across countries and stakeholders, and one of the key follow-on question of this Study is, how and which financing mechanisms (private and public, as well as combined) would represent effective incentives for early, coordinated and sustainable benefits both locally and at network level, taking into account the objectives and legislative framework of the Single European Sky (SES) policy and the different instruments to support ATM infrastructure development.

The deployment of SESAR's systems, technologies and standards will start in reality as soon as the solutions (outputs of the development phase) are available and ready for industrialisation, meaning they have been positively verified and validated in an operational environment.

As the SESAR Programme is structured in a layered manner and composed of different levels of performance (service levels) and different complexity and technology readiness levels, the deployment of SESAR systems will start as soon as the implementation of functionalities defined in the first set of the Implementing Rules of the Implementation Package I is undertaken by the stakeholders.

Therefore the deployment of SESAR products, systems and procedures needs to be seen as a gradual process, where the development activities run in parallel to the deployment activities.

2. TERMS OF REFERENCE

2.1. Subject of the Study

The SESAR Concept of Operations is designed to facilitate the continued fulfilment of legitimate National Defence and Security missions including the unrestricted access to the airspace and airports for military aircraft. The SESAR concept element of military Mission Trajectory (MT) is of paramount importance in this respect. SESAR concept objectives to sustain military aerial operations in a mixed mode environment can only be a reality if enhanced levels of integrated interoperability between civil and military aircraft systems and ground systems are proven feasible and implemented in due time.

A “Military Avionics Study” (the “Study”) is required to support the SESAR Work Programme in providing stable guidance to support Military Authorities planning and procurement decisions. This is of importance in relation to the proposed interoperability options and deployment timescales for military aircraft integration in the trajectory-based SESAR concept.

The Study shall include an exhaustive description of existing European military fleet’s capabilities and enablers together with their evolution plans. The Study shall compare this description with the SESAR Concept of Operations in which the military high level requirements and needs have already been established. This comparison will serve as a basis for proposals on the evolution of the SESAR programme related activities, or possibly the identification of new tasks to be performed.

2.2. Assumptions

This Study is needed to avoid multiple interoperability gaps in terms of military aircraft systems’ compliance to SESAR functions and it will complement the identified gaps of the operational, technical and transversal work already performed in the ongoing related SESAR projects.

This Study is also needed to support the SESAR Work Programme in:

- setting a coherent overarching view of the integrated operational and technical approach;

- providing an exhaustive description of applicable needs and requirements;
- providing a more complete assessment of targeted military fleets and;
- identifying new needs, for instance for UAS;
- understanding possible transitional arrangements for legacy aircraft;
- providing guidance on possible verification and validation activities to be performed on military platforms.

2.3. Objective and Scope

The **objectives** for the present Study are to deliver:

- consolidated information on European military aircraft fleets, their capabilities and enablers (size, types, variants, roles, architectures, avionics suites);
- an exhaustive description of the planned operational and technical military aircraft avionics capability evolution plans.
- The delta required to fully integrate the military mission aircraft according to the SESAR Concept of Operations requirements ;
- the identification of relevant military aircraft capabilities/performances that can be re-utilized as adapted enablers and its mapping against SESAR Concept of Operations requirements;
- a consolidated Military Avionics Roadmap (hereinafter referred to as the “Roadmap”) including IOC and FOC dates for the identified requirements and the timescales for the transition arrangements necessary for the accommodation of fleets with lower capability.

The **scope** of the Study shall exclude specific wartime functions and capabilities not re-useable in the SESAR context.

2.4. Available budget

The maximum allocated budget for this Study is **400.000,00 EUR** (VAT excluded).

2.5. Description of Deliverables

2.5.1. Project Plan and Baseline Information (Deliverable D1)

Deliverable D1 is composed of two separate documents: a Project Plan document (A) and a Context Baseline and Assumptions document (B).

A. Project Plan document

The Contractor shall submit a Project Plan document which describes the approach and contents to be delivered in the frame of the Study, the associated timeframe, milestones and

Deliverables, technical activities to be conducted, the needed inputs and references, the resources and expertise required the mechanisms for technical monitoring, advice and consultation, a list of associated risks and foreseeable follow on work.

B. Context, Baseline and Assumptions document

The Contractor shall produce a document describing the context against which the Roadmap is defined.

This document should derive the relevant operational and technical requirements for military aircraft, in line with current SESAR Target Concept where the military conceptual level requirements have been recently enhanced and the SESAR work programme, on the basis of the following elements:

- the SESAR ATM Concept of Operations represents a paradigm shift from an airspace-based environment to trajectory-based operations. A Business Trajectory (BT) for civil aviation or a Mission Trajectory (MT) for military operations is elaborated and agreed for each flight, resulting in the trajectory that a user agrees to fly and the ANSP and airport agree to facilitate;
- the notion of military Mission Trajectory (MT) was introduced in the SESAR ConOps to represent the mission intentions of military airspace users facilitating the conduct of military aerial operations and training in a mixed-mode environment;
- this concept element will decisively contribute to lower levels of airspace segregation/ATM constraints thus increasing the overall capacity of the ATM system, enhancing safety, alleviating ATC workload and delivering environmental benefits;
- Mission Trajectories will be described and executed with the required precision in all 4 dimensions. To safeguard the integrity of 4D trajectories and ensure the best outcome for all users, military aircraft designated to fly MT shall be seamlessly integrated in SESAR trajectory structures. MT will require military aircraft to fulfil defined capability/performance levels that include:
 - key 4D functions, including flight guidance, and a standardised trajectory sharing capability mediated by cooperative processes
 - the ability to process and share all data required to describe the flight and support automated airport operations
 - new separation modes, including airborne separation assurance and 4D contract
 - advanced navigation performances, including defined RNP and RNAV levels
- In order to define, demonstrate the feasibility and validate civil-military interoperability solutions for military aircraft, the SESAR Work Programme includes already a number of projects where the following capabilities are addressed:
 - Ground interface for military data communication accommodation (Projects 9.20 and 15.2.8)
 - ADS-B In/Out for military aircraft (Project 9.24)
 - Key 4D functions for military aircraft re-utilizing Military Mission Systems/Mission Computers (Project 9.3)

- Advanced navigation for State aircraft (Projects 9.27, 15.3.1 and 15.3.4)

These Projects are to be understood as the technical baseline content for the Study. These are also the main projects that will benefit from the results of the Study.

2.5.2. Military Aircraft Inventory - Platforms and Capabilities (Deliverable D2)

This Deliverable is composed of two separate documents: Military Aircraft Inventory – Platforms (A) and Military Aircraft Inventory – Capabilities (B).

A. Military Aircraft Inventory - Platforms

This document shall comprise an assessment of present situation in relation with the military aircraft fleets of the European Union and Eurocontrol States, identifying the size of fleets (number of aircraft) per country and the different aircraft types, variants, versions and military aircraft operator.

Exhaustive information shall also be provided on the roles and missions of each aircraft type and regularity of flights and the impact on ATM requirements.

Plans for estimated aircraft end of operational service (end of lifecycle) shall also be provided together with known major mid-life upgrades/overhaul interventions.

Information on future military aircraft procurement plans in particular for UAS should be provided including foreseeable date of entry into operational service.

B. Military Aircraft Inventory - Capabilities

Detailed information shall be provided, for the most relevant aircraft types/families operating by 2020⁺, on:

- Airborne avionics architecture
- Level of ATM/CNS capability offered (B-RNAV, P-RNAV, Mode S EHS (DAPs), CPDLC, RVSM, FM Immunity, etc.)
- Available ATM/CNS equipage of different aircraft types and variants (e.g. UHF/VHF-COM (25 or 8.33 kHz), HF, SATCOM, Tactical Data Link (including JTIDS/MIDS Link 16), VOR, TACAN, MMR (ILS, MLS, DGPS), INS/GPS, GPS/PPS, GNSS, ABAS, IFF/SSR, Mode S, ACAS/TCAS, TAWS/EGPWS, ELT, HUD/EVS, Airborne Radar, Military Mission System, etc.)
- Data bus, airborne computer, software, antennae, ancillary equipment, etc.
- Supporting standards or specifications
- Known retrofit plans
- Forward fits foreseen in procurement plans
- Current and future spectrum requirements and usage aspects (if information is not yet available)

The foreseeable technology evolution of the technologies used or any known migration strategies should be described (e.g. data link migration to software defined radio).

2.5.3. Operational and Technical Requirements for Military Aircraft Integration in SESAR (Deliverable D3)

This work stream shall include justified identifications of all SESAR concept elements, operational requirements and functions that need to be considered for military to be capable of operating within Mission Trajectory structures. This assessment should include, as the minimum, Trajectory Management (CPDLC, initial and full 4D trajectories), New Separation Modes (including 4D contract), Advanced Navigation and Airport Functions.

The requirements should be organised as a list of operational improvements (OIs) associated with capabilities and system enablers for military aircraft linked to flight phases (Planning, Oceanic, En-route Continental, Arrival/Departure, Approach, Landing & Take Off and Airport Surface movement) and with IOC dates determined in line with the Concept Story Board Steps.

Existing elements will be recovered from projects B.4.3, C.2, 9.3, 9.20, 9.24, 9.27, 15.2.8, 15.3.1, 15.3.4 identifying what conceptual elements, operational requirements from the relevant operational work packages and functions OIs will be fulfilled.

This information will then serve as the basis for a capability gap assessment and mapping between military system enablers and SESAR capability and enabler needs per storyboard step (incl. architecture elements/requirements/Operational Improvements (OIs)) evaluating civil-interoperability options to support:

- Time and Trajectory based operations for military aircraft
- Data communication and applications and the security needs and requirements
- ADS-B/ASAS
- Advanced NAV in line with PBN and including vertical performance
- Air-ground SWIM integration
- Other SESAR requirements

This work stream will also include a mapping between technical requirements and standardisation activities including references to existing technical specifications or identifying the need for new or modified technical specification materials. Industrialization challenges, including civil-military standardisation, should be described and be organised as opportunities or risks.

2.5.4. Military Avionics Roadmap for SESAR (Deliverable D4)

On the basis of Deliverables D2 and D3 work and building upon work conducted in Projects B.4.3, 9.49, C2 and 16.6.6, a migratory roadmap for military aircraft systems evolution shall be developed (the “Roadmap”).

This document shall identify all the capabilities required (IOC and FOC) for each Concept Story Board Step. The validation and verification needs in line with the SESAR Validation Strategy shall be applied.

The link with SESAR Releases shall also be made. Comparisons with the latest Master Plan timescales should be included.

The Roadmap shall describe a generic military avionics suite solution highlighting the variations needed to cope with other military aircraft types and variants. The capabilities should be identified as applicable to transport-type military aircraft, fighter, helicopters and light aircraft.

For all the requirements (capabilities and infrastructure components), it needs to be indicated to what SESAR Capability/Service Level and OI’s they contribute and by which dates.

The Deliverable D4 shall include an Executive Summary summarising the conclusions and recommendations of the Study.

2.6. Project management, timeframe and meetings

A. Project management

The Contractor Team will be responsible to gather and organise all the information and to produce and submit the Study results including the identified Deliverables and all the associated management, review and consultation activities.

B. Deliverables and Milestones

The Contractor shall submit to the SJU the Draft and Final Deliverables in accordance with the planning outlined below.

Upon the release of each Draft Deliverable, the SJU shall review the submitted documents in terms of structure, technical content and quality and may request additional information or a revised Deliverable

Due Date	Deliverable ID & Description
T0 ¹ + 3 weeks	Draft Deliverable D1 (first version of Deliverable D1)

¹ T0: date of the kick-off meeting between the SJU and the Contractor following the entry into force of the Contract.

T0 + 4 weeks	Final version of Deliverable D1
T0 + 11 weeks	Draft Deliverable D2 (first version of Deliverable D2)
T0 + 12 weeks	Final version of Deliverable D2
T0 + 19 weeks	Draft Deliverable D3 (first version of Deliverable D3)
T0 + 20 weeks	Final version of Deliverable D3
T0 + 31 weeks	Draft Deliverable D4 (first version of Deliverable D4)
T0 + 32 wks	Final version of Deliverable D4

The Deliverables shall be provided to the SJU in English language in five (5) paper copies, as well as a CD ROM containing the electronic version.

C. Meetings

Meetings shall normally take place in Brussels at the SJU premises, unless agreed otherwise by both Parties.

3. ASSESSMENT OF THE OFFERS AND AWARD OF THE CONTRACT

3.1. Introduction

The assessment will be strictly based on the content of the received offers 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 3.2. below),
- Stage 2 – assessment in the light of selection criteria (see section 3.3. below) and
- Stage 3 – assessment in the light of award criteria (see section 3.4. below).

The aim of each of these stages is:

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

3.2. Assessment in the light of exclusion criteria

To be eligible for participating in this contract award procedure, the tenderer² (and in case of consortium, 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 contracting 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 contracting authority or those of the country where the contract is to be performed;

Accordingly, tenderers (and in case of consortium, the coordinator and each consortium member) must provide a **Declaration on Honour** (see Annex I), duly signed and dated, stating that they are not in one of the situations referred to above.

Nota Bene:

The tenderer (and in case of consortium, the coordinator and each consortium member) to which the contract is to be awarded shall provide, within 15 days following notification of award and preceding the signature of the contract, 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 of a tenderer to submit the documentary evidence referred to above if such evidence has already been submitted to the SJU for the purposes of another procurement procedure and provided that the documents are not more than six (6) months old starting from their issuing date and that they are still valid. In such a case, the tenderer shall declare on his honour that the documentary evidence has already been provided in a previous procurement procedure and confirm that no changes in his situation have occurred.

² Where parts of the services are intended to be subcontracted the tenderer has also to ensure that the subcontractors satisfy the exclusion criteria as indicated in section 16 of invitation to tender Ref. SJU/LC/0...-CFT.

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/internal_market/publicprocurement/2004_18/index_en.htm.

3.3. Assessment in the light of selection criteria

The tenderer must have the overall capabilities (legal, economic, financial, technical and professional) to perform the contract. 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 on the quality of the track record and not on the quality of the (technical) offer.

3.3.1. Assessment of the legal capacity

Tenderers (and in case of consortium, the coordinator and each consortium member) are requested to prove that they are authorised to perform the contract 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 tenderer (and in case of consortium, the coordinator and each consortium member) shall provide a dully filled in and signed Legal entities' form (see section 7 b) of the invitation to tender Ref. SJU/LC/0061-CFT).

3.3.2. Assessment of the economic and financial capacity

In order to prove its sufficient economic and financial capacity to perform the contract, the tenderer (and in case of consortium, 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 tenderer (and in case of consortium, the coordinator and each consortium member) is [are] unable to provide the references requested here above, the tenderer (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.

3.3.3. Assessment of the technical and professional capacity

The tenderer which can be a single organisation or consortium shall establish that it has sufficient technical and professional capacity to perform this contract.

- *Specific requirements*

The proposed team shall have experience in the following fields:

- development and maintenance of military aircraft, in particular technical expertise in the fields of Communications, Navigation and Surveillance/Identification;
- proven access to fleet information in a large number of countries.

- *Documents requested for the establishment of the technical and professional capacity of the tenderer*

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

- a presentation of the main current activities of the tenderer,
- a brief presentation of the structure of the tenderer’s organisation or consortium,
- 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 tenderer has the research capacity needed to execute the proposed contribution (staff, expertise, facilities, etc.)
- evidence of established competencies as a contributor to military aircraft manufacture or integration and on defence industrial activities with ability to access and use information concerning military aircraft systems

3.4. Assessment in the light of award criteria

The SJU will evaluate, mark and establish a ranking of the tenderers on the basis of 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 Contract. The evaluation in light of the award criteria and evaluation in terms of quality will be performed for each proposal respectively.

<p>Understanding of the requirements and technical expertise</p> <ul style="list-style-type: none"> - clear demonstration that the technical requirements of each addressed Deliverable are understood; - the technical expertise is adequate and well focused to the addressed Deliverables, the tenderer can demonstrate its in-depth knowledge of the field; - the detailed CVs are reflecting the competencies required. 	30
<p>Added Value:</p> <ul style="list-style-type: none"> - proposed methodology to develop the deliverables, in particular the roadmap; - clear demonstration of the added value brought by the proposal towards helping SESAR to reach its objectives; coverage of all aspects of military aircraft fleet equipage issues. 	50

<p>Allocation of resources:</p> <ul style="list-style-type: none"> - clear demonstration that the proposed entity(ies)/individuals are well-suited and committed to the areas to be assigned to them. The right participants are assigned with appropriate levels competencies for each Deliverable, the adequate resources have been identified for each Deliverable and in coherence with the tendered capacity. 	20
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3.4.1. Financial evaluation of the offers and recommendation for contract award

Only proposals whose award evaluation gives them a score of at least half the available number of points in each the four main criteria above and a total of 70 points may be subject to a financial evaluation and be recommended for award of the contract. For lower scores the bids will be considered non-suitable and excluded.

The contract will be awarded to the offer which offers the highest ratio quality/cost by applying the following formula:

$\text{Ratio Quality/Price} = (\text{Total quality score of Offer Y} / \text{Highest quality score} \times 70\%) + (\text{Lowest price} / \text{Price of Offer Y} \times 30\%)$

ANNEX I

DECLARATION ON HONOUR

[To be completed and signed by the tenderer [the coordinator and each consortium member]]

The undersigned:

Name of the individual/company/ organisation:

Legal address:

Registration number/ID Card No.:

VAT number:

Declares on oath that the individual/company/organisation mentioned above is not in any of the situations mentioned below:

- 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 SJU 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 contracting authority or those of the country where the contract is to be performed;

I the undersigned understand that contracts may not be awarded if during the procurement procedure the individual/company/organisation mentioned above:

- is subject to a conflict of interest;
- is guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the contract procedure or fail to supply this information;

Full name:

Date & Signature:

ANNEX II

FACT SHEETS

founding members



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www.esf.eu

Fact sheet 1: The SESAR Programme

The SESAR Programme is one of the most important research and development projects ever launched by the European Union in the field of air traffic management (ATM). Its objective is to provide technological solutions in the area of the Air Traffic Management for the full and successful achievement of the Single European Sky legislation. While the Regulation 1070/2009 will provide a revised legal framework for a more efficient, performance driven, safer and greener procedures for the air traffic management, the SESAR Programme will deliver technological solutions, functionalities, systems and proposals for standards, which will be deployed in Europe.

The whole ATM Network R&D SESAR Programme activities will develop and deliver the necessary operational and technical materials (specifications, procedures, mock-ups, prototypes, validation reports, etc.) for the progressive industrialisation, deployment and operation of a new ATM system.

The SESAR Programme is composed of three phases:

- a) **The definition phase (2005-2008)**, whose aim was to define the roadmap for the achievement of ATM performance levels and to establish a high level work plan defining the content of the next generation of ATM systems, and identifying the necessary elements for its realisation. The consortium of the definition phase was composed of 30 organisations including the Air Navigation Service Providers, the industry and the airlines. The technological coordination was entrusted to Eurocontrol.

The definition phase of the SESAR Programme ended in May 2008. It resulted in 6 documents:

- i. D1: Air Transport Framework – the current situation;
- ii. D2: the ATM Performance Targets;
- iii. D3: the ATM Target Concept;
- iv. D4: the ATM Deployment Sequence;
- v. D5: the SESAR Master plan: this document is the core stone of the definition phase. It is a commonly agreed roadmap for the research activities and for the deployment of the SESAR's technological outputs
- vi. D6: the Work Programme for 2008-2013

Upon a proposal from the European Commission based on the SESAR Master plan, the Council of the EU endorsed the "European ATM Master plan" in its Decision of 30th of March 2009. On the same date the Council adopted a Resolution confirming that the modernisation of ATM and the proposed timelines for the achievement of this modernisation remain high political priority at the EU level.

As requested by the Council in its Resolution of 30th of March 2009, the European ATM Master plan will be updated in 2010, after appropriate consultation process including the Single European Sky Committee.

- b) **Development phase (2008-2013)**, which will develop the necessary elements on the basis of the Definition phase findings.

a. The financing of the development phase:

The estimated cost of the development phase amounts to 2.1 billion € and is financed through three channels combining public and private funds. The European Union, being the founding member together with Eurocontrol, has committed 700 million € from two different programmes to the Joint Undertaking. Half of this amount stems from the 7th Framework Programme for Research and Development of the European Community and another half from the multi-annual programme of the Trans-European Transport Network Programme. The industrial partners, selected in a competitive process, are also expected to commit 700 million €. Eurocontrol also contributes 700 million €.

b. The governance of the development phase and the current model of the private-public partnership

The Joint Undertaking has been established under Article 171 of the Treaty establishing the European Union.

The specific mandate of the SESAR Joint Undertaking is laid down in the Article 1 par. 5 of Regulation (EC) 219/2007, as amended by Regulation (EC) 1368/2008.

To resume, the mandate of the Joint Undertaking is defined as follows:

- a) Coordinating and concentrating all relevant ATM research of the development phase, in accordance with the ATM Master plan
- b) Ensuring the necessary funding of the development phase
- c) Ensuring the involvement of the stakeholders
- d) Organising the technical work; including the validation activities
- e) Ensuring the supervision of the activities related to the development of common products

Following the amendment of the basic regulation, the Joint Undertaking statutes changed from private entity to a Union body.

The management of the Development Phase of the SESAR Programme is entrusted to the SESAR Joint Undertaking, a Union body in charge of the coordinating and concentrating all relevant ATM research, as well as of the execution of the European ATM Master plan.

The executive decisions are taken by casting the votes at the Administrative Board, composed of the three founding members, the selected members, which carry out the work, and the airlines. Please consult the list of the members of the Administrative Board of the SESAR Joint Undertaking available at <http://www.sesarju.eu/about/board>

c. The operational activities of the Development Phase:

The new Concept of Operations of SESAR resulting from the definition phase aims at moving from today's airspace based trajectories to the time based operations of "4-D trajectories", where all the relevant stakeholders have access to the most up to date and precise information through the System Wide Information Management (SWIM).

The Work Programme of the SESAR Development Phase is divided into following thematic areas and Work Packages (WPs):

(1) Operational ATM research will be addressed under WPs:

- WP 4: En-route Operations
- WP 5: Terminal Management Areas (TMA) Operations
- WP 6: Airport Operations
- and WP 7: Networking Operations

(2) System research considerations are addressed under WPs:

- WP 9: Aircraft systems
- WP 10: En-Route & Approach ATC Systems
- WP 11: Flight Operations Centre System
- WP 12: Airport Systems
- WP 13: Network Information Management System
- and WP 15: Non Avionics Communication-Navigation-Surveillance (CNS) Systems

(3) System Wide Information Management (SWIM) considerations are addressed under WPs:

- WP 8: Information Management
- WP and 14: SWIM Technical Architecture

(4) Transversal activities: such as validation infrastructure, development of safety, security, environment and human performance cases, maintenance and updates of the ATM Master Plan, of the Target Concept and its Architecture, are dealt by a number of additional WPs, which are B, C, 3, 16. It is expected that transversal WPs will contribute to maximising benefits of operational and system Work Packages.

The SESAR Programme is composed of almost 300 research projects or transversal activities.

The Work Breakdown Structure is presented below:

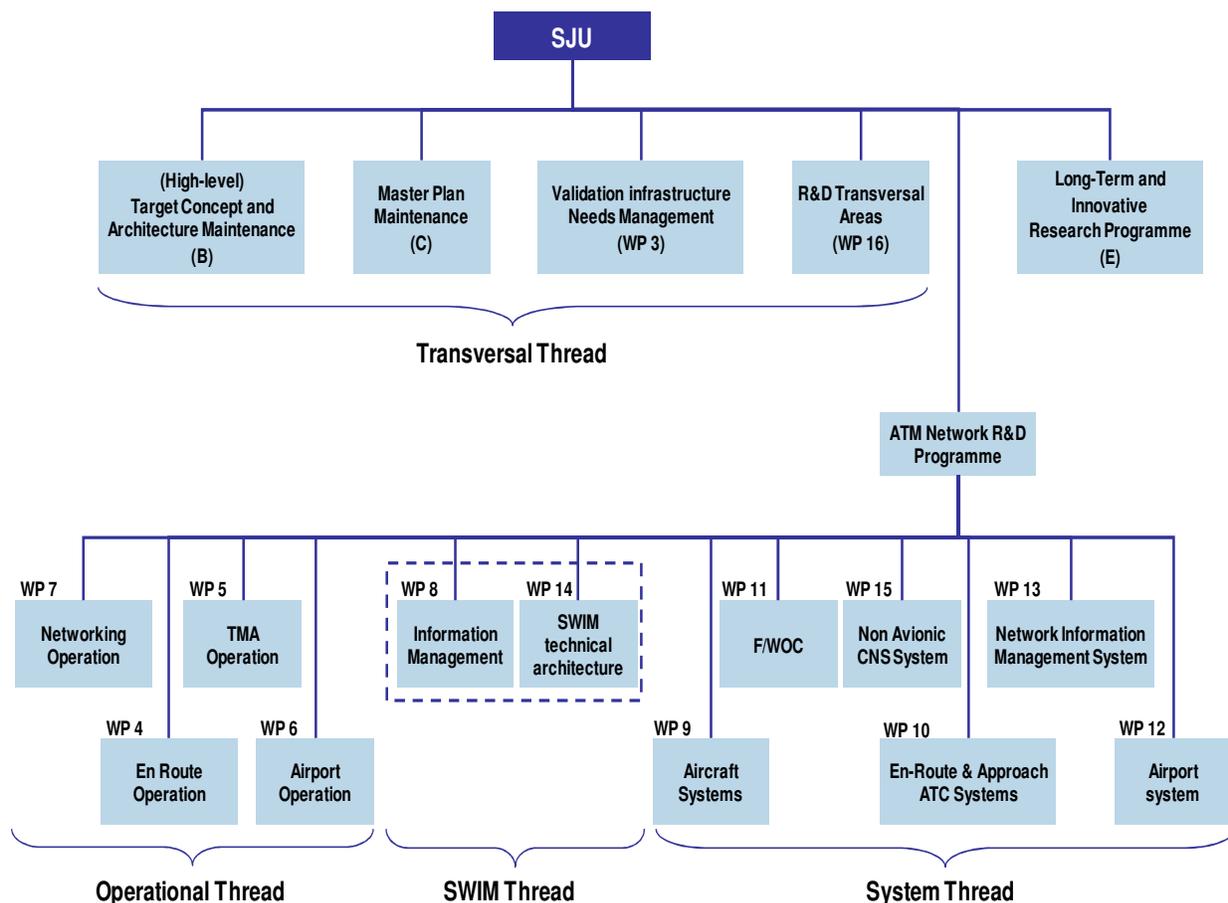


Figure: Work Breakdown Structure high-level overview

Detailed description of the Work Packages can be obtained via the SESAR JU webpage under the following link:

http://www.sesarju.eu/public/standard_page/wp.html

Detailed Technical Description of Work can be obtained via the SESAR JU webpage under the following link:

http://www.sesarju.eu/public/standard_page/library_list.html

Deployment phase (2013-2020), through which there will be large scale production and implementation of the new air traffic management infrastructure, composed of fully harmonised and interoperable components which guarantee high performance air transport activities in Europe.

Fact sheet 2: Single Sky legislation

1 History and background

Air traffic management (known under the English acronym: **ATM** – Air Traffic Management) constitutes, together with airports, **the infrastructure** of air transport. Using an image of railway transport, we may say that air traffic management provides with the "rails, markings and beacons" for airplanes together with the equipment intended to ensure traffic surveillance and flight expedite flows.

Historically traffic control mission has been ensured by national civil administrations. These administrations were therefore in charge of regulating and monitoring air carriers, airports and air traffic management.

The creation of the internal market and the liberalisation of the air transport sector have led to the reorganisation of it. However, in the ATM area such a trend has prompted the establishment of specific entities gathering air navigation service providers in the vast majority of the Member States.

Air traffic management technology is in many ways **obsolete** today. Means of communications between pilot and traffic controller are carried out through a technology that dates from the 50s (NavAids and Radio Telecoms); radars, treatment of flight plans etc. date from the 70s. The level of automation is still low which keeps air traffic controllers **productivity** at a very low level (on average 0.7 aircrafts per hour are controlled by a single controller). An aircraft stays in general between 3-5 minutes in a given sector of airspace controlled by the controller, which requires a lot of coordination. To date, an increase of traffic has automatically led to a proportional increase in traffic controllers. This shows the need to speed up **technological innovation** and new ways of operational organisation.

The **Community legislation "Single European Sky I"** (adopted in March 2004) has provided several positive elements to the European ATM system:

- a. The establishment of an institutional and legal framework for Community action, within which a partnership with stakeholders has been put in place.
- b. The separation between service provision and regulation tasks, the harmonisation of the regime for licensing of traffic controllers, the transposition of the "Eurocontrol Safety Regulatory Requirements (ESARRs)" into the EU ATM body of law.
- c. More efficiency in the airspace utilisation through its flexible utilisation and coordination between the civil and military.
- d. A transparent and common system of "en route" charges.
- e. The acceleration of innovation, interoperability of equipments³ with notably the implementation of the Single European Sky technological pillar: the SESAR programme.

³ Important to note that each State had in the past Developer its technology in an isolated manner

2 The Single European Sky second package – SES II

The second legislative package (Regulation EC 1070/2009) of the Single European Sky has been adopted in October 2009 by the European Parliament and the Council and entered into force on 4th December 2009. Its implementation is now the crucial issue.

The second legislative package has three pillars: (1) a legislative framework for the performance in the areas of safety, environment, capacity and flight efficiency; (2) a reinforcement of the network management; and (3) the integration of air navigation services in functional airspace blocks (FABs).

- 1) **Performance regulatory framework:** as ATM is a monopoly, a regulatory system is necessary the establishment of performance plans in support of the airspace users needs. Through a **performance** assessment body (Performance Review Body), **the Commission will act as an economic regulator and will adopt targets** for the European network, while national supervisory authorities will propose national or FAB targets, after consultation with the airspace users and the service providers. In addition the Commission will ensure the compatibility and coherence between the local and network targets. The new system will put in place financial incentives for the purpose.
- 2) **Network management:** the ATM sector provides the infrastructure for aviation, but the latter is increasingly under pressure: the smallest incident in any link of the chain will impact the whole network. The Commission shall have to designate an European ATM network manager which shall be requested to:
 - ensure that routes and airspace are managed from a true European perspective in order to have for airlines shorter routes;
 - synchronise the deployment of the SESAR infrastructure in the Member States;
 - coordinate the management of the radio spectrum allocated to aviation;
 - ensure that traffic problems are tackled from a “gate to gate” perspective.
- 3) **Integration into Functional Airspace Blocks (FABs):** the deadline of 2012 has been retained for the effective implementation of the 9 regional ongoing initiatives. The FABs initiatives are bottom- up initiatives, depending on the will and strategy of cooperation of the Air Navigation service providers and the National Supervisory authorities of the States and aim at increasing the cost-effectiveness of the service provision in Europe and delivering operational benefits (such as for example: improving the capacity in the airspace block, improving the routes structure, providing common procurement strategy and training).

The efficiency of the Single Sky implementation depends as well on the progress made in other areas: safety, technology and airport capacity. For this reason, the new Single Sky legislative measures are integrated into an "**aviation package**". Together with the abovementioned elements, other crucial aspects are: (1) the extension of competences of the European Air Safety Agency (EASA); (2) the SESAR programme deployment; and (3) the Action Plan for the improvement of the airport capacity and safety efficiency.

The intergovernmental organisation **Eurocontrol** could be designated as the technical agency in support of the Single European Sky if it does comply with the EU requirements such as separation between regulatory and service provision related activities.

3 Key Data

- Air carriers finance air navigation services through two type of tariffs called 'en route' and 'terminal' (approaching the airports), calculated according to the aircraft volume. A charge is levied for each flight performed in the airspace falling within the competence of the States. This charge takes into account the distance flown and, less than proportionately, the aircraft weight. This way the air carriers pay on a yearly basis 6 billion € for "en route" services and € 2 billions for "terminal" services, therefore **8 billion** € in total.
- The ATM sector employs 37.000 people, out of which approximately 15.000 controllers. The traffic is about **10 million flights** in 2007, with peaks of 50.000 daily, and it is managed through more than 60 air control centres in the EU. This fragmentation of service provision causes an additional cost that has evaluated around € 3 billion. In comparison the United States manage twice the traffic than in Europe with only 20 air control centres with a similar ATM cost.
- Civil aviation is safe transportation mode. However **3 accidents linked to ATM** happened since 2000 in Milan-Linate, Paris-CDG and Überlingen ("en route" collision).
- The impact of civil aviation on **environment** has been evaluated as approximately **3%** of the total CO2 emissions. Increased flight efficiency through the rationalisation of air navigation service provision may improve the environmental efficiency per flight by a range of between 6 à 12%.

ANNEX III

Background documents to be consulted and understood before submitting the offers

- 1. Air transport key facts:**
 - a. http://ec.europa.eu/transport/air/doc/03_2009_facts_figures.pdf

- 2. SESAR Programme and SESAR Joint Undertaking:**
 - a. Council Regulation (EC) 219/2007, amended by the Council Regulation (EC) 1368/2009
 - b. SESAR concept of Operations (D3 of the definition phase)
http://www.sesarju.eu/sites/default/files/documents/reports/DLM-0612-001-02-00_0.pdf
 - c. European ATM Master plan, as endorsed by the Council on 30th of March 2009:
http://www.sesarju.eu/sites/default/files/documents/reports/European_ATM_Master_Plan.pdf
 - d. SESAR Activity Report 2007-2008
http://www.sesarju.eu/sites/default/files/documents/reports/SesarJU_AnnualReport07-08.pdf

- 3. Structure of the SESAR's public-private partnership:**
 - a. Regulation (EC) 219/2007 amended by Regulation (EC) 1368/2008;
 - b. the list of the Administrative Board Members at:
<http://www.sesarju.eu/about/board>

- 4. Single European Sky legislation:**
 - a. The four basic regulations 549/2004, 550/2004, 551/2004, 552/2004, as amended by the Regulation (EC) 1070/2009 entered into force on 4th of December 2009, in particular:
 - i. Objectives of the Single European Sky
 - ii. Provision on the common projects
 - iii. Interoperability Regulation

- 5. Performance Review Report prepared by the Performance Review Unit of Eurocontrol**
http://www.eurocontrol.int/prc/gallery/content/public/Docs/PRR_2009.pdf

- 6. The Air Traffic Management ATM Cost Effectiveness Report, 2008 Benchmarking Report prepared by the Performance Review Unit with the ACE working group, June 2010**
http://www.eurocontrol.int/prc/gallery/content/public/Docs/ace2008/ACE_2008_Benchmarking_Report.pdf

ANNEX IV

Glossary

- ▶ *Air navigation service providers (ANSPs)*: means any public or private entity providing air navigation services for general air traffic;
- ▶ *Air Navigation services (ANS)*: means air traffic services; communication, navigation and surveillance services; meteorological services for air navigation; and aeronautical information services
- ▶ *SESAR Master Plan and the European ATM Master plan (ATM Master Plan)*: means the key deliverable of the Definition phase of the SESAR programme, which is a roadmap for the development and deployment of the new ATM system in Europe. The SESAR Master plan is build on different levels of maturity of different functionalities from the least advanced to wards more advanced (from service levels 0 to 5) and structured into three Implementation Packages IP1, IP 2 and IP 3.

The Council of the European Union endorsed the SESAR Master plan in its Decision of 30th of March 2009, which became a politically agreed common roadmap for the implementation of SESAR and since then is referred to as the European ATM Master plan.

- ▶ *Functional Airspace Blocks (FABs) (Please refer to Article 9 bis of the Regulation (EC) 1070/2009)*: means an airspace block based on operational requirements and established regardless of State boundaries, where the provision of air navigation services and related functions are performance-driven and optimized with a view to introducing, in each functional airspace block, enhanced cooperation among air navigation service providers or, where appropriate, an integrated provider. The FABs initiatives are bottom up initiatives led by the States and their scope of actions varies. Most of them are at the stage of pre-implementation and feasibility assessments, exploring different cooperation options and analyzing costs and benefits.

Currently there are 9 initiatives listed below: (1) the Baltic FAB, (2) the Danube FAB, (3) the Blue Med FAB, (4) the South-West (Spain Portugal), (5) the FABEC (Europe Centrale), (6) the FAB CE (Central Europe), (7) the FAB UK-Ireland, (8) NEFAB, (9) NUAC –please note that FABs 8 and 9 are negotiating a possible cooperation scenarios.

Further reading, composition and the assessment of the FABs can be obtained via the reports of the Performance Review Commission of Eurocontrol. The Regulation (EC) 1070/21009 sets the deadline for the implementation of the FABs by December 2012.

- ▶ *General Air Traffic (GAT)*: means general air traffic means all movements of civil aircraft, as well as all movements of State aircraft (including military, customs and police aircraft) when these movements are carried out in conformity with the procedures of the ICAO;
- ▶ *ICAO*: means the International Civil Aviation Organisation, as established by the 1944 Chicago Convention on International Civil Aviation;

- ▶ Implementation Package I: The Implementation Package I containing the basic functionalities of the SESAR system, sets the baseline for the future deployment of more advanced functionalities, which are however required and necessary for the future achievement of the full paradigm shift towards the 4D trajectories and time based operations. The Single Sky Committee agreed the European Commission to draft the mandates to develop the first set of seven Implementing Rules and 10 Union specifications in December 2009.

The IP I functionalities and technologies are those which do not require any further research efforts as they have been validated, and are available to be deployed among the stakeholders. This means that as soon as the Implementing Rules have been developed, and voted in the Single Sky committee, they must be deployed among the stakeholders by the given date.

- ▶ Implementation Package II (corresponding to the service levels 2 and 3 of the European ATM Master plan), is composed of ATM elements which need further research and development and which can be proposed for standardisation and implementation in the timeframe 2014.
- ▶ Implementation Package III (corresponding to the service levels 4 and 5 of the European ATM Master plan) is composed of the most advanced elements of the SESAR's Concept of Operations allowing the full transition to the 4 D trajectory management and time based aircraft operations, whose deployment reaches the timeline beyond 2020.
- ▶ The Implementing Rules (IRs): are technical specifications, including binding implementation deadlines, which are formally, adopted through the Comitology procedure including the vote at the Single Sky committee. They are directly binding on the Member States and stakeholders concerned.
- ▶ Operational Air Traffic (OAT): The needs of military aviation and ATM support often reach beyond the scope of civil aviation and are therefore not sufficiently covered by ICAO provisions for General Air Traffic (GAT). The military therefore require Operational Air Traffic (OAT) to provide regulatory provisions and ATM arrangements for successful military training and mission accomplishment. This, however, is implemented on a national basis. Since Single European Sky legislation will harmonise airspace design and arrangements for airspace use at European level, namely with the creation of functional Airspace Blocks (FABs), the European military community must overcome this national fragmentation to be interoperable with the future EATMN.
- ▶ SESAR Joint Undertaking (SJU): The SESAR Joint Undertaking has been established by the Regulation (EC) 219/2007 under the Belgian law as an entity which is in charge of the management the development phase of the SESAR Programme. Since 1.1.2009 the SJU is formally recognised as an EU body, following the amendment of the Council Regulation⁴ establishing the SJU. Purpose of the amendment was to align the SJU's statute to those of the Joint Technology Initiatives in the 7th Framework Programme for research and technological development (2007-2013)⁵. The amending Regulation (EC) 1361/2008 was adopted on 16.12.2008.

⁴ Regulation (EC)219/2007 of 27.02.2007

⁵ Clean Sky, IMI, ENIAC, Hydrogen Fuel Cells, ARTEMIS

The amended SJU Regulation formally fixes the EU contribution to the SJU at 700 million € (350 million EUR from FP7 and 350 million EUR from TEN-T). Eurocontrol, second founding member contributes 700 million € to the Programme, mostly through the in kind contributions. The remaining 700 million € are granted by the industrial members, who have been selected following a two- steps selection process. After the initial call for expression of interests 15 core members have been selected on the grounds of their technical expertise and of their financial soundness. The second step consisted of selecting the best offers for the parts of the Technical Work Programme of the SESAR Joint Undertaking.

The SJU concluded the first round of accession of 15 “core” members with the signing of the individual membership agreements on 12.06.2009. On the same date Eurocontrol concluded a specific agreement with the SJU as a founding member, defining its role and contribution to the SJU.

Immediately after the accession of the new members in July 2009, the SJU kicked off the research and development activities selected through the first invitation to submit offers. Not all the work packages were covered by this invitation and not all the projects were awarded after the evaluation. In July the SJU launched a second invitation for offers for the remaining 4 work packages and non-allocated projects from the first invitation.

- ▶ Users: means all aircraft operated as general air traffic.

ANNEX V

Acronyms and terminology

ADS-B	Automatic dependent surveillance-broadcast
ANS	Air Navigation services
ANSP	Air navigation service provider
ASAS	Aircraft Separation Assurance System
ATM	Air Traffic Management
ATM Master Plan	SESAR Master plan and the European ATM Master plan
BT	Business Trajectory
CNS	Communication, Navigation and Surveillance
CPDLC	Controller Pilot Data Link Communications
DAPs	Downlink Aircraft Parameter(s)
EC	European Commission
ECAC	European Civil Aviation Conference
EHS	Mode S Enhanced Surveillance
E-OCVM	EUROCONTROL Operational Concept Validation methodology
EU	European Union
FAB	Functional Airspace Block
FABs	Functional Airspace Blocks
FOC	Full Operational Capability
GAT	General Air Traffic
GNSS	Global Navigation Satellite Systems
ICAO	International Civil Aviation Organisation
INS	Inertial Navigation System
IOC	Initial Operational Capability

IP	Implementation Package
IR	Implementing Rule
MMS	Mission Management System
MT	Mission Trajectory
OAT	Operational Air Traffic
OIs	Operational Improvements
P-NAV	Precision Area Navigation
RNAV	Area Navigation
R-NAV	Area Navigation
RNP	Required Navigation Performance
RVSM	Reduced Vertical Separation Minima or Minimum
SATCOM	Satellite Communication
SBAS	Satellite-Based Augmentation System
SEMP	SESAR Engineering Management Plan
SES	Single European Sky
SESAR	Single European Sky ATM Research Programme
SJU	SESAR Joint Undertaking (European Union body under Council Regulation (EC) No 219/2007 as amended by Council Regulation (EC) No 1361/2008)
SJU	SESAR Joint Undertaking
SWIM	System Wide Information Management
TMA	Terminal Control Area
TS	Technical Specifications
UAS	Unnamed Aircraft System
WP	Working Package