

# THE MILITARY KEY PARTNER IN THE SINGLE EUROPEAN SKY

#EuropeForAviation



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# FACTS & FIGURES

## SES / SESAR PROJECTS IMPLEMENTED BY MILITARY STAKEHOLDERS

Airspace is a shared and scarce resource, vital to the security and prosperity of Europe. Over the last six years, EDA assisted Member States in obtaining EU co-funding to upgrade and modernise the Air Traffic Management system and increase civil-military interoperability in Europe.



**213 M€**  
**PLANNED MILITARY  
INVESTMENT**



**6**  
**EDA MEMBER  
STATES**



**93 M€\***  
**INEA  
CO-FUNDING**



**29\***  
**IMPLEMENTING  
PROJECTS**



### FRANCE

- › Advanced Controller Tool
- › Civil-Military Secure Interface
- › Upgrade of Military Control Centre
- › SWIM Governance (multi-stakeholder project)
- › Gateway Upgrade for 4Flight compliance
- › SWIM Common PKI (multi-stakeholder project)

**20.5 M€**



### NAPMA

- › Avionics Upgrade - E3 AWACS

**17.3 M€**



### NETHERLANDS

- › Civil/Military Enroute Collocation

**5 M€**



### BELGIUM

- › Civil/Military Enroute Collocation

**5.5 M€**



### PORTUGAL

- › Aeronautical Data Exchange
- › Avionics Upgrade - C130H (2 projects)
- › Avionics Upgrade - Falcon 50
- › SWIM Backbone Infrastructure

**15.1 M€**



### ITALY

- › SWIM Backbone Infrastructure
- › i4D interface
- › LARA enhancement implementation
- › Automatic Tactical Controller Tool implementation
- › AERONET/ENET2 Interoperability
- › Italian Air Force Integrated Briefing

**5.6 M€**



### SPAIN

- › Navigation Procedure Design
- › Navigation Procedure Implementation
- › Advanced Flexible Use of Airspace Tools
- › Avionics Upgrade - Falcon 900 (2 projects)
- › Avionics Upgrade - A310
- › SWIM Common PKI (multi-stakeholder project)

**5 M€**

\* Total INEA co-funding and implementation projects include UK participation in SESAR projects (3 projects | 19.1ME in funding). Since 1 February 2020 the UK is no longer a Member State of EDA.



# ONE SKY FOR ALL

The military has multiple roles as air navigation service provider, airspace user, airport operator and regulator under state responsibility – not only in times of crisis, but every day. The implications of the Single European Sky (SES) initiative and its technological pillar, the Single European Sky Air Traffic Management Research (SESAR) programme for the military are considerable.

## MEMBER STATES HAVE ENTRUSTED THE EUROPEAN DEFENCE AGENCY (EDA) TO:

- › Connect the military with each other and with the European institutions;
- › Develop ways to engage Europe's military in the SES initiative;
- › Assist Member States in accessing EU funding for technological initiatives from the SESAR programme.



**MILITARY AIR TRAFFIC  
CONTROLLERS AND  
AIRPORTS OPERATE  
365 DAYS  
OF THE YEAR**



**MORE THAN  
11,000 MILITARY  
AIRCRAFT ARE  
STATIONED  
IN EUROPE**



**STATE AIR FORCES  
ARE THE BIGGEST  
FLEET OPERATORS  
AND AIRPORT  
OWNERS IN EUROPE**



# THE MILITARY AND THE SINGLE EUROPEAN SKY

## SINGLE EUROPEAN SKY

The SES initiative was launched in 2000 on the basis of the EU's objective to reform Air Traffic Management (ATM) in Europe in order to deal with continued air traffic growth and to ensure that aviation operates in a safe, cost-efficient and environmentally friendly way.

EDA has been given a key role to facilitate the coordination of military views regarding SES-related issues and to act as the military interface with the EU institutions. The goal of EDA is to ensure that the Member States' interests related to security and defence are given full consideration, while maintaining the right level of interoperability between civil and military systems.

EDA has been supporting Member States in SES and SESAR since 2010, working closely with all relevant EU bodies.

## SINGLE EUROPEAN SKY ATM RESEARCH (SESAR)

SESAR is the EU's ATM infrastructure modernisation project which will develop and deploy the new generation air traffic management system capable of ensuring the safety and flexibility of air transport.

The main objective of SESAR is to coordinate ATM research and development in the EU and to help establish a new generation of ATM infrastructure.

In the current deployment phase, the concepts and technologies developed through the SESAR Joint Undertaking are introduced into operation across Europe. The SESAR 2020 Research and Innovation Programme is demonstrating the viability of the technological and operational solutions previously (2008-2016) developed in larger and more operationally-integrated environments.





## HOW DOES SES/SESAR AFFECT THE MILITARY?

Aviation is a strong driver of economic growth, jobs, trade and mobility, but also a key asset to enable the military to ensure security and defence, as mandated by national laws and international agreements. A modernised aviation/ATM system accommodating military needs will contribute to improve security and defence in Europe.

This is of the utmost importance as, even though civil and military objectives may differ, both live in the same world, share the same airspace and are therefore subject to the same upheavals. Safety and security are shared objectives and responsibilities.

Considerable progress has been achieved over the past years regarding cooperation between civil and military stakeholders. Today, the defence community is seen as a key and trusted partner for the successful implementation of the Single European Sky.

The SESAR project is committed to shaping the future towards a performance-driven European sky. Although the SES regulations do not apply to military operations and training, the military can be directly or indirectly affected due to regulatory constraints related to flexible use of airspace and data sharing, and technical implementing rules such as performance-based navigation. Such constraints potentially lead to some limitations in terms of access to airspace or confidentiality might negatively impact military air mobility. It is therefore key that SES answers both civil and military needs, in bringing the procedures and the performance of ground and airborne systems used for ATM purposes up to SESAR standards.

The deployment phase of SESAR as well as the military mobility envelope and the European Defence Fund (EDF) also offers opportunities for the military, for example to obtain EU co-funding to enhance their ATM technology for the benefit of both civil and military aviations.



# A MILITARY AVIATION STRATEGY

The EDA SES Military Aviation Board (ESMAB) was created in 2015 to be the framework for coordination with Member States and relevant international organisations. Its objective is to agree on military priorities for upcoming milestones for the Single European Sky, in the wider context of military aviation, and to ensure necessary national involvement at the appropriate decision-making level. The EDA Steering Board adopted in 2017 a Military Aviation Strategy in the context of SES, which reflects shared high-level principles on military aviation.

The strategic vision is that European aviation will incorporate the areas of security and defence, at a level that will ensure that both manned and unmanned military aviation will continue to provide, and further improve, effective security and defence in Europe in the changing context of Single European Sky and other future developments in the civil rulemaking and oversight processes.

The strategy includes key principles related to safety, civil-military coordination and cooperation across the military community, as well as strategic objectives on security and defence, access to airspace and use of air navigation services, confidentiality, cyber security and interoperability.

Its development was facilitated by EDA, in close coordination with Member States, together with the EU Military Staff, the EU Military Committee and NATO. Its implementation will ensure that the military are recognised as credible and reliable partners in SES and SESAR but moreover, it will enable to preserve a safe, secure and efficient SES for the benefit of all relevant stakeholders.



# FUNDING OPPORTUNITIES FOR THE MILITARY

In the current phase of SESAR, EDA is supporting Member States in identifying military projects and in preparing bids to obtain EU co-funding. So far planned investment by military stakeholders in relation to SES/SESAR has amounted 213 M€ and they have received 93 M€ of EU co-funding for the implementation of 29 projects\*, as depicted on page 3. In total, the military obtained 4% of the EU funds allocated to SESAR deployment while the overall cost for military aviation has been estimated at 20% of the total investment costs which are associated with the full deployment of SESAR, as detailed in the SESAR ATM Master Plan. This might represent 11 billion € over the period 2012-2050, of which around 9 billion € is invested by 2035.

EDA continues to support Member States in developing bids concerning military projects for the potential future EU CEF\*\* Transport calls. Moreover, EDA is exploring the potential use of other EU funding mechanisms for SESAR related collaborative military projects and developing its cooperation with the European Investment Bank (EIB). Further information regarding INEA and other potential funding opportunities, including the European Defence Fund (EDF) and military mobility envelope, can be found on EDA's website.

In addition, EDA also supports Member States by developing the Capability Development Plan (CDP) which is the 'driver' and the 'overall strategic tool' for future EU capability needs. The CDP is a tool to assist Member States in their national defence planning and programmes and, therefore, is an important element in a comprehensive capability development process. Among the 11 EU capability development priorities agreed in 2018, the one on the "integration of military air capabilities in a changing aviation sector" is directly linked to the implementation of Single European Sky and its implications on military aviation. It addresses military access to the airspace (for manned and unmanned military platforms), the ability to protect confidentiality of mission critical information, the ability to ensure an appropriate level of interoperability and coordination with civilian aviation structures and the adaptation of military air/space command and control capability. The CDP is the key tool to set up future collaborative research, innovation, implementation and acquisition projects. Grant opportunities include the European Defence Fund (EDF) and the Military Mobility envelope. Besides, EDA developed together with the EIB a new Cooperative Financial Mechanism (CFM), whose purpose is to ease the financing of European defence cooperation projects, especially for the launching phase, which is sometimes impeded because of issues of synchronisation between the budget processes of Member States.

\* Total INEA co-funding and implementation projects include UK participation in SESAR projects (3 projects | 19.1ME in funding). Since 1 February 2020 the UK is no longer a Member State of EDA.

\*\* CEF = Connecting Europe Facility.

# EDA PRIORITIES FOR SES AND SESAR

- › Ensuring participating Member States (pMS) early awareness of SES-related activities;
- › Supporting European armed forces in implementing the Military Aviation Strategy in a SES context;
- › Ensuring an appropriate military involvement from the outset in relevant SES-related activities;
- › Obtaining EU co-funding for military projects;
- › Further developing cooperation with key civil and military stakeholders.



# COOPERATION WITH KEY STAKEHOLDERS

EDA cooperates with several other entities in order to progress and influence SES and SESAR:

- › **The European Commission, notably the Directorate-General for Mobility and Transport (DG MOVE)** – In order to be involved from the outset in SES-related legislative initiatives, EDA supports the military in the preparation of the related meetings and has an observer status within the Single Sky Committee, the EASA Committee and related Expert Groups in which EDA is also participating.
- › **SESAR Joint Undertaking (SJU)** – A Memorandum of Cooperation between EDA and SJU sets the framework for collaboration on SESAR 2020. This ensures that, pursuant to EDA's role, military views will be taken into consideration in the context of Single European Sky ATM Research and Development. The overall objective is to accommodate technical solutions developed in the framework of SESAR related to military equipment programmes.
- › **SESAR Deployment Manager (SDM)** – EDA and SDM work closely together on the basis of a renewed Memorandum of Understanding in order to take military considerations into account for the successful deployment of SESAR and to assist the military in accessing EU funding.
- › **European Aviation Safety Agency (EASA)** – Based on a Cooperation Arrangement dated from 2013 and a bi-annual Work Programme concluded for the first time at end of 2019, EDA and EASA are developing their cooperation to ensure early awareness for the military regarding forthcoming regulations and to address subjects of common interest such as RPAS air traffic insertion and cyber security in aviation.
- › **EUROCONTROL** – EDA and EUROCONTROL have a joint work programme updated every two years developing their partnership on research, standardisation and deployment activities. EUROCONTROL's technical ATM expertise is provided to EDA in support of its role to facilitate the coordination of military views and to act as an interface with EU institutions.
- › **NATO** – EDA and NATO have an effective staff-to-staff coordination process, which has been given additional impetus through the common set of proposals for the implementation of the EU-NATO Joint Declaration which allows closer cooperation between NATO and EU/EDA experts on military aviation in general and SES/SESAR in particular.
- › **EUROCAE** – EDA is participating in certain working groups to influence EUROCAE and European Standardisation Organisations through effective military involvement.
- › **NEASCOG** – EDA enhanced its cooperation with the NATO EUROCONTROL ATM Security Coordination Group based on a longstanding relationship. The works carried out by the NEASCOG aim to address ATM security challenges in a civil – military context considering current and future developments and technological advances, including those emerging from SES/SESAR.





# KEY TECHNOLOGICAL PRIORITIES FOR THE MILITARY IN SESAR

## EUROPEAN AIR TRAFFIC MANAGEMENT MASTER PLAN

Within the Single European Sky initiative, the European ATM Master Plan is the main "non-binding" planning tool driving the modernisation of the Air Traffic Management system and connecting SESAR Research & Development (R&D) with deployment. It is the key tool for SESAR, providing the basis for timely, coordinated and efficient R&D and deployment of new technologies and procedures.

The SJU is entrusted as the owner and the executor of the ATM Master Plan. The ATM Master Plan 2020 edition includes results of the Airspace Architecture Study which proposes an evolution of the European airspace architecture that leverages modern technologies. EDA has played an active role by coordinating the military views of Member States, with EUROCONTROL and NATO, and providing relevant input into the different technical and policy groups.

## REMOTELY PILOTED AIRCRAFT SYSTEMS

RPAS are becoming important assets in military operations. Enabling their operations and training in non-segregated airspace over European territory remains a key objective of EDA.

An RPAS Regulatory Framework Working Group was established in EDA in 2014 to develop a harmonised set of airworthiness requirements, so that military RPAS can be fully integrated into the future European aviation system. EDA's intention is to have common military airworthiness and certification requirements for military RPAS by 2025.

EDA, on behalf of its Member States, has a major role in the development of the required enabling technologies in the domain of RPAS Air Traffic Integration. The Agency has managed several R&D projects in this area: Remote Pilot Stations Standardisation, Detect & Avoid Standardisation (a pilot project in the framework

of the Preparatory Action on Defence Research) and SATCOM Command and Control links. Furthermore, the Agency is supporting Member States regarding other important R&D initiatives on "detect and avoid", and RPAS automation.

In 2016, the European Commission, EDA, EASA and SESAR Joint Undertaking signed an agreement to establish a technical coordination mechanism to align the research activities for air traffic insertion of certified drones with the European ATM Master Plan. The coordination mechanism ensures that all stakeholders, including the military are involved in the integration of certified RPAS in non-segregated areas in a safe, secured and cost-efficient manner. The aim is to integrate large/certified RPAS in non-segregated airspace by 2025.

An Industry Exchange platform on RPAS ATI was settled in 2017 to promote an information exchange on current R&D initiatives and strategies between Member States, EDA and industry.

In order to enable the seamless integration of RPAS alongside manned aviation, an initial phase of "RPAS Accommodation", in which RPAS operate with limited restrictions, has been identified as a key stepping stone ("quick wins" in the 2020-2025 timeframe). In this context, EDA is currently validating an initial "accommodation" study which has previously defined scenarios and corresponding safety cases for MALE-type RPAS. The validation/demonstration flight campaign using MALE-type RPAS will take place in 2020 and will include cross-border operations.

In 2018, the EASA Executive Director and the EDA Chief Executive decided to launch a joint task force to produce "Guidelines for the accommodation of Military IFR RPAS under GAT Airspace classes A-C". This Task Force included experts from the SESAR Joint Undertaking, EUROCONTROL, military representatives from EDA participating Member States and European industry through the Aerospace and Defence Industries association of Europe. The EASA/EDA Guidelines which were published in November 2019 are available on the EDA website.



## STANDARDISATION

As a critical enabler for cooperation in Europe, European defence standardisation is an integral element for any defence project, notably in view of translating results from Research & Technology and/or cooperative programmes into standards.

Based on the Rolling Development Plan produced within the European ATM Standardisations Coordination Group (EASCG), the European UAS Standardisation Coordination Group (EUSCG) and the European Cyber Standardisation Coordination Group (ECSCG), EDA is building a list of best practices and standards (military and civil) in the areas of Air Traffic Management and RPAS to be inserted in the European Defence Standard Reference System.

## CYBER

EDA supports Member States to help improve cyber security in the air domain. Advances and increased adoption of Information Technology is seen as a key enabler for the overall improvement of the aviation system (digitalisation). These developments, emerging in part also out of the SES initiative, may for the time being primarily consider civil aviation; however, they also have a significant impact on military aviation and vital civil – military coordination. In addition, new

generations of manned and unmanned platforms, the increased reliance on satellite based PNT (Position, Navigation and Timing) aids, the modernisation of the CNS (Communication, Navigation and Surveillance) infrastructures and the exploitation of sensor fusion capabilities that rely on multiple data sources to create a degree of situational awareness not seen before, must be appropriately considered to ensure the highest possible degree of cyber resilience.

To support Member States, EDA developed an ambitious work programme through "The Military Aviation Cyber Engagement plan" which aims to follow a holistic approach in cyber security. In 2018, EDA organised the Aviation Cyber Security Seminar that provided civil and military stakeholders with a broad overview of current and future cyber security challenges.

Information Sharing, Education, Training and Exercise, Regulatory and standardisation activities were amongst the identified priorities for further engagement. EDA, in collaboration with EUROCONTROL in 2019 organised two follow-up workshops addressing civil – military Air Traffic Management Information Sharing and Education, Training and Exercise.

Based on the findings, EDA, together with other organisations on the EU and international level, will further address the topics identified, to provide Member States with the best support possible.

# TOWARDS A 'TOTAL SYSTEM APPROACH TO MILITARY AVIATION' (TSAMA)

Based on inputs following consultation with Member States, the EDA Steering Board on 28 February 2018 agreed to the progressive introduction of a 'Total System Approach to Military Aviation' (TSAMA) through two pilot cases (transport aircraft and large/certified RPAS). With the support of participating Member States and external parties like the European Air Transport Command and the Multi Role Transport

Tanker Implementation Team, EDA initiated work on these two pilot cases. The aim is to harmonise safety requirements in some aviation domains such as Initial Airworthiness, Continuing Airworthiness, ATM/Airports, Licensing and Operations for large/certified RPAS and in Military Air Transport Operations for the transport fleet.



# ARMED FORCES: THE BIGGEST AIRLINE IN THE EU



**2629 (45 TYPES)**  
HELICOPTERS



**1127 (63 TYPES)**  
LIGHT AIRCRAFT



**376 (33 TYPES)**  
LARGE AIRCRAFT



**1932 (23 TYPES)**  
COMBAT AIRCRAFT



**186**  
MILITARY AIRBASES



**400**  
UNMANNED AIRCRAFT  
SYSTEMS



**63**  
AIR DEFENCE SYSTEMS  
AND MILITARY AREA  
CONTROL CENTERS



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