



THE MILITARY IN THE SINGLE EUROPEAN SKY

**PARTNERING FOR EXCELLENCE
IN GLOBAL AVIATION**



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 two years, the EDA assisted Member States to obtain EU co-funding to upgrade and modernise the Air Traffic Management system and increase civil-military interoperability in Europe.



203 M€
PLANNED MILITARY INVESTMENT



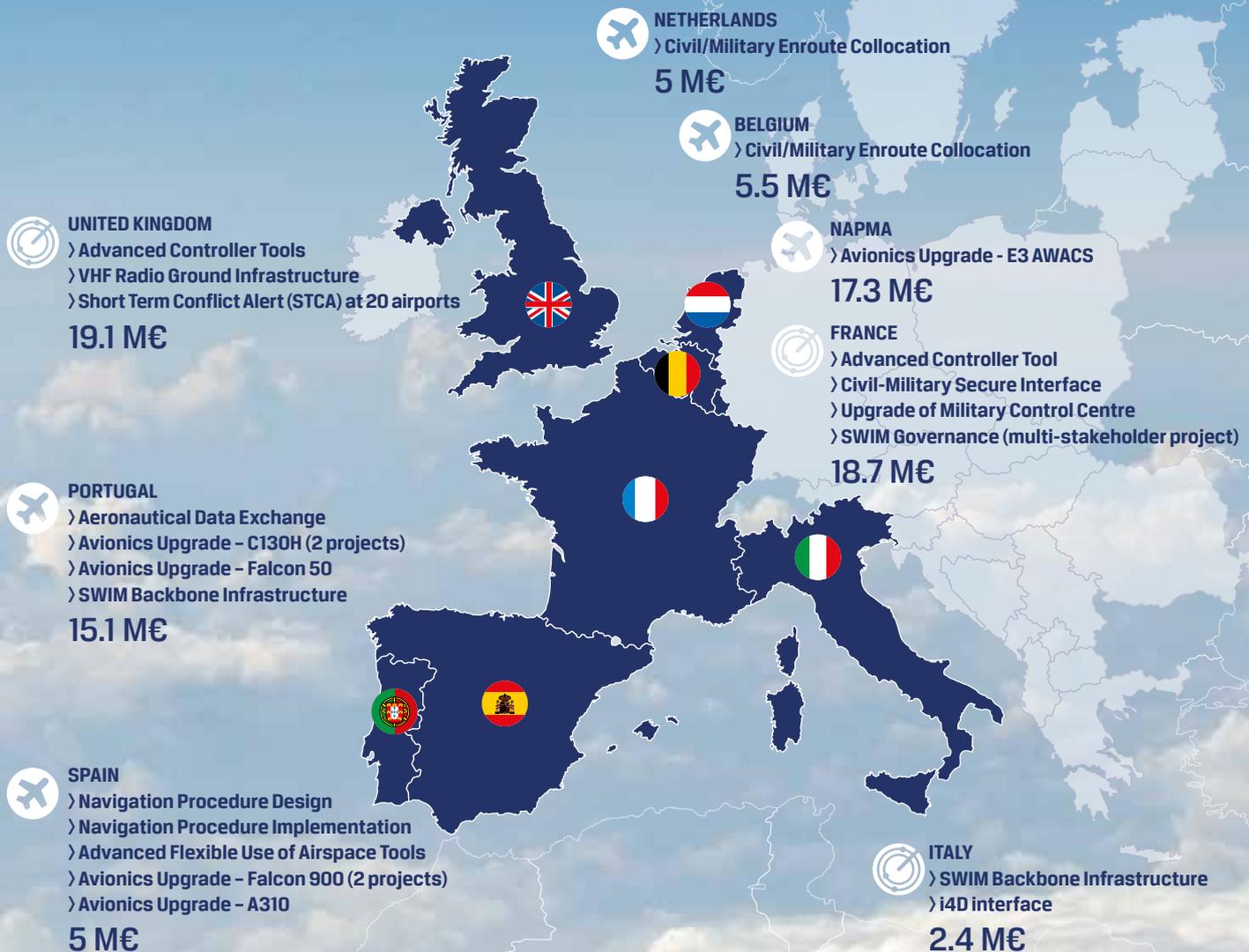
7
INVOLVED MEMBER STATES



88 M€
INEA CO-FUNDING



23
IMPLEMENTATION PROJECTS

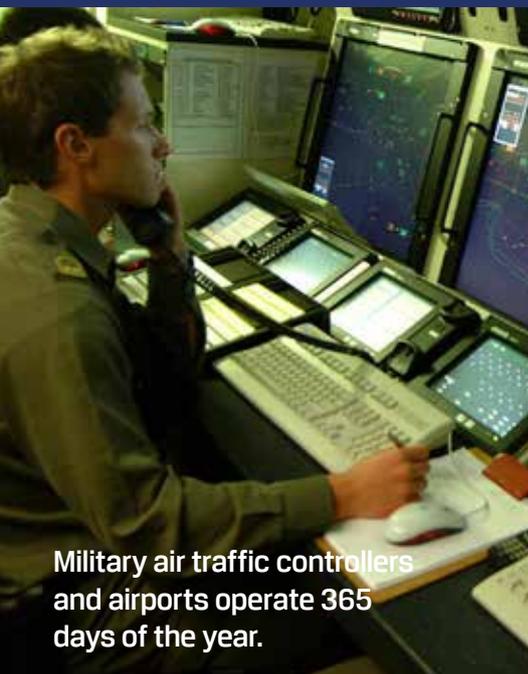


ONE SKY FOR ALL

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 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 Single European Sky (SES) initiative aims at achieving improved efficiency, increased capacity, enhanced aviation safety, diminished environmental impact of flights and reduced costs of air navigation services. It is of crucial importance in order to cope with sustained air traffic growth while at the same time ensuring safe operations. Although SES does not apply to military operations and training, civil and military aviation activities are tightly interlinked, as they share the same airspace.

In 2010, the European Defence Agency (EDA) was tasked by Member States to work on the implications of SES and the Single European Sky ATM Research programme (SESAR) for the European air forces. Specifically, together with the Member States the Agency concentrated all efforts on avoiding adverse impact on national and collective defence capabilities. At the same time, it is our intention to seize possible benefits for the military. In doing so, we have moved from a reactive to a proactive approach over the last years.

We have put the right instruments in place, such as the EDA Single European Sky Military Aviation Board (ESMAB), to ensure there is solid consultation with Member States and all stakeholders. At the same time, the Board ensures that the strategic long term vision of SES for the military is set and maintained.

By doing so, we have achieved tangible results over the last two years. The "Military Aviation Strategy in the context of SES" was approved by both the EDA Steering Board and the North Atlantic Council; € 88 million of EU co-funding have been awarded to military projects in the framework of SESAR Deployment in the 2016-2017 timeframe; through the EDA, military are involved in SES related initiatives from the outset and are able to influence SES Regulations such as the new SES Performance Scheme and the European Aviation Safety (EASA) Basic Regulation; a common civil-military roadmap for Remotely Piloted Aircraft Systems (RPAS) Air Traffic Insertion has been developed to enable the seamless integration of certified RPAS alongside manned aviation into the general airspace from 2025. In 2017, an EDA Industry Exchange Platform on RPAS Air Traffic Insertion has been established to develop a structured dialogue with industry and to foster civil-military synergies in support of European industries.

These examples show that the military community actively contributes to the success of a Single European Sky. It is aware of, and ready to face the challenges ahead, such as digitalisation and cyber security. The EDA will continue to support the military to make the Single European Sky a success for all airspace users.

Jorge DOMEcq
Chief Executive, European Defence Agency

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 ATM in order to deal with continued air traffic growth in Europe and to ensure that aviation operates in a safe, cost efficient and environmentally friendly way.

The 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 EU institutions. The goal of the 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.

The 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 is the EU's air traffic management infrastructure modernisation programme 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 (SJU) are introduced into operation across Europe. The SESAR 2020 Research and Innovation Programme will demonstrate the viability of the technological and operational solutions previously (2008-2016) developed in larger and more operationally-integrated environments.



HOW DOES THE SINGLE EUROPEAN SKY AFFECT THE MILITARY?

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 programme is committed to shape the future towards a performance driven European sky. And while the SES Regulations do not extend to military operations and training, the military can be directly or indirectly affected due to regulatory constraints related

to flexible use of airspace and technical implementing rules such as performance based navigation. It is thus 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 also offers opportunities for the military, for example to obtain EU co-funding to enhance their ATM technology.





A MILITARY AVIATION STRATEGY

The EDA SES Military Aviation Board (ESMAB) is a framework for coordination with Member States and relevant international organisations. Its objective is to agree on priorities with regard to 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. As part of its work, the ESMAB has adopted 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 the 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, the EDA is supporting the EU Member States in identifying military projects and in preparing bids to obtain EU co-funding. In 2016, 13 projects submitted by Member States were awarded funds, adding up to a total of €69 million of co-funding from the Innovation and Networks Executive Agency (INEA). In 2017, 11 military projects were co-funded, with over €19 million awarded.

EDA continues to support Member States in developing bids concerning military projects for the current and future EU CEF¹ Transport calls. Furthermore, 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. Further information regarding INEA and other funding opportunities, including the defence fund, can be found on the EDA's website.

THE EDA'S PRIORITIES FOR SES AND SESAR ARE:

- › Ensuring 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.

¹ CEF = Connecting Europe Facility



COOPERATION WITH KEY STAKEHOLDERS

The EDA cooperates with a number of other entities in order to progress and influence SES and SESAR:

- › **The European Commission, Directorate-General for Mobility and Transport (DG MOVE)**. In order to be involved from the outset in SES related legislative initiatives, EDA has an observer status to the Single Sky Committee and supports the military in the preparation of the related meetings.
- › **SESAR Joint Undertaking (SJU)** – A Memorandum of Cooperation between the EDA and SJU sets the framework for collaboration on SESAR 2020, the second phase of research and innovation in air traffic management. 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, including but not limited to emerging surveillance technologies.
- › **SESAR Deployment Manager (SDM)** – The EDA and SDM work closely together on the basis of a 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)** – The EDA and EASA are developing their cooperation to ensure early awareness for the military regarding forthcoming regulation and addressing subjects of common interest such as RPAS air traffic insertion and cyber security in aviation.
- › **EUROCONTROL** – EDA and EUROCONTROL cooperation, established in 2008, has been formalised in 2013 by an exchange of letters with a joint work programme on SES, SESAR, ATM Master Plan, RPAS, cyber security, CNS performance equivalence and other activities related to the military. This joint work programme is bi-annually updated regarding the contribution of both organisations to SES/SESAR where EUROCONTROL provides technical ATM expertise to EDA in support of its role to facilitate the coordination of military views and to act as interface with EU institutions.
- › **NATO** – The EDA and NATO have a very effective staff-to-staff coordination process which has been given an 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 and SESAR in particular.
- › **EUROCAE** – The EDA is participating in certain working groups to influence EUROCAE and European Standardisation Organisations through effective military involvement.



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. A Master Plan update campaign has been launched in November 2017 and will be completed by the end of 2018. EDA plays an active role in the context of the Master Planning Committee and Master Planning Group established by the SJU, by coordinating the military views of Member States, with EUROCONTROL and NATO, and providing relevant input into the Committee's work.

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 the EDA.

An RPAS Regulatory Framework Working Group was established in EDA in 2014 to develop a harmonised set of airworthiness requirements together with common classification and certification processes, so that military RPAS can be fully integrated into the future European aviation system. The EDA's intention is to have common military airworthiness and certification requirements for military RPAS by 2020.

The 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 is managing several R&D projects in this area: Remote Pilot Stations Standardisation, Detect & Avoid Standardisation (a pilot project in the frame of the Preparatory Action on Defence Research) and SATCOM Command and Control links. Furthermore, the Agency is supporting EDA's Member States regarding other important R&D initiatives on detect and avoid as well as on RPAS automation.

In 2016, the European Commission, EDA, EASA and SJU 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 the integration of large/certified RPAS in non-segregated airspace by 2025.

In order to enable the seamless integration of RPAS alongside manned aviation, an initial phase of "RPAS Accommodation", in which RPAS will operate with limited restrictions, has been identified as a key stepping stone. In this context, EDA launched a study on the possible scenarios and corresponding safety case for the accommodation of MALE-type RPAS, taking into account the current technical possibilities. The outcome of this study will be distributed to EDA Member States and key civil stakeholders to support their operations with MALE-type RPAS in European airspace, making full use of the current civilian regulatory trends and offering opportunities for "quick wins" in the 2019-2025 timeframe.



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) and the European UAS Standardisation Coordination Group (EUSCG), the 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 aviation domain. Multiple developments in the civil aviation sector have significant influence on military aviation. This ranges from the SES initiative over to an increased lifecycle speed for civil aviation systems to the fast growing UAS/UCAS market. An ambitious work programme is being developed in the EDA which will incorporate the development of an Aviation Cyber Engagement Plan, identifying gaps and addressing the areas of awareness, education and training.

AIRWORTHINESS

Within European civil aviation, airworthiness regulations are managed by the EASA. Member States have their own national-specific systems to ensure the airworthiness of their military aircraft. In 2008, the EDA Ministerial Steering Board agreed to establish a Military Airworthiness Authorities (MAWA) Forum and approved the associated military airworthiness roadmap for achieving common harmonisation and certification processes. The MAWA Forum is chaired and supported by the EDA.

The MAWA Forum has developed a suite of harmonised European Military Airworthiness Requirements (EMARs) which are based upon the EASA regulations and are currently maintained under the EMAR-Programme. As part of this programme, the MAWA Forum also developed a European Military Airworthiness Certification Criteria handbook (EMACC) containing references to applicable certification criteria for military aircraft type designs. As soon as SES/SESAR developments affect these referenced design criteria, the EMACC will be updated accordingly.

Member States are encouraged to implement EMARs into national regulation and to use the EMACC to achieve a common approach to ensuring the airworthiness of their military aviation fleets.

MILITARY FLIGHTS REPRESENT 25% OF ALL FLIGHTS OPERATING IN EUROPEAN AIRSPACE

ARMED FORCES: THE BIGGEST AIRLINE IN EUROPE*



HELICOPTERS
3 733



LIGHT AIRCRAFT
1 390



LARGE AIRCRAFT
949



COMBAT AIRCRAFT
3 365

* State aircraft fleet, 44 ECAC countries including 28 Member States, Source : Eurocontrol

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Page 2: Royal Netherlands Air Force

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