

Remotely Piloted Aircraft Systems



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Remotely Piloted Aircraft Systems (RPAS) have demonstrated their importance in recent military operations, particularly for surveillance and information gathering. RPAS can also offer a wide range of civil applications such as infrastructure surveillance, firefighting, disaster or environmental monitoring, as well as border control and management. RPAS have been earmarked as one of four capability development priorities by the December 2013 European Council.

The EDA has divided its work in the field of RPAS into five main areas:

Integration of military RPAS in non-segregated airspace: Military RPAS in the Single European Sky.

In order to facilitate EDA Member States input on RPAS for Air Traffic Management (ATM) issues, the ESMAB (EDA Single European Sky Military Aviation Board) agreed to set up the RPAS ATI SEC (Single European Sky Expert Community) group in 2016. This group has the mandate to develop an ATI roadmap of dual-use strategy on RPAS regulation, in close cooperation with the European Commission, European Aviation Safety Agency (EASA), EUROCONTROL, SJU, NATO, JARUS, EUROCAE and other stakeholders involved in RPAS (Air Traffic Integration (ATI)).

Harmonisation of national processes for military RPAS certification : Military RPAS Airworthiness Certification

Within Europe, military RPAS are certified by the national Military Airworthiness Authorities. Building upon the successes of the Military Airworthiness Authorities Forum, established by the EDA in 2008, the Agency is exploring together with these national authorities and EASA ways to streamline the certification process for military RPAS at the European level.

Significant time and cost savings, as well as harmonised safety requirements, can be expected from a common approach to airworthiness and achieving certification.

An RPAS Regulatory Framework Working Group was established in EDA in March 2014 with the purpose of developing a harmonised set of airworthiness requirements and common classification and certification processes, in order to ensure that military RPAS can easily integrate into the future European Aviation System.

Development of cutting-edge technologies for future European RPAS

MIDCAS: MIDair Collision Avoidance System

The MIDair Collision Avoidance System (MIDCAS) project on demonstrating the sense and avoid function for RPAS was launched in 2009 by EDA on behalf five Member States: Sweden (lead nation), France, Germany, Italy and Spain. The MIDCAS industry consortium is composed of eleven companies from the five participating Member States.

The aim of the MIDCAS programme is to provide the technical content of a collision avoidance system standard proposal for RPAS and thus to contribute to the RPAS integration in civilian airspace by proposing a baseline of solutions for the "Unmanned Aircraft System Mid-air Collision Avoidance Function" acceptable by manned aviation.

DeSIRE: Demonstration of Satellites enabling the Integration of RPAS in European airspace

EDA and the European Space Agency (ESA) established their cooperation in the RPAS sector in 2010. Two feasibility studies were carried out in order to analyse the re-

quired work for demonstrations in the area of secure C2 data links for RPAS using satellites.

Based on the results EDA and ESA launched the joint DeSIRE (Demonstration of Satellites enabling the Insertion of RPAS in Europe) project in 2012. The aim of the project is to demonstrate the safe integration of RPAS in non-segregated airspace using satellites capabilities for RPAS command and control, air traffic control communications and mission data transfer to ground, in order to satisfy the needs of potential user communities. A follow-on project (DeSIRE 2) with ESA was launched in February 2014. This activity contributes to prepare a midterm development of RPAS independent satellite data-link service. Close involvement of rulemaking stakeholders allowed for the seamless consideration of critical certification and rulemaking issues from the beginning. This principle, combining demonstrator development, testing generic functions and operational concepts, allows all relevant partners in European and international aviation to participate in the creation of a dual-use regulatory framework for safe RPAS operations.

ERA: Enhanced RPAS Automation

The Enhanced RPAS Automation (ERA) was launched in 2016 by EDA on behalf of five Member States: Germany (lead nation), France, Sweden, Italy and Poland with an industry consortium composed of several companies from the five participating Member States.

RPAS automation is a key enabler for the integration of RPAS in non-segregated airspace, particularly to ensure the operation safety levels in degraded or emergency modes. Automation in RPAS take-off, landing, and taxi phases will be required for airport (civil and military) operation.

The main objectives of ERA are to establish the technological baseline for automatic take-off and landing, auto-taxi, nominal/degraded mode automation functions and emergency recovery and to support the standardization activities in these areas.

Remote Pilot Stations Standardisation

The Remote Pilot Station (RPS) Standardisation project launched by EDA in 2017 aims at supporting the standardization activities at EUROCAE for key ATI technical enabler in the RPS.

The scope of the EDA RPS Standardisation project is: RPAS within EASA's certified category; Integration of RPAS traffic in non-segregated controlled airspace; Standardisation of the required RPAS Air Traffic Integration enabling elements common to any kind of RPS in the certified category.

The development of European standards is a necessary step to ensure the certification of this technology by European authorities and allow the full integration of RPAS in European airspace.

Accommodation Study

While the final goal for MALE-type RPAS is the full integration in the ATM, in the meantime, the Accommodation of RPAS must be facilitated, implemented in a stepped way, as soon as possible, and harmonized way European-wide.

The goal of this study, launched by EDA in 2018, is to deliver an enhanced Aviation Safety Case Assessment Methodology for large RPAS by assimilating and consolidating current best practices, testing this methodology through simulation and developing consolidated generic RPAS Accommodation scenarios, to allow all aspects of aviation hazard analysis to be exercised for MALE-type RPAS into European skies alongside manned aviation.

Future European MALE Capability

Considering the obvious operational added value of MALE type RPAS for armed forces, and that challenges related to the air traffic integration will gradually be overcome, there is an opportunity for Member States to prepare the next generation of European MALE RPAS in a cooperative way. Under the framework of the EDA-OCCAR arrangement, EDA provides support to this programme in the field of Air Traffic Integration building on the work already achieved and on the institutional framework in place.

Development of synergies among Member States operating large military RPAS : European Military Cooperation

Considering that the number of MALE RPAS operated in Europe is limited but fragmented among several Member States, EDA established a "European MALE RPAS User Community". This forum includes countries which are currently operating or are considering getting this capability in the coming five years.

European Non-Dependence

RPAS offer a wide range of civil and military applications. The market ranges from small tactical mini and micro aircraft to large sophisticated systems. Investment in RPAS at the higher end has the additional benefit of helping to sustain European aeronautic competences in the design and engineering necessary for future manned fixed wing aircraft.