EUROPEAN DEFENCE AGENCY

Fact sheet

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# Remotely Piloted Aircraft Systems


**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
- Harmonisation of national processes for military RPAS certification
- Development of cutting-edge technologies for future European RPAS
- Development of synergies among Member States operating large military RPAS
- Support to the development of a European medium-altitude long endurance (MALE) RPAS to be operational by 2025

## Research & Technology: RPAS Joint Investment Programme

An EDA Research & Technology Joint Investment Programme (JIP) on RPAS was launched in November 2013. Ten Member States are now involved in this activity (Austria, Belgium, Czech Republic, Spain, France, Italy, Poland, Sweden and the United Kingdom). This programme provides the forum to generate R&D projects for the development of key technological functions enabling safe integration of RPAS into non-segregated airspace. The following three projects are currently conducted in this framework:

## 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 with five Member States: Sweden (lead nation), France, Germany, Italy and Spain. The MIDCAS industry consortium is composed of eleven companies of 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. Successful flight tests and simulation campaigns were performed in 2015 and the focus is now on using those results to develop related technical standards.

## DeSIRE: Demonstration of Satellites enabling the Insertion of RPAS in Europe

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 required 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. The demonstration was carried out in Spain in Spring 2013 through several flights using a RPAS (Heron platform) providing airborne maritime surveillance

services to the Spanish users involved in the project.

A follow-on project (DeSIRE 2) with ESA was launched in February 2014. This activity contributes to prepare a mid-term 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 Autonomy

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, autotaxi, nominal/degraded mode automation functions and emergency recovery. This will be done alongside support to the regulation and standardisation of these capabilities, by providing safety assessments, procedures, simulation and flight demonstrations .

This project launched in 2015 is funded by France, Germany, Poland, Sweden and Italy.

## 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 the European Aviation Safety Agency 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. The Agency expects that common military airworthiness and certification requirements for military RPAS will be available by 2018.

## 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.

A Common Staff Target related to this capability was endorsed by the EDA Steering Board in November 2013. On that basis, four Member States (Germany, France, Spain and Italy) decided in 2015 to move forward and launch within an OCCAR framework, a two-year €65 million definition phase to pave the way for a full-scale development phase.

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. Meanwhile, the Agency is also expected to facilitate the entry of other European partners into the programme at a later stage.

## 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.

The objective is to:

- Exchange information and facilitate cooperation among Member States who operate such systems in order to streamline resources;
- Exchange operational experience and best practices of operating MALE RPAS;
- Identify cooperation opportunities in the following enablers: training, logistics, maintenance of similar assets.

Seven Member States (France, Germany, Greece, Spain, Italy, the Netherlands and Poland) are involved in this activity.

## 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.

Over half the cost of building a complex intelligence, surveillance and reconnaissance RPAS is related to sensing technologies and data exploitation capabilities; excellence in these areas will be necessary for future industrial competitiveness in the global marketplace. At present there is the risk that Europe could become dependent on third country suppliers for such technologies. All EDA's current activities in the RPAS domain are aiming at ensuring that this level of dependence is under control.

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