

Remotely Piloted Aircraft Systems

Remotely Piloted Aircraft Systems (RPAS) have proven their value in the military sphere in recent operations demonstrating their operational capacities, particularly for surveillance and information gathering. However RPAS can also offer a wide range of civil applications such as infrastructure surveillance, fire fighting, disaster or environmental monitoring, as well as border control and management.

RPAS as an EDA Pioneer Project

Pioneer Projects have been promoted by EDA to harness synergies in the military and civil domains, maximise dual-use technologies, generate economies of scale and extend the Comprehensive Approach into the area of capabilities development. At the EDA Steering Board on 23 April 2013, Ministers endorsed proposals to prepare two such projects, in the areas of RPAS, and cyber defence. The overall objective for Pioneer Projects was to be major deliverables for the European Council in December 2013.

The EDA Pioneer Project on RPAS contains the following four pillars:

- Air traffic insertion
- RPAS certification
- Future European Medium Altitude Long Endurance (MALE) programme
- European military cooperation

Air Traffic Insertion

At present, the use of RPAS is limited to certain areas of Restricted Airspace, and as yet there is no harmonised framework that allows remotely piloted aircraft to operate simultaneously in civil airspace.

Following a European conference on Unmanned Aircraft Systems in 2010, EDA contributed to the production of a roadmap on the safe integration of RPAS in European air space by 2016, thus contributing to a cooperative European approach.

The realisation of RPAS Air Traffic Integration requires a comprehensive approach including a strong and close civil military cooperation. Hence, Sense and Avoid as well as Secure Command and Control Data Links for Beyond Radio Line of Sight operations have been identified as high priorities for the military domain; EDA's focus is on topics addressed by existing and future activities.

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 11 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. As an important milestone, the project conducted first in-flight tests in April 2013.

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

EDA and ESA established their cooperation in the RPAS sector in 2010 and carried out two complementing feasibility studies on this issue 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 in 2012 the joint DeSIRE (Demonstration of Satellites enabling the Insertion of RPAS in Europe) project aiming at demonstration of safe insertion 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. This activity was planned as initial step to 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, was already successfully integrated in the MIDCAS project, allowing all relevant partners in European and international aviation to participate in the creation of a legal and regulatory

framework for safe RPAS operations. A follow-on project (DeSIRE 2) with ESA has been launched in February 2014.

Joint Investment Programme

The EDA Research & Technology Joint Investment Programme (JIP) on RPAS was launched in June 2012. The Programme Arrangement was signed at the EDA Steering Board on 19 November 2013 by AT, BE, CZ, DE, FR, IT, ES and UK aiming at first projects starting the following year.

The programme will focus on technological priorities such as sense and avoid, taxi, automatic take-off and landing, air traffic management interfaces, safe automated monitoring and decision architecture. These demonstration projects will be complementary to the activities of the European Commission in support of RPAS in order to seek synergies.

RPAS Certification

Currently, military RPAS are certified by national Military Airworthiness Authorities. In the context of the Military Airworthiness Forum, established by the Agency in 2008, the Agency is exploring together with these national authorities and the European Aviation Safety Agency, how to streamline the certification process for military RPAS on the European level. Significant time and cost savings as well as harmonised safety requirements can be expected from standardised certification. The Agency expects that common military certification requirements are available as of 2018.

Future European MALE RPAS Programme

Considering the potential for military and civil use of RPAS in Europe, and that challenges related to the air traffic insertion will be overcome in the longer term, there is a need to anticipate the next generation of MALE RPAS. Beyond 2020 seems a reasonable timeframe to produce a European capability.

The Common Staff Target to be considered as the initial step, was endorsed by the EDA Steering Board of 19 Nov 2013. The next phase will be dedicated to the elaboration of the Common Staff Requirement which will match the military requirement with technology maturity, cost assessment and integration challenges in an iterative manner.

This document may constitute the basis for a future European programme. Airworthiness and the associated certification will be key enablers for the successful European MALE programme. Special attention will be given to integrate airworthiness, air traffic standardisation and flight standard requirements as early as possible.

European Military Cooperation

Considering that the number of MALE RPAS is limited in Europe and fragmented among different Member States, EDA established a "European MALE RPAS User Community" which are currently operated and/or will achieve initial operating capability in the in-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.

At the Steering Board meeting on 19 November 2013 seven Member States (FR, DE, EL, ES, IT, NL, and PL) signed a Letter of Intent to join the Community.

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. Consequently EDA has launched work to identify the priority areas for future technological and industrial investment.