



# FLYING A BOOST FOR EUROPEAN CREATIVITY AND INNOVATION NEW WAY



# RPAS

REMOTELY PILOTED AIRCRAFT SYSTEMS



# RPAS

## CIVIL APPLICATIONS OF RPAS

### The case for the European Commission to act

**T**oday Europe needs more than ever to identify and support opportunities to boost industrial competitiveness, promote entrepreneurship and create new businesses. The sustainable and competitive European economy is based on a strengthened Europe's industrial base and dynamic SMEs.

Within this framework, the role of the European Commission is to support the emergence of new markets with single market legislation, coordination of actions taken by the Member States and actions in areas such as research and development.

Recent conflicts and peacekeeping operations around the world have demonstrated the operational capacities of RPAS and led to a significant increase in military applications. RPAS have also a great potential for civil applications, commercial, corporate or governmental non-military. These applications are starting to develop, driven by both state and commercial interests. If their full potential is unleashed, they will bring important benefits to European citizens and the European economy as a whole.







# RPAS USE CASES

- Precision agriculture
- Infrastructure inspection
- Wind energy monitoring
- Pipeline and power inspection
- Highway monitoring
- Natural resources monitoring
- Environmental compliance
- Atmospheric research
- Media and Entertainment
- Sports photos
- Filming
- Wildlife research
- Hunting and anti-hunting monitoring
- Disaster relief



# AN EMERGING MARKET OF INNOVATIVE AERIAL SERVICES

As indicated by the name, the RPAS — also called Unmanned Aircraft Systems (UAS), commonly known as drones — are systems comprising an aircraft, a ground control where the pilot is based and a data link. Being remotely piloted they are well suited for long duration monitoring tasks or risky flights into ash clouds or in proximity to nuclear or chemical plants after major incidents.

RPAS reduce human life exposure and provide economic savings and environmental benefits with less fuel consumption, less CO2 emissions and less noise than manned aircraft. They can efficiently complement existing manned aircraft or satellite infrastructure used by governments in crisis management, law enforcement, border control or fire fighting.

RPAS can be light, flexible and affordable for a large number of commercial applications. They are used in a growing number of applications: precision agriculture and fisheries, power or gas line monitoring, infrastructure inspection, communications and broadcast services, wireless communication relay and satellite augmentation systems, natural resources monitoring, media and entertainment, digital mapping, land and wildlife management, air quality control and management.



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At least 20 projects financed under the 7th Framework Programme for research and innovation in different areas (Galileo, Global Monitoring for Environment and Security, ICT, security, etc.) involve RPAS. Hundreds of potential civil applications have been identified and more are expected to emerge once the technology is widely disseminated. Creativity, innovation and entrepreneurship play a major role in the development of commercial aerial services.

The expansion of this new market will not only support growth and create highly qualified jobs in the industry producing the RPAS or developing the applications; it will also foster the emergence of a totally new service industry offering RPAS operations and aerial work to commercial and state customers. This service industry is expected to generate jobs and revenues even bigger than the RPAS manufacturing industry itself.





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# ABLE TO BOOST INDUSTRIAL COMPETITIVENESS AND SUPPORT THE DEVELOPMENT OF SMEs

The development of RPAS technologies is supported by a dynamic industry. More than 400 RPAS projects across 20 European countries involve companies of all sizes — from global aerospace and defence industries producing large systems for military and state applications to SMEs developing small systems for commercial or corporate applications. The structure of the industry reflects the wide range of systems varying in size and performance (from the size of an Airbus 320 to a few grams).

The development of large unmanned aircraft of more than 150 kg has been the most dynamic growth sector of the aerospace industry during the last decade. RPAS technologies are a source of important spin-off to civil aviation and a key element of the future aeronautics sector.

RPAS are themselves multi-systems and involve a great variety of equipment and payloads. Beyond the manufacturers and system

integrators, the RPAS industry also includes a broad supply chain providing a large range of enabling technologies (flight control, communication, propulsion, energy, sensors, telemetry, etc.). Thus the development of RPAS technologies will create spin-offs with significant impact in many sectors.

SMEs represent more than 80 % of the companies involved in the development, manufacturing and exploitation of light RPAS. Hundreds of unmanned aircraft of less than 150 kg are currently being developed, often by start-ups, and associated with concrete applications. The expansion of the RPAS sector is supported in a number of European regions. Boosted by local initiatives and policies, the cooperation between large industries, SMEs, research organisations and universities allow the development of local networks of RPAS expertise. Finally, innovative aerial services will help their customers to improve their own products and services or increase their own competitiveness.



# PROVIDED THAT REGULATIONS ARE IN PLACE, TECHNOLOGIES ARE AVAILABLE AND SOCIETAL IMPACTS ARE PROPERLY ADDRESSED

The European Commission is well aware of its potential role to support the emergence of the RPAS sector. Since 1998 it has been supporting the market by investing research and innovation relevant for RPAS, for example in technology development for improving reliability, safety and performance. Besides having financed a wide variety of projects involving RPAS through the 5th, 6th and 7th Framework Programmes, the EC has also invested in studies identifying new and emerging civilian applications that can boost entrepreneurship in the area.

These projects are contributing a great deal to cross-country technology and innovation exchange as well as collaboration among different industries. In addition, through its established SME network platform and other financial instruments for enterprises, the Commission can facilitate cooperation between RPAS manufacturers and operators from all over Europe but also internationally. The EC will be able to contribute to the efforts in the area through Horizon 2020, the new financial instrument for research and innovation to be launched in 2014.

A number of issues need however to be addressed to draw the full benefit of this technology. First of all, RPAS need to have a routine access to non-segregated airspace. This needs however to be achieved without undermining overall aviation safety. RPAS are aircraft and they have to operate at an equivalent level of safety to other aircraft. This requires the development of an equivalent set of rules, including airworthiness, personnel and operations.

Regarding the legislative framework, RPAS in Europe are divided in two major groups, each regulated by different authorities. Unmanned aircraft of more than 150 kg are regulated by the European Aviation Safety Agency (EASA), while light aircraft of less than 150 kg fall under national competence and are regulated by national civil aviation authorities. In consequence, a comprehensive set of European and national rules need to be developed and harmonised as far as possible in order to ensure a true single market for aerial services.





The increased use of RPAS that will result from their progressive integration into airspace may raise serious and unique privacy and data protection concerns and reduce the overall benefits of this innovative technology. This mainly concerns video surveillance and monitoring applications involving collection, retention, use, and disclosure of personal information. The privacy threads must be carefully analysed and actions must be taken to ensure that RPAS operations fully comply with privacy and data protection standards.

For ensuring the safe integration of RPAS into civil airspace the Commission is working on a European regulatory framework, which is the prerequisite for the industry to generate growth and jobs.

After completing an extensive set of consultations with the Member States and other European stakeholders on the future of RPAS the Commission is now preparing a roadmap for safe RPAS integration into the European airspace system from 2016.

The roadmap aims to provide a clear strategy, define the priorities and describe the concrete tasks in this respect by tackling three main areas:

- aviation regulation;
- technology;
- societal impact (data and privacy protection, insurance and liability).

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**For further information see:**

[http://ec.europa.eu/enterprise/sectors/aerospace/uas/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/aerospace/uas/index_en.htm)

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