

RPAS – The European Approach & The Way Forward

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The civil remotely piloted aircraft systems (RPAS) industry community consists of two principal stakeholder groups, namely manufacturers and operators (persons, organisations or enterprises engaged in or offering to engage in an RPAS operation). The current regulatory context is not really stimulating for RPAS manufacturers and not very conducive to the development of an RPAS aerial work market with fair competition in Europe, as well as outside of Europe. This is mainly because, even though various initial national regulations relative to the operation of civil RPAS are now in place, or are about to enter into force, or are being formulated, these regulations have not been harmonized on a pan-European level, nor on an international level. It should also be highlighted that there is no noteworthy RPAS regulatory activity in a significant number of European and non-European countries.

Consequently, it is difficult for an RPAS operator registered in one European Union (EU) country to engage in an RPAS operation in another EU country, not to mention engaging in such activities outside the EU. Another consequence of this situation is the difficulty for the manufacturers and operators of non-military RPAS to draw up realistic business plans and attract investors. As a consequence, the financing of new RPAS developments at system and sub-system level is currently not really an attractive proposition.

Hereinafter the reader will find an explanation of the principal European activities and initiatives, as well as UVS International's contributions to them that have permitted the European RPAS community to initiate the first steps to integration of RPAS into European airspace and get to where it is at the moment. This historical review also highlights the multiple organisations involved in the current process, and illustrates the importance of a federated stakeholder approach to promote the interests of the multi-faceted RPAS community and raise political, regulatory and public awareness at national and multi-national levels.

As a member of the ICAO UAS Study Group, UVS International has adopted the terminology recommended by the International Civil Aviation Organization (ICAO). Consequently, the terms Remotely Piloted Aircraft (RPA) and Remotely Piloted Aircraft System (RPAS) are used in this document, instead of Unmanned Aircraft System (UAS) or Unmanned Aerial Vehicle (UAV).

EUROPEAN COMMISSION (EC) HEARING ON LIGHT RPAS

On 19 October 2009, the EC Directorate General Mobility & Transport (MOVE) conducted a hearing on Light RPAS, which was attended by 49 European representatives of the civil Light RPAS community. The hearing gathered governmental authorities, manufacturers, flight service (aerial work) providers, national police forces, fire brigades, national and international associations and working groups, research organisations, EUROCAE, and the European Defence Agency (EDA). UVS International played an instrumental supporting role in the organisation of this event.

The EC's final report on the Hearing on Light RPAS indicated the following conclusions and recommendations.

The hearing demonstrated that light RPAS are already used by a significant number of governmental authorities, in particular for police, customs, border control, fire fighting, natural disasters, and search and rescue missions.

It was also noted that RPAS-related technologies are of strategic importance for Europe, with many potential spin-off applications, possibly even for manned aviation. Furthermore it became apparent that RPAS may catalyse developments for complex technologies, including low fuel consumption, fuel cells, small large capacity batteries, computers and systems, green engines, sensors.

Light RPAS can be viable and competitive products, if they are low cost entry-level solutions for customers. Once a legal framework exists, a totally new aerial work service supply industry should sprout rapidly.

A minima European regulation could speed up the emergence of the market, the routine deployment of Light RPAS being hampered by the current regulatory situation in Europe. The fast-track creation of dedicated standards and rules and regulations would be beneficial for the European Light RPAS industrial community and provide civil society with a very wide range of benefits. In addition, it would make it possible for a totally new aerial work supply community to form, thereby not only creating new jobs, but also a new markets for Light RPAS.

Non-military Light RPAS operations are currently mainly conducted at altitudes inferior to 150 meters above ground level and within visual line-of-sight. In that condition, the operational environment does not conflict with flights of manned aircraft. This situation calls for the development of specific rules for Light RPAS, simpler than those existing for manned aircraft or that will be required for unmanned aircraft with a mass of more than 150 kg.

The European legislation should be relatively simple, covering essential elements like certification of RPAS, training and licensing of the pilots and flight crew, responsibilities and obligations of all stakeholders, as well as liability, security and insurance issues, license to operate, reliability of the components, maintenance matters, and security aspects. The legislation should take into account the specificities of Light RPAS, but should ensure the maximum safety and security level, maintaining the current overall safety level. Rules and standards should be in equation with the aviation standards currently applicable for manned aircraft (equivalent level of safety), but should put the lowest possible constraints on manufacturers and users.

The full and seamless integration of Light RPAS into the airspace shall require an important amount of common efforts from the aviation sector. A lot of work has already been done in these domains and could be used for the development of harmonized rules & standards at European level. The EC should support such harmonization efforts by federating the activities and developing European standards and rules applicable uniformly throughout Europe.

Detect & Avoid is a critical factor relative to the operation of Light RPAS beyond visual line of sight (BVLOS), and it can be considered as the necessary enabling technology required integrating Light RPAS into non-segregated airspace. The possibility of launching a call for a funded study and technology demonstration relative to detect & avoid specifically for Light RPAS should be investigated.

Without prejudice to the right of States to certify RPAS below 150 kg, and taking into account the advantages of European harmonization, it is considered necessary to develop national legislation, based on consensually agreed criteria, in all European Union countries. The development of such harmonized rules and regulations would permit to ensure the recognition of the various certificates

and licenses between the countries of the European Union, as well as to provide all Light RPAS manufacturers with similar standards.

The establishment of common European standards should allow trans-border cooperation between authorities, multi-lateral operations, and the transfer of RPAS and RPAS crews from one country to another (i.e. for security, atmospheric sensing, meteorological, environmental and research applications, and to address natural disaster crisis such as earth quakes, floods, forest fires, oil spills, etc). A single set of rules for Europe would favour the creation of an open and fair European market.

It is necessary to harmonise the requirements and limitations for Light RPAS certification and operations within Europe, but also to harmonise the requirements with a number of non-European Union regulators such as the Federal Aviation Administration (FAA), Transport Canada and Civil Aviation Safety Authority Australia (CASA). Europe should produce a single set of draft airworthiness, operational and airspace requirements to be applied on a voluntary basis by aviation authorities. The process should be based on the examination of existing standards and best practices.

As most manufacturers and aerial work service providers will have the intention to sell their products or their services outside the limited remit of their national boundaries, a single set of rules for Europe would favour the creation of an open and fair European market. This shall be the case not only for the 27 European Union States, but also in all the countries having bilateral or multilateral agreements with Europe for aviation (currently 38 States in the Single European Sky implementation region).

A significant number of European and non-European national aviation authorities are jointly endeavouring to develop specific rules for Light RPAS, which may be applied at European level. It is required to implement methodology in Europe to ensure full cooperation between existing working groups like JARUS (see below) and EUROCAE Working Group 73 (see below) and other EU and non-EU initiatives that address RPAS-related topics of interest. All the work done may constitute an excellent baseline material to be used to further, at European level, the aspired to harmonised rules and regulations. The hearing demonstrated that the EC can play an important role in the support of this process.

It had been understood that, due to the specific characteristics of Light RPAS and the large number of small and medium-sized companies [SMEs (< 250 employees & annual turnover < Euro 50 million)] involved with these systems, the Light RPAS community should be recognized as a separate stakeholder group and should benefit of ad hoc working arrangements clearly separated from the activities conducted for other segments like medium altitude long endurance (MALE) or high altitude long endurance (HALE) RPAS.

In particular, it was recommended that standardisation groups like EUROCAE evaluate the possibility of starting up dedicated activities aiming to develop specific solutions for Light RPAS, with the view to speed up their insertion by producing dedicated standards. This suggestion is motivated by the following points:

- 1) The large number of SMEs involved with the development of Light RPAS;
- 2) SMEs are unable to participate in working groups on the same basis as Industry, mainly due to insufficient personnel, time & financial restrictions;
- 3) The standards for Light UAS have a specific and diverging nature in comparison to UAS with a maximum take-off mass superior to 150 kg;
- 4) The work methodology adopted, must be designed to specifically accommodate SMEs.

Furthermore, it was recommended that the European Light RPAS community designates a representational entity to express their views and voice their interests. High political awareness of RPAS matters, at national and European level, has to be improved, or created. To that end, the European Commission announced that it would address the Light RPAS dimension during a high-level RPAS conference that planned to organise in Brussels, Belgium in July 2010 (see below). The entire text of the EC's final report can be found on www.uvs-info.com (see "European Matters" tab in the main menu bar).

SURVEY ON LIGHT RPAS

During the European Commission's Hearing on Light UAS, which took place in the offices of the Directorate General of Mobility Brussels, Belgium on October 19, 2009, UVS International presented the conclusions of its survey on the non-military applications of Light RPAS. 120 companies and organisations in 27 countries, 3 international associations, 1 international regulatory authority, and 2 multi-national working groups participated in this survey.

The following 17 RPAS stakeholder groups were represented in the survey:

- Flight service provider
- Governmental research
- International association
- Regulatory authority
- Small & Medium-sized Enterprise
- Flight service customer
- Governmental UAS operator
- National association
- Regulatory service provide
- University
- Governmental entities
- Industry (large companies)
- Multi-national working group
- Standards organisation
- UAS Test & Evaluation

The survey participants originated from: Australia, Austria, Belgium, Brazil, Canada, Cyprus, Czech Rep., France, Germany, Greece, India, Israel, Italy, Netherlands, Norway, Pakistan, Portugal, Romania, Russian Fed., South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, UK, and USA.

This survey on non-military UAS applications contained an overview of the European Light RPAS manufacturers that had been referenced. The European UAS manufacturers/developers have been referenced in two categories:

- Manufacturers/developers of Light RPAS (MOTM <150 kg);
- Manufacturers/developers of RPAS (MTOM >150 kg).

This categorization was made in such a way that the RPAS with a MOTM of less than 150 kg, which are subject to national certification rules, and the RPAS with a MTOM are more than 150 kg, which are subject to certification by the European Aviation Safety Agency (EASA), were clearly identified. Furthermore, this categorization made it possible to make clear the rather incredibly large number of Light RPAS currently under development, and already market ready. RPAS which were no longer in production (a few of which are still in service), were listed separately for reference purposes. International cooperation developments were also highlighted.

In addition, a distinction has been made between Industry (> 250 employees & annual turnover > Euro 50 million) and SMEs (< 250 employees & annual turnover < Euro 50 million) developing and/or producing RPAS. On 19 October 2009, this survey was remitted to the EC DG MOVE during the Hearing on Light RPAS.

The text of this survey can be found on www.uvs-info.com (see “European Matters” tab in the main menu bar)

UVS INTERNATIONAL’S PETITION TO THE EC REGARDING LIGHT RPAS

In December 2010, UVS International submitted a petition to the European Commission DG MOVE (Daniel Calleja). Copies were sent to Siim Kallas (Vice-president of the EC), Antonio Tajani (Vice-president of the EC) & Luc Tytgat (DG MOVE). This petition was signed by 112 organisations and 1 multi-national governmental working group, originating from a total of 25 countries, including 20 European countries (Austria, Belgium, Cyprus, Czech Rep., Denmark, Finland, France, Germany, Greece, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, United Kingdom) and 5 non-European countries (Brazil, Canada, Israel, Russian Fed., USA). The 112 petition signatories represented: 5 government organisations, 10 industrial parties, 6 institutions, 2 international associations, 5 national associations, 67 SMEs, 17 academic institutions, which came to a total of 2046 companies & organisations.

UVS International’s cover letter mentioned the following: “We are confident that the attached documents will contribute to motivating the European Commission to:

- Recognise the strategic value of RPAS-related technologies for Europe;
- Recognise the importance of societal benefits RPAS can bring to Europe;
- Play an active role to enable the early insertion of RPAS into non-segregated airspace and thereby open up the European RPAS market;
- Provide the European RPAS community with the necessary support, which will permit it to position itself favorably in the international context.”

In his written response to the petition Siim Kallas indicated the following: “In your letter you specify four areas for which you indicate that a European Commission lead would be beneficial, and I would like to state that I fully share your views.”

The text of the petition can be found on www.uvs-info.com (see “European Matters” tab in the main menu bar).

EC’S HIGH LEVEL CONFERENCE

On 1 July 2010, the European Commission and the European Defence Agency co-organised a high-level conference on remotely piloted aircraft systems (RPAS), where approximately 450 participants from around the world discussed issues such as how RPAS can support European policies, the different uses of RPAS, and the institutional and infrastructure aspects, which would have to be addressed to allow RPAS to fly in non-segregated airspace. UVS International was a member of the conference organising committee.

Through this conference it was made apparent to the EC that there was a large interest in the development of RPAS-related technologies, which could also have spill-over effects in other industrial sectors (avionics, sensors, optical equipment, sense & avoid, etc.) and could contribute to a potential increase in the safety level of commercial aircraft. The conference also illustrated that RPAS currently only fly in segregated airspace and highlighted that the emergence of the non-military (governmental, research, commercial) market for RPAS, and related technologies, was hampered by regulatory obstacles. Furthermore, the conference brought home the fact that, in order to allow RPAS

to fly in non-segregated airspace, a number of complex regulatory issues had to be resolved, especially compliance with the Single European Sky. Various speakers at the conference gave undisputable evidence that RPAS can supply societal benefits in very diverse application areas. The conference also brought to light that the majority of the current non-military RPAS applications are carried out by Light RPAS [with a maximum take-off mass (MTOM) of less than 150 kg]. The EC concluded that the lack of a regulatory framework for RPAS is preventing industry from building pertinent business cases and launching the developments required to answer non-military needs.

At this conference, the EC announced the establishment of a High Level Group on RPAS, which would, as is normally the case with high level groups, make use of hearings, discussions with stakeholders, and reports commissioned from experts, to formulate a recommendation to the EC on how best to move forward. However, this was not to be.

The conclusions of the High Level Conference echoed those that the EC had drawn subsequent to the Hearing on Light RPAS organised by the Directorate General Mobility & Transport (DG MOVE) had in Brussels, Belgium in October 2009.

The presentations given at this high level conference can be found on www.uvs-info.com (see “European Matters” tab in the main menu bar).

UVS INTERNATIONAL’S MEETING WITH DG MOVE

On 12 October 2010, 5 representatives of the UVS International Board of Directors met with EC DG MOVE in Brussels, Belgium. The purpose of this meeting was to officially introduce UVS International and its collective expertise, and to propose its services to DG MOVE. During this meeting, UVS International was requested to produce an advisory document, which would express an opinion relative to the High Level Group on RPAS, the creation of which had been announced at the EC’s High Level Conference on 1 July 2010. The requested advisory document was to cover a proposed structure, an overall strategic approach, a mission statement, a proposed work methodology, as well as the topics to be covered, a report framework, and the required time-line. This document was produced by UVS International and remitted to DG MOVE in February 2011.

EC’S BUILD-UP TO THE UAS PANEL

On 18 April 2011, the European Commission, DG ENTR and DG MOVE, jointly announced a new RPAS initiative in lieu of the earlier announced High Level Group. This announcement was made in a letter sent out to a selected number of stakeholders, including UVS International. This new initiative was meant to provide the EC with the necessary expertise and input to develop a strategy for the future of RPAS in the European Union, and to identify the most pressing issues which today hinder the emergence of an RPAS market.

A preparatory meeting took place at the offices of DG ENTR in Brussels, Belgium on 27 May 2011. At this meeting, to which 15 persons had been invited, DG ENTR and DG MOVE explained that in order to collect the necessary information and inputs, the EC was setting up a process involving relevant experts from aviation rulemaking bodies and industry, and inviting them to share their knowledge on the subject of RPAS insertion into civil managed airspace. For this purpose, the EC indicated the organisation of a series of meetings, which would be co-chaired by DG ENTR and DG MOVE, and would also involve other EC services [Directorate General for Home Affairs (DG

HOME), Directorate General for Research & Innovation (DG RTD), and Directorate General for Information Society & Media (DG INFSO)].

The announced intention was to organise a launch meeting, four workshops spread over a rather short period of time ending in January 2012, and a wrap-up meeting in February 2012. The organisation of each workshop was the responsibility of a designated “chef de file” and was to result in a report on the workshop topic. At the end of this process, a Strategy Paper was to be drafted by the EC. This Strategy Paper would take both the civil and military UAS aspects of development and regulatory gaps into account, and was to cover the entire range of RPAS type (from nano to HALE RPAS).

The official announcement of the creation of the EC UAS Panel and its objectives was made by Daniel Calleja (DG ENTR) at the Paris Air Show on 12 June 2011. This announcement was attended by EC representatives, as well as high level representatives from the European RPAS industrial community.

Subsequently, an introduction of the EC UAS Panel and an explanation of its objectives were presented by representatives of the European Commission DG ENTR and DG MOVE, with the support of EASA, EUROCONTROL and UVS International, at UVS International’s UAS 2011 conference in Paris, France on 14 June 2011.

EC’S UAS PANEL INITIATIVE

The EC UAS Panel was co-chaired by EC Directorate General Enterprise & Industry and Directorate General Mobility & Transport and its members consisted of nominally designated representatives from the European Aviation Safety Agency (EASA), EUROCONTROL, European Civil Aviation Conference (ECAC), Single European Sky ATM Research Joint Undertaking (SESAR JU), European Union Agency for Border Security (FRONTEX), European Defence Agency (EDA), European Aerospace & Defence Manufacturers’ Association (ASD), and UVS International.

The objective of the UAS Panel Initiative was to produce by means of its four dedicated 1-day workshops (industry & market; regulatory matters; complementary matters; research & development) and over a period of 7 months, a report on the potential of the non-military RPAS market in the European Union, based on viable business cases with societal benefits. The UAS Panel initiative, in which UVS International was an active participant (“chef de file” of the workshop on industry & market), highlighted the potential of RPAS for the development of a wide range of non-military applications with societal benefits [aerial work, also known as specialized operations (commercial, non-commercial, corporate) and non-military governmental applications].

The UAS Panel Initiative’s final report was published in September 2012 and concluded that non-military RPAS offer a wide spectrum of applications, could create a large new market of innovative services, have significant potential for job creation in the industry and services sectors, and could generate significant economic growth. As a consequence, the need to accelerate the safe integration of RPAS into European airspace – taking into account such issues as liability, insurance, privacy, data protection, and public acceptance – was recognized, and the need to develop a strategy to incrementally introduce RPAS into European airspace was acknowledged. This resulted in the creation of the European RPAS Steering Group.

All the UAS Panel’s workshop discussion papers, the presentations given at the workshops, the relevant back-up and reference documents, as well as the EC’s final report, can be found on www.uvs-info.com (see “European Matters” tab in main menu bar).

EUROPEAN RPAS STEERING GROUP

The European RPAS Steering Group (ERSG), announced by the EC in July 2012, is co-chaired by the EC's DG ENTR and DG MOVE and has participants from 13 stakeholder groups (Directorate General Connect, Directorate General Research, EASA, ECAC, EUROCONTROL, EDA, SESAR JU, Joint Authorities for Rulemaking on Unmanned Systems (JARUS), EUROCAE, ASD, European Cockpit Association (ECA), Association of European Aeronautical Research Establishments (EREA), and UVS International.

Its objective was to foster the development of civil RPAS operations by planning and coordinating all activities necessary to achieve the safe and incremental integration of non-military RPAS into the European air traffic system, aiming at initial RPAS integration by 2016. In order to achieve this, the ERSG formed three topical sub-groups (regulatory matters; research & development; complementary measures/societal impact), which were mandated to produce a comprehensive annually updatable roadmap for this purpose.

The European RPAS Roadmap, consisting of an overarching document and three annexes (Regulatory Approach; Strategic Research Plan; Study on Societal Impact), identifies all the issues to be addressed and establishes a step-by-step approach to address them. On 20 June 2013, the European RPAS Roadmap was officially remitted by UVS International, on behalf of the ERSG, to the EC at the Paris Air Show.

The European RPAS Roadmap and its three annexes can be found on www.uvs-info.com (see "European Matters" tab in the main menu bar).

ICAO UAS STUDY GROUP

The mandate of the International Civil Aviation Organization (ICAO) is to promote the safe and orderly development of international civil aviation throughout the world. It sets standards and regulations necessary for aviation safety, security, efficiency and regularity, as well as for aviation environmental protection. It serves as the forum for cooperation in all fields of civil aviation among its 191 members. The ICAO Unmanned Aircraft Systems Study Group (UASSG) has been active for the last five years and was established to help in the harmonization of terms, strategies and principles with respect to the regulatory framework that States and international organisations were already engaged in developing. It serves as the high level focal point for global interoperability and is tasked by ICAO with developing a regulatory concept, coordinating the development of RPAS Standards and Recommended Practices (SARPs), contributing to the development of technical specifications by other bodies, and identifying communication requirements for RPAS so that they can be integrated alongside manned aircraft in non-segregated airspace and at aerodromes.

The scope of ICAO's UASSG has been narrowed to facilitating international operations, in particular the requirements needed to ensure interoperability and harmonization throughout the world, such that an RPA can operate seamlessly in any region using the same equipment and being recognized as a legitimate airspace user by the States, air navigation service providers (ANSPs) and other airspace users. It was agreed by the UASSG that in most cases, visual line-of-sight (VLOS) operations, whether being conducted as an international flight or not, would benefit from application of locally (e.g. nationally or regionally) developed regulations. It was recognized that individual States would want to exempt many small RPA from most aviation regulations, choosing to impose restrictions limiting how and where they could operate without having to follow lengthy certification processes. VLOS provisions would therefore not be a major focus of the ICAO work programme.

Conversely, international operations conducted beyond visual line-of-sight should come under the purview of ICAO Standards and Recommended Practices (SARPs) as these operations would most likely participate in the air traffic management system and could pose a significant hazard to persons, property and other aircraft if harmonization is not achieved. No exemptions are foreseen at this time based on category of operation (general aviation, commercial aviation, aerial work, etc.) or based on altitude/level, maximum take-off mass or type of C2 data link.

In March 2011, ICAO published Unmanned Aircraft Systems (UAS) (Circ 328) which contains detailed information on issues to be addressed in order to bring UAS under the regulatory framework of the Convention on International Civil Aviation. Subjects include legal, technical and operational requirements. This circular will become obsolete upon publication of the RPAS Manual.

The UASSG has six primary focus areas, each assigned to a working group: airworthiness, air traffic management, C2 and ATC communications, detect and avoid, licensing and operations. The working groups conduct much of their work independently between meetings of the UASSG, and then bring their material to the UASSG plenary meetings for discussion. Each focus area is dependent upon input from the other groups and, in turn, contributes to decisions being made related to the other topics. The work is both multi-disciplinary and interdisciplinary. The objective of the current work is to produce a draft guidance manual on RPAS addressing the six focus areas identified above, as a minimum, to be published by the third quarter of 2014, in time for the RPAS Symposium scheduled to be held at ICAO Headquarters in November 2014. The RPAS Manual is expected to provide States, operators, ANSPs and industry with sufficient guidance to plan national (or regional) regulations and procedures related to certification, licensing, operations, safety management, security, airspace integration, human performance, frequency spectrum, communications requirements (for ATC and C2) and detect and avoid capabilities.

Membership of the UASG currently consists of the representatives of approximately 20 States (Australia, Austria, Brazil, Canada, China, Czech Rep., EASA, EUROCONTROL, Germany, France, Italy, The Netherlands, New Zealand, Norway, Russian Federation, Singapore, South Africa, South Korea, Sweden, UK, and USA) and 13 international organisations, including UVS International.

ICAO LATIN AMERICAN RPAS SEMINAR

On 18-20 April 2012 UVS International participated in ICAO's first regional RPAS seminar, which took place at the ICAO regional office in Lima, Peru. This event featured 28 speakers from ICAO, Australia, Belgium, Brazil, Chile, Colombia, Ecuador, France, Norway, South Africa, Spain, Sweden, Switzerland, USA and brought together national aviation authorities from many countries in the region, as well as a good number of RPAS manufacturers and RPAS operators.

This event had been co-organised by UVS International and had as objective to bring the Latin American national aviation authorities and industry together to inform them on ICAO's ongoing work relative to RPAS, permit Latin American authorities to highlight currently ongoing RPAS operations in their countries, and promote closer cooperation and coordination between Latin American & Caribbean region authorities and organisations like JARUS, EUROCONTROL, and EUROCAE.

RPAS-RELATED TERMS & DEFINITIONS AND NON-MILITARY RPAS OPERATION CATEGORIES

In September 2012, UVS International produced, as a contribution to the work being performed by the ICAO UASSG, a single document containing all terms and definitions that can be found in the annexes of the Chicago convention. This document, which did not exist at ICAO level, has been remitted to ICAO.

The purpose of this document, which was produced within the framework of UVS International's Global Access Initiative, is to contribute to the promotion of the correct use of the appropriate aviation terminology by the international RPAS community. Now that ICAO, and subsequently its member States have agreed that that RPA are aircraft, this is becoming ever more important, as many of the new and potential members of the international RPAS community have little aeronautical expertise and lack aviation experience.

This reference document can be found at www.uvs-info.com [see "Terms & Definitions" tab in the web site's secondary menu bar (only accessible to members of UVS International)].

In September 2012, two additional reference documents were produced within the framework of UVS International's Global Access Initiative and published, namely the RPAS Civil Operations Glossary and the RPAS Civil Operations Categories.

The RPAS Civil Operations Glossary is list of the terms and definitions that are most commonly used in the field of non-military RPAS operations and is based on the definitions found in:

- 18 Annexes of the Chicago Convention on International Civil Aviation (Recognized by the Contracting States (Source: ICAO);
- ICAO Circular 328 (Explanation of Terms – Not yet formally accepted by ICAO (Source: ICAO);
- CAP722, edition 5 (Recognized in UK) (Source: CAA, UK - 5th edition, 10 August 2012);
- Proposals by UVS International.

The purpose of this document is to supply the international RPAS community with a list of terms and definitions, as well as the applicable acronyms, which are relevant to RPAS operations. It is anticipated that this document will have significant educational value (especially for persons who are not native English speakers & persons with limited aeronautical experience), and it is hoped that it will contribute to making it possible for the international RPAS community to start using a common terminology.

The RPAS Civil Operations Categories is a list of categorized RPAS operations that is based on the European Coordination Centre for Accident and Incident Reporting Systems (ECCAIRS) 4.2.8 document produced by the European Commission Joint Research Centre, which in turn is based on the ICAO ADREP 2000 document. Where considered necessary, clarifying explanations have been supplied.

The RPAS operation examples indicated have been compiled going out from various European Commission (EC) documents & studies, including, amongst others, the EC's report of the hearing on Light RPAS and the presentations given at this hearing, the USEP study produced by the Conseil Général de l'Armement (France), the survey on Light RPAS conducted by UVS International for the EC, information obtained from the EC Joint Research Centre, and the documents submitted to the EC within the framework of the EC UAS Panel initiative. The document splits the RPAS operations into

6 principal categories [state flights; mutualised operations; commercial air transport; general aviation; aerial work (commercial); aerial work -non-commercial]. The indicated examples in each of the 6 categories are not to be considered exhaustive. The examples highlighted in yellow are known to have taken place, are taking place, or are about to take place in one or several of the following countries: Australia, Angola, Argentina, Belgium, Brazil, Canada, Chili, China, Colombia, Czech Rep., Denmark (Greenland), Equator, Finland, France, Germany, Greece, Haiti, Hungary, India, Italy, Japan, Mexico, Netherlands, Norway, Russian Fed., South Africa, South Korea, Spain, Sweden, Switzerland, UK, USA.

These two documents can be found on www.uvs-info.com [see “Terms & Definitions” tab in the web site’s secondary menu bar (only accessible to members of UVS International)].

EASA

The European Aviation Safety Agency (EASA) is an EC agency and is responsible for the certification of RPAS with a maximum take-off mass (MTOM) of more than 150 kg, as well as for the certification of remote pilots and RPAS operators in 31 countries. EASA has been actively involved in the ICAO UASSG since its inception (and co-chairs it), and in all European RPAS-related regulatory initiatives. EASA also leads the Regulatory sub-group of the ERSG

In August 2009, EASA issued Policy Statement E.Y013-01 – Airworthiness Certification of Unmanned Aircraft Systems, which establishes the general principles for type certification of RPAS.

In August 2012, EASA issued Notice of Proposed Amendment (NPA) 2012-10 Transposition of Amendment 43 to Annex 2 to the Chicago Convention on RPAS into common rules of the air. UVS International drew up and supplied extensive comments to this NPA. These comments were also made on behalf of the following national associations: ASSORPAS, Italy; BeUAS, Belgium; DARPAS, The Netherlands; UAS Norway, Norway; UAV-DACH, Germany; UVS France, France. UVS International’s submission represented 451 corporate, institutional and academic entities.

In view of the comments submitted by UVS International, it was invited to participate in a workshop that took place at EASA headquarters in Cologne, Germany on 4 & 5 March 2013. At this meeting EASA presented a revised version of the NPA that took into account all the comments received from all parties and accepted by EASA. The meeting’s attendees agreed on additionally required amendments. The revised document is now under peer review. The final document should be remitted to the EC during the first quarter of 2014.

EUROCONTROL

EUROCONTROL, the European Organisation for the Safety of Air Navigation, an intergovernmental organisation made up of 39 Member States and the European Commission, leads and supports air traffic management improvements across Europe, and plays a pivotal role in the Single European Sky initiative. EUROCONTROL has been actively involved in the ICAO UASSG since its inception, as well as in all European RPAS-related regulatory initiatives (including EUROCAE WG73 of which it was one of the initiators).

On 1 June 2012, EUROCONTROL, in anticipation of its contributions to ERSG, as well as to various other organisations (including, but not limited to EUROCAE WGs 73 & 93, and the ULTRA Consortium), initiated a Regulatory Gap Analysis Survey amongst the 24 State members of the UAS Coordination Group (consisting of representatives of the regulatory authorities in Austria, Belgium,

Bulgaria, Czech Rep., Denmark, France, Germany, Greece, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Rep., Slovenia, Spain, Sweden, Switzerland, Ukraine, UK). This regulatory gap analysis will list the current regulatory status in the involved countries and outline the factors that are required to reach the European RPAS regulatory framework. The result of this gap analysis should support the alignment of States, industry and national regulatory authorities with the future RPAS air traffic management integration activities. The conclusions of this survey are expected before the end of 2013.

EUROCONTROL is also actively involved in the ICAO UASSG, as well as in all European RPAS-related regulatory initiatives, including the ERSG.

SESAR

The Single European Sky ATM Research (SESAR) Joint Undertaking (JU) (SJU) is a European public-private partnership founded by the EC and EUROCONTROL, and has 15 industry members. Today the partnership also includes associate partners, associates to SJU members, and other key aviation stakeholders (EASA, airspace users, the military, staff associations, national authorities). SJU is managing the development phase of the Single European Sky ATM Research (SESAR) Programme that will give Europe a high performance Air Traffic Management infrastructure enabling the safe & environmentally friendly development of air transport.

In the definition phase of the Single European Sky ATM Research (SESAR) programme, RPAS developments were not seriously considered. The evolution of the needs affecting European airspace has encouraged the SJU to work on an update to the SESAR concept of operations (CONOPS), which will take the operational specificities of RPAS into consideration.

In 2012 the SJU launched a study on the integration of RPAS into non-segregated airspace. Based on this work the SJU will assess and – if necessary – launch the activities required to enable the satisfactory integration of RPAS into the future civilian airspace.

The SJU has recognised the need to identify, plan, coordinate, and subsequently monitor the activities necessary to achieve the safe and seamless integration of RPAS into non-segregated airspace in a multi-aircraft and manned flight environment. More specifically, the fact that it is essential for SESAR Integrated RPAS Demonstration Activities to ensure the adequate integration of these systems in the non-segregated ATM had already been identified by the European Commission. It is in this context that the SJU launched, at the beginning of 2013, a call for Integrated Demonstration Activities relevant at European scale, including integrated pre-operational flight trials activities. It aims to demonstrate how to integrate RPAS into the different non-segregated ATM and airspace environments in order to explore the feasibility of integration with the wider aviation community by 2016. The Demonstration Activities will focus on finding concrete data and results to complement the already identified operational and technical gaps in the roadmap for the satisfactory integration of RPAS and to capitalise on the SESAR delivery approach by providing synergies and opportunities, with the overall SESAR programme.

The SJU actively participated in the EC UAS Panel, and leads the Research and Development subgroup of the ERSG.

NATIONAL AVIATION AUTHORITIES

The National Aviation Authorities (NAAs) of the 27 member states of the European Union are responsible for the rulemaking, certification and operational approval of civil RPAS with a MTOM of less than 150 kg, remote pilots and RPAS operators in their countries. This situation could possibly generate 27 different sets of RPAS regulations, which would not be in the interest of the European RPAS community.

Currently, initial national regulations relative to the operation of non-military RPAS are now in place in Australia, Canada, Czech Rep., France, Ireland, Japan, Sweden, and UK, or are about to enter into force in Belgium, Italy, and Spain, or are being formulated in Brazil, Denmark, The Netherlands, Norway, Russian Federation, Turkey,

There are currently NAA-approved non-military RPAS operations taking place in the following countries: Australia, Canada, Czech Rep., France, Ireland, Italy, Japan, Sweden, Switzerland, and UK.

In the absence of rules, non-military RPAS operations are being facilitated on a case-by-case exemption basis by the NAAs in the following countries: Argentina, Austria, Belgium, Brazil, Chili, China, Colombia, Denmark, Equator, Finland, Germany (at Länder level), Greece, Haiti, Hungary, Italy, Mexico, The Netherlands, Norway, Portugal, Russian Fed., South Korea, South Africa, Spain, Surinam, and USA (Northern Slope region in Alaska only).

JARUS

The Joint Authorities for Rulemaking on Unmanned Systems (JARUS) group federates the NAAs of 24 countries (Australia, Austria, Belgium, Brazil, Canada, Colombia, Czech Rep., Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Malta, Netherlands, Norway, Russian Fed., South Africa, Spain, Switzerland, Turkey, UK, USA), as well as EASA and EUROCONTROL.

JARUS contributes to the harmonization and coordination of the rulemaking, certification, and operational approval of civil RPAS, remote pilots and operators. The intent is to eliminate the need for each country to write their individual requirements and to facilitate reciprocal acceptance of RPAS-related certificates, approvals and licenses.

The first workshop organised by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) took place at EUROCONTROL in Brussels, Belgium on 6 December 2012. The purpose of this workshop was to make it possible for JARUS to present the JARUS-proposed SC-LURS regulation (for light unmanned rotorcraft systems) to the RPAS community, and inform the RPAS community on SC-LURS comment process. UVS International participated in this workshop.

In October 2012, UVS International proposed, within the framework of its Global Access Initiative, to establish and maintain a web site specifically for the Joint Authorities for Rulemaking on Unmanned Systems (JARUS). This proposal was made because it was politically not possible for any of the JARUS members (all national aviation authorities) to host such a web site. The UVS International proposal was accepted and the JARUS web site (www.jarus-rpas.org) is now online. This web site will make it possible for JARUS to communicate on its activities to the international RPAS community. The content of this web site is supplied by JARUS.

As indicated in the European RPAS Roadmap, JARUS will be playing an instrumental role in the implementation phase of the roadmap.

EUROCAE WORKING GROUP 73

The European Organization for Civil Aviation Equipment (EUROCAE) was formed in Lucerne, Switzerland, on April 24, 1963. EUROCAE has now for several decades been operating as a non-profit organisation, whose membership exclusively comprises aviation stakeholders made up of manufacturers (ATM systems, aircraft, airborne and ground equipment), national and international aviation authorities, service providers and users (airlines, airports, operators) from both inside and outside of Europe. EUROCAE has developed a wide range of performance specifications and other documents exclusively dedicated to the aviation community. EUROCAE documents (ED) are widely referenced as a means of compliance to European Technical Standard Orders (ETSOs) and other regulatory documents like ICAO Standards and Recommended Practices (SARPS), EUROCONTROL Safety and Regulatory Requirements (ESARR) and FAA standards. The European Commission recognises EUROCAE's competence related to standardisation in order to support the Single European Sky initiative, leading to a profound involvement from EUROCAE in the development of technical material, as well as Community Specifications supporting the SESAR Joint Undertaking.

UVS International instigated and strongly contributed, in close co-ordination with EUROCONTROL and EASA, to the start up of EUROCAE Working Group 73 (WG73) in April 2006. The initial objective of WG73 is to deliver proposals for standards and guidance relative to all sizes of RPAS for consideration to EASA and had 4 Sub-Groups (UAS Operations and Sense & Avoid; Airworthiness; Communications, Command & Control, Spectrum & Security; Light RPAS). The WG73 was subsequently adapted to a matrix organisation with 3 vertical activities. WG73 is now re-organised to work on:

- Guidance information for Command, Control and Communications (C3) Concepts, material in support of a UAS Classification scheme, Flight Crew Licensing, Operator Approval and guidance material for UAS AMC 1309 with Typical UAS Failure Classification illustration.
- OSED, SPR, INTEROP (Operational Services and Environment Definition, Safety, Performance and Interoperability Requirements) for RPAS (Scenario 1), MASPS for Traffic Encounter, Weather Avoidance and C3.

Since May 2012, WG73 is only involved with RPAS with a MTOM of more than 150 kg (see hereafter).

EUROCAE WORKING GROUP 93

On 2 March 2011, UVS International submitted a proposal to EUROCAE WG73 SG4 on Light RPAS for a restructuring of this working group, taking into account the specific characteristics of SMEs, which form the backbone of the relevant industry. In this proposal, on request of ICAO, the term Remotely Piloted Aircraft was used instead of Unmanned Aircraft. This proposal was motivated by the following:

- The conclusions of UVS International's Interim Working Group on Light UAS;
- The conclusions drawn by the EC subsequent to their Hearing on Light UAS in October 2009;
- The recommendations expressed by the EC in their report on the Hearing on Light UAS;

- The conclusions of the worldwide survey on Light RPAS (< 150 kg) produced by UVS International for the EC DG MOVE;
- UVS International's petition regarding Light RPAS and remitted to the European Commission, and the positive response this petition received from the EC.

The aforementioned mentioned brought the following points into focus:

- The majority of the current non-military RPA operations are conducted using Light RPA (MTOM <150 kg);
- The vast majority of the manufacturers and operators of Light RPAS are SMEs;
- The amount of manufacturers producing Light RPAS is much larger than the amount of manufacturers producing RPA with a maximum take-off mass superior to 150 kg;
- Light RPAS have the potential of supplying significant societal benefits (including in the security sector);
- A significant number of Light RPAS are market ready;
- The strategic importance of the technologies being developed by SMEs;
- There is, today, a significant market for non-military RPAS (governmental, commercial & research applications);
- An incremental approach to insert Light RPAS into civil-managed airspace should be initiated in the short term and a minima European regulation could speed up the emergence of these markets;
- Most non-military Light RPAS operations are currently conducted at flight altitudes below 150 m above ground level and within visual line of sight (VLOS);
- A single set of rules pertaining to Light RPAS for Europe would favor the creation of an open and fair European market for these systems;
- Aerial work/specialized operations using Light RPAS will be the core of a totally new service industry;
- A successful incremental approach to permitting Light RPA operations would have benefits for the large RPAS community;
- Due to the specific characteristics of Light RPAS and the large number of SMEs involved, and taking the aforementioned points into account, the Light RPAS community has been recognized by the EC as a separate and important aviation stakeholder group.

The approach proposed took into account the two following points, which are of capital importance for the large majority of the Light RPAS manufacturers and operators:

- Minimise the requirement for meetings in Brussels (or elsewhere) for the entire working group and maximize the use of modern communication tools (to decrease cost & reduce personnel constraints & increase efficient use of time);
- Organise participation in the work on a national level and in the national language (producing a national position paper in English), making it possible for all to participate on an equal basis (and without any linguistic domination).

In order to make this possible, it was suggested to make use of national associations and working groups, and create synergies with ongoing national initiatives in the process. In anticipation of this necessity, UVS International had already organised the International Coordination Council (ICC) on RPAS, which brings these parties together.

Subsequent to this proposal, EUROCAE Working Group 93 on Light RPAS was kicked off in May 2012. Its initial two-year programme aims to gather information, analyze it and make

recommendations to NAAs in a number of defined areas relative to non-military Light RPAS regulation (VLOS & BLOS operations). WG93's work methodology (all required work is carried out online) has been specifically geared to small and medium-sized enterprises. The initially defined 14 Work Packages have recently been restructured into 5 Focus Groups (Safety & Security; Organisation Approval; VLOS Operations; Flight Crew Licensing & Training; BVLOS Operations). Currently, more than 180 persons (including 27 NAA representatives) from 22 countries are currently participating in this effort.

Participation in WG93 is open to three categories of participants:

- All full EUROCAE members;
- All appropriate companies, organisations and private individuals designing, developing, or producing RPAS or related sub-systems, operating RPAS (commercially or non-commercially), training RPAS pilots or supporting the emerging RPAS industry, under the condition that they are a member of UVS International, or a national association or working group that is associated with UVS International and/or the International Coordination Council;
- Companies and organisations that do not fall in either of the two aforementioned categories, but under the condition that they become a full member of EUROCAE, or have an existing working arrangement with EUROCAE.

Appropriate companies and organisations should be understood as legal entities having their principal place of business and registration in an acceptable country (United Nations & European Union guidelines apply). Appropriate private individuals should be understood as persons officially residing and deploying their activities in acceptable countries (United Nations & European Union guidelines apply).

Information on EUROCAE WG93, including the participation application form, can be found on www.uvs-info.com (see the "Standards" tab in the main menu bar).

QUALIFIED ENTITIES

In the UK, CAP553 enshrined the use of Qualified Entities (QEs) by the Civil Aviation Authority (CAA). To date only one QE has been approved in the UK. As indicated in the CAP722, the UK CAA can, in accordance with its "Light UAS Policy", grant permission to allow the operation of a Light RPAS (MTOM <150 kg) and uses an accredited QE to carry out, on its behalf, airworthiness assessments, as well as assessments of RPAS pilots for competence (and grant the relevant qualification) and RPAS operators for competence (granting the relevant certificates).

The CAP553 document can be found at <http://www.caa.co.uk/docs/33/CAP553.PDF>

A number of European NAAs have decided to also call for the establishment of national QE(s), or to recognize recommendations made by QEs in other States.

EUROPEAN NATIONAL RPAS ASSOCIATIONS & WORKING GROUPS

Starting in 1999, UVS International instigated the formation of national RPAS working groups and associations consisting of industry, and in some cases government and military representatives, to deal with RPAS-related airworthiness, certification and air traffic management issues on a national

level, and to exchange information amongst each other. This initiative has resulted, directly or indirectly, in the formation of the following national associations:

| | | | |
|------------|-------------------------------|-----------------|------------|
| Belgium | BeUAS | Italy | ASSORPAS |
| Brazil | ABIMDE-VANT (WG) | Japan | JUAV |
| Canada | Unmanned Systems Canada | The Netherlands | DARPAS |
| Czech Rep. | AVBS | Norway | UAS Norway |
| Denmark | UAS Denmark (WG) | Russian Fed. | UVS Russia |
| France | France FPDC | Spain | AE RPAS |
| | UVS France (no longer active) | UK | UAVS |
| Germany | UAV DACH | | |

Note: UAV DACH, a multi-national German language RPAS Working Group (Austria + Germany + Netherlands + Switzerland), was instigated by UVS International in 2000, and became a national association in 2010.

UVS INTERNATIONAL SURVEY ON RPAS OPERATIONS

UVS International is currently undertaking a worldwide survey on current non-military RPAS operations. This survey will make it possible to identify RPAS operators and catalogue the currently on-going civil RPAS operations.

The objective of this survey is to:

- Reach out to the current civil RPAS operators' community;
- Permit the current civil RPAS operators' community to identify itself;
- Identify the types of the civil RPAS currently being used;
- Identify the types of missions currently being flown;
- Evaluate the quantity of currently on-going & anticipated civil RPAS operations;
- Identify wishes of the civil RPAS operators' community in the field of regulatory & operational developments relative to their anticipated future activities;
- Supply conclusions for consideration in the European RPAS Roadmap.

The survey categorizes RPAS operators as follows:

- Operator – Commercial (RPAS manufacturer);
- Operator – Commercial (not RPAS manufacturer);
- Operator – Non-Commercial – Commercial Air Transporter;
- Corporate (internal corporate use);
- Flying Club / School;
- General Aviation Air Service Supplier;
- Governmental Organisation/Agency (non-military);
- Research Organisation;
- RPAS Manufacturer (experimental use);
- Sales / Rental / Service Organisation.

UVS International is conducting this survey within the framework of its Global Access Initiatives. The following 3 documents concerning this survey can be found under the “European Matters” tab in the main menu bar on www.uvs-info.com:

- RPAS Civil Operations Survey – Introduction;

- RPAS Civil Operations – Survey Form;
- RPAS Civil Operations – Aerial Operation Categories (the relevant operation category ref. nr. in this document is to be used when completing the survey form).

All current & possible future RPAS operators are invited to participate in this survey. In the context of this survey “Operator” means: A person, organisation or enterprise engaged in or offering to engage in an aircraft operation.

The survey conclusions, which will be presented at the RPAS CivOps conference in Brussels, Belgium in December 2013 (see below), will be made available to all survey participants, as well as to ICAO UASSG, ERSG, EASA, EUROCONTROL, SESAR JU, EUROCAE WG73 & WG93.

ULTRA CONSORTIUM

On 27 June 2012, the kick-off meeting of the ULTRA (Unmanned Aerial Systems in European Airspace) Consortium took place. The EC awarded an 18-month study contract to ULTRA under its «Coordination and Support Actions» within the framework of the EC’s Seventh Framework Programme. This contract has as an objective, based on a viable business case approach, to develop a recommendation relative to the pragmatic and incremental insertion of civil Light RPAS (< 150 kg) into European airspace. For each step, the impact on European industry and quality of life will be quantified, and the regulatory and technology needs, as well as the required social acceptance actions will be highlighted. The ULTRA Consortium’s conclusions will be fed into the ERSG.

The ULTRA Consortium members are: A2Tech, Italy; Blyenburgh & Co, France; Boeing R&T Europe, Spain; Cranfield Aerospace, UK; DFS, Germany; Honeywell, Czech Rep., Indra Sistemas, Spain; Integra, Denmark; NLR, Netherlands, Onéra, France; Studio Legale AST, Italy; Thales Alenia Space, France.

For additional information see: www.ultraconsortium.eu

THE NON-MILITARY RPAS COMMUNITY

When these activities start to bear fruit, the opening of European airspace to RPAS operations will instigate an acceleration of the creation of new commercial, and non-commercial, non-military RPAS operators, most of which will initially be SMEs. However, it should be noted that electrical grid, as well as pipeline and railway operators in various countries have experimented the use of RPAS and are starting to show keen interest in the use of RPAS for corporate aerial work operations. The currently existing RPAS operators are not federated on a European level, or on an international level, and they are not recognized as an aviation stakeholder group. Subsequently they cannot make their voice heard nor contribute, in a coordinated way, to the on-going construction of the European and international regulatory framework. In addition, it is therefore impossible for the EC and its agencies to scope the civil RPAS operators’ community and address themselves to it.

Furthermore, due to its non-existence as a community, non-military RPAS operators cannot self-impose, oversee and enforce the adherence to a community “code of conduct” by its members on a national, and even less on a European or international level. Adherence to such a code of conduct or label of quality, could contribute to eliminating unfair competition from rogue operators not abiding by the current rules.

In addition, and again due to the lack of existence as a recognized stakeholder, non-military RPAS operators cannot negotiate acceptable rates for the obligatory insurance premiums.

BRINGING THE RPAS COMMUNITY TOGETHER

The current RPAS operators' situation has been recognised by UVS International, and as a consequence it organised the first RPAS Operators' Forum in Brussels in December 2012. This conference will from now be an annual event; the second edition of the event will take place in December 2013 (see below).

Furthermore, UVS International has decided to start-up the following committees, which will undertake activities that will be of importance for the implementation of the European RPAS Roadmap:

- Non-Military RPAS Operators Committee [to represent the interests of the RPAS aerial work community (commercial, non-commercial, corporate) in Europe].
- Civil RPAS Insurance Committee (to bring the RPAS operator and international insurance communities together).
- RPAS Accident & Incident Committee (to contribute to the definition of the required European RPAS accident & incident reporting procedure).
- Governmental Non-Military Operators Committee (to bring representatives of the European national police, fire brigades, coast guard, etc together as a RPAS operators' stakeholder group).
- Public Flight Demonstration Committee [to draw up an initial proposal for safety regulations that would be applicable at public flight demonstrations of RPAS (this draft document would be open to comments from the European RPAS community)].
- Academic RPAS Research Committee (to bring the European academic community involved with RPAS together with the purpose of designing & producing a publically accessible European RPAS-related study data base, which should contribute to spending European RPAS-related study money more wisely, and making the study results more accessible).

The European and international photogrammetry community is invited to join the aforementioned activities that are of relevance. For more information on these initiatives, and to find out how to participate, please contact Peter van Blyenburgh at pvb@uvs-info.com or pvb@uvs-international.org (tel.: 33-1-46.51.88.65)

RPAS CIVOPS 2013

The RPAS CivOps 2013 conference, organised by UVS International, in cooperation with the Belgian Royal Military Academy, and coordinated with the European Commission (European RPAS Steering Group) will take place in the conference centre of the Royal Military Academy in Brussels, Belgium on 9-11 December 2013. This conference intends to bring together representatives of the following communities and organisations:

- Current civil RPAS operators [commercial & non-commercial (research, governmental non-military)];
- Organisations currently involved in preparing the future regulations for civil RPAS on a national & European level (incl. ERSG, EASA, EUROCONTROL, JARUS, SESAR JU, NAAs, EUROCAE WG73 & WG93, ULTRA consortium);

- Manufacturers of civil RPAS (all aircraft types of all sizes);
- Manufacturers of sub-systems for RPAS (including imagery & non-imagery sensors);
- National Aviation Authorities;
- European Commission DG Enterprise & Industry;
- European Commission DG Mobility & Transport;
- European Commission DG Research;
- European Commission Joint Research Centre;
- Insurance companies (underwriters & brokers);
- National associations involved with RPAS;
- National working groups involved with RPAS;
- Current & potential customers of RPAS flight services.

The objectives of this conference are to:

- Increase awareness relative to currently on-going civil RPAS operations (commercial & non-commercial; non-governmental & governmental);
- Give a selected number of current civil RPAS operators the possibility to state their requirements (re: regulatory matters & remotely piloted aircraft & sensors);
- Contribute to identifying the civil RPAS community to its members;
- Highlight the diversity of current & potential civil RPAS applications and present business case examples;
- Disseminate information on the currently on-going civil RPAS-related regulatory activities in Europe;
- Disseminate information on recently concluded studies pertaining to civil RPAS applications;
- Permit potential customers of RPAS flight services to express their requirements;
- Create a forum for current and future civil RPAS operators, RPAS manufacturers and the representatives of the organisations that are involved in preparing the future for civil RPAS operations to interact;
- Present novel civil RPAS applications;
- Discuss critical issues such as command & control frequencies (in various environments);
- Highlight current technology & regulatory gaps.

The topics to be covered by the conference will include:

- Current & future applications;
- Regulatory issues (national & European);
- Technical & performance requirements;
- System & sub-system development updates;
- Technology crunch points;
- Aerial work customer requirements;
- Insurance & liability issues;
- Operational experience & lessons learned.

All information concerning the RPAS CivOps 2013 conference can be found on www.rpas-civops.org.