

**INTERNATIONAL
CONFERENCE**



**REMOTELY PILOTED
AIRCRAFT SYSTEMS
CIVIL OPERATIONS**

VENUE, LOCATION & DATE

**Royal Military
Academy
8 Hobbema straat
Brussels, Belgium
19 & 20 Jan. 2016**

ORGANIZED BY



**BLYENBURGH & CO
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IN COOPERATION WITH



**ROYAL MILITARY
ACADEMY, BELGIUM**

UNDER THE AUSPICES OF

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THE EUROPEAN CIVIL RPAS OPERATORS' FORUM

Announcing the Way Forward

IN COORDINATION WITH



RPAS CivOps 2016 - Conference Programme

DAY 1 - TUESDAY 19 JANUARY 2016

Session 1 RPAS Operations

- 09.00-09.15 **Overview of the Current Regulatory Situation**
Peter van Blyenburgh - Blyenburgh & Co, France (*"Drone-Rules.eu" Consortium & RAVT Cooperation Group member*)
- 09.15-09.30 **French Civil Drone Council: A Tool for Developing the Drone Industry & Market**
Carine Donzel-Defigier - DGAC, France (*"Conseil du Drone Civil" member*)
- 09.30-09.45 **RPAS Operations in France - An Industry Perspective**
Stéphane Morelli - Fédération Professionnelle du Drone Civil (FPDC), France (*"Conseil du Drone Civil" member*)
- 09.45-10.00 **RPAS Operations in Germany - A Legal Perspective**
Dr Oliver Heinrich - BHO Legal, Germany (*"Drone-Rules.eu" Consortium member*)
- 10.00-10.15 ♦ **Interactive Panel Discussion**
- 10.15-11.00 ♦ **Refreshment Break**

Session 2 RPAS Operations

- 11.00-11.15 **RPAS in Agriculture: Now & Tomorrow**
Corentin Cheron - Airinov, France (*"Conseil du Drone Civil" & RAVT Cooperation Group member*)
- 11.15-11.25 **The Safe Use of RPAS in the European Sky (presentation by video)**
Matthijs van Miltenburg - European Parliament
- 11.25-11.40 **Understanding Communication Requirements for RPAS Traffic Management Systems**
Sebastien Babiarz - Nokia, Germany
- 11.40-11.55 **Fully Autonomous Drones: Technical Challenges & Development Methods**
Sébastien Varrier - Squadron System, France
- 11.55-12.10 ♦ **Interactive Panel Discussion**
- 12.10-13.30 ♦ **Lunch in the RMA Cafeteria**

Session 3 RPAS Regulation - The Way Forward

- 13.30-13.45 **Drones: The Proposed Way Forward - The European Aviation Package**
Koen de Vos - European Commission DG Mobility & Transport (MOVE)
- 13.45-14.00 **The EASA Opinion**
Antonio Marchetto - European Aviation Safety Agency (EASA)
- 14.00-14.15 **How «Product Harmonisation Legislation» & Market Surveillance Could Contribute to Drone Safety**
Jean-Pierre Lentz - European Commission DG for Internal Market, Industry, Entrepreneurship & SMEs (GROWTH)
- 14.15-14.30 **Towards the Integration of RPAS into the Aviation System**
Alain Siebert - Single European Sky ATM Research Joint Undertaking (SJU)
- 14.30-14.45 **EGNOS & Galileo Added Value for RPAS and Funding Opportunities**
Carmen Aguilera - European GNSS Agency
- 14.45-15.00 ♦ **Interactive Panel Discussion**
- 15.00-16.00 ♦ **Refreshment Break**

Session 4 RPAS Regulation - The Way Forward

- 16.00-16.15 **RPAS for Civil Protection**
Alessandro Carrotta - European Commission DG Humanitarian Aid & Civil Protection (ECHO)
- 16.15-16.30 **RPAS Regulation - The French Approach to Malicious RPA**
Col Laurent Barrilliet - Ministry of Defence, France (*"Conseil du Drone Civil" member*)
- 16.30-16.45 **Insertion of Large Drones into European Airspace**
Vincent de Vroey - Aerospace and Defence Industries Association of Europe (ASD), Belgium
- 16.45-17.00 **Geo-Fencing: A Comprehensive Approach**
Jon Resnick, DJI, China (*RAVT Cooperation Group member*)
- 17.00-17.15 **Standards for Light RPAS - An Urgent Requirement**
André Clot - EuroUSC, UK (*"Drone-Rules.eu" Consortium & RAVT Cooperation Group member*)
- 17.15-17.35 ♦ **Interactive Panel Discussion**
- 17.45-19.00 ♦ **Conference Cocktail in the RMA Mess**

DAY 2 - WEDNESDAY 20 JANUARY 2016

Session 5 RPAS-related Awareness Creation

- 09.00-09.10 **«Drones-Rules.EU»: Purpose & Objective**
Philippe Carous - SpaceTec Partners, Belgium (*"Drone-Rules.eu" Consortium member*)
- 09.10-09.25 **RPAS-related Insurance**
Jean Fournier - Global Aerospace, France (*"Drone-Rules.eu" Consortium member*)
- 09.25-09.40 **RPAS-related Privacy & Data Protection**
Rachel Finn - Trilateral Research, UK (*"Drone-Rules.eu" Consortium member*)
- 09.40-09.55 **Update on JARUS & Industry Involvement**
Eric Sivel, JARUS
- 09.55-10.10 ♦ **Interactive Panel Discussion**
- 10.10-11.00 ♦ **Refreshment Break**

Session 6 Solutions for the Safe Integration of RPAS

- 11.00-11.15 **SKYBRIDGE - Bridging the Gap between Manned & Unmanned Aviation**
Marc Kegelaers - UniFly, Belgium (*RAVT Cooperation Group member*)
- 11.15-11.30 **PSMD Project**
Justyna Zdanowska - Dron House, Poland
- 11.30-11.45 **Airspace Integration - With a Civil/Military Context**
Thomas M. Buckner, NATO Headquarters
- 11.45-12.00 **A New Generation of Risk Management**
Tracy Lamb, SGS, UK

- 12.00-12.15 ♦ **Interactive Panel Discussion**
- 12.15-13.30 ♦ **Lunch in the RMA Cafeteria**

Session 7 Solutions for the Safe Integration of RPAS

- 13.30-13.45 **A European Approach & Perspective to NASA UTM**
Taro Kuusiholma - Sharper Shaper, Finland
- 13.45-14.00 **Light UAS in Non-segregated Airspace for Maritime & Environmental Surveillance**
Koen Meuleman, VITO, Belgium
- 14.00-14.15 **DroneRadar: The Drone Awareness Control System**
Wojciech Wozniak & Pawel Korzec, dlapilota.pl Sp z o.o, Poland
- 14.15-14.30 ♦ **Interactive Panel Discussion**
- 14.30-14.40 ♦ **Conclusions & Announcements + Closure**

Presenting Organisations & Their Affiliations

Airinov, France

- RPAS operator specialised in agricultural applications
 - Member of "Conseil pour les Drones Civils"
 - Member of RAVT Cooperation Group

Aerospace & Defence Industries Association of Europe (ASD)

- Pan-European trade association
 - Member of ICAO RPAS Panel (observer)
 - Member of European RPAS Roadmap Implementation Coordination Group
 - Member of the JARUS Stakeholder Consultation Body

BHO Legal, Germany

- High technology law experts
 - Member of "Drone-Rules.EU" consortium

Blyenburgh & Co, France

- Strategic RPAS consultancy & publishers & patent search
 - Member of "Drone-Rules.EU" consortium
 - Member of RAVT Cooperation Group

Conseil pour les drone civils (Civil Drone Council), France

- National public/private initiative (see page 4)

Direction générale de l'aviation civile (DGAC), France

- National aviation authority
 - Member of "Conseil pour les Drones Civils"
 - Member of ICAO RPAS Panel
 - Member of JARUS

DJI, China

- Producer of civil drones (leisure & commercial)
 - Member of RAVT Cooperation Group

dlapilota.pl Sp z o.o, Poland

- High tech development company

Dron House, Poland

- High tech development company

Drone-Rules.EU Consortium, Europe

- Consortium co-funded by the Executive Agency for Small & Medium-sized Enterprises (EASME) of EC (COSME programme)

European Aviation Safety Agency (EASA)

- European Union Agency
 - Member of European RPAS Roadmap Implementation Coordination Group
 - Member of ICAO RPAS Panel
 - Member of JARUS

European Commission:

- Directorate General Humanitarian Aid & Civil Protection (ECHO)
- Directorate General Internal Market, Industry, Entrepreneurship & Small & Medium-sized Enterprises (GROWTH)
 - Member of European RPAS Roadmap Implementation Coordination Group
- Directorate General Mobility & Transport (MOVE)
 - Chair of European RPAS Roadmap Implementation Coordination Group

European GNSS (Global Navigation Satellite System) Agency

- European Union Supervisory Agency

European Unmanned Systems Centre (EuroUSC), UK

- Qualified entity
 - Member of "Drone-Rules.EU" consortium
 - Member of RAVT Cooperation Group

Federal Office of Civil Aviation (FOCA), Switzerland

- National aviation authority
 - Member of ICAO RPAS Panel
 - Member of JARUS

Fédération Professionnelle du Drone Civil, France

- National RPAS association
 - Member of "Conseil pour les Drones Civils"
 - Member of UVS International's International RPAS Coordination Council

Global Aerospace, France

- Aviation insurers

- Member of "Drone-Rules.EU" consortium

JARUS - Joint Authorities for Rulemaking on Unmanned Systems

- Group of representatives of national aviation authorities from 43 countries + 2 regional aviation authorities (EASA & EUROCONTROL) that has a purpose to recommend a single set of technical, safety & operational requirements for all aspects linked to the safe operation of RPAS.
 - Member of European RPAS Roadmap Implementation Coordination Group

Ministry of Defence - DPID, France

- Member of "Conseil pour les Drones Civils"

NATO Headquarters

- North Atlantic Treaty Organization

Nokia, Germany

- Mobile network specialists

RAVT Cooperation Group

- Non-funded international industry cooperation group consisting of 20 companies from 12 countries, initiated by UVS International, which has as objective to lay the foundation for the development of a RPAS autopilot validation tool.

SGS, UK

- Operational safety auditing & training in the areas of risk management, safety systems, threat & error management.

Sharper Shape, Finland

- RPAS-related high tech company

Single European Sky ATM Research Joint Undertaking (SESAR JU)

- European public/private partnership that manages the development phase of the Single European Sky ATM Research programme.
 - Member of European RPAS Roadmap Implementation Coordination Group

SpaceTec Partners, Belgium

- Programme management company
 - Member of "Drone-Rules.EU" consortium

Squadrone System, France

- Manufacturer of autonomous drones

Trilateral Research, UK

- Experts in data protection & privacy
 - Member of "Drone-Rules.EU" consortium

UniFly, Belgium

- Aviation software development company
 - Member of RAVT Cooperation Group

UVS International

- International RPAS association federating 25 national RPAS associations in 23 countries & representing over 2700 corporate members in 44 countries.
 - Initiator of the RAVT Initiative
 - Member of ICAO RPAS Panel (observer)
 - Member of European RPAS Roadmap Implementation Coordination Group
 - Member of the JARUS Stakeholder Consultation Body

VITO, Belgium

- Flemish Institute for Technological Research
 - Member of the LUMEN Consortium

SPECIAL FOCUS ON FRANCE

France is currently the country with the largest quantity of certificated RPAS operators (2147*) jointly deploying 3851* RPA (with 398* RPA type certificates granted). An explanation of how this growth was made possible will be given, and why the country's aviation stakeholder communities have teamed to form the «Conseil pour les drones civils», with the objective to make the national RPAS market sustainable & to prepare it for the future & to maintain its growth. 4 representatives of the «Conseil pour les drones civils» are presenting at RPAS CivOps 2016.

* = Quantities valid on 10 Nov. 2015

The Council for Civil Drones - France

CONSEIL POUR LES
DRONES CIVILS

The first meeting of the "Conseil pour les drones civils" (Council for Civil Drones), took place on 4 June 2015, under the chairmanship of Patrick Gandil, the director general of the French civil aviation authority.

At this meeting a review was made of the work accomplished within the framework of the first phase of the French government's "New Industrial France" initiative. The "Conseil pour les drones civils" consists of representatives of the national professional drone federation (FPDC), the national aeronautical and space industry trade association (GIFAS), various aeronautical industrial groups, operators, public utility companies, agricultural cooperatives, academia, competence clusters, and governmental authorities from various ministries & agencies. It makes recommendations on behalf of the French RPAS community.

The "Conseil pour les drones civils" has adopted a set of action plans encompassing three themes:

- **Operations, Regulation & Use:** To collectively identify future markets, frequency protection, remote pilot qualification, define the regulatory evolution necessary for the rational incremental development of the use of drones;
- **Technology & Security:** To draw up a roadmap permitting to identify the most promising technologies and to coordinate the research efforts required to develop them (incl. test facilities);
- **Support & Promotion:** To facilitate the development of the national civil drone community (export, communication & education, access to financing, insurance, data protection & privacy, general acceptance).

In each of these domains, it is the objective, by means of a pragmatic approach, to coordinate all national efforts at all levels and involve all players, in order to support the multiplication of the usage of civil drones and the development of civil drone-related innovative technologies and services.

With the support of the "Direction générale des entreprises" (an agency of the French Ministry of Economy, Industry & Digital Matters, responsible for the development of the competitiveness & growth of industrial & service enterprises), the Council for Civil Drones watches over the correct integration of its action plan with the solutions of the second phase of the national "New Industrial France" initiative, namely "Transport of Tomorrow", "Intelligent Objects" and "Digital Confidence", and in particular the technological projects identified by its technical roadmap.

The current French civil RPAS community consists of well over 2300 companies and the economic activity associated with this budding community (2147 RPA operators deploying 3851 RPA; 140 approved RPAS producers; 398 granted RPA type certificates Qnties valid on Nov 2015) already represents several hundred million Euros per year. The rapid development of the French drone community is the fruit of the conjunction of a balanced regulation, a dense network of very innovative small & medium-sized companies, a long national aeronautical tradition, and visionary agricultural users and public utility companies.

Drone-Rules.EU - Belgium, France, Germany, UK

DRONE-RULES.EU
CONSORTIUM

The Drones-Rules.EU project aims at building a comprehensive and high quality online presence in order to create THE reference web portal in the European Union (EU) (+ Norway and Switzerland) with the purpose of increasing awareness and facilitating understanding of the legal environment and constraints in relation with light RPAS operations (safety, privacy and data protection, insurance, etc.), with a focus on non-commercial operators (incl. hobbyists). The project will also facilitate access to the European market for commercial operators intending to use RPAS in their home country, or in other EU countries, and showcase the opportunities for economic and job market growth that RPAS represent for entrepreneurs and Small & Medium-sized Enterprises (SMEs).

The DronesRules.EU project has three objectives:

- Design online educational and training material intended to increase awareness and knowledge of commercial and non-commercial operators about the regulatory framework applicable to the use of light RPAS in the European airspace, as well as informing them on the potential safety, liability and privacy risks associated to RPAS operations.
- Collect, elaborate and monitor information from all EU Member States (+ Norway & Switzerland) to present the requirements related to Light RPAS operations in the areas of privacy & data protection, operational safety, liability and insurance requirements.
- Develop & deploy a comprehensive, engaging and accessible web library that will act as a one-stop-shop for the RPAS community (existing stakeholders and potential new entrants). The portal will be available in the five main EU languages (EN, DE, ES, IT, FR) with country-specific information on RPAS rules and regulations translated in the language of the concerned Member State. The portal will also showcase success stories and best practices, so as to increase the uptake of RPAS technologies by small & medium-sized enterprises (SMEs) in new entrepreneurial ventures, as well as their acceptance by civil society. In order to maximise the impact of the project, the Consortium will actively promote the platform by organizing training sessions and promotional events.

The Drone-Rules.EU consortium partners combine a wealth of experience in RPAS regulations and EU institutional communication activities. In addition, they also represent a unique team, gathering some of the most knowledgeable and renowned specialists of the European RPAS regulatory landscape. The seven consortium partners are:

- BHO Legal, Germany
- Blyenburgh & Co, France
- EuroUSC International, UK
- GOPAcom, Belgium
- Global Aerospace, France
- SpaceTec Partners, Belgium
- Trilateral Research & Consulting, UK

The consortium has received the support of key RPAS stakeholders in the EU (national RPAS associations, manufacturers, operators, service providers, etc.), thus ensuring that the impact of the project will be maximised across the EU, thanks to a strong network of multipliers.

The Drone-Rules.EU project is the result of the call for proposals «COS-RPAS-2014-2-03: Facilitating access to regulation for Light Remotely Piloted Aircraft Systems (RPAS)» launched by the European Commission Executive Agency for Small & Medium-sized Enterprises (EASME). It started on 1 October 2015 and has a duration of 24 months.

Session 1 RPAS Operations

09.00-09.15 **Market Structure & Current Regulatory Situation**

Peter van Blijenburgh
Blijenburgh & Co, France & UVS International, The Netherlands
("Drone-Rules.eu" Consortium & RAVT Cooperation Group member)



Bio Data

Peter van Blijenburgh, a Dutch national, was born in The Netherlands (1948) and resides in Paris, France (since 1976). He is the CEO of Blijenburgh & Co, a French strategic consultancy company & publisher. Mr. Van Blijenburgh is the founder of EuroUVS (1997), which became UVS International in 2000. He is currently in his 9th two year mandate as president of UVS International (www.uvs-international.org), a non-profit association registered in The Netherlands and operating out of offices in Paris, France, which represents more than 2700 companies & organizations involved with RPAS/drones in 44 countries. He has instigated the creation of 14 national RPAS/drone associations, and has been the instigator of and/or participant in multiple initiatives related to RPAS/drone regulations & standards. He is the founder of the International RPAS Coordination Council, which federates 25 associations in 23 countries [See page 16]. He is the editor of "RPAS: The Global Perspective", the well-respected annual RPAS/drone reference publication and is also the creator of www.rpas-regulations.com, the world's only web site dedicated to RPAS/drone regulations, which monitors 267 countries & overseas territories, as well as www.uvs-info.com (a generic RPAS/drone information source), a data base of internationally registered patents relative to RPAS/drones (at system & sub-system level), the architect of the related promotional web site (www.uas-patents.org), and the co-organizer of the upcoming EuropaDrone trade show (www.euordrones.info). Mr. Van Blijenburgh has been implicated with RPAS/drones since 1987 and has supplied advisory services to corporate & governmental entities in Europe, the Middle East, and Far East & USA. He is a member of the ICAO RPAS Panel, European RPAS Steering Group, the EC's RPAS Roadmap Implementation Coordination Group, EASA's Safety Standards Consultative Committee, JARUS' Stakeholder Consultation Body, the European Commission-funded "Drone-Rules.EU" consortium, as well as various corporate & academic advisory committees.

Abstract

This presentation will explain the problems and obstacles relevant to the integration of RPA (remotely piloted aircraft) into non-segregated airspace and into very low level airspace (< 500 ft.). It will highlight the actions taken by the European Commission and its agencies relative to RPAS (remotely piloted aircraft systems). An overview of the regulatory situation in Europe, and the rest of the world, will be given, as well as the organisation of the RPAS industrial community (manufacturers, operators & other service suppliers), what "aerial operations" are, what "aerial work/specialized operations" are, and the various sub-categories that exist in "aerial work/specialized operations".

09.15-09.30 **French Civilian Drone Council: A Tool for Developing the Drone Industry and Market**

Carine Donzel-Defigier
DGAC, France
("Conseil du Drone Civil" member)



Bio Data

After a degree in engineering, Carine Donzel-Defigier joined the French Civil aviation authority (DGAC, direction générale de l'aviation civile) as deputy head of the french air carriers and public intervention office, tasked with economic regulation and oversight of French air carriers and the implementing of the French public service obligation (PSO) programme. She then joined the Airworthiness and Operations department where she headed the international activities monitoring and operational quality office for four years. This office participates in elaborating and implementing the safety oversight policy of French air carriers and is responsible for elaborating and implementing the ramp inspection programme in France, both on French and foreign air carriers (technical inspection of aircraft during turn-around). In September 2015, she joined the aeronautic department as deputy head. This department is in charge of defining and putting into effect the aeronautical research and development support policy and of the secretariat of the Civilian Drones Council.

Abstract

A dynamic drone market emerged rather quickly in France, thanks to a drone regulation dating back to april 2012, allowing professional use of drones under some restrictions. Now, more than 1900 drone operators exist in our country. The Civilian Drones Council was created in early 2015 in order to structure the drone industry in France, maintain links between its various actors and help to develop the drone market. The Council, which first plenary was held last June, gather drone manufacturers, drone operators, state representatives, clusters, equipment manufacturers and big drone clients. It consists of an executive committee, and three technical committee : «Operations, uses and regulation», «technologies and safety» and «drone industry support and promotion». The latter deals with export matters, privacy rights, financing, insurance, societal acceptance of drones. The «technologies and safety» committee elaborates the technological roadmap of the Council and proposes reasearch projects in accordance to the roadmap. The «operations, uses and regulations» committee has to identify the various operational and regulatory barriers to the full use or operation of drones and propose adequate actions to remove these barriers.

09.30-09.45 **RPAS Operations in France - An Industry Perspective**

Stéphane Morelli

Fédération Professionnelle du Drone Civil (FPDC), France

(*"Conseil du Drone Civil" member*)



Bio Data

Stéphane Morelli graduated from Ecole Spéciale Militaire de Saint-Cyr and Ecole Nationale Supérieure de Techniques Avancées. He retired from the French Army in 2011, after a career dedicated to leadership and military technology. From 2007 to 2009, he commanded the tactical RPAS regiment of the French Army. In 2009, he was assigned as intelligence and RPAS expert for future programs of the Army. In 2012, he founded Azur Drones, a civil RPAS operator specialized in the Energy, Construction, Industry and Security sectors. Azur Drones has already performed several missions for major companies in these sectors. In 2013, Stéphane Morelli co-created the Fédération Professionnelle du Drone Civil (FPDC), the French RPAS users association, of which he is the President. He represents the FPDC on UVS International's Board of Directors.

Abstract

This presentation will detail the re-organisation of the FPDC and the actions taken by this association over the last 3 years. The current situation pertaining to civil RPAS operations in France, as well as what requires improvement, will be highlighted. Emphasis will be placed on the positive coordinated national dynamics that have been created by the creation of the «Conseil du Drone Civil».

09.45-10.00 **RPAS Operations in Germany - A Legal Perspective**

Dr Oliver Heinrich

BHO Legal, Germany (*"Drone-Rules.eu" Consortium member*)



Bio Data

Oliver Heinrich is co-founder and partner of BHO Legal - a consortium member of the «Drone.Rules.eu» EU funded project. Oliver studied German and Anglo-American law at the Universities of Trier and Cologne. He wrote his doctoral thesis at the Institute of Air and Space Law of the University of Cologne on legal questions of national and European research funding. Prior to working as an attorney, Oliver was a project manager for the European Satellite Navigation System Galileo at the German Aerospace Centre (Deutsches Zentrum für Luft- und Raumfahrt e.V.). Oliver is a member of the extended board of UAV DACH, member of the association's air law expert group and head of its legal work group.

Abstract

The presentation provides an overview of the current legal situation for operating RPAS in Germany and its practical implications for the user community. Explicit rules on RPAS were introduced into German federal air law as late as 2012. Due to the structure of the German administration, these rules are implemented by local administrations within the sixteen federal states ('Bundesländer'). While this is already a high number, depending on the structure of a state, there may even be different administrations responsible for different administrative districts. The specific rules for RPAS apply only, if the RPAS is not used for sport or leisure activities; for other use cases the rules for model aircraft apply. If used for other than sport or leisure activities, the operation of RPAS in Germany always requires an official permission, granted by the local administrations. The underlying rules are very wide, and open for individual conditions, interpretation and discretion by the administration on a case by case basis. The overall situation may lead to diverting implementations of the federal air law by the different responsible local administrations. Furthermore, in order to use an RPAS outside an administrative district, for which the initial permission was provided, additional authorisation and transfer of permission is necessary, sometimes creating extra fees. Accordingly, the situation in Germany is highly complex. A good understanding is however essential for devising use cases relevant for business models.

10.00-10.15 **◆ Interactive Panel Discussion**

10.15-11.00 **◆ Refreshment Break**

Session 2 RPAS Operations

11.00-11.15 **RPAS for Agriculture: Now & Tomorrow**

Corentin Cheron

Airinov, France (*"Conseil du Drone Civil" member*)



Bio Data

Florent is the CEO and co-founder of AIRINOV, a start-up providing product and services for an intensive and sustainable agriculture through an expertise in sensors and drones regarding crop monitoring. Engineer in Computer Science and Geographic Information Systems, specialised in image processing, Florent runs this company, which was awarded in 2010 by the French Ministry of Education and Research during the French National Start-up Competition. 25 employees gather their scientific and management knowledge to acquire data with agronomic models conceived by Airinov, based on lab crop analysis. This complete expertise and solid experience lets AIRINOV being considered as the pioneer in precision agriculture.

Abstract

Agriculture is presented in various market studies as the biggest economic sector for civil drone applications in the next five or ten years. Nowadays, a few companies provide imaging services to farmers using drones. AIRINOV and its network of drone operators has been mapping 30.000 ha in more than 2.000 flights in 2015 in France, and hope to reach 100.000 ha by the end of the year. These flights are carried out by licensed drone operators, train both theoretically and practically, and nearly 80% of the flights have required an agreement with

one or more airdrome or heliport. A process that is acceptable for an established and specialized company, but could the current French regulatory framework be a good base for future operations over farms? What is the future of drone in agriculture? Different scenarios are plausible and could very well coexist. Licensed and well trained drone operators could very well expand their activities in agriculture in the next years. But some, or many, farmers could also buy their own RPAS as hardware prices decrease. Would every farmer who has bought a drone for less than 1.000 € follow a proper training, costing twice the price of the drone, just to fly over his own land? What are the actual risks and what should the future regulatory framework anticipate? This presentation will try to point out the risks of drones in agriculture and suggest ideas for a future regulatory framework that should anticipate the use of light RPAS by individual farmers, based on a four-year experience of drone operations in France.

11.15-11.25 The Safe Use of RPAS in the European Sky
Matthijs van Miltenburg
European Parliament



Bio Data Matthijs van Miltenburg has been a Dutch Member of the European Parliament since 2014 for the Alliance of Liberals and Democrats for Europe (ALDE). He is member of the Committee on Regional Development (REGI) and the Committee on Transport and Tourism (TRAN). As member of the Transport Committee Van Miltenburg is the spokesperson for ALDE on the civil use of drones. Van Miltenburg is also member of the delegations for European relations with Latin American countries. From 2012 until 2014 Van Miltenburg worked as project manager Foreign Investments. Before he was elected as Member of European Parliament Van Miltenburg was a member of the city council of Den Bosch for four years. Between 2007 and 2012 he was senior policy advisor International Affairs at the Province of Noord-Brabant, The Netherlands. From 1997 to 2001 Matthijs van Miltenburg worked for the Dutch ministry of Transport. Van Miltenburg has an educational background in international law.

Abstract In December the European Commission will present its proposal for legislation on the safe and sustainable integration of civil drones into European airspace as part of the aviation package. Prior to the presentation of the aviation package the European Parliament drafted its own initiative report on the safe use of remotely piloted aircraft systems (RPAS, commonly known as drones) in the field of civil aviation. Being the ALDE shadow rapporteur on this topic, Matthijs van Miltenburg will elaborate on the importance of European legislation for the civil use of drones, and the main opportunities and challenges as determined by the European Parliament. (Video presentation).

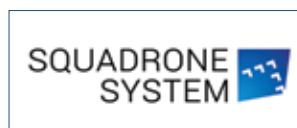
11.25-11.40 Understanding Communication Requirements for RPAS
Traffic Management Systems
Sebastien Babiarz
Nokia, Germany



Bio Data Sebastian Babiarz is RPAS Innovation Research Manager in Nokia Technology Center Ulm, Germany. For more than 10 years Sebastian has been working in various positions from R&D to Customer Support where he gained extensive experience in mobile network systems architecture (GSM, UMTS, LTE). Internet of Things (IoT), RPAS being one of them, is his current challenge and passion. Sebastian holds a Master of Science in Telecommunication and Electronics Engineering.

Abstract Nokia as the world's specialist in mobile networks, is the vendor to all biggest mobile network operators around the globe. Nokia provides end-to-end mobile network communication solutions and high quality services. The drone (RPAS) market has dramatically increased in the last couple of years, which has influenced general public safety. Unawareness of safe drone usage has in many cases caused incidents around the globe. As being already heavily involved in public safety aspects, Nokia has started an innovation project regarding a possible solution for RPAS traffic management. The solution would reuse existing mobile network infrastructure to secure communication between RPAS and the traffic management system. The first prototype of a traffic management system was tested to investigate the problem more deeply in order to understand what improvements are needed in mobile networks to secure identification and communication aspects needed for such a system.

11.40-11.55 Fully Autonomous Drones: Technical Challenges & Development Methods
Sébastien Varrier
Squadron System, France



Bio Data Sébastien Varrier was born close to Lyon, France, in 1987. In 2010, he completed his Engineering degree and M.Sc. in Control and Embedded Systems from Grenoble INP-ENSE3 (Grenoble, France). In 2013, he completed his Ph.D. degree in Control Systems Theory, within the GIPSA-lab's control systems department, from the Grenoble Institute of Technology (Grenoble, France). During those 3 years, he focused on the development of solutions for the detection of critical situations and fault tolerant control of vehicles. He developed new algorithms to detect very efficiently vehicle lack of control, actuators and sensors failures such as active power steering or semi-active suspensions. He also

Abstract built a 1/5th scale vehicle equipped with many sensors such as accelerometers, gyrometers, GPS, ultrasonic sensors etc ... A stm32 board made the interface between the power modules (for traction and direction) and sensors and embedded fault tolerance and safety algorithms. His multi field experience (sensors / actuators / mechanics / informatics / algorithms etc ...) gave him an overview of any complex system. He joined Squadrone System as lead system architect and manages the software development. His experience in algorithms permitted to improve the trajectories of the drone and the overall safety. Sébastien is CTO of the Innovation department. The last century witnessed the evolution of flying systems, from manned piloted aircraft to fully automatic aircraft. In the last decade, the emergence of automated remotely piloted aircraft systems (RPAS), also called drones, has taken place. The next generation of drones is already being developed and concerns fully autonomous drones. However, this raises many challenges that have to be addressed. The company Squadrone System with its product HEXO+ is proposing a new generation of personal drone that is fully autonomous. The development of such a system represents a huge work which is firstly guided by safety and robustness. Developing a fully autonomous system means that you need to trust the technology (hardware + software) and rely on sensors. This also means you need to think about all the possible failures and spend much time to test the system. Testing is the key issue, but it requires time, many resources, and it is not always perfectly representative of the real "autonomous" behavior of the system. During the development of HEXO+, many technical challenges were faced when dealing with sensors, software and reliability, to ensure safety of the flights. This presentation focuses on some key examples the company faced to illustrate challenges when dealing with safety and autonomous systems; it will conclude with general recommendations for future development of drone systems. Moreover, this presentation proposes means to develop correct and reliable embedded software for drones, taking into account the differences between the drone ecosystem and the avionics mixing automated verifications and DO-178C adaptation, depending on the drone criticality.

- 11.55-12.10 ♦ **Interactive Panel Discussion**
- 12.10-13.30 ♦ **Lunch in the RMA Cafeteria**

Session 3 RPAS Regulation - The Way Forward

13.30-13.45 **Drones: The Proposed Way Forward - The European Aviation Package**
Koen de Vos
European Commission DG Mobility & Transport (MOVE)



Bio Data Koen de Vos (Belgian, born on 21 March 1962) studied law (1985) and economics (1987) at the University of Leuven, Belgium. He started his career at the centre for development studies of the University of Antwerp (1988-89) and at the higher institute for labour studies of the University of Leuven (1990-93). He joined the services of the European Commission in 1993 to work on social and employment issues in the Coal and Steel industries and on Social Dialogue. He moved to the Transport Directorate-General in 2002 to join the Single European Sky team, working in the field of air traffic management to prepare the second Single European Sky package. Since September 2009 he has assumed responsibilities in the field of aviation safety and environment where he is currently working on drones.

Abstract On 7 December 2015 a proposal for a regulation of the European Parliament and of the European Council on common rules in the field of civil aviation was published by the European Commission (The European Aviation Package). This initiative is part of the 2015 European Commission's 'Aviation Strategy to Enhance the Competitiveness of the EU Aviation Sector'. Its objective is to prepare the EU aviation safety regulatory framework for the challenges of the next ten to fifteen years and thus to continue to ensure safe, secure and environmentally friendly air transport for passengers and the general public. This initiative builds on over twelve years of experience in the implementation of Regulation (EC) No 216/2008 and its predecessor. This proposal must also be seen in the context of the Commission priorities of fostering jobs and growth, developing the internal market and strengthening Europe's role as a global actor. This initiative aims at contributing to a competitive European aviation industry and aeronautical manufacturing which generates high value-jobs and drives technological innovation. It will create an effective regulatory framework for the integration of new business models and emerging technologies. In particular this initiative proposes to create a Union framework for the safe integration of RPA into the European airspace. This presentation will the major points pertaining to RPAS and will explain the way forward.

13.45-14.00 **The EASA Opinion**
Antonio Marchetto
European Aviation Safety Agency (EASA)



Bio Data As EASA RPAS Technologies Expert Antonio Marchetto is involved on regulatory as well as certification activities in the civil unmanned aircrafts domain. He has been particularly engaged in the process leading to the publication of the Agency's technical opinion on a regulatory framework for the operation of unmanned aircrafts. Before joining the Agency he worked for several years in the military unmanned aircraft domain being deeply involved in the nEUROn program and, previously, in the UAV demonstrator program Sky-X. He formerly carried out systems design, development and certification activities for several other programs, such as the C27-J airlifter and the Eurofighter. He holds a degree in Electronics Engineering from the Turin Polytechnic and a Master in Technology Management from the

Stetson School of Business and Economics of Mercer University, Atlanta.
Abstract EU Member States' regulation in the unmanned aircrafts domain is today not harmonized. This situation prevents to fully benefit the unmanned aircrafts potential for growth. The European Commission and EASA are working together to establish a new European framework which, preserving the adequate level of safety for operation of unmanned aircrafts, will foster growth in this market segment through legal certainty and harmonization of rules. The presentation will encompass the current regulatory situation in the various MSs, the extension of EU competence to drones of all sizes and the future regulatory scenario being proposed within the EU.

14.00-14.15 **How «Product Harmonisation Legislation» & Market Surveillance Could Contribute to Drone Safety**

Jean-Pierre Lentz

European Commission DG for Internal Market, Industry, Entrepreneurship & SMEs (GROWTH)



Bio Data Jean-Pierre Lentz is civil engineer. He joined SABCA a Belgian aerospace company, where he first worked on space programmes for the European Space Agency. He led in particular the development of a European space suit. Subsequently, Jean-Pierre became assistant to the head of the company, supporting the cost reduction programme and the reorganisation of the company. He joined the European Commission in 1999 as project officer in the aeronautics unit of DG Research. Height years later, Jean-Pierre moved to DG Enterprise, where he worked on Intellectual Property and Space industrial policy. Since 2 years, Jean-Pierre is part of the team leading the work of the European Commission in the area of RPAS.

Abstract The presentation will discuss how Product harmonisation legislation and market surveillance tools (including CE marking) could contribute to drone safety legislation and how it could increase the safety of drones' operations.

14.15-14.30 **Towards the Integration of RPAS in the Aviation System**

Denis Koehl

Single European Sky ATM Research Joint Undertaking



Bio Data Denis joined the French AF as fighter pilot in 1976. In 1987, he is detached to serve within the Navy and obtained all Navy fighter pilot qualifications, and performed seven tours including operations on board aircraft carriers. In 1990, Denis was given command of a Fighter squadron and performed two operational detachments (Golf War & Africa). Promoted in 1993, Denis was assigned at the 12th Fighter Wing level. During this assignment, he participated in several operational detachments in the Balkans and in Saudi Arabia. In September 1997, he entered the Joint War College in Paris. The following year, he was posted as Assistant Chief for Air Operations of the Air Operations Command and took the post of Assistant Chief of Staff "Policy". In 2000, Denis is assigned to the MOD as chief of the "Yugoslavia" Crisis Cell made responsible for all French military operations conducted in the Balkans. He was posted as Commander of Orange Air base in 2002 and from June to September 2003, he was detached in Uganda in charge of the Combined Joint Support Base for the EU operation "Artémis". In 2004, he receives an assignment as Chief of Staff to the Air Forces Command and was promoted to Flag Officer in Oct. 2005. In Sept. 2007 he was posted to NATO in Lisbon as French Representative to Commander. Promoted to Major General in 2009, Denis ended this military career and joined SESAR Joint Undertaking in Brussels in May 2010, as Senior Advisor to the Executive Director for Military Affairs. Denis has a total of 4000 flying hours including 206 war missions and 99 landings on aircraft carriers. He is "Commandeur" in the National Merit Order & Officer in the Legion of Honour and his awards include serial War and Combattent Crosses for Overseas operations.

Abstract The EU RPAS Roadmap, handed over by RPAS stakeholders to the European Commission in 2013, paves the way for the safe integration of RPAS into the non-segregated ATM environments in Europe. Since not all the key technologies required for RPAS to fly in non-segregated ATM environments are today mature and standardized, the need for Research and Development activities in SESAR was identified.

14.30-14.45 **EGNOS & Galileo Added Value for RPAS and Funding Opportunities**

Carmen Aguilera - European GNSS Agency



Bio Data Carmen Aguilera is Market Development Officer at the European GNSS Agency (GSA) since 2009. She is responsible for European GNSS adoption in aviation, in introducing EGNOS and Galileo in aviation operations, including RPAS. She is also responsible for Research and Development activities in GNSS applications as call coordinator of Galileo Horizon 2020 calls and its predecessor FP7 programme, under delegation by the European Commission to the GSA. Prior to joining the GSA, she worked as a technology and strategy consultant on high-tech innovation in the aerospace, transport, and information and communications technology industries. She holds a Master Science degree in Telecommunication Engineering from the University of Seville.

Abstract The European Global Navigation Satellite System (EGNSS) encompasses the satellite navigation system established under the Galileo programme and the European Geostationary Overlay System (EGNOS). The Galileo system will provide position, navigation and timing services and increase availability and reliability of other GNSS, while ensuring the European non-dependence from other GNSS. The EGNOS system improves the accuracy and provides information on the reliability of the GPS system, and in the future also of the Galileo

system. EGNOS and Galileo can contribute to navigation, guidance and control solutions for RPAS, by increasing accuracy and improving the robustness of the navigation solution. In fact, some RPAS applications may be even more demanding than other aviation application in terms of navigation solution performance, especially in low-altitude navigation and GPS Stand Alone based solutions may not be enough for the integrity and precision needed. EGNOS and Galileo based research for RPAS is a key topic within the EC H2020 research funding programme. In particular, within the next H2020 Galileo call to be open on November 2017, with 33 million euro available to co fund research and development. The presentation will detail the existing funding opportunities for RPAS and GNSS together with results from previous and ongoing research projects.

14.45-15.00
15.00-16.00

- ◆ **Interactive Panel Discussion**
- ◆ **Refreshment Break**

Session 4 RPAS Regulation - The Way Forward

16.00-16.15 **RPAS for Civil Protection**

Dr Alessandro Carrotta
European Commission DG Humanitarian Aid & Civil Protection (ECHO)



Bio Data

Dr. Alessandro Carrotta holds an MSc in Engineering and a PhD in Operations Research. In the last ten years he has covered positions related to research and technology in the transport and defence sectors, both in public and private organisations. In 2015 he joined DG ECHO at the European Commission where he is in charge, among others, of the file on innovative technologies for Civil Protection.»

Abstract

In recent years the use of RPAS has proved effective in improving capacities for data and imagery collection to support better decision making for response in the midst of emergencies and crisis, particularly in dangerous and life-threatening situation, when situation awareness from land is limited, or when operational conditions do not allow the deployment of any other systems. DG ECHO is committed to make use of the full potential of RPAS and is endeavouring to support the deployment of RPAS in the Union Civil Protection Mechanism (UCPM) missions. RPAS have been recently positively used in two UCPM response missions, and one Member States has recently expressed interest to offer a team equipped with RPAS to the European Emergency Response Capacity, posing urgent challenges to face for their use in UCPM response mission. ECHO and Member States will soon discuss: scenarios, needs, operational principles and procedures, interoperability requirements, regulatory and ethical challenges in disaster management.

16.15-16.30

RPAS Regulation - The French Approach to Malicious RPA
Col Laurent Barrilliet

Ministry of Defence - DPID, France (*“Conseil du Drone Civil”* member)



Bio Data

French Air Force Officer, ground base air defense specialist, after a intense operational phase during 20 years, with foreign operational deployments, Col Barrilliet was chief of the GBAD Office at Air forces command, deputy joint base of defense commander, and is now Head of threat analysis and expertise department at French MOD/DPID. Col Barrilliet is also head of the French RPAS working group N° 4, mandated by the FR Prime minister, in order to define new regulation to counter malicious RPAS.

Abstract

Malicious RPA were flown above French highly sensitive sites, at the end of 2014. The analysis of this subject by the French cabinet, has shown that the current regulation is not adapted to this new challenge. The Prime Minister has decided to create working groups in order to define proposals for each of the following domains: a) Detection and neutralization capabilities; b) RPAS regulation improvement; c) Command and control procedures improvement. These proposals were published in October 2015, in a special report addressed to the Parliament. The French approach is based on two pillars: 1) To regulate this new activities to assure safety; 2) To regulate, in order to assure the growth of this new industry. New technologies could be the key to achieve these ambitious objectives.

16.30-16.45

The Insertion of Large Drones into European Airpace
Vincent de Vroey

Aerospace and Defence Industries Association of Europe (ASD)



Bio Data

Vincent De Vroey is Director of Civil Aviation at the AeroSpace and Defence Industries Association of Europe (ASD). In this role, he is in charge of the management of the ASD Civil Aviation Business Unit and he represents ASD's members vis-à-vis the European and international civil aviation community. He is also representing the civil equipment manufacturers at the Board of the SESAR Joint Undertaking and the Provisional Council of EUROCONTROL. Vincent has extensive experience in the civil air transport industry: before joining ASD, he was General Manager Technical & Operations at the Association of European Airlines (AEA). In this role, he was also the Chairman of the European Aviation Safety Agency (EASA) Advisory Board from 2009 until 2014 and he represented the civil airspace users on the Board of the SESAR Joint Undertaking. Vincent De Vroey holds a Master of Science in Electronics and a Master of Science in Transport and Business Economics from the Free University of Brussels. He is Belgian/Flemish and speaks fluently Dutch, English, French, Italian and German.

Abstract This presentation will detail the manufacturers' position relative the insertion of large drones into European civil airspace.

17.00-17.15 **RPAS Geofencing: A Comprehensive Approach**

Jon Resnick
DJI, China



Bio Data Jon Resnick leads DJI's policy efforts in Washington DC where he focuses on promoting best practices and effective regulations. Jon works on issues related to operator and aircraft standards, airspace access and management, privacy and aviation R&D policy. Jon serves on the boards of the US-focused Small UAV Coalition, UVS International and Drone Advocates for Public Safety (DAPS), USA and chairs the Consumer Electronic Association's Drone Policy Working Group, USA. Prior to joining DJI Jon had a 20-year career in broadcast journalism, most recently at the Associated Press. There he spearheaded the news agency's programme to incorporate drones into professional newsgathering operations. He was also a founding member and played a leadership role in the News Media Coalition, a group of more than fifteen major media companies currently conducting formal UAV testing at an FAA sanctioned site. Jon lives with his wife Sarah on the border of the DC NFZ in Oakton, Virginia.

Abstract Amid regulatory calls for broad Geofencing requirements, industry leader DJI weighs in with its view of a viable, productive and sustainable geofencing implementation. For more than 2 years, DJI has incorporated Geofencing in its consumer RPAS. As a result, the company is uniquely qualified to assess the promise and problems of Geofencing technology. This session will focus on DJI's renewed efforts to maintain its leadership in employing Geofencing to assure that informed operator judgment, rather than geographic location, is the primary means of assessing safe and authorized operations.

17.15-17.30 **Standards for Light RPAS - An Urgent Requirement**

André Clot
EuroUSC, UK
(*"Drone-Rules.eu"* Consortium member)



Bio Data André J. Clot formed EuroUSC™ in 2003 whilst working as the rapporteur for the Safety and Security working group of the JAA/Eurocontrol UAV Task Force. In 2004 the task force's report became the basis for the newly formed European Aviation Safety Agency (EASA). In 1998 as the UAVS Association's first General Secretary, André led the industry input to the early development of United Kingdom RPAS regulation and the formulation of CAP 722. André is a former chairman of the Royal Aeronautical Society's UAS Specialist Group and former Vice Chairman of EUROCAE WG93 on Light RPAS, which has recently delivered its first report to the EU RPAS Roadmap. André is an advisor to Eurocontrol on the International Civil Aviation Organisation (ICAO) RPAS Panel working on the Airworthiness WG and the interactions with the Air Traffic Management WGs. The panel is formulating changes to the ICAO Annexes for International IFR RPAS operations. EuroUSC™ is a Qualified Entity compliant with EC 216/2008 ANNEX V and André is currently the Chairman of AVA, the association of Qualified Entities. EuroUSC™ now operates in over 10 countries supporting National Aviation Authorities on work which includes pilot qualification, airworthiness and operational assessments as well as incident investigations in the support of safe RPAS operations. André Clot is also a non-executive member of the UVS International Board of Directors.

Abstract Global co-ordination and harmonization within the RPAS industry has been hampered by many different approaches being adopted by National Aviation Authorities. Within Europe and the United States this is beginning to change, but it will be a few years before tangible benefits appear. In the meantime, standards have begun to emerge from industry led standards organisations bodies and industry organisations to drive the market towards greater acceptance by regulators, insurers and the public whose safety is paramount. The residual risk currently for most safety assessments is still the airworthiness of the aircraft system and the competence of the pilots that operate them. This presentation highlights standards available today from EuroUSC™ to address these issues.

- 17.30-17.45 ♦ **Interactive Panel Discussion**
- 17.45-19.00 ♦ **Conference Cocktail in the RMA Bar**

DAY 2 - WEDNESDAY 20 JANUARY 2016

Session 5 Awareness Creation

09.00-09.10 **Drone-Rules.EU - Purpose & Objectives**

Philippe Carous
SpaceTec Partners, Belgium
(*"Drone-Rules.eu"* Consortium member)



Bio Data Philippe Carous is a consultant at SpaceTec Partners and the deputy coordinator of the Drone Rules.eu project. He has gained legal and technical expertise in the field of RPAS since 2012 when he joined EUROCONTROL and participated in the UAS Panel Initiative. After graduating from a Master in European Law, Philippe obtained in 2013 a LL.M. in Aviation and Space Law (Leiden University) and specialised in the regulatory aspects of RPAS operations. Philippe also worked in the business development department of Airbus

Abstract Defence & Space in the Netherlands.
The Drone Rules.eu project is co-funded by the Executive Agency for Small and Medium-sized Enterprises (EASME) of the European Commission under the COSME programme. Its main objective is to develop an awareness raising campaign that will be launched in mid-2016 to promote and facilitate understanding of the regulatory framework applicable to RPAS operations in the areas of privacy and data protection, safety and operation, liability and insurance. The speaker will present the main objectives and key challenges of the project as well as the expected positive outcome for the global RPAS community.

09.10-09.25 **RPAS-related Insurance: Where are we & Where we are going - The importance of Awareness Creation**

Jean Fournier

Global Aerospace, France

("Drone-Rules.eu" Consortium member)



Bio Data Jean Fournier is the Managing Director of the French branch of Global Aerospace. He joined Global Aerospace in April 2009 to open the French branch and to insure all classes of aerospace risks (airlines, airports, general aviation, manufacturers and space) as a leader on the French market. He is also in charge of innovation and new products for the entire Group. Prior to joining Global, Jean spent 19 years with Marsh, including 10 years as Head of the French Aviation & Space team and 3 years as Managing Director in charge of Innovation. In the early part of his professional life, he worked as MATRA (now Airbus) on military & space programmes. He accomplished his military duties as a research engineer at ONERA (French Aerospace Research Centre). Jean is a graduate engineer from the ENS d'Arts et Metiers, and holds a Master degree from the University of Stanford (CA) as well as a DESS in Finance from the University Paris I - Sorbonne. He is a licensed pilot and a non-executive member of the UVS International Board of Directors. Global Aerospace is the world's leading aviation insurer and provides underwriting and claims expertise from its worldwide headquarters in London, UK and its network includes six offices in the United States, two offices in Canada and three continental European offices located in Cologne, Germany, Paris, France and Zurich, Switzerland. Global Aerospace has been dedicated to the aerospace industry for over 85 years and underwrites insurance on behalf of some of the world's largest and most secure insurers and reinsurers.

Abstract RPAS aka drones are developing at a pace that makes them more comparable to consumer electronics than traditional aerospace products. Regulatory authorities want to maintain order and remain in control of in-flight activities that cannot accept unprofessional behaviour, while setting a scene that is appropriate for the rapid growth of an economic sector that is very promising. Risk based approaches have been promoted for the definition of appropriate regulations. Insurance follows the same approach. Drones that will be privately used for recreational purposes should be easily covered as long as their mass does not induce a huge risk. Typically, responsibility for damages caused by drones weighing less than 1kg should be as easy to insure as the liability incurred by a bicycle rider who could hit a pedestrian in the street. Some countries have already announced that this should be part of the private life liability coverage that protects citizens in their everyday life. In parallel, the same aircraft could be used for professional purposes. Corporate general liability insurance could also step in to protect the SMEs that intend to operate drones. However, the nature of their activities is such that a risk based approach, similar to the one promoted for regulation, is foreseeable. The competitive (economic) advantage that drones have for certain tasks justifies their use. Reduction of insurance cost is part of these savings but they are likely to depend on the activity undertaken, the proficiency of the operators, and the safety management measures implemented. There is currently no insurance market problem to insure drones. There is just a challenge to convince the drone manufacturer and operator community of the interest to purchase the coverage appropriate to protect their activities.

09.25-09.40 **RPAS-related Privacy & Data Protection Issues**

Rachel Finn

Trilateral Research, UK

("Drone-Rules.eu" Consortium member)



Bio Data Rachel Finn is the Data Science Practice Manager at Trilateral Research Ltd, London. She manages projects and participates in research related to the privacy, data protection and social impacts of current and emerging data technologies and practices, including issues relevant to big data, security technologies (especially drones), open data, open government and standardisation. She provides regulatory and policy advice for European, national and institutional policy-makers on the responsible implementation of new technology systems. She is widely published in relation to all of these issues, and has a number of often-cited publications, including "Unmanned aircraft systems: Surveillance, ethics and privacy in civil applications" and "Seven types of privacy". Her latest book, Mobilising Data in a Knowledge Society, will be published by AUP in 2016. She has a PhD in Sociology from the University of Manchester.

Abstract Awareness creation around the current and future privacy and data implications of civil RPAS use is vital to the sustainability of the industry. There is a lack of awareness amongst industry as to what are problematic practices and what are safe practices of civil RPAS use. This presentation will present specific scenarios of current practice and dissect them for specific data protection, privacy and ethical issues that could be raised, and provide specific recommendations for industry about how RPAS can be used to reduce the data protection and privacy risks.

09.40-09.55 **Update on JARUS & Industry Involvement**

Eric Sivel, Joint Aviation Authorities for Rulemaking on Unmanned Systems (JARUS)

Bio Data

Eric Sivel, a French national educated in Britain, Australia and the United States, took part in the creation of EASA that he joined in 2004. There, as deputy Director for Rulemaking he continued to lead the development of the agency in its new fields of responsibility. More recently he was named to head the EASA research and innovation activities. He is coordinating the RPAS efforts in EASA and he has been nominated to represent EASA on the newly created RPAS Panel in ICAO. He has furthermore been elected chairman of JARUS.



Abstract

The speaker will give an update on the JARUS activities and present the new strategy of JARUS regarding industry involvement in the JARUS Working Groups.

09.55-10.10

◆ **Interactive Panel Discussion**

10.10-11.00

◆ **Refreshment Break**

Session 6 Solutions for the Safe Integration of RPAS

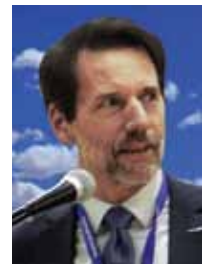
11.00-11.15

SKYBRIDGE - Bridging the Gap between Manned & Unmanned Aviation

**Marc Kegelaers
UniFly, Belgium**

Bio Data

Marc Kegelaers holds a Master's degree in Electronic Engineering and Master's Degree in Business Administration. He also has an EASA CPL and is an experienced Flight Instructor. After a successful international career as an entrepreneur in the Telecommunication Industry, Marc got involved in Aviation 15 years ago. The last 10 years, he served as the Chief Executive Officer and Accountable manager of BAFA – and made it the leading flight school in Belgium. Marc got involved in unmanned aviation three years ago when he decided to start a Remote Pilot License training at BAFA. This is also the period when BAFA co-founded the BeUAS. Marc recently joined Unify as shareholder and CEO. In addition, Marc is currently a boardmember of the Chamber of Commerce in Antwerp (VOKA) and serves as a boardmember of the VLOC (Flemish Aviation Training Center).



Abstract

The growing number of low flying drones are increasingly becoming a problem. They pose a risk for manned aviation, are a nuisance when interfering with rescue missions and may represent a security risk. The existing Air Traffic Management systems were not designed to manage this large amount of low flying targets, flown by people without an Aviation Background. Unify have designed Skybridge: an open, scalable Drone Traffic Management Platform that serves the needs of the Drone operator, NASP, Rescue Services and Police Forces. From the ground up, it has been designed to interface to the existing ATM systems and with an intuitive user interface that puts Aviation information in the hands of non-aviation personnel.

11.15-11.30

The Polish Drone Monitoring System (PSMD)

**Justyna Zdanowska
Dron House, Poland**

Bio Data

Justyna Zdanowska is PSMD Project Manager at Dron House Joint Stock Company and a drone operator (VLOS). She has a Ph.D. (Linguistics, in fields of Terminology, Lexicology & Lexicography) from the University Nova de Lisboa, Portugal. Her Ph.D. concerned the newly developed field of terminology and drones in the legal systems of English-speaking countries and international institutions. She received a Short Term Scientific Mission's grant at KU Leuven University in Antwerp, Belgium where she prepared methodology related to her Ph.D.



Abstract

The PSMD project is the result of cooperation between many participants in drone market in Poland – designers, manufacturers and drone operators who are determined to create solutions fulfilling requirements that are needed for controlling and monitoring Polish, European and world airspace in real time. The main aim is to organize the airspace, guarantee control and safety for all aircraft in the airspace. PSMD has already received recommendations from the Polish Civil Aviation Authority and other national institutions. The system is patented in, among others, the United States (no.: WIPO47642) and in the European Union (no.: ZWW 002806976). The complete and implemented PSMD allows to arrange the airspace by creating & dividing special air corridors (air ways), and guarantees 100% of continuity of operations by dint of our algorithms, the idea of our system and our special application managing GSM, GPS networks for purposes of localizing drones in real time. It permits all airspace users to use RPA in a responsible way owing to the complete arrangement of the airspace where the security of the users is guaranteed by using spherical separation between drones & aircraft. It ensures the continuity of activities by dint of the reliability of the priority of emergency calls in GSM, GPS networks, and allows to monitor controlled & uncontrolled areas, both for professional & amateur drones, as well as prohibited/ no-fly zones.

11.30-11.45 **Airspace Integration - With a Civil/Military Context**

Thomas M. Buckner

NATO Headquarters, Defence Investment Division, Armament & Aerospace Directorate, Airspace Capabilities



Bio Data

Thomas Buckner is the RPAS and Airworthiness Staff Officer in the Aerospace Capabilities Section, Defence Investment Division, of NATO's International Staff. He's responsible for promoting NATO's RPAS capabilities through coordination among NATO Member and Partners States, as well as international organizations, in order to promote RPAS awareness and acceptance and develop standardized procedures for RPAS across the Alliance. Thomas has 1,000 flight hours piloting the RQ-4 Global Hawk High Altitude Long Endurance (HALE) RPAS for the US Air Force, and was part of the initial cadre tasked with establishing the first operational and training US Air Force Global Hawk units. Thomas is currently the secretary of the Joint Capabilities Group - Unmanned Aerial Systems (JCGUAS), under the NATO Naval Armaments Group (NNAG).

Abstract

NATO has long ago recognized the importance of UAS/RPAS. Almost 20 years ago, the first working groups were formed to address the issues associated with UAS/RPAS and their integration into the NATO force structure. In the beginning, the NATO UAS/RPAS efforts were fragmented and the insertion of UAS/RPAS into airspace constituted a major challenge to NATO. Today, UAS/RPAS features high on the agenda of the current work of the NATO Aviation Committee (AVC), Joint Capability Group on Unmanned Aircraft Systems (JCGUAS), Flight in Non-Segregated Airspace (FINAS) Working Group and the NATO Headquarters International Staff-led Remotely Piloted Aircraft Systems Airspace Integration Integrated Product Team (RPAS AI IPT). Challenges continue due to the immaturity, at the international level, of legal, regulatory, technological and procedural conditions and processes to enable the safe integration of remotely piloted aircraft into the same environment as manned aircraft. While the international civil aviation community is promoting initiatives and research to enable insertion of UAS/RPAS into the same airspace as civil aviation, NATO has been and continues to lean forward in many of these same areas. Specifically, by organizing working groups or conducting studies, which focus on standards to facilitate system interoperability, training of operators, airworthiness requirements, with the objective to define, in the short-term, operational solutions to enable cross-border UAS/RPAS air activities within the current regulatory framework, while developing long-term processes and standardization agreements for harmonizing operations of UAS/RPAS within NATO-led operations and their integration within the airspaces of the Alliance.

11.45-12.00 **A New Generation of Risk Management**

Tracy Lamb

SGS - Systems Standards Certification, United Kingdom



Bio Data

Tracy has 18 years of experience in commercial aviation with over 7000 flight hours as an airline pilot on the Boeing 737, a senior flight instructor, charter pilot in the Australian outback, including FIFO ops, and as an international corporate jet pilot around the Asia Pacific Region. She is also a qualified drone pilot. Being passionate about flying and about safety, she is a specialist in human factors, crew resource management, safety systems and remotely piloted aircraft systems (RPAS); she is an ISO 9000:2008 lead auditor, and conducts audits and inspections on fixed wing, rotary wing and unmanned aircraft operators and maintenance organisations, both internationally and around Australia. Tracy holds awards for academic excellence in her undergraduate and post graduate qualifications in applied science (aviation), masters in business management, human factors and, in conjunction with RMIT University in Melbourne, Tracy is active in research and development, in the areas of safety and risk management in remotely piloted aircraft systems. Since joining SGS HART Aviation in 2014, she has led this group in developing a world class guidance document on Standards and Best Practice for Unmanned Aircraft Operations, this has enabled accurate and systematic operational safety auditing of Unmanned Aircraft operations. She has also developed a comprehensive Risk Management framework which has been adapted into an interactive computer program. These tools assist clients and auditors with RPAS Safety, efficiency and performance tracking. With extensive teaching experience, Tracy has also established the SGS HART Aviation Training Department, which delivers fresh and innovative Human Factors and Safety Training in the areas of Risk Management, Safety Systems, Threat and Error Management. These Training Courses cover Fixed Wing, Rotary Wing, Ground Crew, Engineering and Unmanned Aircraft Operations.

Abstract

The objective of this presentation is to outline the challenges and risks posed by the integration of RPAS not only into civil airspace but also commercial space, as well as the critical and multi-dimensional change in the approach to risk management for RPAS. It aims to highlight the importance of corporate responsibility and due diligence in enabling RPAS as part of a commercial operation. The presentation introduces that perhaps a culture shift in the industry is required for it's effective advancement. The Civil Aviation Regulators in most countries around the world are now approaching a level of uniformity towards establishing regulations, standards and best practices for RPAS operations. Despite existing guidelines, recreational or 'hobbyists' drone operators in many countries continue to make the media headlines with their violations into controlled airspace, breaches of sensitive areas, dangerous and annoying stunts at sporting events and public gatherings. The chaos in the recreational area, unfortunately, has a profound effect on the professional industry. A contributing factor to the chaos is the lack of education about the legalities and safety concerns surrounding the use of RPAS, and users entering into the market with little or no aviation knowledge or training. The current perception of risk in this emerging industry is as subjective and varied among the academics as the policy makers and industry stakeholders alike. When considering using RPAS in

the commercial environment, consequential risks must be calculated as part of the total risk value within the risk management framework. The consequential risks and indirect costs are by far the most concerning.

12.00-12.15 ♦ **Interactive Panel Discussion**

12.15-13.30 ♦ **Lunch in the RMA Cafeteria**

13.30-13.45 **A European Perspective & Approach to NASA UTM**

Taro Kuusiholma

Sharper Shape, Finland



Bio Data

Taro Kuusiholma is Senior Vice President of Sharper Shape Ltd. responsible for regulation and Space as of 1st September 2015. Formerly he worked eight years as Special Advisor for Finnish Transport Safety Agency (CAA Finland) Regulation and Development department and Chairman of Finnish CAA UAS Working Group. He was Plenary member of JARUS (Joint Authorities for Rulemaking on Unmanned Systems) representing Finland and member of WG2 (leader), WG3 and WG7. He is also member of ICAO RPASP & ICAO Space Learning Group (as advisor to UVS International) and member of the Legal and Regulatory Committee of the International Association for the Advancement of Space Safety (IAASS). He served as Advisor in EASA P&M TAG, was a member of EUROCAE WG93, was an advisor for Norway in ICAO UASSG (2013-2014) and he was awarded the UVS International Catherine Fargeon Award 2014. He is member of the Royal Aeronautical Society and a professional member of IAASS.

Abstract

At the moment there is imminent global and national level need for RPAS traffic management (UTM) system for low-altitude airspace, much like today's surface vehicles that operate within a system consisting of roads, lanes, stop and go signs, rules and regulations regardless of whether the vehicle itself is automated or driven by a human. The NASA UTM is to be designed to enable safe low-altitude – up to 200 to 500 ft (AGL) - civilian RPAS operations by providing pilots information needed to maintain separation from other aircraft to start with by reserving certain areas for specific routes, with for example concurrent consideration of restricted airspace and adverse weather conditions. The objective of the NASA UTM System is to enable safe and efficient low-altitude airspace operations by providing services such as airspace design, corridors, dynamic geofencing, severe weather and wind avoidance, possible congestion management, terrain avoidance, route planning and re-routing, separation management, sequencing and spacing, and contingency management. The near term goal is safely enable initial low-altitude RPAS operations as early as possible. The long term objective is to accommodate increased RPAS operation's demand with highest safety, efficiency and capacity. In 2014 a relevant number of partners have expressed an interest in working with the NASA in exploring the research, development, testing, and possibly implementation (if proven feasible) of the UTM System. These 100+ stakeholders include public and private organizations, universities, and industry representing inter alia cargo and goods delivery operators, system integrators, UAS manufacturers, avionics and insurance industries, different operators, and personal vehicle manufacturers. Therefore, three party public-private-academia partnerships are expected further to define and develop the UTM System. Furthermore NASA is also seeking for possible collaboration with foreign governments and authorities for co-operation in providing real-life use cases where the UTM can be efficiently demonstrated and validated in a national scope. So far UK, Singapore, Poland, Japan and Finland have been expressis verbis mentioned.

13.45-14.00 **Light UAS in Non-segregated Airspace for Maritime & Environmental Surveillance**

Koen Meuleman

Flemish Institute for Technological Research (VITO), Belgium (on behalf of the LUMEN Consortium)



Bio Data

Koen Meuleman is working at VITO's remote sensing department since 2003. As a project manager, he is involved in hyperspectral remote sensing and is coordinating the overall RPAS activities. Currently he's also in charge of the ESA-IAP project LUMEN which aims at demonstrating the use of RPAS for maritime and environmental surveillance. Further he's the president of the Belgian RPAS association BeUAS since 2014.



Abstract

LUMEN (Light UAS in non-segregated airspace for Maritime and Environmental surveillance) is a demonstration project aiming at promoting the operational use of a light RPAS (Remote Piloted Aircraft Systems) for Maritime surveillance and Environmental (Flood) monitoring delivering real-time information to the end-users. For this, the LUMEN system combines different space technologies: GNSS (Global Navigation Satellite Signals) for navigation of the RPAS and geo-correction of the acquired data and real-time satellite communication to transfer the acquired data from the Ground Control Station to the service provider. The LUMEN service will be demonstrated through performing RPAS missions above the Belgian part of the North Sea for the maritime use case and the catchment of the Poperingevaart for the flood monitoring case. The objective of the LUMEN project is to demonstrate in pre-operational conditions a near-real time service both for maritime surveillance and flood monitoring applications based on a flexible data collection by means of a light-weight medium sized RPA platform. A secondary goal is to demonstrate the safe insertion of RPAS in non-segregated airspace. Satellite communication capabilities are used for data transfer and Beyond Radio Line Of Sight (BRLOS) Command and Control links. The service will be carried out in Belgium, providing airborne maritime surveillance and flood mapping services to the involved Belgian and Flemish administrations.

14.00-14.15 **DroneRadar: The Drone Awareness Control System**

Wojciech Wozniak & Pawel Korzec
dlapilota.pl Sp z o.o, Poland



Bio Data 1 Wojciech Wozniak is co-founder and co-owner of dlapilota.pl, Poland's most popular general aviation website, which is focused on aviation information and flight safety. He has spent over 20 years of his professional life in the information technology industry working for companies such as Apple and Oracle in various management positions. Being the holder of a degree in management from the Warsaw School of Economics, his interests evolve around management issues, aviation and mobile technology. His passion for aviation led him to receive his private pilot's licence in 2000 and to found dlapilota.pl in 2002, where he now works full time. With the recent proliferation of RPAS, dlapilota.pl naturally turned to integrate RPAS into the Polish general aviation scene. Concern over RPAS safety issues turned into the preparation, design and launch of the DroneRadar, Europe's first Drone awareness Control System based on mobile connected social mobile technology.

Bio Data 2 Pawel Korzec is the co-founder and co-owner of dlapilota.pl. Holding a degree from the Warsaw University of Technology, he started his career in telecommunications at Orange and then moved to the information technology industry working for, among others, Oracle and Avaya. Parallel to his professional activity, Pawel is an active pilot for over fifteen years and the vice-president of AOPA Poland. His Interests are centered around big data analysis, cybersecurity and aviation safety. Pawel is responsible for the editorial content and technological side of dlapilota.pl.



Abstract This presentation will explain what DroneRadar is and how it works. DroneRadar is a mobile platform for airspace visualisation which enables the registration and monitoring of areas where RPA flights are taking place. It will outline the legal assumptions that have been used to build the system, data sources used for visualisation methods and the operation of the system itself. Further explanations will show how DroneRadar links RPAS operators and provides them with airspace information. Finally, the DroneRadar Service Console will be presented as a flexible tool for Flight Information Services and other authorities in need to monitor drone operations.

14.15-14.30 ♦ **Interactive Panel Discussion**

14.30-14.40 ♦ **Closing Remarks & Conference Closure**

CONCURRENT & COORDINATED ACTIVITIES

UVS INTERNATIONAL - Board of Directors Meeting

A Board of Directors shall take place at the Royal Military Academy from **18.00 to 19.30 on 19 January 2016**.

Participation: The Board of Directors meeting can only be attended by the Board of Directors' Executive Committee & Non-Executive Committee [Corporate & Non-Corporate (International RPAS Coordination Council) members that have registered their attendance.

UVS INTERNATIONAL - General Assembly

The association's General Assembly shall take place in the «Raadzaal» at the Royal Military Academy from **15.00 to 17.00 on 20 January 2016**.

Participation: The General Assembly can be attended by representatives of all association members in all member categories that have registered their attendance by completing the relevant forms (see www.uvs-international.org) and have supplied them to UVS International prior to the deadline of 12.00 noon on 13 January 2016.

Drone-Rules.EU - Consortium Members Meeting

A meeting of the Drone-Rules.EU consortium members shall take place at the Royal Military Academy from **17.00 to 19.30 on 20 January 2016**.

Participation: Consortium members.

EC DG ECHO - RPAS Workshop for Civil Protection Experts

The European Commission's (EC) Directorate General for Humanitarian Aid and Civil Protection (DG ECHO) has organized a workshop on RPAS for disaster relief operations. This workshop will take place in Brussels, Belgium on **21 & 22 January 2016**. Experts & EU Member State Civil Protection authority representatives will work together to identify necessary actions & recommendations to tackle the main existing challenges in order to enable the use of RPAS in disaster management, focussing on their deployment in the context of the Union Civil Protection Mechanism (UCPM). The workshop will be articulated along 3 sessions: (1) regulation & policy aspects relevant to the use or RPAS in disaster management, (2) operational & technical aspects of RPAS in disaster management, and (3) strategic aspects.

Participation: On invitation only.



RPAS CIVOPS 2016
is coordinated with

THE INTERNATIONAL RPAS COORDINATION COUNCIL

which represents
over 2800 companies & organisations in 44 countries

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www.arpasa.com.ar

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SWEDEN



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www.civil-drones.ch

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<http://arpas.uk>

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www.uavs.org



International RPAS Coordination Council
Non-Executive Non-Corporate Members
of the 2016 Board of Directors



Hector Luis Vargas
 ARPASA
Argentina
 (2nd year - 1st mandate)



Joe Urli
 ACUO
Australia
 (1st year - 2nd mandate)



Raoul Fortner
 AAI-UAS Group
Austria
 (2st year - 2nd mandate)



Koen Meuleman
 BeUAS
Belgium
 (1st year - 1st mandate)



Sonia Higgins
 Unmanned Systems
Canada
 (1st year - 1st mandate)



BaiYuan-Sun
 AUVSC
China
 (2nd year - 1st mandate)



Edgar Quintero
 ARTC
Colombia
 (2nd year - 1st mandate)



Juhani Kangasniemi
 RPAS Finland
Finland
 (2nd year - 1st mandate)



Stéphane Morelli
 FPDC
France
 (1nd year - 1st mandate)



Bernhard von Bothmer
 UAV-DACH
Germany
 (1st year - 2nd mandate)



Elton Lui
 ARPAS-HK
Hong Kong
 (1st year - 1st mandate)



John Wright
 UAAI
Ireland
 (1st year - 1st mandate)



Michele Fazio
 ASSORPAS
Italy
 (1st year - 1st mandate)



Ilmars Ozols
 LARPAS
Latvia
 (1st year - 1st mandate)



Robert van Nieuwland
 DARPAS
The Netherlands
 (1st year - 3rd mandate)



Ole Vidar Homleid
 UAS Norway
Norway
 (1st year - 4th mandate)



Juan Bergelund
 APEVANT
Peru
 (2nd year - 1st mandate)



Florin Nedelcut
 UVS Romania
Romania
 (1st year - 2nd mandate)



Hennie Kieser
 CUAASA
S. Africa, Botswana, Namibia
 (1st year - 2nd mandate)



Manuel Onate
 AERPAS
Spain
 (1st year - 2nd mandate)



Rasmus Lundqvist
 UAS Sweden
Sweden
 (1st year - 1st mandate)



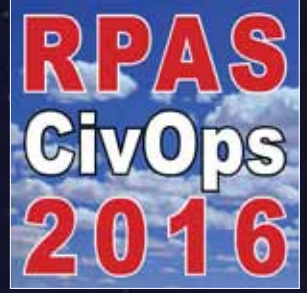
Dominik Jenzer
 SFCD
Switzerland
 (2nd year - 1st mandate)



Gary Clayton
 UAVS
United Kingdom
 (2nd year - 1st mandate)



Angus Benson-Blair
 ARPAS
United Kingdom
 (2nd year - 1st mandate)



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