

ECAC RPAS REPORT 2019

Executive Summary - Strategic Report on Commercial Drones Regulation and Industry Analyses, Trends, Opportunities and Forecasting ECAC-CEAC Member States

First edition: April 2020



INTRODUCTION

Boosted by the new European regulatory framework on unmanned aircraft systems and the imminent new U-Space regulation, 2019 has been a crucial waypoint for the development of the commercial drone industry in Europe.

This report analyses the drone sector's current situation and identifies the main challenges the National Aviation Authorities are going to face strengthening the ECAC vision regarding new trends, opportunities and forecasting.



Executive Summary

Currently, the creation and development of new and innovative technologies are offering a multitude of opportunities and benefits to our society, which is significantly changing our daily routine.

Drones are one of these growing technologies. The expectations, both in terms of social and economic benefits, are huge. In the future, it will not be uncommon to see a significant number of drones flying simultaneously over cities, as they deliver packages, carry out inspections, accomplish surveillance missions or conduct tasks that have not yet been conceived today. However, in order to fully exploit the potential of these aircraft, there is still a lot of work to be done.

The low operating cost, versatility, and accessibility of drones indicate that the drone industry will develop at an exponential rate given the wide variety of applications and services they can offer.

The development of the drone industry will boost new job-creation initiatives and economic growth related to drone activities such as design, manufacturing, services provision and R&D, as well as consulting and new services that will be offered within the U-Space system in order to guarantee a competitive and scalable air traffic management.

A key factor in achieving full integration of drones with existing infrastructure (or even an initial accommodation) is to ensure that the safety and security of citizens, airspace and defense are not affected by these unmanned aerial systems.

Thanks to the European Commission support, U-Space was defined as a set of new services and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones.

Consequently, EUROCONTROL and the SESAR Joint Undertaking have led a European Network of U- Space Demonstrators, and the Unmanned Traffic Management Concept of Operations, to identify common information sharing protocols and architecture that will allow drone operations to scale up, while maintaining acceptable levels of safety and security, and reaching interoperability with the ATM requirements.

ECAC Member States are aware of these challenges, and therefore have been working since 2016 with the aim of achieving a safe, secure, sustainable and regulated environment which does not affect the privacy of citizens.

Conscious of the urgency to analyse the technologies related to the drone sector at European level and aiming to establish a cooperative mechanism between Member States, Authorities and operators, ECAC launched the ECAC DRONE SURVEY 2016, and the ECAC RPAS SURVEY 2019.

2019 was one of the most decisive years for the development of civil drones in Europe, with the adoption of the new Regulations (Implementing Act and Delegated Act) and the publication of the Opinion on U-Space by EASA, expected in Q1 2020.

The ECAC RPAS SURVEY aims to obtain conclusions in order to define a better approach to allow the potential of drones to be fully exploited and to pave the way to integrate them at European level. In this regard, the collaboration of ECAC National Aviation Authorities in this survey was essential to identify the challenges that the sector will be facing.

Nowadays, all Member States are involved in a transitional period where collaborative actions and global coordination is critical to reach the desired level of harmonisation.

The ECAC RPAS Work Programme 2019-2021

The aviation community considers RPAS as a strategic sector, which affects a wide variety of industry sectors.

In such context, ECAC is cooperating in the promotion and harmonized development of the future of UAS in Europe at a strategic level.

Moreover, ECAC supports the required involvement and commitment of its Member States and highlights the need to gradually evolve towards sharing experiences, national policies and practices on UAS among other strategic international key partners such as China, India, Israel and the United States.

ECAC RPAS Work Programme 2019-2021

The ECAC Work Programme in the field of RPAS for The period 2019-2021 pursues two main objectives:

Objective 1: To promote strategic debates with Member States on the future of RPAS.

- Ensuring, at Director General level, high-level exchanges of views on possible developments to cope with current and future challenges in the field of RPAS.

Objective 2: To support the sharing of experiences and national policies and practices on RPAS among ECAC Member States.

- Organising strategic discussions with the objective of sharing national experiences.
- Establishing and maintaining contacts with key partners such as China, Israel and the United States to exchange information on RPAS experiences.
- Establishing and maintaining a web platform to share data and information on RPAS among Member States. That would include a notably list of contacts in each State, national practices and experiences, engagement practices with the RPAS communities, national strategic plans on RPAS and communication policies.

Note: The term RPAS has been used in this document for consistency with the scope of this discipline within ECAC. However, it is recognized that recent developments are driving to a change in nomenclature of these systems.

ECAC RPAS SURVEY 2019

With the aim of assessing the current situation of the drones industry in Europe, a survey was circulated to the 44 ECAC Member States in mid-2019 to gather relevant information on several aspects of the drones sector at European level.

Responses have been received from 37 Member States. This report will be updated should additional responses be received from the remaining Member States. The results of the survey show the state of drone integration in Europe and where to focus next steps on drones.



Background: Previous ECAC Drone Survey Results

In order to analyse the state of the drone sector within ECAC Member States, a previous survey was developed and distributed at the end of 2016. A total of 30 ECAC Member States shared their key figures and experiences on drones. The results of this survey were published in 2017 and indicated the status of drone technology at that time and the steps to be followed in order to face upcoming challenges and facilitate the further development of the industry.

To this end, it was essential to continue working to ensure that aviation operational and safety levels were maintained, and security barriers provided for. All of this to be achieved in an environmentally sustainable way while respecting the citizen's right to privacy.

The need for a common and proportionate regulatory framework to boost the integration of these aircraft was crucial. Likewise, it outlined the need to establish mechanisms for coordination between the Authorities and operators, proper and flexible enough to allow the development in an efficient way.



ECAC DRONE SURVEY RESULTS



Report published in 2017 by the Spanish DGAC (ECAC Focal Point on RPAS), as a result of the analyses after the first survey on commercial drones within the ECAC Member States

The results established, in question form, some main aspects to be considered in the coming years:

- Most of the States considered that the current aviation occurrence reporting regulation at that time served for the drone segment. **Was it necessary to amend that regulation?**
- Only a few States had specific regulations on data protection and privacy in the field of drones. **Was that regulation enough for the new scenario or new regulations were needed?**
- Almost half of the States had specific penalty systems for infringements. **Did it mean that half of the countries considered the conventional aviation penalty system applicable to drones?**
- Regarding the registration obligation and pilot licensing, there was a great lack of homogeneity. **Would it be necessary to create a simplified website indicating the applicable requirements depending on the aircraft and the environment of the operation?**
- In general, there was not much information about the drone sector, or not robust figures. **Was the real size of the sector known or was it necessary to carry out a further analysis?**
- Most States had a specific unit in charge of the drone regulation, inspection and oversight tasks, but the number of staff assigned to these units was variable from country to country. **Were greater efforts of the States' Administrations needed?**
- UAS commercial pilots were professionals in sectors very disconnected from the aviation sector, who considered drones as tools to perform their jobs and not as aircraft. **How could States spread the aeronautical culture among new users?**

Survey structure

The ECAC RPAS Survey 2019 is structured in seven main blocks or topics, each one of them focused on a relevant aspect contributing to the development of the drones sector:

1. Key figures

Key figures on drone operators, registration of aircraft, specialised aerodromes, manufacturers and main drone activities.

2. National Strategy

Specific development plans, pointing out priorities regarding drone activities & technological trends and aspects that the ECAC Member States should focus on.

3. Drone pilots, training & licenses – Insurance

Data on drone pilots, their registration, training and licensing, as well as operator insurance.

4. Dissemination activities

Information on the most relevant drone specific events and dissemination/awareness sessions focused in drones.

5. Data privacy

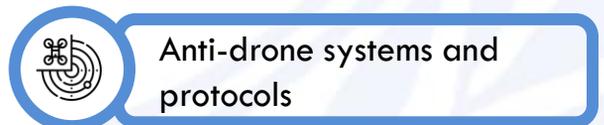
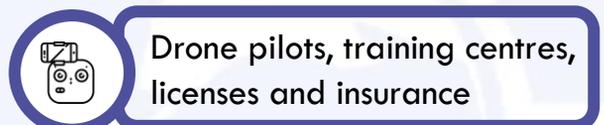
Specific regulations, guides and best practices on drones for data protection and privacy.

6. Anti-drone systems and Cybersecurity

Figures on anti-drone systems, protocols for drones detection in the proximity of airports and cybersecurity regulations applicable to drones.

7. Local Administrations and drones

Authorisations required for drone operations separate to the Civil Aviation Authority and initiatives to coordinate drone operation management and associated responsibilities.

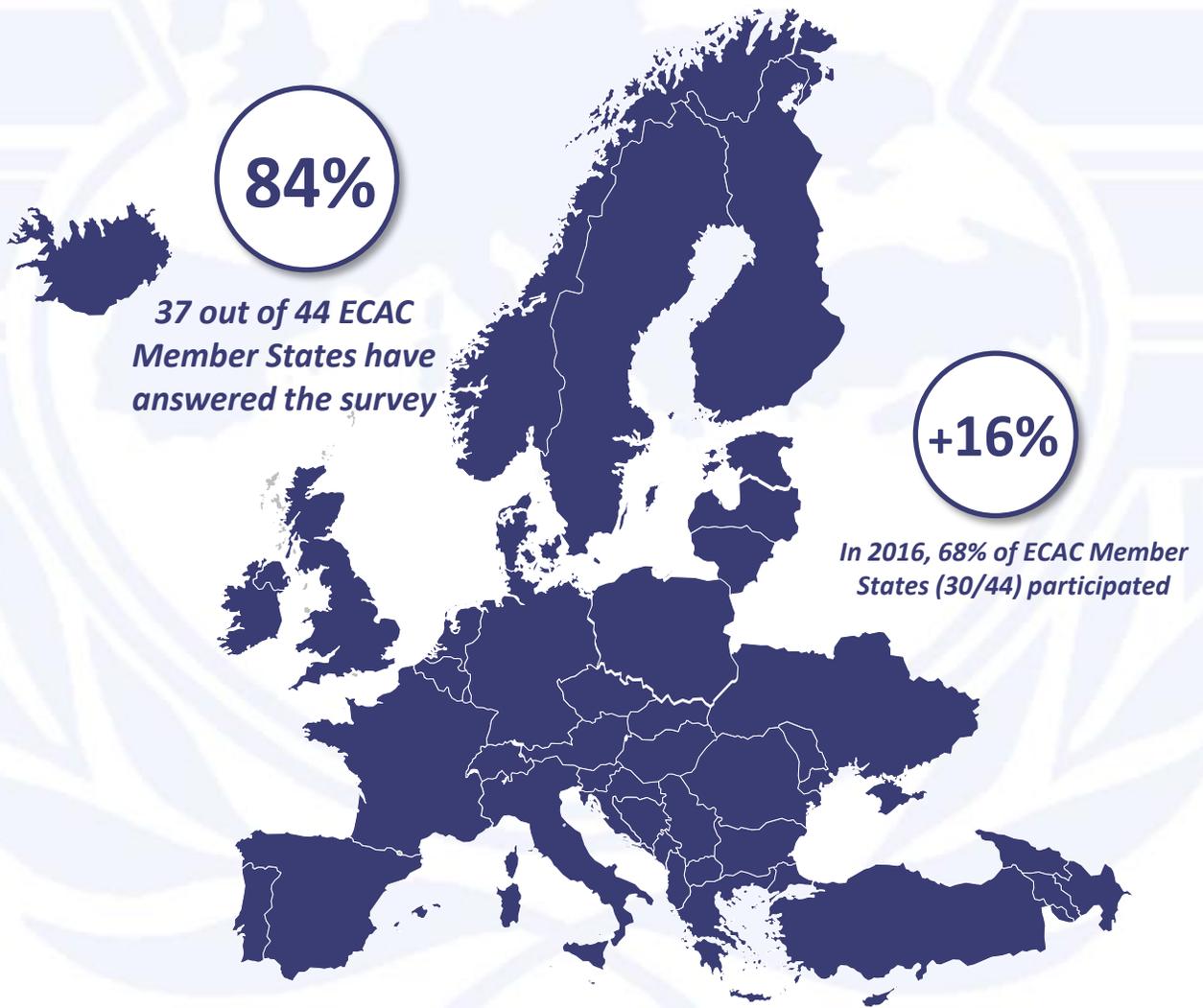


Survey results – Participation rate

The data shown in the following sections has been obtained from the survey carried out in mid-2019 with the cooperation of the Civil Aviation Administrations of ECAC Member States.

Of the 44 ECAC Member States surveyed, 37 States have responded with their data and statistics on the drone sector in their respective countries, which represents 84% of the members.

This has been a significant participation increase (+16%) compared to the first survey carried out in 2016, where 68% of ECAC Member States (30/44) participated in the study.



MAIN CONCLUSIONS

The results of this report and the survey, proposed by the ECAC RPAS Focal Point to the rest of the ECAC Member States, show that the civil drone sector is ready to be developed in Europe. The different National Aviation Authorities and the competent Organisations and Administrations have carried out a valuable effort to reach a higher level of regulatory harmonisation.

Still, many challenges and much work is left to be addressed before the current regulation enters into force. The development of Urban Air Mobility solutions and the deployment of U-Space will be critical to measure the maturity of each national civil drone sector.





The registration of drone operators will become a big challenge for the Administrations during 2020, but it is a great opportunity to measure the real size and impact of this growing sector, as it will be necessary to establish requirements and services adapted to the needs of each operator, operation and flight plan.



The potential growth and quick development of the civil drones sector demands not only national strategies, but mainly a cooperative and collaborative framework. U-Space, Urban Air Mobility, and counter-drones systems require harmonized procedures, standards and protocols.



The training for civil drone operation is going to change significantly, becoming harmonized and more scalable, with proportional requirements according to the complexity of the operation and the class of the aircraft involved.



Data privacy is one of the key enablers for drone operations to gain social acceptance in urban scenarios and in proximity to people uninvolved with the operation. There are still many challenges regarding cybersecurity and all the technologies that are being considered for the development and management of the sector and its services.

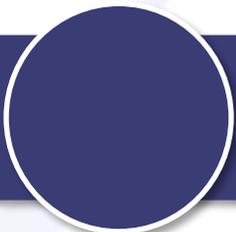


E-ID (remote identification) will be a global challenge, but it could also turn into a key enabler for enhanced counter-drones capabilities (when using robust databases). The integration and compatibility of those systems will be a major concern for airport protection.



Local Administrations will become key stakeholders in the authorisation process to grant and approve many drone operations, according to their responsibilities (excluding the aviation requirements).

Urban Air Mobility projects will need the support of Local Administrations in order to develop and integrate into cities.



ANNEXES



ECAC RPAS Survey 2019



ECAC RPAS
Database 2019



MEMBER STATE

A. National Strategy

1. Is there a specific Strategic Plan for the development of the drones/RPAS in your country?

Yes (please specify which is the document) No, but we consider drones as a part of a broader Strategic Plan (i.e. Transport, Airspace ...) (please, specify which document) No

2. Which are the most strategic priorities regarding drone activities and technological trends in your country? (Please, select all the options that apply)

U-space implementation BVLOS drone operations Delivery with drones (Urban Air Mobility) Anti-drone systems deployment Infrastructures supervision Other (please specify)

3. In your opinion, in which aspects regarding drones and their associated technologies trends should the ECAC Member States cooperate?

U-space implementation BVLOS drone operations Urban Air Mobility cross-border projects Anti-drone systems deployment Infrastructures supervision

B. Key figures of the sector: sector statistics (Please, specify the date of each figure)

1. Number of registered operators (legal entities such as: big corporations, SMEs, etc.): (Date)

2. Number of registered operators to perform BVLOS operations: (Date)

3. Number of registered aircraft (EASA categories; C1, C2 and C3 should be the most relevant figures):

(i) C1 0.25Kg < MTOW ≤ 0.9Kg: (iv) 25Kg < MTOW ≤ 150Kg:

(ii) C2* 0.9Kg < MTOW ≤ 4Kg: (v) MTOW > 150Kg:

(iii) C3* 4Kg < MTOW ≤ 25Kg:

4. Number of specialised drones' aerodromes (Drone Test Centres): (Date)

5. Number of national drone manufacturers and design organizations: (Date)

6. Main activities (authorised operators): (Date)

Photography, aerial works and filming Precision agriculture; phytosanitary treatments Observation and aerial surveillance Other civil drone activities (specify when one)

Calibration and aerial inspections Research and Development Emergency, Search and Rescue

C. Drone Pilots, Licenses and Training - Insurance

1. Is the registration of pilots required? Yes No

2. Number of registered drone pilots: (Date)

3. Number of authorised drone pilot training schools / Qualified Entities (Date)

4. Is there approved any specific online theoretical training course on drones in your country? Yes, and it has a defined standard syllabus Yes, but it is not standardised No

5. Is there currently any training school or qualified entity from other Member State offering theoretical training courses on drones in your country? Yes No

6. Is there a specific practical training required for pilots? If so, indicate minimum training targets and duration (hours)

Yes No

Training duration (please specify in hours)

Minimum Training Targets (multicopter / fixedwing / all)

Hover flight (multicopter) Take-Off & Landing (all) Waypoints and fixed plan (any) Other (specify)

7. Is an insurance required from operators? If yes, indicate possible exemptions

Yes No (Please, specify possible exemptions)

D. Dissemination activities

1. Which are the most relevant drone specific forums/conferences/events in your country?

(Please, specify a link for more information) Other comments and clarifications

(Please, specify a link for more information)

(Please, specify a link for more information)

2. As a Civil Aviation Authority, have you arranged training/awareness sessions focused in drones? (i.e.: drone's operations, drone's operational authorization procedures, data privacy regarding drones, ...etc)

Yes, only for professional operators

Yes; for both professional operators and recreational users

No

3. Do you have specific dissemination activities for non-professional (i.e. recreational) users? Yes No

E. Data privacy

1. Is there a specific regulation on drones for data protection and the right to privacy? Yes (Please, specify which is the document corresponding to this regulation)

Not a specific one, but Regulation (EU) 2016/679

No

2. Is it published any guide or best practices document regarding the management of the captured data with drones? Yes (Please, specify which is the document corresponding to this publication)

No

F. Anti-drone (Counter-drone) systems & Cybersecurity

1. Are there any anti-drone systems already implemented at your national airports or other critical infrastructures? Yes (Please, specify)

No; but there are counter-drone mitigation measures/protocols

No

2. What are the key elements, procedures and technologies that you would consider in that "counter-drone" protocol?

Passive systems: Detection Drone detection and discrimination (authorised/non authorized) Drone tracking and monitoring Drone neutralisation or mitigation

Other comments (carried studies and counter-drone texts)

3. Does exist a defined protocol in case of drone non-authorized flights detection in the proximity of the airports in your country? Yes (Please, specify)

No

4. Are there specific regulations or guidelines for drones on cybersecurity? Yes (Please, specify which is the document corresponding to this regulation)

No

G. Local Administrations

1. Is an authorization from any public body or local Administration required for the drones' operation apart from the Civil Aviation Authority? Yes; an authorization from Law Enforcement bodies is required (Please, specify for which, depending on the area of operation: Local Authority, Police, etc)

Yes; an authorization from Law Enforcement bodies and city councils is required

Yes; an authorization from other public bodies is required

No; it is not required

2. Is there any training initiative between your Civil Aviation Authority, the national ANSPs (Air Navigation Services Providers) and the local Administration to coordinate the drone operation management and the associated responsibilities? Yes (Please, describe these initiatives briefly)

Yes, only between the CAA and ANSP. The local Administration will not take part in the Drone Traffic Management in the early stage

Yes; the ANSP is coordinating with other UTM Services Suppliers, resulting in some Drone Traffic Management responsibilities for the local Administration/councils

No; any initiative has been launched yet



ECAC Member States & their Civil Aviation Authorities

Member State	Civil Aviation Authority	Director General
Albania	Albanian Civil Aviation Authority <i>http://www.aac.gov.al</i>	Krislen Keri
Armenia	General Department of Civil Aviation <i>http://www.gdca.am/</i>	Tatevik Revazyan
Austria	Civil Aviation Authority <i>http://bmvit.gv.at/</i>	Elisabeth Landrichter
Azerbaijan	State Civil Aviation Agency <i>http://www.caa.gov.az/</i>	Arif Mammadov
Belgium	Belgian Civil Aviation Authority <i>http://www.mobilit.belgium.be/</i>	Eugeen Van Craeyvelt
Bosnia & Herzegovina	B&H Directorate of Civil Aviation <i>http://www.bhdca.gov.ba/</i>	Zeljko Travar
Bulgaria	Civil Aviation Administration <i>https://www.caa.bg/</i>	Stanimir Leshev
Croatia	DG Civil Aviation, Electronic Comms & Post <i>http://www.mppi.hr/</i>	Jure Šarić
Cyprus	Department of Civil Aviation <i>http://www.mcw.gov.cy/mcw</i>	Panayiota Demetriou
Czech Republic	Civil Aviation Department <i>http://www.mdcr.cz/</i>	Zdenek Jelinek
Denmark	Danish Transport & Construction Agency <i>http://www.trafikstyrelsen.dk/</i>	Carsten Falk Hansen
Estonia	Estonian Civil Aviation Administration <i>http://www.ecaa.ee/</i>	Rait Kalda
Finland	Finnish Transport & Comms Agency - Traficom <i>https://www.traficom.fi/en</i>	Jari Pöntinen
France	Direction Générale de l'Aviation Civile <i>http://www.dgac.fr/</i>	Patrick Gandil
Georgia	Georgian Civil Aviation Agency <i>http://www.gcaa.ge/</i>	Levan Karanadze
Germany	Directorate General for Civil Aviation <i>http://www.bmvi.de/</i>	Johann Friedrich Colzman

ECAC Member States & their Civil Aviation Authorities

Member State	Civil Aviation Authority	Director General
Greece	Hellenic Civil Aviation Authority <i>http://www.hcaa.gr/</i>	Georgios I. Dritsakos
Hungary	General Directorate for Civil Aviation <i>http://www.kormany.hu/en</i>	Gyula Györi
Iceland	Icelandic Transport Authority <i>http://www.samgongustofa.is/</i>	Jon Gunnar Jonsson
Ireland	Department of Transport, Tourism & Sport <i>http://www.dttas.gov.ie/</i>	Fintan Towey
Italy	Ente Nazionale per l'Aviazione Civile <i>http://www.enac.gov.it/</i>	Alessio Quaranta
Latvia	Civil Aviation Agency <i>http://www.caa.lv/</i>	Maris Gorodcovs
Lithuania	Civil Aviation Division <i>http://www.ltsa.lrv.lt/</i>	Virginija Žegunytė
Luxembourg	Direction de l'Aviation Civile <i>http://www.dac.public.lu/</i>	Pierre Jaeger
Malta	Transport Malta – Civil Aviation Directorate <i>http://www.transport.gov.mt/</i>	Charles Pace
Moldova	Civil Aviation Authority <i>http://www.caa.md/</i>	Eugen Costei
Monaco	Civil Aviation Directorate <i>http://www.gouv.mc/</i>	Jérôme Journet
Montenegro	Civil Aviation Agency <i>http://www.caa.me/</i>	Dragan Djurovic
Netherlands	DG for Civil Aviation & Maritime Affairs <i>http://www.minienm.nl/</i>	Jaco Stremmer
North Macedonia	Civil Aviation Agency <i>http://www.caa.gov.mk/</i>	Tomislav Tuntev
Norway	Civil Aviation Authority Norway <i>http://www.caa.no/</i>	Lars Kobberstad
Poland	Civil Aviation Authority of Poland <i>http://www.ulc.gov.pl/</i>	Piotr Samson
Portugal	Autoridade Nacional da Aviação Civil <i>http://www.anac.pt/</i>	Luis Miguel Ribeiro

ECAC Member States & their Civil Aviation Authorities

Member State	Civil Aviation Authority	Director General
Romania	Romanian Civil Aeronautical Authority <i>http://www.caa.ro/</i>	Armand Petrescu
San Marino	Autorità per l'Aviazione Civile e la Navigazione Marittima <i>http://www.caa-mna.sm/</i>	Marco Conti
Serbia	Civil Aviation Directorate <i>http://www.cad.gov.rs/</i>	Mirjana Cizmarov
Slovakia	Directorate General of Civil Aviation <i>http://www.mindop.sk/</i>	Mario Nemeth
Slovenia	Directorate of Aviation and Maritime Transport <i>http://www.mzp.gov.si/en/</i>	Damjan Horvat
Spain (Focal Point for RPAS)	Directorate General of Civil Aviation <i>https://www.mitma.gob.es/</i>	Raúl Medina Caballero
Sweden	Civil Aviation & Maritime Department <i>http://www.transportstyrelsen.se/</i>	Gunnar Ljungberg
Switzerland	Federal Office of Civil Aviation <i>http://www.bazl.admin.ch/</i>	Christian Hegner
Turkey	Directorate General of Civil Aviation <i>http://www.shgm.gov.tr/</i>	Bahri Kesici
Ukraine	State Aviation Administration of Ukraine <i>http://www.avia.gov.ua/</i>	Oleksandr Bilchuk
United Kingdom	Aviation Directorate – Department for Transport <i>http://www.dft.gov.uk/</i>	Rannia Leontaridi



Update on ECAC RPAS main activities during 2019

Objective RPAS 1:

With the purpose of meeting the first objective of the ECAC RPAS Work Programme for the period 2019-2021, a **debate on Airport Protection** was encouraged during the Security Forum held in May 2019 (ECAC SF/27 Lisbon).

- Four Member States presented their national experiences on this topic (Spain, Portugal, United Kingdom and Turkey).
- Taking into account importance of Airport Protection, the **Security Programme Management Group** agreed to add the development of a **guidance paper on Remotely Piloted Aircraft Systems (RPAS)**, to the Guidance Material Task Force.
- **Communication between ECAC RPAS and ECAC Security has been established** to identify synergies on Airport Protection.
- The **Spanish abbreviated protocol on airport security has been shared on the ECAC secure site**, and Member States have been informed and encouraged to share their own protocols, where possible, as a reference for other ECAC Member States.



The 27th meeting of the ECAC Security Forum (SF/27) gathered experts from 20 ECAC member states, the United States and other international organizations. The meeting emphasized the need for cooperation between states and for possible response protocols against a range of potential threats scenarios involving RPAS, as well as the need to test and use technology-oriented solutions and to further develop regulations and standards. In the picture, some of the participants in the ECAC SF/27 (Lisbon, May 2019)

Objective RPAS 2:

To try to share experiences, national policies and practices on RPAS among Member States, an **ECAC RPAS Website** has been proposed and created.

- The **RPAS section has been created** on the ECAC website and secure access has been granted.
 - A **list of designated Points of Contact** from each Member State has been uploaded to this secure site (at the moment, **33 Member States** have nominated a Point of Contact on this topic).
 - All **Points of Contact have been individually contacted**.
- A **database containing relevant information on RPAS conferences and congresses** has been shared on the secure site and the Points of Contact have been encouraged to review this information for comments.
- **Points of Contact have been asked to share**, when available, **Member States national strategies**.
- A **survey has been elaborated and forwarded to the ECAC Points of Contact**. For the time being, a response has been obtained from 37 Member States.



Bilateral meetings with non-ECAC key strategic States in order to exchange information on RPAS experiences. In the picture, the ECAC RPAS representatives (DGAC Spain) with the CAAI (Israel) representatives (left) and the CAAC (China) delegates (right), during the 40th ICAO's General Assembly (Montreal, October 2019)

