

ANNUAL REPORT

OCTOBER 2020 - MAY 2021

THE EUROPEAN ORGANISATION FOR
CIVIL AVIATION EQUIPMENT

L'ORGANISATION EUROPEENNE POUR L'EQUIPEMENT DE
L'AVIATION CIVILE



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Dear EUROCAE members,

On behalf of the EUROCAE Council, it is my privilege to present this Council Chair report. It describes the activities that were performed in 2020, which was a disruptive year. The

COVID-19 pandemic initiated a global crisis that severely impacted the aviation domain.

I would initially like to highlight the very high level of resilience demonstrated by EUROCAE during this extremely difficult year. The association has maintained a level of activity that is very close to a normal year, despite the unprecedented conditions created by the sanitary measures, containment and travel restrictions associated with the pandemic.

For this, we certainly must thank the whole EUROCAE team, and in particular the experts who contributed to the Working Groups and ensured the continuity of standardisation activities.

I will now provide further details about EUROCAE's activities in 2020. We are glad to report another year of increased membership. We had 381 EUROCAE members at the end of 2021. After several years of consistent increase at around 15% a year, it jumped by 21% in 2020, which is unprecedented. This is a direct effect of expanding our activities and the scope of the Working Groups that generated an interest from a larger community. Undeniably, it is extremely difficult to forecast how the membership will evolve in the present situation, and to which extent it may be impacted by the crisis.

Despite this, EUROCAE remained extremely active and efficient in standards development in 2020, both in terms of active Working Groups and number of EUROCAE documents published.

Seven new Working Groups were launched in 2020, compared to five in 2019:

- ▶ WG-116 High Voltage Systems and Components in Aviation
- ▶ WG-117 Topics on Software Advancement
- ▶ WG-118 Crash-Protected and Lightweight Flight Recorders
- ▶ WG-119 Radar Altimeters

- ▶ WG-120 Technical Means for identifying potential Covid-19 carriers among passengers
- ▶ WG-121 Aircraft Cleaning
- ▶ WG-122 Virtual Centre

This list of Working Groups clearly reflects that EUROCAE's scope is progressively evolving to address a wider range of topics in aviation.

29 EUROCAE documents (EDs) were published in 2020, which is similar to the number of documents published in 2019, but is far above the average number of EDs published in the previous years. This proves that Working Groups are quickly and efficiently adapting to the "new normal" ways of working (virtual meetings and remote coworking), and the sustained commitment of the Secretariat and Members.

The Technical Advisory Committee (TAC) is responsible for launching new Working Groups. It corresponds to the strategic and technical orientation defined in the EUROCAE Technical Work Programme (TWP), which is publicly available on the EUROCAE website. The TWP is an essential element in defining EUROCAE's technical strategy and results from the remarkable work performed by the TAC to compile, analyse and synthesise the main needs and trends regarding standards in the wider aviation domain.

The quality of standards developed by EUROCAE is further enhanced by the application of the Quality Management System, which was implemented and approved in 2019. It defines the processes and instructions that govern EUROCAE activities.

Despite the meagre number of physical events conducted in 2020, EUROCAE remained active internationally. We took part in a significant number of virtual events that were held through the year. To sum up, EUROCAE was present at more than twenty events.

EUROCAE signed a Grant Agreement with the European Commission, DG MOVE, in 2018 for the years 2019 and 2020. It supports the Single European Sky targets related to ED development, coordination activities for ATM, Drones and Cyber, as well as to specifically support EASA performance based regulations and other rulemaking and international coordination activities. The Grant agreement

was extended in 2020 to cover the European Commission, DG DEFIS, and to provide support in the area of European Global Navigation Satellite System (EGNSS) and the wider space policy.

In 2020, the chairing of the three European Standards Coordination Groups for ATM, Drones and Cyber was passed from EUROCAE to EASA. EUROCAE supported the transition to ensure efficient operation in the new arrangement, where EUROCAE will keep an active role in the groups and maintain the secretariat function.

The training activity was most impacted in this crisis. Several training courses were scheduled in 2020, namely three courses related to cybersecurity, one on airworthiness and safety for unmanned aircraft systems and a training on aviation software standards. While several sessions were conducted virtually with a good level of participation, roughly half of the planned sessions were cancelled or postponed. Uncertainty is still very high concerning the evolution of this activity in 2021.

Last but not least, the Council in 2020, with the support of the Secretariat, established a proposal to set up a new, simplified and efficient structure for EUROCAE that revisits the governance and the legal setup of the association. This task resulted in an updated Constitution, which was endorsed by the Council. It was submitted to the General Assembly and subsequently approved, as part of a dedicated item in the agenda.

Considering the context, apart from the difficulties encountered in training activities, 2020 was a successful and positive year for EUROCAE. All these achievements in 2020 were possible due to the remarkable commitment and efficiency of the Secretariat in technical and administrative matters. It is their dedication to EUROCAE that enabled the association to perform so well through such a difficult year.

The EUROCAE strategy is defined through vision and mission statements, and several strategic lines, which are derived into key objectives for 2021:

EUROCAE VISION

The European leader in the development of worldwide recognised industry standards for aviation.

EUROCAE MISSION

In support of EUROCAE's vision, its mission is to take an active role in coordinating European and global standardisation activities and to develop standards that:

- ▶ are build upon state-of-the art expertise of its members
- ▶ are fit for purpose and adopted internationally
- ▶ support the operational, development and regulatory processes
- ▶ address future global aviation challenges

STRATEGY LINES

- ▶ Strengthen the European leading role of EUROCAE as an international aviation standardisation organisation
- ▶ Increase EUROCAE's global footprint and international relationships
- ▶ Increase the effectiveness of EUROCAE's standards development activities
- ▶ Ensure EUROCAE's sustainability and independence

According to Article 7 of the EUROCAE Constitution, complemented by paragraph 1.5.5 of the Handbook "Loss of Membership", the Council Chair must report on the organisations removed from the list of EUROCAE members due to the non-payment of membership fees. For 2020, this was already reported at the 57th EUROCAE General Assembly, which took place on 20 October 2020. For 2021, decisions related to non-payment of fees will be taken at the Council Meeting planned in June. Please allow me to kindly remind these members to balance their open invoice as soon as possible. Membership fees are key for securing EUROCAE's financial situation.

I would now like to conclude my report at the end of my first year as Chair of the Council, I want to share with you the confidence I have in the capacity of EUROCAE to pursue its development, despite the current crisis. I would like to remind you that EUROCAE's major strength lies in its membership, and that its main *raison d'être* is to serve its members. In this difficult period, it is essential that EUROCAE can continue relying on its members.



Bruno Ayrat
EUROCAE Council Chair



Dear members, colleagues, and friends of EUROCAE,

This edition of the Annual Report is the second one, where we are still recovering from this unprecedented crisis in aviation. While we see the initial positive results

of the vaccination campaigns all over Europe and globally, we still do not have a harmonised way of implementing measures, restrictions crossing borders - not even regionally we are applying a common strategy. This situation leads to uncertainties and additional burdens for the already weakened aviation industry sector. We at EUROCAE are trying our best to support our members and the aviation community with launching a set of activities as a direct response to the COVID-19, like the Aircraft cleaning and disinfection standard which was developed and published in three months; an agile adaption of our well-developed processes and procedures in place, while keeping the high-quality level of our standards. Our second activity focused on the technical means to identify potential COVID-19 carries among passengers: this Working Group discussed and defined the specification and parameters for sensors which could be used onboard commercial aircraft to monitor the temperature of passengers to a sufficiently high degree of accuracy to highlight to the cabin crew when a passenger presents with a fever. The objective of this piece of equipment is to provide passengers reassurance, and thus to serve the recovery of the aviation industry. The Working Group built on the framework driven by the ICAO "Collaborative Agreement for the Prevention and Management of Public Health Events in Civil Aviation" (CAPSCA) and the EASA Aviation Industry Charter for COVID-19. The standard is now going through the last plenary meeting of WG-120 and will then be ready for Open Consultation. These new activities signal that we must be prepared for different activities to support our members and the bigger aviation community, while using EUROCAE's solid and strong infrastructure to address these emerging topics. We are aware and prepared to adapt to this new environment. Your inputs are therefore very welcome, and you can clearly

observe the role of EUROCAE in addressing the current challenges, shifting priorities and new topics.

Related to this, I'm happy to report that we also increased our performance and now develop 30 standards per year on average, compared to 10 from just a couple of years ago. The time to develop and publish standards has reduced, mainly by streamlining processes and procedures. At the same time, we have not reduced the necessary quality time for our experts to develop the standard and keep safety and quality at the highest known level. Time to market is not a first level performance indicator for our standards, as an efficient and effective development and publication process automatically results in shorter timeframes. Let me remind you of the example above, where a standard for aircraft cleaning and disinfection was published in only three months' time, and various performance indicators are tracking our activities and EUROCAE processes to identify potential delays.

We now have Working Groups with a bigger substructure and several parallel developments are ongoing, as we expect to reach the mark of 50 active Working Groups by 2021 at EUROCAE. This makes me strongly believe that we have reached a stage of strong and reliable development processes, paired with a flexibility in order to swiftly adapt to new areas, while meeting the demand of high-quality standards.

More activities and better performance require accompanying actions and investments. We have hired an additional Technical Programme Manager (TPM) to replace Alain Vallée, who retired by the end of 2020. Alain was employed at 50% and supported the TPM team as a technical expert, mainly on drone and VTOL activities. No physical events took place for a long time, so we had to establish a new method to connect with our stakeholders. The target was to establish a stronger digital communication and information campaign for our members and the global aviation community, while adapting our social media presence. We have therefore expanded the team with a communication and PR specialist, who was also in charge of organising the 2021 EUROCAE symposium.

Our second investment was on the IT improvement programme, which was launched based on the analysis of tickets issued over the last years, and led to an updated registration process where several steps were removed to run an automated process. Another significant improvement was on the 'password reset' function, which is now available on the workspace landing page. These two improvements have significantly reduced our ticket and IT support load but have more importantly, made the life of our 3500 experts much easier.

One main topic I want to address in my 2020-2021 Annual Report editorial is also close to my heart, and in the meantime a high priority in the EUROCAE strategy. Our one and only planet, the environment, CO2 emissions, noise and overall, the goals our members set for themselves became a top level priority in aviation. This is raising the expectations of EUROCAE, paired with the political pressure to contribute as aviation sector to meet the global goals of reducing CO2 emissions, to fight the global warming and to build a better and more sustainable mode of transport, while keeping a very high degree of connectivity regionally and globally. Many initiatives and promising technologies on an aircraft level, innovative propulsion systems, increasing efficiency in the daily operations, a seamless, automated, and defragmented traffic management infrastructure and Sustainable Aviation Fuel (SAF) will contribute to the overall goals in aviation. In the previous years, EUROCAE already expanded its activities in the environment and sustainability domain by including activities like hydrogen, electric and hybrid propulsion systems. eVTOL and UAS also have activities that are related to these emerging and environmental friendly technologies. EUROCAE will further align its work programme with these goals, the regulatory frame and the needs of the industry. The EUROCAE Technical Work Programme (TWP), which is available for free at our eShop, will in this year's update focus on the sections related to environment. Your input, feedback, and direct initiatives for launching new EUROCAE standardisation activities, are therefore highly welcome.

As discussed at the beginning of my editorial, our industry sector is very much affected by this crisis. However, we have now learned to live with COVID restrictions and to rely on a virtual environment. Hence, EUROCAE had organised its annual symposium in a fully virtual setup, while following its usual schedule at the end of April. You will find a detailed report inside this Annual Report, but I do not want to miss this opportunity to convey my appreciation to our speakers, the supporting team and the EUROCAE staff, and to our sponsors, who made this event possible. The feedback we received showed us that we were able to organise a highly interesting symposium in a digital environment, while attracting hundreds of international participants. We had used a three-day format and appropriate timeslots to enable participation from several countries around the globe. The topics were well chosen, the event was inaugurated with an encouraging speech by Henrik Hololei, further reflecting on innovation and digitalisation. Day two was dedicated to environment and sustainability, which provided an important input to the topic I addressed above. High level sessions and a cross industry panel helped us look over the fence and learn from different industry domains, standards needs and other priorities. EUROCAE closely followed these discussions, and we will summarise the main conclusion as drafting inputs for our TWP and strategy.

Enjoy reading our Annual Report, and your feedback is, as always, highly welcome. I wish the best for you and your families, stay safe and healthy, and we look forward to a quick recovery, so that we can meet soon in person.



Christian Schleifer-Heingärtner
Director General



EUROCAE is

...**a non-profit organisation** with almost 60 years of excellence in the development of aviation standards (Airborne, Ground Systems and Equipment) and related documents, as required for use in the regulation of aviation equipment and systems.

EUROCAE is a membership-based organisation, and it gathers members from leading aviation companies in the world under its logo.

EUROCAE does

...**develop standards** to suit the needs of the aviation industry, while supporting European and global regulations. We aim to increase safety and market potential, facilitate interoperability, and encourage technological development in the interest of our members.

To develop EUROCAE Documents (EDs), we offer a platform, which is organised by Working Groups (WGs), where our members contribute on a voluntary basis. Over 3,500 experts are collaborating in 48 active WGs to revise or develop future EDs.

The development of EUROCAE Documents is governed by an established process that promotes teamwork, excellence, industry collaboration and consensus.

To date, EUROCAE has published more than 250 EDs, which are recognised worldwide as high-quality and state-of-the-art standards.

To further support the industry and aid understanding of the existing standards and regulations, EUROCAE offers training courses in cooperation with the appropriate experts.

EUROCAE has

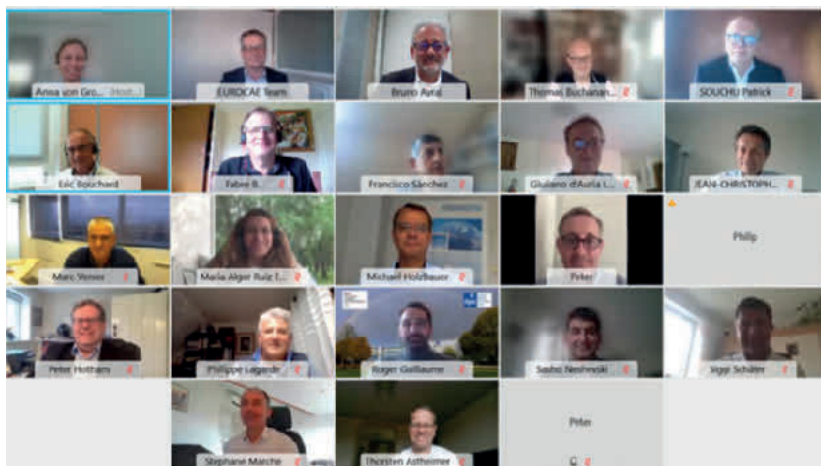
...a unique structure, the Technical Advisory Committee (TAC), which unites leading experts from various stakeholder categories in aviation. The role of the TAC is to monitor the consistency and coherence of the EUROCAE strategic work programme and to advise on ongoing and future activities.

EUROCAE currently has over 360 members, including manufacturers, service providers, regulators, research institutes and international organisations. EUROCAE membership is available to organisations and industries worldwide.

EUROCAE is dealing with four commercial activities:

- ▶ **Sales of ED documents**
- ▶ **Contracts with external companies** (covering engineering studies and services in relation with EUROCAE's domains of activities, etc.)
- ▶ **Concerning dedicated technical workshops, symposia** (such as the EUROCAE annual Symposium, usually accompanying the General Assembly) and conferences.
- ▶ **Training**, in cooperation with the best experts in their fields to provide with high-quality training courses.

COUNCIL October 2020 - April 2021



COUNCIL OFFICERS

Bruno AYRAL / THALES LAS France SAS / Chairperson
 Philip CHURCH / HELIOS / Vice-Chairperson
 Michael HOLZBAUER / FREQUENTIS AG / Vice-Chairperson
 Peter GREEN / EUROCONTROL / Treasurer

COUNCIL MEMBERS	ORGANISATION
Jean-Christophe ALBOUY	AIRBUS Operations
Eric BOUCHARD	DASSAULT AVIATION
Giuliano D'AURIA	LEONARDO
Bernard FABRE	THALES GROUP
Pierre GEORGES	GIFAS
Iain HARRIS	NATS
Peter HOTHAM	SESAR JU
Philippe LAGARDE	SAFRAN
Stéphane MARCHÉ	HONEYWELL AEROSPACE
Pascal MEDAL	EASA
Michael MOWINSKI	FRAPORT
Guillaume ROGER	DGAC / DTA / STAC
Francisco SANCHEZ ROMERO	INDRA SISTEMAS
Patrick SOUCHU	DSNA
Marc VENIER	COLLINS AEROSPACE
Frank ZETSCHKE	DFS

COUNCIL May 2021 - April 2022

The Council is made up of not less than 8 members, and not more than 20 members. For the exercise 2021-2022, 20 Council members were elected by EUROCAE Full Members at the General Assembly. The Director General is the Council Secretary.

At its first meeting (usually immediately after the General Assembly), the Council elects the President, who is also chairing the Council, two Vice-Presidents and the Treasurer.

In 2021, with the approval of the new Constitution, the responsibilities of the Council are to:

- ▶ define the overall vision, mission and policy of EUROCAE and proposes the organisation's strategy to the General Assembly
- ▶ elect the President, Vice Presidents and the Treasurer
- ▶ select and decides on the hiring and dismissal of the Director General (DG)
- ▶ approve the business plan and associated annual budget as well as any additional expenses
- ▶ appoint the chair and members of TAC, set its objectives and approve its outputs
- ▶ approve the creation and disbandment of WG and their ToR, supervise the WG activities via a report at each Council meeting, and approve the publication of EUROCAE documents
- ▶ approve contracts and agreements with third parties beyond the powers of DG
- ▶ approve the arrangements for the annual GA and Symposium
- ▶ may delegate additional functions and responsibilities to DG

COUNCIL OFFICERS

Bruno AYRAL / THALES LAS France SAS / President

Michael HOLZBAUER / FREQUENTIS AG / First Vice-President

Guillaume ROGER / DGAC / DTA / STAC / Second Vice-President

Philip CHURCH / EGIS AVIATION UK / Treasurer

COUNCIL MEMBERS	ORGANISATION
Thorsten ASTHEIMER	FRAPORT AG
Jean-Christophe ALBOUY	AIRBUS Operations
Maria ALGAR RUIZ	EASA
Eric BOUCHARD	DASSAULT AVIATION
Thomas BUCHANAN	Skyguide
Giuliano D'AURIA	LEONARDO SpA
Bernard FABRE	THALES GROUP
Peter GREEN	EUROCONTROL
Iain HARRIS	NATS
Peter HOTHAM	SESAR JU
Philippe LAGARDE	SAFRAN
Stéphane MARCHÉ	HONEYWELL AEROSPACE
Francisco SANCHEZ ROMERO	INDRA SISTEMAS
Patrick SOUCHU	DSNA
Marc VENIER	COLLINS AEROSPACE
Frank ZETSCHÉ	DFS GmbH

Technical Advisory Committee (TAC)

October 2020 - May 2021

CHAIRPERSON: Eric BOUCHARD / DASSAULT AVIATION

VICE-CHAIRPERSON: Jean-Marc LOSCOS / DSNA

The Technical Advisory Committee (TAC) advises the Council on technical, operational and, on request, on policy matters. TAC is a specific body, composed of 12 specialist members representing the different groups of stakeholders. The Secretariat is also a key participant in the TAC, complementing the overall perspective and ensuring a tight link with the Working Groups. TAC ensures that prospective work aligns with EUROCAE members' interests from the outset, guaranteeing a high technical quality of the standards, fit for purpose and available when needed.

TAC gives advices to the Council and provides technical recommendations on standardisation activities. It elaborates and maintains the EUROCAE Technical Work Programme, as the core guideline for future EUROCAE activities.

As it includes representatives of key European aeronautical organisations, TAC is wellplaced to ensure alignment of EUROCAE activities with external entities and regulatory bodies. It places activities within the context of European SES developments and coordinates transatlantic efforts with our main partner organisations in support of ICAO roadmaps and global interoperability.

The TAC members remain unchanged for the period May 2021 to April 2022.

TAC MEMBER	ORGANISATION	REPRESENTING
Laurent AZOULAI	AIRBUS	Aircraft Manufacturers – Commercial aviation
ERIC BOUCHARD	DASSAULT AVIATION	Aircraft Manufacturers – Business aviation
Denis RICAUD	THALES GROUP	Equipment manufacturers – Avionics Equipment manufacturers – Aircraft Non Avionic
Robin GARRITY	SESTAR JU	European R&D community
Jean-Marc LOSCOS	DSNA	Air Navigation Service Providers
Manfred MOHR	IATA	Airlines / Airspace users
Sasho NESHEVSKI	EUROCONTROL	European ATM Organisation
Roy POSERN	FRAPORT	Airports
Sylvain POUILLARD	SAFRAN ELECTRONICS & DEFENSE	UAS
Michel PROCOUDINE-GORSKY	THALES AIR SYSTEMS	Equipment manufacturers – Ground Equipment
Hette HOEKEMA	EASA	Regulatory Authority
Christian SCHLEIFER	EUROCAE	EUROCAE

58th GENERAL ASSEMBLY

Like last year, the 58th General Assembly was exclusively held online due to the situation created by the COVID-19 crisis.

The President and Chairperson of the Council, Mr. Bruno Ayrat introduced the meeting and presented the main activities and achievements in the year 2020. In addition to the usual resolutions, the General Assembly approved the amendment of the Constitution that required the quorum of the majority of the Full Members.

The main changes of the Constitution aimed at improving its governance by reassigning to each of the Association body, responsibilities adapted to their mission. It involved the merge of the President's with the Council chair position which simplified the governing layers and rationalised the internal function.

Moreover, the functions of the governing bodies were modified to accommodate the incorporation of commercial activities into EUROCAE Association from EUROCAE Communication. Thus, extensive functions were attributed to the Director General of EUROCAE Association to ensure the efficient and effective operation of the organisation.

The General Assembly elected 20 Council Members and was immediately followed by a Council Meeting, which elected Mr. Bruno Ayrat (THALES LAS France SAS) as President, Michael Holzbauer (FREQUENTIS AG) and Guillaume Roger (DGAC / DTA / STAC) as Vice Presidents, and Philip Church (Egis Aviation UK) as Treasurer.

Technical Advisory Committee, April 2019 to May 2020



EUROCAE Partners

At EUROCAE, our goal is to maintain the standardisation process relevant and dynamic, aligned with the latest developments of the industry and in support of our stakeholder community. To achieve this goal, we work closely with our European and international partners for a consistent approach to standardisation.

Furthering our outreach and building a strong relationship and long-term cooperation with key partners are part of our strategic goals.

Implementing this strategic target given by the Council in the Business Plan, EUROCAE concluded the following agreements:

- ▶ **Global UTM Association (GUTMA)**
signed 4 December 2020
- ▶ **EUROCONTROL** signed 9 February 2021

In addition, several agreements were reviewed and are being updated to ensure their continued relevance.



EUROCAE MAINTAINS AGREEMENTS WITH THE FOLLOWING ORGANISATIONS:

- ▶ **Airports Council International Europe (ACI Europe)**
Memorandum of Understanding
- ▶ **ASD-STAN**
Memorandum of Understanding
- ▶ **Civil Air Navigation Services Organisation (CANSO)**
Memorandum of Understanding
- ▶ **European Committee for Standardisation (CEN, ESO*)**
Memorandum of Understanding
- ▶ **European Committee for Electrotechnical Standardisation (CENELEC, ESO*)**
Memorandum of Understanding
- ▶ **European Aviation Safety Agency (EASA)**
Framework Contract & specific activities in support of EASA activities
- ▶ **European Cockpit Association (ECA)**
Memorandum of Understanding
- ▶ **European Telecommunications Standards Institute (ETSI, ESO*)**
Cooperation Agreement
- ▶ **EUROCONTROL**
Memorandum of Cooperation
- ▶ **General Aviation Manufacturers Association (GAMA)**
Memorandum of Understanding
- ▶ **Global UTM Association (GUTMA)**
Memorandum of Understanding
- ▶ **International Council of Aircraft Owner and Pilot Associations (IAOPA)**
Memorandum of Understanding
- ▶ **International Air Transport Association (IATA)**
Memorandum of Understanding
- ▶ **International Civil Aviation Organisation (ICAO)**
Memorandum of Understanding
- ▶ **International Federation of Air Traffic Controllers' Associations (IFATCA)**
Memorandum of Understanding
- ▶ **Japan Aviation Innovation Development Association (AIDA)**
Memorandum of Understanding
- ▶ **RTCA**
Memorandum of Cooperation
- ▶ **SAE**
Memorandum of Cooperation
- ▶ **SESAR Joint Undertaking**
Memorandum of Cooperation
- ▶ **SESAR Deployment Manager**
Memorandum of Cooperation

* ESO: European Standardisation Organisation

Global UTM Association (GUTMA)

EUROCAE and the Global UTM Association (GUTMA) signed a Memorandum of Understanding on 4 December 2020 to support one another in creating a greater contribution to the development and promotion of industry standards for UTM and U-Space.

GUTMA is a non-profit consortium of worldwide Unmanned Aircraft Systems Traffic Management (UTM) stakeholders with the purpose of fostering safe, secure and efficient integration of drones in global airspace systems. Its mission is to support and accelerate the transparent implementation of globally interoperable UTM systems.

This agreement will allow EUROCAE and GUTMA to closely work together on worldwide standards to promote UTM interoperability and harmonisation, whilst also encouraging respective members to actively engage.

This is a great opportunity to unify the developing standards for UTM and U-Space worldwide. GUTMA is extremely happy to further build on their agreements with ASTM International and ISO, as these collaborations are important for this developing community. Inclusion of the UTM and U-Space community is vital for current and future standardisation activities.

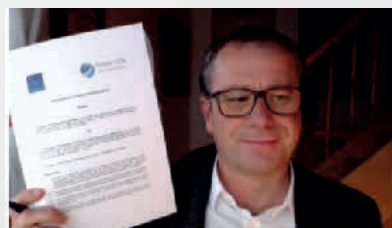
Both of our organisations share the same objective: to contribute to the safe integration of all categories of drones into all classes of airspace.

This MoU bares high potential, and it is as a prospect to join our efforts and deliver the necessary standards to support the implementation of UTM and U-Space.

This MoU reflects a true commitment from the industry to not delay the deployment of UTM and U-Space as it is seen as an important enabler of Urban Air Mobility concept.

Already before signing this MoU, GUTMA had teamed with the Global System for Mobile Communications Association (GSMA) to form 'Aerial Connectivity Joint Activity' (ACJA). It aims to bridge UAS activities in 3rd Generation Partnership Project (3GPP) with those in EUROCAE and RTCA to develop standards for using Management Communication Network (MCN) to implement communication services for safe operation of UAS.

The first activity pursued collaboratively under this MoU to support the ACJA initiative is Minimum Operational Performance Specification (MOPS) for UAS C2 Communications by Cellular Networks. This standard intends to provide a framework for all stakeholders, UAS manufacturers, UAS operators, UTM/U-Space Service Suppliers, Mobile Network Operators, and Communication Service Providers, to comply with regulation when using cellular (3GPP) communication.



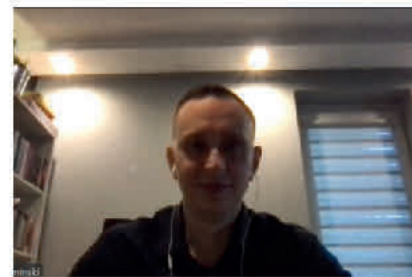
Christian Schleifer-Heingartner,
Secretary General EUROCAE



Eszter Kovacs,
Acting Secretary General GUTMA



Sergiu Marzac,
Technical Programme Manager, EUROCAE



Pawel Trómiński,
Technical Project Manager, GUTMA

The EUROCAE and GUTMA teams during the virtual signing ceremony on 4 December 2020.

EUROCAE and EUROCONTROL Sign MoC

EUROCAE and EUROCONTROL strengthen cooperation in aviation standards development

On 9 February 2021, the Director General of EUROCONTROL, Eamonn Brennan, and the Director General of EUROCAE, Christian Schleifer, concluded a new Memorandum of Cooperation (MoC) between the two organisations at a virtual meeting in the presence of the EUROCAE President and Council Chair, Bruno Ayral, Thales LAS France.

The new MoC builds on and strengthens decades of cooperation between EUROCAE and EUROCONTROL – Europe’s leading developers of aviation standards. It provides for greater mutual recognition of the role played by each organisation in the field of standards and contributes to greater complementarity between the two.

Europe is moving towards an open architecture, capable of enabling a seamless, flexible and scalable provision of services in the digital European sky. Standards will play a critical role in supporting global interoperability and worldwide harmonisation, while showing compliance with a more performance based regulatory frame, enabling implementation of innovative solutions.

This new agreement will allow for greater synergies between EUROCONTROL and EUROCAE and enhanced collaboration in addressing the challenges ahead. Standards have a fundamental role in accelerating the deployment of the future digital European sky, envisaged by the Airspace Architecture Study. The MoC will enhance efficiency and provide more visibility to the European standard development collaborative effort.



EUROCAE's Response to COVID Situation: Working to Support the Industry in the COVID-19 Crisis

We are looking back at a year where the COVID-19 pandemic was in focus. Since March 2020, EUROCAE activities have shifted to a fully virtual business model. Due to the quick change and flexibility of our members, our activities could continue without significant delays.

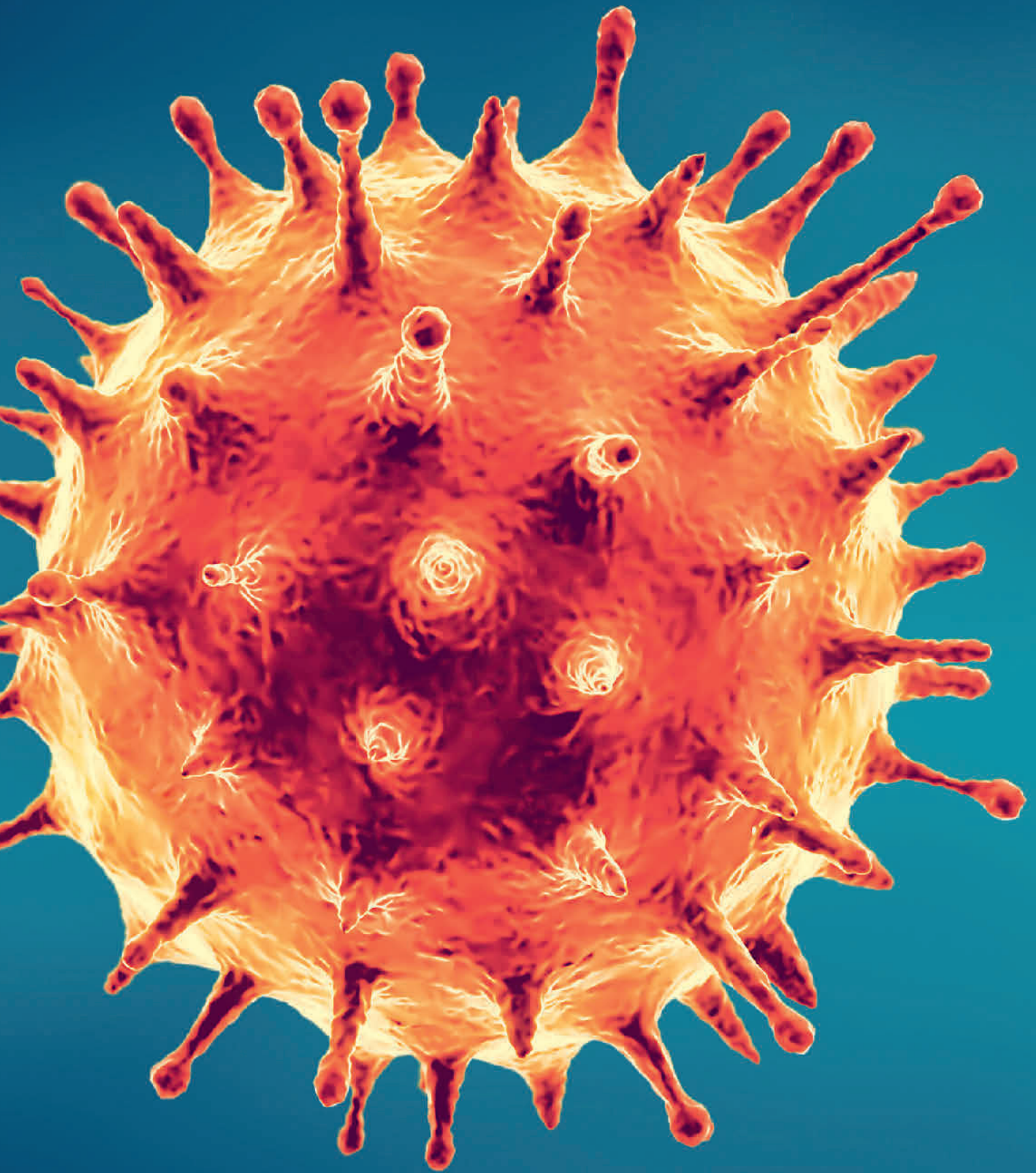
The EUROCAE team has been active in maintaining a high level of engagement to support our members and ongoing standardisation activities. Meetings have been conducted on online platforms, to coordinate activities within the Working Groups (WGs). Despite several shortcomings such as experts being unavailable, member organisations' changed priorities and the inability to meet in person, the impact on our current activities has been relatively limited.

EUROCAE has been able to rapidly initiate activities aimed at facilitating recovery of the aviation sector. Two new WGs were established, WG-120 Technical Means for identifying potential Covid-19 carriers among passengers, and WG-121 Aircraft Cleaning. Additionally, it is now possible to apply different measures, such as reducing Open Consultation to 28 days. Other potential standardisation activities are currently under review by the EUROCAE secretariat.

We continue to coordinate and stay in close contact with our partners. EUROCAE is maintaining a good relationship with its stakeholders to ensure that, when industry activity restarts, we are well positioned to accelerate the standards development process and swiftly deliver on our commitments. Standards are key to ensure technological progress and maintain high levels of safety to support aviation today and tomorrow. Thus, the EUROCAE system and staff will facilitate the remote participation of Working Group meetings so that the standards development activities can continue until restrictions ease.

As regulations begin to ease in Europe, EUROCAE is looking forward to offer face-to-face meetings and trainings again at our premises in Saint-Denis, starting with September 2021. The possibility to attend virtually will continue to remain available.

Our aim is to stay flexible and respond quickly and effectively to the changing demands triggered by the COVID-19 pandemic. We are observing the developments very carefully and will adapt our response accordingly. We will keep you posted with relevant information on our website, via the NEWSblog and our other regular communication channels.





EUROCAE

Domains of Activity

AVIONICS (NON-CNS)

This domain encompasses all standardisation activities which are related to on-board equipment and systems without those in interaction with the external world (which are part of the CNS Domain). In addition, this Domain also encompasses standardisation activities related to the various system development activities.

CNS (Communication, Navigation, Surveillance, Datalink Applications)

This domain encompasses all standardisation activities which are related to on-board and ground equipment and systems which are in interaction with the external world for Communications, Navigation and Surveillance (CNS). Activities related to Datalink are also considered as part of this Domain.

ATM (AIR TRAFFIC MANAGEMENT)

The following EUROCAE activities are concerned by the ATM Domain:

- ▶ Flight Data Processing (FDP) Interoperability
- ▶ Voice over Internet Protocol (VoIP) for ATM
- ▶ Interoperability of ATM Validation Platforms
- ▶ Virtual Center

AIRPORTS

As airports are an important stakeholder in the ATM system, it is necessary to facilitate the integration of airports in the ATM system in support of the European concept of operations. In addition, airports are also key economical players in their region where modernisation of their infrastructure is expected together with their expansion.

SWIM (SYSTEM WIDE INFORMATION MANAGEMENT)

Through the SESAR programme, Europe has made great progress on defining, developing and validating SWIM.



SECURITY

The Aeronautical Information Systems Security (AISS) activity addresses the cyber security concerns for Aeronautical Information Systems (AIS) within aircraft as much as their supporting infrastructure and supply chain.

ARTIFICIAL INTELLIGENCE (AI)

AI technologies are developing fast and appear to become accessible, providing attractive future capabilities for aviation, thanks to the significant increase of processing power in the recent years, enabling machine learning and computing.

AERONAUTICAL INFORMATION SERVICES (AIS) / METEOROLOGICAL (MET) SERVICES

The scope of the activities within this domain includes the establishment of user requirements for aeronautical data as well as standard generic data format for the transfer of geographic information/ data in digital form between different users, systems and locations.

UAS, VTOL & GENERAL AVIATION

It has been realised that the specific needs of general aviation have been left aside when developing or updating the aviation system. Now it has been recognised that several activities are on their way to adopt some systems and regulations better to the needs of the GA community. A similar situation exists for the integration of Unmanned Aircraft Systems (UAS). The integration of those aircraft into the existing ATM system needs industry standards to achieve worldwide harmonisation.

AIRCRAFT ELECTRICAL SYSTEMS

This Domain encompasses all standardisation activities which are related to energy management of aviation needs, e.g.

- ▶ Hydrogen & Fuel Cell Systems
- ▶ Hybrid Electric propulsion
- ▶ High Voltage - Power Distribution

MISCELLANEOUS

The scope of this Domain is to accommodate activities which do not fit 100% into other domains, but are clearly within the scope of EUROCAE, such as

- ▶ Electronic Flight Bag (EFB)
- ▶ Space / space-based ATM systems
- ▶ Counter UAS
- ▶ COVID-19 related activities.

Standards Development – WG Activities

EUROCAE's core activity is the development of internationally recognised aviation standards.

Regulators and industry alike have expressed their appreciation of the open, transparent and consensus-based process of developing EUROCAE standards. They acknowledge the high quality of our work and the fact that our standards are recognised and applied worldwide.

Currently, 48 Working Groups (WGs) are actively developing standards, a record in our history.

This is the highest level to date and results of a long-lasting trend:

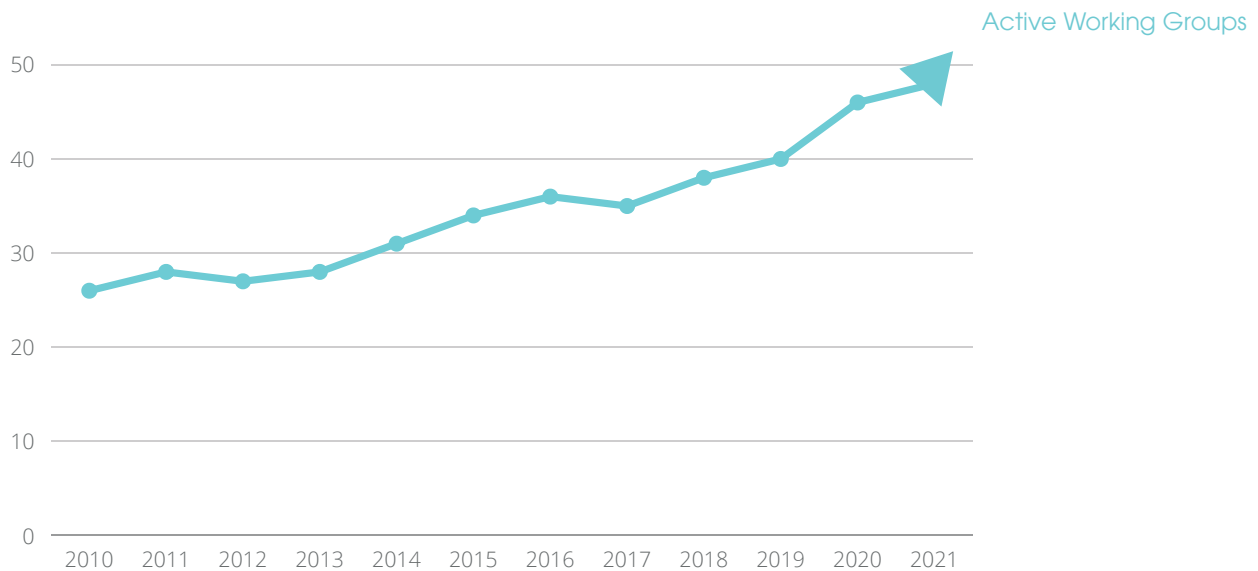
In 2010, EUROCAE was managing merely half as many, namely 26 WGs. The number steadily grew over the last years, expanding into new technical domains.

Today, over 3500 experts develop standards in these active WGs.

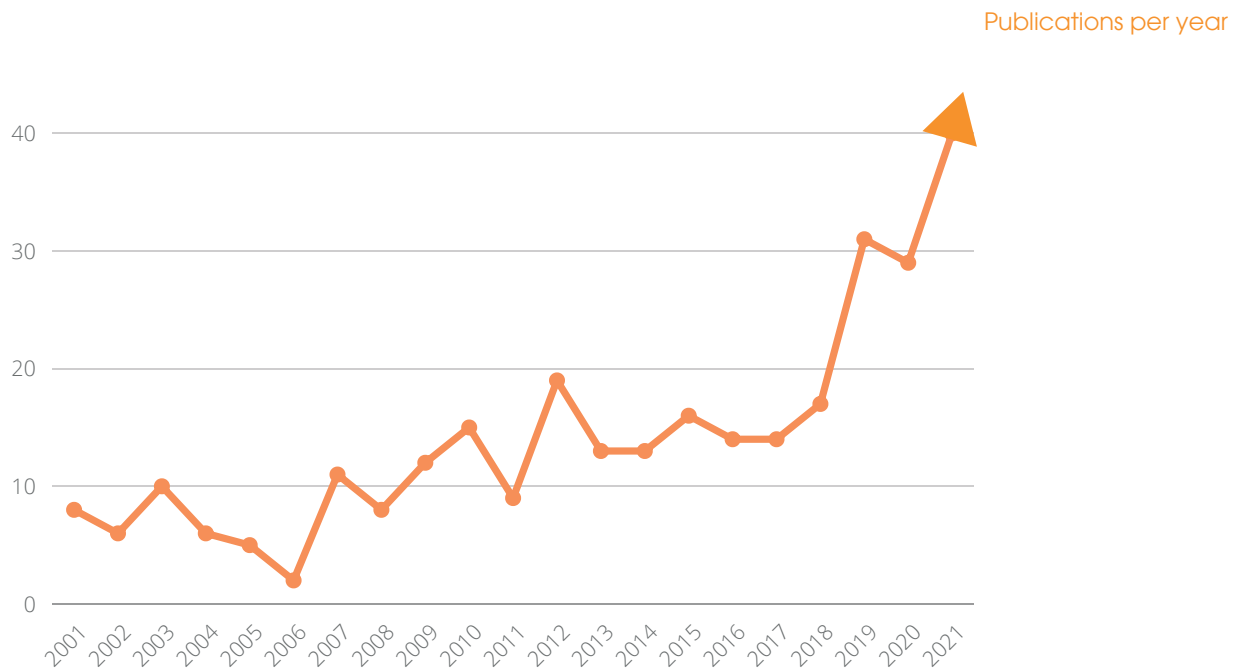
This wealth of knowledge is a decisive factor for the high quality of our standards, and we thank each and every expert for their contribution.

19 of these WGs are joint with RTCA (our partner Standard Developing Organisation (SDO) based in the US) Special Committees (SC), and another 5 work jointly with SAE (another US SDO partner) committees. This collaboration is extremely valuable for the quality, global recognition, and applicability of our standards.

Details on each of the WGs and their activities are provided in the following pages.



The rising number of WGs also results in an ever-growing number of publications every year. Whilst 10 years ago, EUROCAE released only a handful of deliverables, EDs and ERs, per year, nowadays around 30 deliverables are published every year – here again, with an upward trend.



The progress made by WGs towards the completion of their deliverables is well monitored through key performance indicators, which are presented to the Council twice per year.

In case of divergences from the target dates, the Secretariat staff, together with the Council and Technical Advisory Committee (TAC), take appropriate action, depending on the nature, cause and criticality of the delay.

THE FOLLOWING INDICATORS ARE MEASURED:

▶ **WG PROGRESS AGAINST TOR TARGETS**

Measuring the WGs performance to achieve the target dates for their deliverables

- Target > 90% on target
- Result: constantly exceeding the 90% target (latest measure: 93%)

▶ **ED PUBLICATION DELAY**

Measuring the Secretariat performance to publish the EDs without undue delay once approved by the Council

- Target: publication within 1 week after approval, excluding external factors
- Result: the performance increased immensely from 1.5 months 2 years ago, to about one week (latest measure: 8.1 days) on average

▶ **ED PERIODIC REVIEWS**

Ensuring a 5-yearly periodic review of all published EDs and ERs to ensure their continued relevance and quality

- Target: 100% of relevant EDs reviewed
- Result: The periodic review of all EDs published 5 years ago was carried out and completed by the TAC in January 2021.

In conclusion, the overall performance of the standards-development activities and process is therefore considered to be very good, thanks to the hard work and dedication of the WG leaders and participants.

Working Group List

WG	TITLE	DOMAIN
WG-14	Environment	Avionics - Environment
WG-28	Ground Based Augmentation Systems (GBAS)	CNS - Navigation
WG-31	Electromagnetic Hazards	Avionics - Environment
WG-41	A-SMGCS	Airports
WG-44	Aeronautical Databases	AIS/MET - Databases
WG-49	Mode S Transponders	CNS - Surveillance
WG-51	Automatic Dependent Surveillance - Broadcast (ADS-B)	CNS - Datalink
WG-59	Flight Data Processing (FDP) Interoperability	ATM - Flight Data Processing
WG-62	GALILEO	CNS - Navigation
WG-63	Complex Aircraft Systems	Avionics - System Safety Assessment
WG-67	Voice on Internet Protocol (VoIP) for ATM	ATM - Intercommunications
WG-72	Aeronautical Systems Security	Security
WG-75	Traffic Alert and Collision Avoidance Systems (TCAS)	Avionics - Safety systems
WG-76	AIS/MET Datalink Services	AIS/MET - Databases
WG-78	Standards for Air Traffic Data Communications Services	CNS - Datalink
WG-79	Enhanced Vision Systems (EVS), Synthetic Vision System (SVS)	Navigation Services and Sensors Enablers
WG-80	Hydrogen and Fuel Cell Systems	Miscellaneous
WG-81	Interoperability of ATM Validation Platforms	ATM - Simulators
WG-82	New Air-Ground Data Link Technologies	CNS - Communication
WG-83	Airport Foreign Object Debris (FOD) Detection Systems	Airports
WG-85	4D Navigation	CNS - Navigation
WG-88	Onboard Weight and Balance Systems	Avionics - Safety systems
WG-92	VDL Mode 2	CNS - Communication
WG-95	In-Flight Ice Detection Systems	Navigation Services and Sensors Enablers
WG-96	Wireless On-Board Avionics Networks	Avionics - Architecture & Network

WG	TITLE	DOMAIN
WG-97	Interoperability of Virtual Avionic Components	Avionics - System Engineering
WG-98	Aircraft Emergency Locator Transmitters	Avionics - Safety systems
WG-100	Remote & Virtual Tower (RVT)	Airports
WG-102	GEN-SUR SPR	CNS - Surveillance
WG-103	Independent Non-Cooperative Surveillance System (INCS)	CNS - Surveillance
WG-104	SWIM Services	SWIM
WG-105	Unmanned Aircraft Systems (UAS)	UAS
WG-106	Electronic Flight Bag (EFB) Software Applications	Miscellaneous
WG-107	DME Infrastructure Supporting PBN Positioning	CNS - Navigation
WG-108	ATN/IPS	CNS - Datalink
WG-109	Runway Weather Information Systems	Airports
WG-110	Helicopter Terrain Awareness and Warning Systems (HTAWS)	Avionics - Safety systems
WG-111	Airport Collaborative Decision Making (A-CDM)	Airports
WG-112	Vertical Take Off and Landing (VTOL)	Miscellaneous
WG-113	Hybrid Electric Propulsion	Miscellaneous
WG-114	Artificial Intelligence	Miscellaneous
WG-115	Counter UAS (C-UAS)	UAS
WG-116	High Voltage Systems and Components in Aviation	Miscellaneous
WG-117	Topics on Software Advancement	Miscellaneous
WG-118	Crash-Protected and Lightweight Flight Recorders	Avionics - Safety systems
WG-119	Radar Altimeters	Avionics - Architecture & Network
WG-120	Technical Means for Identifying Potential COVID-19 Carriers Among Passengers	Miscellaneous
WG-121	Aircraft Cleaning	Miscellaneous
WG-122	Virtual Centre	ATM - Flight Data Processing
FAS	Forum on Aeronautical Software	

WG-14 Environment

CHAIRPERSON: Marc Ponçon, AIRBUS Helicopters

SECRETARY: Gilles Crousier, SAFRAN

TECHNICAL PROGRAMME MANAGER:

Sergiu Marzac, EUROCAE

Created in September 1970, WG-14 continues to review and update ED-14, 'Environmental Conditions and Test Procedures for Airborne Equipment', including the related user guide material contained in ED-234 'User Guides Supplement to ED-14G'.

ED-14 and DO-160 were initially a set of simple procedures and limits that were used to guarantee a minimum qualification level regarding the ability of airborne equipment to function on board an aircraft environment. Since the creation of WG-14, its purpose has evolved and many sections aim to provide guidance on environmental stress, which is comparable to actual inflight conditions.

Due to technology evolution, equipment test levels and procedures need to be periodically updated. Currently, ED-14/DO-160 has reached edition G and will continue to evolve on a regular basis. WG-14 closely collaborates with RTCA SC-135 Environmental Testing in the development of these documents to ensure technically identical standards in EUROCAE and RTCA.

In 2018, the ToR of WG-14 was complemented with a new deliverable, Minimum Standard Environmental Test Conditions (categories) and Applicable Test Procedures for Ground Based Equipment. As technology evolves and Unmanned Aircraft Systems (UAS) are integrated into commercial applications, it is necessary to review existing environmental qualification standards and requirements for surface-based equipment, (stationary ground, mobile ground, and sea-based) and provide the environmental qualification requirements for UAS Detect and Avoid (DAA), the Command and Control Communications (C3) and Control Station Equipment. Collaboration is envisaged in this respect with EUROCAE WG-105 and RTCA.

In 2021, Marc Ponçon (Airbus Helicopters), the chair of WG-14, was awarded the EUROCAE Leadership Award for his remarkable contribution in efficiently steering the working group activities.



WG-28 Ground Based Augmentation System (GBAS)

SECRETARY: Linda Lavik, INDRA

TECHNICAL PROGRAMME MANAGER:
Anna Guégan, EUROCAE

WG-28 activities are driven by the objectives of developing standards for GBAS ground sub-systems. This includes multi-constellation multi-frequency concepts based on Galileo.

Since its creation in December 1985, WG-28 has worked on the maintenance of ED-114, 'Minimum Operational Performance Standards (MOPS) for Global Navigation Satellite Ground Based Augmentation System (GBAS) Ground Equipment to support Precision Approach and Landing'.

The last revision of ED-114B was published in September 2019. An ED-114B change 1 is under development to resolve issues and reflect changes in the Standards and Recommended Practices (SARPs) and RTCA airborne MOPS on the topic of Very High Frequency Data Broadcast (VDB). The ED-114B change 1 will also identify dependencies between the ground and airborne elements of GBAS for consideration in equipment approval.

WG-28 is further collaborating with ICAO Navigation System Panel (NSP) in the context of GBAS Dual Frequency Multi-Constellation (DFMC) developments. The group also continues to monitor activity within WG-62 and RTCA SC-159 Global Positioning System, who are developing airborne MOPS that will be relevant to GBAS DFMC operation.

WG-31 Electromagnetic Hazards

CHAIRPERSON: Franck Flourens, AIRBUS

SECRETARY: Dan Morgan, ELEMENT

TECHNICAL PROGRAMME MANAGER:
Sergiu Marzac, EUROCAE

Created in February 1987, WG-31 is tasked with developing technical standards, specifications and guidance material to support the development of regulation and compliance processes in relation to the hazards of lightning and electrostatics. WG-31 works in liaison with the SAE AE2 Lightning Committee.

The mandate of WG-31 was recently updated to extend the scope to all electromagnetic threats (typically high-intensity radiated field (HIRF)). The key topics are fuel tank protection against ignition risks, test methods for supporting lightning certification, guidance for demonstrating

compliance to HIRF, lightning test methods for equipment, and guidance for the use of simulation in support of compliance processes. The WG is running five sub groups to deal with these matters, in parallel with equivalent SAE AE2 and SAE AE4 sub groups.

During last year, new organisations joined the group. They brought a stronger focus of expertise for the task group working on simulation tasks. The new members have improved the diversity of the group. There is a better representation of general aviation, companies working on simulation software, airworthiness authorities and research laboratories.

The COVID-19 pandemic has significantly impacted the activities, making face to face meetings difficult to achieve. However, virtual meetings were efficiently managed, thanks to

the willingness and discipline of those involved. One of the benefits of virtual meetings is that they offer more possibilities for overseas members to participate. WG-31 hopes to resume physical meetings in 2021, but the principle of an annual virtual meeting could become a permanent feature.

WG-31 is maintaining very good group dynamics to address its current deliverables, but also to ensure convergence with SAE AE2 on topics of general interest. In 2020, the effort of Franck Flourens (Airbus), the chair of WG-31, was duly recognised. He was granted the EUROCAE Leadership Award for successfully managing a group addressing such a complex and important topic.

WG-41 Advanced Surface Movement Guidance & Control System (A-SMGCS)

CHAIRPERSON: Roy Posern, FRAPORT
SECRETARY: Vasileios Stefanioros, EASA
TECHNICAL PROGRAMME MANAGER: Sergiu Marzac, EUROCAE

In 2019, WG-41 concluded revision D of ED-87, 'Minimum Aviation System Performance Standard (MASPS) for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)'. This document was published in June 2019, complementing the EUROCONTROL Specification for A-SMGCS with technical specifications, requirements and test procedures. It provides a basis for the implementation of A-SMGCS Services Surveillance, Airport Safety Support and Routing at aerodromes. Thus, it supports the achievement of conforming to Pilot Common Projects (PCP) as defined under Regulation (EU) No 716/2014. In 2020-2021, the group continued its work on general interoperability requirements for A-SMGCS and on the technical requirements for the A-SMGCS guidance service.

Close collaboration with the European Telecommunications Standards Institute (ETSI) ensured the timely maintenance of the existing Community Specifications (CS) and the creation of new standards in the family of European Standard/Norm (EN) 303 213. The coordination with the Single European Sky ATM Research (SESAR) Joint Undertaking (JU) (SJU) and European ATM Standards Coordination Group (EASCG) is maintained to integrate the outcome of the latest SESAR activities on A-SMGCS and to support the SESAR Deployment Roadmap with WG-41 work.

The upcoming activities of the working group will focus on finalising the ED-87 MASPS development with requirements on A-SMGCS Guidance Service, resulting in revision E in 2021. After that, the provision of a set of documents further describing A-SMGCS interoperability in a technical context with specifications for supporting sensor systems for use in A-SMGCS will be developed.

WG-44 Aeronautical Databases

CHAIRPERSON: Stéphane Dubet, DSNA
SECRETARY: Sasho Neshevski, EUROCONTROL
TECHNICAL PROGRAMME MANAGER:
 Sergiu Marzac, EUROCAE

WG-44 was created in 1997 and has developed several standards to cover the processing of aeronautical data (ED-76), navigation (ED-77), terrain and obstacles (ED-98, ED-119) and aerodrome mapping (ED-99, ED-119).

After publishing ED-77A in 2019, WG-44 remained in active monitoring status to scrutinise industry feedback on WG-44 family of standards and collect new requirements for aeronautical data and related applications (e.g. for Data Driven Charting). In practice, web meetings have been

organised to gather and discuss proposals and information on potential work topics.

During the active monitoring phase, several new threads were identified for future work. In 2021, the work programme was approved by the TAC. It includes three new deliverables:

- ▶ Considerations for Aeronautical Data Alteration – Q3/2021
- ▶ Standards for Processing Aeronautical Data – Q3/2023
- ▶ User Requirements for Navigation Data – Q4/2023

WG-49 Mode S Transponders

CHAIRPERSON: Eric Potier, EUROCONTROL
TECHNICAL PROGRAMME MANAGER:
 Alexander Engel, EUROCAE

In December 2020, EUROCAE published revision F of the Mode S Transponder MOPS (ED-73/DO-181) to

- ▶ resolve errors reported by transponder manufacturers
- ▶ resolve misalignment between the EUROCAE MOPS and RTCA MOPS
- ▶ reflect the last ICAO amendments
- ▶ define new requirements, as necessary, to ensure transponders are more robust to RF environment encountered nowadays in Europe
- ▶ review the data provided through transponder registers to support new applications such as ACAS X or Wake Vortex
- ▶ remove unnecessary functions
- ▶ add functions or data to support new ADS-B 1090 MOPS (ED-102B/DO-260C), including a possible new phase modulation scheme, which is developed by WG-51/SG-1

In addition, the new Transponder MOPS contains basic requirements necessary to include future collision avoidance functionality (ACAS X) into the transponder.

WG-49, via the Combined Surveillance Committee (CSC), took on board requirements from EUROCAE WG-76/RTCA SC-206 (AIS/MET Datalink Services) for the provision of related weather information.

Following the publication of ED-73F, WG-49 will continue to work on revision A of ED-115, 'MOPS for Light Aviation Secondary Surveillance Radar Transponders'.

WG-51 Automatic Dependent Surveillance-Broadcast (ADS-B)

CHAIRPERSON: Michel Procoudine-Gorsky, THALES LAS France

SECRETARY: Jörg Steinleitner, EUROCONTROL

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

WG-51 worked with three active sub groups, two of which have completed their Work Programme:

▶ Sub group 1

developed ED-102B/DO-260C, the MOPS for 1090 MHz Extended Squitter Automatic Dependant Surveillance – Broadcast (ADS-B) & Traffic Information Services – Broadcast (TIS-B). The work of SG-1 was performed with EUROCAE WG-49 and RTCA SC-186/SC-209. The document was published in January 2021.

▶ Sub group 2

has been dormant for some time already.

▶ Sub group 3

developed Safety and Performance Requirements (SPR) documents for ADS-B airborne and ground

surveillance applications, as well as aircraft system MOPS material. The following documents were published:

- ▶ ED-194B / DO-317C, MOPS for Aircraft Surveillance Application (ASA) System, published on 03 July 2020
- ▶ ED-195B/DO-328B, SPR for Airborne Spacing Flight-deck Interval Management (ASPA-FIM), published on 31 March 2020
- ▶ ED-236A/DO-361A, MOPS for Flight-deck Interval Management (FIM), published on 06 April 2020. Change 1 was published on 21 December 2020.

▶ Sub group 4

is responsible for an update of the 'Technical Specification for an ADS-B Ground System' (ED-129C, target date 30 September 2022) and an updated 'Technical Specification for a Wide Area Multilateration System with Composite Surveillance Functionality' (ED-142A, target date 30 June 2022). The latter document will contain requirements for the development of a ground infrastructure that utilises functionalities of Multilateration and ADS-B.

WG-59 Flight Data Processing (FDP) Interoperability

CHAIRPERSONS: Andrés Grijalba, ENAIRE and Patrick Souchu, DSNA

SECRETARY: Juan Jose Meana Vega, INDRA

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

WG-59 is tasked with a revision of ED-133 Flight Object Interoperability Specification.

To develop operational and technical requirements as basis for the revision of ED-133, two Task Forces within the remits of the SESAR Joint Undertaking (SJU) have performed extensive exercises. The results of these exercises were made available to WG-59 for the inclusion in ED-133A.

An intermediate version of ED-133A was available in March 2020, and it was made available to interested parties to perform initial steps towards deployment.

In line with the WG-59 Terms of Reference (ToR), the publication of ED-133A is expected by the end of June 2022.

WG-62 GALILEO

CHAIRPERSON: Pierre Bouniol, THALES GROUP

SECRETARY: Mikael Mabillean, GSA

TECHNICAL PROGRAMME MANAGER:

Anna Guégan, EUROCAE

The European Commission has confirmed full operational capability of Galileo in 2020. The contract for the next generation of European Geostationary Navigation Overlay Service (EGNOS), which will augment dual frequency Global Positioning System (GPS) and Galileo, has been awarded. In this context, the work of EUROCAE WG-62 is focused on the development of the Satellite-Based Augmentation System (SBAS) Dual Frequency Multi Constellation (DFMC) receiver Minimum Operational Performance Standard (MOPS).

A first version of the document ED-259, 'MOPS for Galileo - Global Positioning System - SBAS

Airborne Equipment', was published in February 2019. This document is a very important part of the regulatory framework, leading to the certification of equipment.

The objective of WG-62 is to provide an updated version of the SBAS DFMC receiver MOPS for 2022, in cooperation with RTCA. The attendance of the WG meetings has grown to include most of the stakeholders for such MOPS. Regular virtual meetings, including RTCA attendance, are held between meetings to progress with the content of the document.

WG-62 members are actively participating. In 2021, four Plenary meetings took place, jointly with RTCA (SC-159 SG-2). In addition, SBAS DFMC MOPS authors' and editors' groups are regularly holding review meetings.

WG-63 Complex Aircraft Systems

CHAIRPERSON: Christopher Lacey, AIRBUS

CO-CHAIRPERSON / SECRETARY: Julien Chaou, LIEBHERR AEROSPACE

DIRECTOR TECHNICAL PROGRAMME:

Anna von Groote, EUROCAE

WG-63 has concentrated most of its resources on the development of Development Assurance Objectives for Aerospace Vehicles and Systems, jointly with SAE S-18. The purpose of this document is to provide a minimum set of development assurance objectives to ensure safety for aircraft and system development. The draft document was submitted to the EUROCAE Open Consultation in fall 2019; several important comments were raised and the group worked intensely to refocus this deliverable. As a result, it was agreed that it would be more appropriate to publish it as ER-023. It is now undergoing final review within the joint group and is expected to be published in Q3/2021.

In addition, work is progressing on

- ▶ **ED-79B:** Guidelines for Development of Civil Aircraft and Systems
- ▶ **ED-135:** Guidelines and methods for conducting the safety assessment process on civil airborne systems and equipment

WG-63, jointly with SAE S-18, initiated work on a EUROCAE Report, evaluating the applicability of existing development assurance and system safety practices to UAS and VTOL. This task is related to ED-79B and ED-135. It could produce results that may be included in future updates of those guidelines.

To perform this task, WG-63 will also coordinate with WG-105 SG-4 and WG-112 that are respectively producing guidelines on UAS FHA and VTOL safety assessment (CMA, Specific Risks).

Furthermore, WG-63 initiated a series of WG-internal TechTalks.

The purposes of these technical talks are:

- ▶ to help newcomers getting grips with the various topics that have been discussed for years in the working group (ED-135, ED-79B, ER-023...)
- ▶ to offer an opportunity to academics and universities to provide some insight on the new safety-related methodologies and processes (STPA, MBSA, MBSE, MBE...)

- ▶ to help WG-63 tackle the challenges and new standards development from new safety-related domains (UAS, VTOL, Urban Air Mobility, AI...)
- ▶ before any ballot or open consultation period, to explain the major changes and benefits of the update of the document under review

WG-67 Voice over Internet Protocol (VoIP) for ATM

CHAIRPERSON: Liviu Popescu, EUROCONTROL

SECRETARY: Roberto Weger, SITI

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

WG-67 is responsible for three deliverables:

- ▶ **ED-136B**
Voice over Internet Protocol (VOIP) Air Traffic Management (ATM) System Operational and Technical Requirements
- ▶ **ED-137C**
Interoperability Standard for VOIP ATM Components (published in 4 volumes), including Change 1 documents for Volumes 1, 2, and 4.
- ▶ **ED-138B**
Network Requirements and Performance for VoIP ATM Systems (published in 2 parts)

Following the publication of ED-137C (including the Change 1 documents), WG-67 is now working in line with updated Terms of Reference (ToR) on a revision of ED-136 and ED-138, both of which are expected to be published in the middle of 2023.

ED-136 will be split into two Volumes: Volume 1 will be the Operational Services and Environment Description (OSED), whereas Volume 2 will define Safety and Performance Requirements (SPR).



WG-72 Aeronautical Systems Security

CHAIRPERSON: Cyrille Rosay, EASA
SECRETARY: Clive Goodchild, BAE SYSTEMS
TECHNICAL PROGRAMME MANAGER:
 Anna Guégan, EUROCAE

Created in December 2005, WG-72 was tasked to establish process specifications, guidelines and means of compliance to address security concerns for aeronautical systems. This includes the entire lifecycle of aeronautical systems. It ensures safe, secure and efficient operations, amid growing use of highly integrated electronic systems and network technologies onboard aircraft.

Published EUROCAE cyber security standards are regularly referenced.

WG-72 is composed of three sub-groups whose activities are fully joined with RTCA-216. WG-72 is currently developing several new standards addressing different aspects of cyber security. From earlier standards focusing on aircraft security, the range of topics is shifting towards other domains in civil aviation. This is illustrated by the last standard that was published by WG-72 SG-2 ED-205, which focused on ATM. The number of participants in WG-72 is increasing, and the group is looking for contributions from new categories of stakeholders such as airlines and airports.

WG-72 SG-2 has developed ED-205 on ATM/ANS ground system in March 2019. Revision A is currently under development:

▶ **ED-205A** 'Process Standard for Security certification and declaration of ATM/ANS ground systems'. This revision will address comments received and development in the regulatory framework.

WG-72 SG-3 has completed ED-204A/DO-355A 'Information Security Guidance for Continuing Airworthiness' in September 2020. It is now working on ED-xxx on Security Event Management.

▶ **ED-xxx** 'Guidance on Security Event Management' This new document will provide guidance on security event management for various actors in the aviation environment. It assists in developing processes and

procedures to identify and report security events and develop appropriate responses with respect to continuing airworthiness.

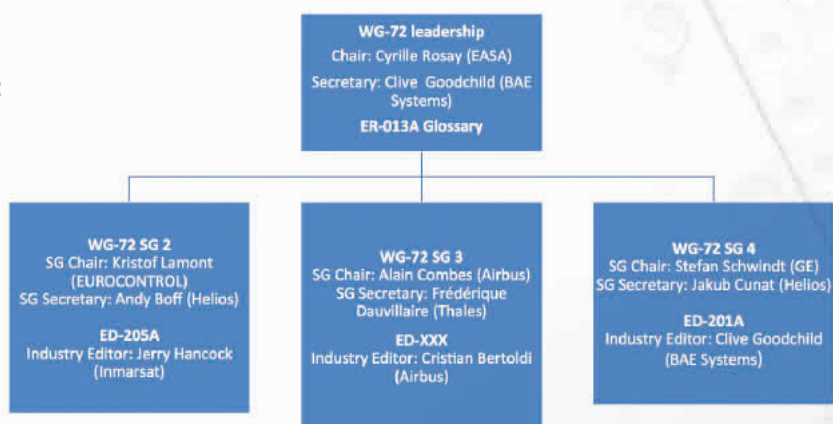
WG-72 SG-4 has been tasked with revisiting ED-201.



▶ **ED-201A** 'AISS Framework Guidance Document' ED-201 provides the framework to link various portions of security in aviation. As relevant standards are updated and new standards are generated, ED-201 must be updated to reflect these changes. In addition, EASA is generating a set of regulations ('horizontal rule') across aviation domains to introduce an Information Security Management System to share risk across organisations.

In addition to its own activities, WG-72 provides its expertise to support activities in other working groups. For example, WG-72 is supporting activities in WG-98 SG-1 on Aircraft Emergency Locator Return Link Services. WG-72 leadership is also in contact with WG-82 on New Air-Ground Data Link Technologies, WG-105 on Unmanned Aircraft Systems and WG-114 on Artificial Intelligence.

WG-72 structure:



WG-75 Traffic Collision Avoidance System (TCAS)

CHAIRPERSON: Bill Booth, EUROCONTROL
SECRETARY: Garfield Dean, EUROCONTROL
TECHNICAL PROGRAMME MANAGER: Alexander Engel, EUROCAE

After completing ED-256/DO-385 (MOPS for Airborne Collision Avoidance System X (ACAS X) (ACAS Xa AND ACAS Xo)) in October 2018, WG-75, which works jointly with RTCA SC-147, continued to develop additional documents to standardise the suite of ACAS systems.

Focus was put on developing 'MOPS for ACAS Xu', the ACAS variant for Unmanned Aircraft Systems. ED-275 was submitted to Open Consultation between 14 May 2020 and 27 April 2020. Following the successful completion of the comment resolution

process, Council approval was obtained and it was subsequently published in December 2020.

As different types of collision avoidance systems will simultaneously fly in the airspace in the future, interoperability between these systems is paramount. WG-75 and SC-147 developed ED-264, 'MASPS for the Interoperability of Collision Avoidance Systems', which was published in September 2020.

SC-147 has now launched the development of 'MOPS for ACAS sXu', a document geared towards the requirements of small unmanned aircraft. While this activity will be continued jointly, the lead will be with EUROCAE WG-105 due to their specialisation on Unmanned Systems. WG-75 will however support the development with their expertise in collision avoidance systems.

WG-76 AIS/MET Datalink Applications

CHAIRPERSON: Vacant
SECRETARY: Macarena Martin Viton, AIRBUS
TECHNICAL PROGRAMME MANAGER: Alexander Engel, EUROCAE

Together with RTCA SC-206, WG-76 is developing specifications for AIS/MET Datalink Services. The intention of these services is to improve situational awareness for the flight deck by making up-to-date

information available using datalink. The number of services has been reduced to nine by consolidating overlapping information.

Following the finalisation of the Service Descriptions, work is being performed on the Operational Safety Assessment (OSA) and Operational Performance Assessment (OPA). These activities are ongoing. Publication of the final document is expected for the end of 2022.

WG-79 Enhanced Vision Systems (EVS)/ Synthetic Vision Systems (SVS)

CHAIRPERSON: Carlo Tiana, COLLINS AEROSPACE

SECRETARY: Trish Ververs, HONEYWELL

TECHNICAL PROGRAMME MANAGER:
Sergiu Marzac, EUROCAE

WG-79 on Enhanced Vision Systems/Synthetic Vision Systems is tasked with developing regulatory guidance support documents covering all aspects of airborne Vision Systems. It is also responsible to harmonise guidance between US and European regulators by coordinating its work with the RTCA SC-213 Special Committee.

Following the publication of ED-255 'MASPS for a Combined Vision Guidance System for Rotorcraft Operations' in 2019, which was aimed at situational awareness operational benefits for a Combined Vision System (CVS) for Helicopter Operations, the group has been developing an extension of this

document to define vision systems operational credit, with an initial focus on MASPS for Offshore Helicopter Low Visibility Operations.

In 2021, to support the demonstration of a visual advantage using an Enhanced Flight Vision System (EFVS), WG-79 published ED-291 'Test Procedures for Quantified Visual Advantage'. It provides a consensus standard for a method via flight test to measure and quantify the visual advantage performance of an installed EFVS. Additional coordination for the work performed in this group has taken place with FAA, EASA and other related SAE Working Groups.

WG-79 continues to work on harmonising Low-Visibility Take-Off (LVTO), and Synthetic-Vision related documents generated in collaboration with RTCA SC-213.



WG-80 Hydrogen Fuel Cell Systems

CHAIRPERSON: Olivier Savin, DASSAULT AVIATION

SECRETARY: Carlos Mourao, EMBRAER

TECHNICAL PROGRAMME MANAGER:

Sebastian Reschenhofer, EUROCAE

WG-80 was established in 2008 and is tasked with developing operational guidelines, best practices and standards to support the certification of hydrogen fuel cells in aircraft. These activities are performed in coordination with SAE AE-7F.

As an initial deliverable, the committee developed a standard on aircraft fuel cell safety guidelines, ED-219/AIR6464, which was published in early 2013. In 2017, ED-245/AS6858, 'Minimum Aviation System Performance Standards (MASPS) for the Installation of Fuel Cell Systems on Large Civil Aircraft', was developed and published.

In December 2019, ER-020/AIR7765 'Considerations for Hydrogen Fuel Cells in Airborne Applications', was published.

The WG is currently working on a standard to address MASPS for liquid Hydrogen Fuel Cells onboard aircraft. This MASPS should define technical guidelines for the safe development, testing, integration, validation and certification of Liquid Hydrogen, including fuel storage and fuel distribution.

Hydrogen fuel is a promising and environmentally friendly alternative to fossil fuels. It should support the aviation industry and community to reach its emissions reduction targets by 2050, namely 75% of CO₂ and 90% of NO_x emissions reductions, relative to the year 2000.

WG-81 Interoperability of ATM Simulators

CHAIRPERSON: Thomas Damm, DFS

SECRETARIES: Jose Manuel Cordero, ENAIRE

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

Created in March 2008, the group is currently working on Revision B of ED-147A 'ATM Validation Platforms interoperability requirement specification'. It aims to maintain the Reference Information Model and to introduce the Model Driven Approach (MDA).

Publication for the new version was planned for Q1/2021 but is slightly delayed.

ED-147 implementations have been a key enabler for cross ATM-Domain validation exercises in SESAR. Due to their capabilities of connecting the various existing industry-based pre-operational ATM Validation Platforms (IBP), new operational concepts could be validated and their implementations in industry prototypes could be verified.

In order to support the usage of ED-147B, ED-148 'Guidance to achieve ATM Validation Platforms interoperability', will be updated to be ready for Open Consultation in Q2/2021.

Scheduled for Q1/2022, the group will provide a supplement to ED-147B to describe 'Technology Mapping for the High Level Architecture HLA'.

WG-82 New Air-Ground Data Link Technologies

CHAIRPERSON: Armin Schlereth, DFS
SECRETARY: Martina Angelone, ESA
TECHNICAL PROGRAMME MANAGER:
 Anna Guégan, EUROCAE

WG-82 is tasked to develop standards related to new air-ground data link technologies involving airport surface, satellite, and enroute/Terminal Area TMA L-band systems. The documents under development are intended to be used in the context of ICAO Standards and Recommended Practices (SARPs) development or as a Means of Compliance (MoC).

WG-82 is currently finalising the following documents, in coordination with RTCA-222 on AMS(R)S. The publication is expected for Q2/2021:

- ▶ ED-242C 'Minimum Aviation System Performance Standard (MASPS) for Aeronautical Mobile Satellite Radiocommunication Services AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required

Surveillance Performance (RSP)'. The MASPS ED-242C will be expanded with an update of Appendix B to reflect new frequency and power plan for Air Traffic Control tower (ATCt).

- ▶ ED-243C 'Minimum Operational Performance Standards (MOPS) for Avionics Supporting Next Generation Satellite Systems (NGSS)'. The MOPS ED-243C will be expanded with an update of terminal specification for SwiftBroadband (SBB) terminals for Long-Term Evolution (LTE) and ATCt blocking immunity

WG-82 also works in coordination with RTCA SC-223 Aeronautical Mobile Airport Communication System (AEROMACS). The target date for the following joint document is Q1/2023:

- ▶ ED-xxx 'Minimum Operational Performance Standards (MOPS) for the Aeronautical Mobile Airport Communication System (Aeromacs)' This revision will address the required changes to ensure compatibility with other communication systems and standards.

WG-83 Foreign Object Debris Detection (FOD)

CHAIRPERSON: Stephane Larose, THALES LAS France
SECRETARY: Catherine Bonari, DGAC STAC
TECHNICAL PROGRAMME MANAGER:
 Sergiu Marzac, EUROCAE

Created in 2010, WG-83 is tasked with developing guidance documents to support airports to implement systems that deal with FOD detection.

After releasing ED-235 'Minimum Aviation System Performance Specification for Foreign Object Debris Detection System' in 2016, the WG agreed to move forward with the definition of the associated Operational Services and Environment Definition (OSED) to help airports to define their CONOPS using a FOD detection system.

In August 2020, WG-83 published ED-274 'OSED for Aerodrome Foreign Object Debris Detection Systems', which provides guidance related to the operation of an automatic FOD detection system on an aerodrome movement area. ED-274 contains requirements to facilitate an FOD detection system deployment and subsequent operation. As technology evolves, the WG will update the guidelines for developing any FOD detection system with respect to the capabilities of latest technologies, such as sensors and artificial intelligence for FOD identification and classification.

Thus, WG-83 launched a Call for Participation to gather the necessary expertise to update ED-235A 'Minimum Aviation System Performance Specification for Foreign Object Debris Detection System'.

WG-85 4D Navigation

CHAIRPERSON: Okuary Osechas, DLR

SECRETARY: Ricardo de Sousa, NATS

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

WG-85 has developed ED-75D 'Minimum Aviation System Performance Standards: Required Navigation Performance for Area Navigation' in October 2014, as a joint document with RTCA Special Committee SC-227 (the equivalent RTCA reference is DO-236C plus Change 1).

On 09 June 2020, the Council approved the reactivation of WG-85 '4D Navigation'.

In line with the Terms of Reference (ToR), the group shall, in a joint effort with RTCA SC-227, revise ED-75/DO-236 to "ensure more robust support for implementation of PBN operations relying on the RNP system by offering new minimum performance standards to provide resilient RNP capability through DME navigation". The committee will also address PBN lessons learned as applicable to the material in the RNP MASPS and MOPS and offer ancillary improvements to the standards.

During this revision, WG-85 will ensure operational compatibility between ED-75/DO-236 and the functionalities described in ED-194/DO-317, the MOPS for Airborne Surveillance Applications (ASA) Systems, as well as ED-236/DO-361, the MOPS for Flight-deck Interval Management (FIM). This will facilitate the RNP system's support for future aircraft.

The work on ED-75/DO-236 is complimentary to the current activities of WG-107. The WG-107 MASPS focuses on infrastructure requirements as a complement to the aircraft-focused ED-75/DO-236. WG-85/SC-227 are in coordination with WG-107 regarding assumptions about aircraft behaviour when navigating using DME as an area navigation sensor. WG-107 will support the joint WG-85/SC-227 concerning assumptions about DME infrastructure performance.

Publication of ED-75E/DO-236C is scheduled for Q2/2022.

WG-88 On-board Weight & Balance Systems (OBWBS)

WG-88 has been dormant during this reporting period.

WG-92 VDL Mode 2

CHAIRPERSON: Stéphane Pelleschi,
COLLINS AEROSPACE

DIRECTOR TECHNICAL PROGRAMME:
Anna von Groote, EUROCAE

WG-92 is working jointly with RTCA SC-214 VDL sub group and in close coordination with the AEEC Datalink Committee.

With the introduction of ATN/IPS and the related need for security, there is an opportunity to update VDL Mode 2 that will optimise the ATN/IPS operations. The joint working group is currently discussing the improvements needed for ATN/IPS and defining the scope for a future MASPS/MOPS update with the associated schedule.

This leads to a need to update the VDL Mode 2 standards to:

- ▶ support data communications over the new ATN-IPS network being developed by SC 223/WG-108,
- ▶ incorporate derived requirements not specified in current published VDL Mode 2 standards to resolve issues discovered from the European Data Link Service (DLS) and FAA Data Comm Program En-Route operations.

The joint group initiated work on ED-92D, MOPS for an Airborne VDL Mode 2 System Operating in the Frequency Range 118-136.975 MHz to support ATN/IPS operations.

WG-95 In-Flight Ice Detection Systems

CHAIRPERSON: Francois Larue, ADV-Icing

SECRETARY: Vince LoPresto, Collins Aerospace

TECHNICAL PROGRAMME MANAGER:
Sebastian Reschenhofer, EUROCAE

WG-95 was created in 2012 and tasked by the EUROCAE Council to update ED-103, 'Minimum Operational Specification for In-Flight Ice Detection System (FIDS)'. Almost ten years later, it was time to bring the MOPS to the current state-of-the-art requirements for inflight ice detection.

The main reason for reactivating this group was due to the concern raised by several experts, who detected errors and wanted to clarify certain sections of the ED. During this evaluation, a potential safety concern regarding some discrimination time values was raised as well. However, this is not considered to be a safety issue.

The update is almost finished and expected to be launched for Open Consultation in Q2/2021.

WG-96 Wireless On-Board Avionics Networks (WOBAN)

CHAIRPERSON: Vacant

TECHNICAL PROGRAMME MANAGER:

Anna Guégan, EUROCAE

WG-96 was established in 2013 to produce guidance material for the certification of Wireless On-Board Avionics Networks (WOBAN). This work was completed in 2017. WG-96 has since started a joint activity with RTCA SC-236 to develop standards for Wireless Avionics Intra-Communications (WAIC) systems.

The Radio Regulations were changed in 2015 to allow WAIC systems to share the band, 4200 – 4400 MHz with Radio Altimeters. WAIC systems must be able to share the band with Radio Altimeters and WAIC systems on other aircraft in a way that

ensures the safe operation of Radio Altimeters is not compromised, and the worst-case performance of a WAIC system can be predetermined.

These two aspects are major prerequisites for proof of airworthiness for future WAIC systems.

Two documents are under development. ED-260A 'Minimum Aviation System Performance Specification (MASPS) for Coexistence of Wireless Avionics Intra-Communication Systems within 4200-4400 MHz' is currently under comment resolution following the closure of the open consultation (OC). In March 2020, the drafting process for ED-xxx 'Minimum Operational Performance Specification (MOPS) for a Wireless Avionics Intra-Communication System' was initiated.



WG-97 Interoperability of Virtual Avionic Components

CHAIRPERSON: Olivier Fourcade, AIRBUS

SECRETARY: Virginie Frouté, DASSAULT AVIATION

TECHNICAL PROGRAMME MANAGER:

Sebastian Reschenhofer, EUROCAE

Physical test benches, which are used in aircraft development, are complex platforms with high initial and recurring costs. It is usually on the critical path of development and cannot be easily deployed

or multiplied to increase the validation capacity available.

One method to alleviate this problem, virtual and hybrid testing, is a promising solution. Its benefits have already been demonstrated in other industries, such as the cell phone industry. However, in the avionics industry, it brings specific challenges. Some of these are complex distributed systems, hardware heterogeneity, and multiple supplier infrastructures.

A guidance material that can become an internationally recognised standard is necessary to:

- ▶ Provide a framework that supports the demonstration of the interoperability of virtual avionic components.
- ▶ Ease a global process that describes the exchange, integration and exploitation of virtual equipment within virtual or hybrid test benches.

WG-97 is working on revision B of ED-247 'Technical Standard of Virtual Interoperable Simulation for Tests of Aircraft Systems' in the virtual or hybrid bench. It aims to extend the actual technical perimeter of revision A, and to reach the necessary level of fidelity needed for certification.

WG-98 Aircraft Emergency Locator Transmitters

CHAIRPERSON: Philippe Plantin de Hugues, BUREAU D'ENQUETES ET D'ANALYSES

SG-1 CHAIRPERSONS: Alain Bouhet, OROLIA and Christophe Chatain, ECA

SG-1 SECRETARIES: Carmen Aguilera, GSA and Manuel Lopez-Martinez, GSA

TECHNICAL PROGRAMME MANAGER: Anna Guégan, EUROCAE

WG-98 SG-1 ELT Return Link Service (RLS) developed the following document, which was published in February 2021:

- ▶ ED-277 'Minimum Aviation Systems Performance Standards for Aircraft Emergency Locator Transmitter Remote Command via Return Link Service'

Created in July 2013, WG-98 is tasked with improving performance standards for Emergency Locator Transmitters (ELTs). In recent years, several aircraft disappearances have occurred over water, including Malaysia Airlines Flight 370. In a number of these occurrences, it was not possible to recover Persons On Board (POB), major portions of wreckage or flight recorders. These shortcomings were a direct result of not knowing the location of the missing aircraft.

WG-98 intends to propose standards for the carriage and operation of ELTs to improve emergency response time and activities associated with post-accident recovery processes.

WG-98, jointly with RTCA SC-229 has published in June 2020:

- ▶ ED-62B Change 1 'Minimum Operation Performance Standard (MOPS) for Aircraft Emergency Locator Transmitters 406 MHz'

These standards address the function of triggering ELT transmissions from the ground. The standards will define high-level concepts and typical functional interface requirements, including those applicable for the satellite segment. The use of new generation ELTs triggered from the ground through RLS will solve the issue of localisation of non-cooperative aircraft and of general aviation aircraft that have crashed with no ELT activation.

WG-98 SG-1 is liaising with RTCA, ICAO Joint Working Group on Harmonisation of Aeronautical and Maritime Search and Rescue (JWG-SAR) and COSPAS-SARSAT. North American and European stakeholders are involved in this activity.



WG-100 Remote and Virtual Tower

CHAIRPERSON: Joern Jakobi, DLR

SECRETARY: Vacant

TECHNICAL PROGRAMME MANAGER:

Sergiu Marzac, EUROCAE

WG-100 was launched in June 2014. In September 2016, ED-240 'Minimum Aviation System Performance Standard (MASPS) for Remote Tower Optical Systems' was released, and in October 2018, the updated standard ED-240A was published. These MASPS are applicable to all optical sensor configurations (visible, as well as infrared spectrum). It can be used for the implementation of the remote provision of Air Traffic Service (ATS) to an aerodrome, encompassing the whole chain from sensor to display. In addition, ED-240A addresses performance specifications regarding optional technologies like visual tracking and Pan/Tilt/Zoom (PTZ) object following.

Based on the feedback received from the user community on ED-240A, WG-100 is focusing on a major revision of ED-240A, which will result in ED-240A Change 1 to be released by Q4/2021. The new release will receive a refurbishment to improve user-friendliness and readability and provide a better explanation of developing and measuring of the Detection and Recognition Range Performance (DRRP) requirements, as well as more consistent verification and validation procedures. It will also add material on how to use the document addressing the different stakeholders and will provide additional guidance to the users.



Moreover, it will incorporate the latest developments and experience of the working group members as they are involved in new Remote Tower installations in Europe, North American and Asia.

As soon as ED-240 Change 1 is finalised, WG-100 will focus on an extension of the current MASPS (revision B) to cover processing and integration of information produced by existing or emerging surveillance systems and sensors. Some emerging surveillance systems and sensors include Primary Surveillance Radar (PSR), Secondary Surveillance Radar (SSR), Surface Movement Radar (SMR), Wide Area Multilateration/Airport Surface Multilateration (WAM/MLAT), Automatic Dependent Surveillance Broadcast (ADS-B) and other sensors.



Demonstration of the FREQUENTIS Remote Tower Solution, Vienna

WG-102 GEN-SUR SPR

CHAIRPERSON: Roland Mallwitz, DFS
SECRETARY: Jörg Steinleitner, EUROCONTROL
TECHNICAL PROGRAMME MANAGER:
Alexander Engel, EUROCAE

WG-102 has developed ED-261, 'Safety and Performance Requirements Standards for a Generic Surveillance System'. This document has been developed based on operationally driven ATC surveillance requirements that are levied onto a logical end-to-end ATC surveillance function and its respective sub-functions (resembling typical physical ATC surveillance components).

The document consists of three volumes:

Volume 1 captures the minimum safety and performance requirements, to be met by a ground surveillance system to support the air traffic service in a given airspace environment.

Volume 2 contains the determination of the GEN-SUR safety and performance objectives, from which the Volume 1 requirements are derived.

Volume 3 provides a generic framework that may be used at local level to support the demonstration that the implementation of the local ground surveillance system, in compliance with GEN-SUR SPR, is acceptably safe.

ED-261 was submitted for Open Consultation between 16 January 2020 and 03 April 2020. Due to the COVID-19 crisis, organising the comment resolution was delayed. Several non-concur comments were raised against the document, some of which could not be resolved. Therefore the 'Dissenting Opinion Procedure' was invoked which will lead to a final Council decision for publication in Q3/2021.

WG-103 Independent Non-Cooperative Surveillance (INCS) System

CHAIRPERSON: Tim Quilter, AVEILLANT

SECRETARY: Hannes Stahl, HENSOLDT

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

Mitigating the clutter originating from wind farms and detecting small Remotely Piloted Aircraft are typical new demands being placed upon new sensor designs.

WG-103 is tasked to develop a Technical Specification for an INCS System.

It was established in recognition that the design of Non-Cooperative Sensors is undergoing a renaissance. The sensors that traditionally fulfilled this need, rotating Primary Surveillance Radars, are now being supplemented by a host of new designs made possible through the technical advances that have occurred in recent years. Whilst technologies have moved on, the operational requirements have similarly adapted to meet evolving environments.

The lack of a common technical specification, upon which to base the designs of emerging

sensors, threatened to lead to a plethora of sensor types with the potential risk that none met the operational needs of the end user. The group has already made significant progress on assembling a balanced specification that is agnostic enough so as not to unnecessarily constrain the designs yet precise enough to ensure the systems produced in accordance with it are both interoperable and capable of meeting the user requirements. The group comprises a diverse mix of sensor manufacturers and ANSPs. Whilst the participation is largely European, there are also representations from America and Asia.

In a parallel activity, but outside the scope of WG-103, experts of the group defined a standard interface specification for the transmission of target reports and status messages from such systems, known as ASTERIX Categories 015 and 016.

ED-288 was submitted to open consultation in December 2020. Comment Resolution proved to be complex, and it is possible that a second open consultation is required. At the time this report is written the decision is still outstanding.

WG-104 System Wide Information Management (SWIM)

CHAIRPERSON: Oliver Krüger, DFS

SECRETARY: Eric Roelants, EUROCONTROL

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

EUROCAE has produced several deliverables in the SWIM area, including but not limited to, a SWIM Service specification on an information service for the Arrival Manager (AMAN) extended Horizon, a template for future service standardisation within EUROCAE, and a list of potential SWIM Services to be standardised.

The role of WG-104 is to provide EUROCAE Working Groups with further reliable and useful support material in the form of an improved template and

a comprehensive methodology to accomplish their SWIM Service standardisation activities. It is envisaged that the outcome produced will be immediately useable in the European SWIM context.

In line with the current Terms of Reference (ToR), WG-104 is currently working on the following deliverables:

SWIM Service Service-Standardisation Template and Method

The focus of the task will be to work on the template and methods, so that working groups which are about to standardise SWIM Services can make the best use of it. To improve the ER-018 template, it was identified that existing service design standards like the Open Geospatial Consortium (OGC) Web

Service specifications should find their way into EUROCAE standardisation in order to facilitate the usage of those existing standards and providing means to working groups to decide, whether such standards are appropriate to be used for their specific SWIM service standardisation activity.

WG-104 Activities

The final report will give account on the activities undertaken by the working group. It will provide i. a.:

- ▶ Lessons learned
- ▶ Reached objective
- ▶ Unattained objectives (with justifications)
- ▶ History of activities

WG-105 Unmanned Aircraft Systems (UAS)

CO-CHAIRS: Alexandra Florin, WING and Maurizio Goiak, LEONARDO

SECRETARY: Vacant

TECHNICAL PROGRAMME MANAGER: Sergiu Marzac, EUROCAE

WG-105 was created in 2016 by merging previous WG-73 and WG-93. In 2021, WG-105 will have completed its fifth year of activity after its first meeting in November 2016.

According to its Terms of Reference (ToR), WG-105 will develop standards to facilitate the safe integration of all types of UAS into all types of airspace under all conditions and for all operations.

Considering the broad scope and extent of UAS issues, a multilayer structure was created to implement the work program efficiently. It consists of six sub groups, which address different topics in the development of relevant UAS standards:

- ▶ **SG-1:** Detect and Avoid (DAA)
- ▶ **SG-2:** Command, Control, Communications and Security (C3S)
- ▶ **SG-3:** UAS Traffic Management (UTM)
- ▶ **SG-4:** Design and Airworthiness (D&Aw)
- ▶ **SG-5:** Enhanced RPAS Automation (ERA)
- ▶ **SG-6:** Specific Operations Risk Assessment (SORA)

Management and coordination of the functions of the six sub groups is undertaken by WG-105 Steering Committee, comprised of the Chairpersons, Secretary, Technical Programme Manager (TPM), sub group leaders and invited stakeholder representatives.

Due account is taken of emerging UAS regulations centred around the proportionate risk approach,

and coordination is constantly pursued with authorities (EASA, FAA, JARUS, ICAO), other stakeholders and standards organisations where appropriate. Coordination is also ensured through the European UAS Standards Coordination Group (EUSCG) created under the initiative of the European Commission and EASA.

Keeping its deliverable oriented approach, the following have been developed in the last year, after due WG review & Open Consultation (OC):

DAA

- ED-271: Minimum Aviation System Performance Standard (MASPS) for Remotely Piloted Aircraft Systems (RPAS) DAA in Instrument Flight Rules (IFR) in Airspace A to C (under final comment resolution, publication expected Q3/2021)

UTM

- ED-282: Minimum Operational Performance Standard for UAS E-Identification (Under final comment resolution, publication expected Q3/2021)
- Workplan update (5 new deliverables added to UTM work programme)

ERA

- ED-283: MASPS Automatic Take-off and landing
- ED-284: MASPS Auto Taxi

SORA

- ED-280: Guidance for safety assessment (OSO 5) for low and medium robustness (OC closed, publication expected before end 2020)
- Workplan update

The WG-105 work Programme is regularly updated to take the needs of the UAS ecosystem into account.

WG-106 Electronic Flight Bag (EFB) Software Applications

CHAIRPERSON: Eric Lesage, AIRBUS

SECRETARY: Manuel Gucemas, THALES GROUP

DIRECTOR TECHNICAL PROGRAMME:

Anna von Groote, EUROCAE

WG-106 has been tasked to develop a new Minimum Operational Performance Standard (MOPS) for EFB software application, incorporating the latest best industry practices in this field.

This MOPS is intended to be used by any organisation developing EFB applications. It may also be used by regulators for the establishment of the approval basis of EFB applications.

The draft ED-273 was issued for Consultation in December 2019. 519 comments (including 33 non-concur) from 14 organisations were received.

The comment resolution is complex, but WG-106 has progressed well and devised a plan to complete the disposition of the outstanding comments and finalise ED-273 for Council approval and publication in Summer 2021.

In parallel, EASA confirmed its willingness to use the standard and rely on ED-273 for the MOPS of the new ETSO-2C521 that was introduced by NPA 2021-07 for EFB applications.



WG-107 DME Infrastructure Supporting PBN Positioning

CHAIRPERSON: Gerhard Berz, EUROCONTROL

SECRETARY: Maurizio Scaramuzza, SKYGUIDE

TECHNICAL PROGRAMME MANAGER:

Alexander Engel, EUROCAE

The 12th ICAO Air Navigation Conference recognised the continued need for terrestrial-based reversion capabilities to guard against the risks associated with GNSS outages. Currently GPS is the enabling infrastructure for all PBN navigation applications, both RNAV and RNP. DME/DME is considered to only support RNAV applications. This leads to the perception that in case of loss of RNP capabilities based on GPS, reversion to a lower performing navigation capability and associated mitigation measures become necessary.

An analysis conducted by EUROCONTROL, Airbus and other partners (SESAR 15.3.2 D12) has concluded that RNP1 performance can be ensured based on DME/DME, provided that the ground transponder can be relied on for part of the integrity budget. Without such reliance, the onboard reasonableness checks cannot detect all identified possible faults. Fortunately, current equipment readily meets this integrity requirement despite not being specified in Annex 10.

The support to PBN encompasses the following working group objectives:

- ▶ Improve the robustness of DME infrastructure supporting RNAV specifications to ensure reliable performance, in case of a GNSS outage
- ▶ DME infrastructure requirements to permit prolonged support to PBN operations requiring an RNP1 navigation specification in case of a GNSS outage (also called 'RNP reversion')
- ▶ DME infrastructure requirements and assessment means to fully support RNP operations, including as a minimum (but not limited to) the RNP1 navigation specification. This will include guidance for States to approve RNP operations based on DME.

For the ground functions, the objective is to revise ED-57, 'Minimum Performance Specification for Distance Measuring Equipment (DME/N and DME/P) (ground equipment)' to reflect current equipment performance. In order to provide a clearly documented means for Air Navigation Service Providers to offer an RNP reversion mode based on DME/DME positioning, a separate MASPS is developed that explains the overall concept and describes the various system elements and allocations to both the ground and the airborne segment. The MASPS is envisioned to be a standalone document, while ensuring consistency with the complementary ED-75D/DO-236 'Minimum Aviation System Performance Standard for Required Navigation Performance for Area Navigation'. While WG-107 is focusing on the ground equipment, WG-85 together with RTCA SC-227, is developing a revision of ED-75/DO-236C Change 1 improving the behaviour of the airborne components. To ensure consistency of the WG-107 deliverables with the upcoming ED-75E/DO-236D, close cooperation between WG-107 and WG-85/ SC-227 has been set up.

WG-108 Aeronautical Telecommunication Network (ATN) Using Internet Protocol Suite (IPS)

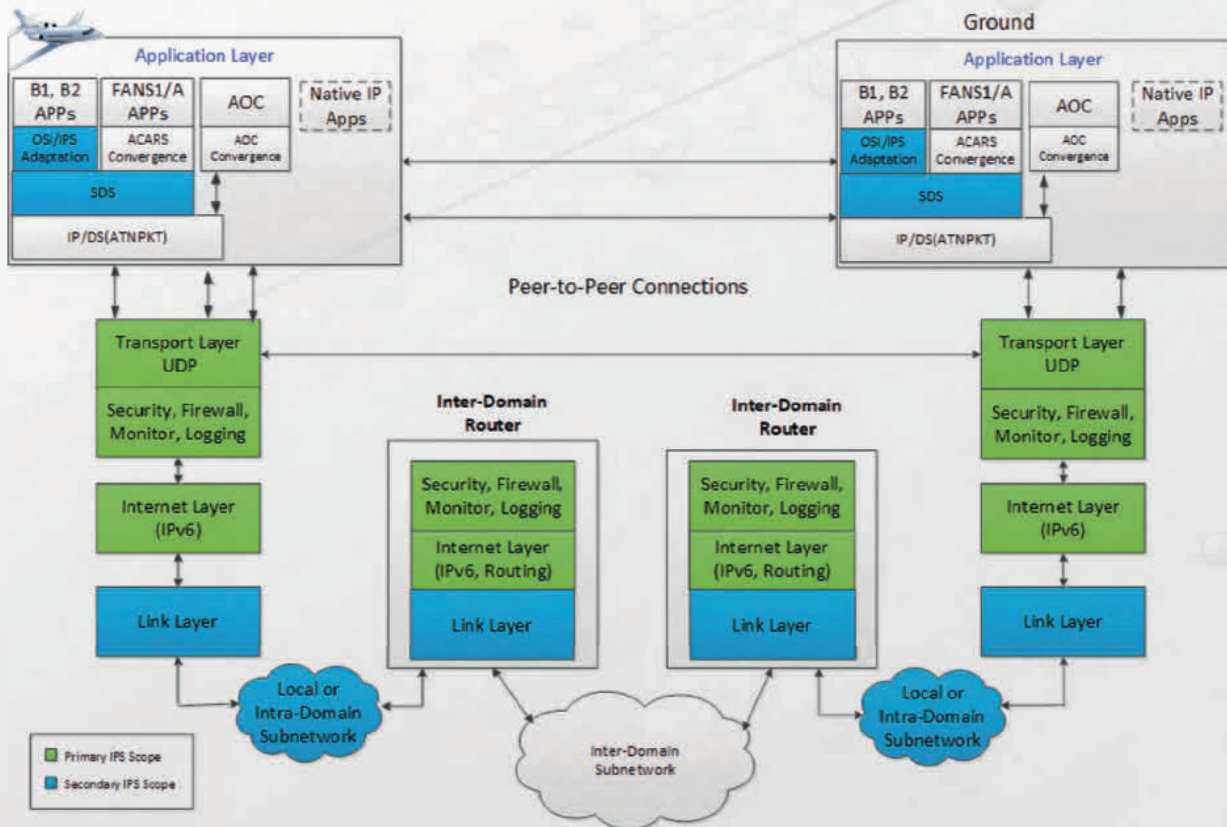
CHAIRPERSON: Stéphane Pelleschi, COLLINS AEROSPACE
DIRECTOR TECHNICAL PROGRAMME: Anna von Groote, EUROCAE

In addition, work continues in the joint group to develop Minimum Aviation System Performance Standard (MASPS) for the end-to-end interoperability supporting certification of the avionics systems and deployment/implementation of the ATN/IPS network.

WG-108, jointly with RTCA SC-223, published ED-262/DO-379 'Technical Standard of Aviation Profiles for Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)', in September 2019.

The work is performed in close coordination with ICAO and Airlines Electronic Engineering Committee (AEEC) of ARINC as well as the entire community, to align the content and availability date of all standards.

A revision of that standard to further improve it, following the current ATN/IPS standards development done by ICAO, is ongoing.



WG-109 Runway Weather Information Systems

CHAIRPERSON: Guillaume Roger, DGAC STAC

SECRETARY: Niklas Jost, FRAPORT

TECHNICAL PROGRAMME MANAGER:
Sergiu Marzac, EUROCAE

With the implementation of the Global Reporting Format (GRF), ICAO emphasised the importance of runway condition assessment. To assess aircraft landing and take-off performance on a given runway, aerodrome operators need to evaluate the meteorological contamination of pavements. Runway Weather Information Systems (RWIS) are intended to help the aerodrome operator in assessing and evaluating the runway condition.

To define the performance expected from the systems and to verify that it is achieving the performance expectations, WG-109 is tasked with developing Minimum Aviation System Performance Standards (MASPS) for RWIS.

The need for performance requirements and performance assessment procedures for RWIS is also emphasised by current regulatory developments. ICAO voted to postpone the GRF for one year, so the new applicability date is 05 November 2021,

whereas EASA decided that the GRF will be mandatory in Europe on 12 August 2021.

WG-109 supports like to support the introduction and fulfilment of the GRF by standardising requirements, terminology and performance validation in collaboration with all stakeholders. This marks an important contribution to future Runway Condition Reporting.

Established in May 2018, the WG includes participants from about 30 companies from all over the world, representing many stakeholders such as airport operators, sensors and systems manufacturers, aircraft manufacturers, flight crews and civil aviation authorities, thus reflecting the complexity and importance of RWIS systems. WG-109 is working in close cooperation with the ASTM E 17 committee on Vehicle-Pavement Systems. The WG is currently working intensively on the completion of the MASPS.

Beginning of 2021, WG-109 launched draft ED-292 'MASPS for Runway Weather Information Systems' for Open consultation. It is intended to be published in Q3/2021 and it will be the first industry standard to support the ICAO GRF implementation.



WG-110 Helicopter Terrain Awareness and Warning Systems (HTAWSs)

CHAIRPERSON: Yasuo Ishihara, HONEYWELL

SECRETARY: Mark Prior, UK CAA

TECHNICAL PROGRAMME MANAGER:
Sebastian Reschenhofer, EUROCAE



Several accidents during offshore helicopter operations have demonstrated the need for HTAWSs. Therefore, EUROCAE WG-110 was created and tasked to develop MOPS for these systems to support offshore helicopter operations.

WG-110, together with RTCA SC-237, worked on ED-285/DO-376 'MOPS for Offshore Helicopter Terrain Awareness and Warning System (HTAWSs)'.

This document was published on 22 March 2021. A potential deliverable for onshore HTAWS will be discussed with the Technical Advisory Committee (TAC) later this year.

WG-111 Airport Collaborative Decision Making (A-CDM)

CHAIRPERSON: Segun Alyande, ACI EUROPE

SECRETARY: Ieyasu Sugimoto, ADB-SAFEGATE

TECHNICAL PROGRAMME MANAGER:
Sergiu Marzac, EUROCAE

control systems (A-SMGCS) regarding routing and dynamic taxi times. The second topic is the description of the SWIM A-CDM Service definition, providing requirements for the interoperability between the ATM and Airport domain.

A-CDM is a programme aimed at improving operational performance at airports. The programme involves airport operators, and other stakeholders such as ANSPs, aircraft operators, ground handlers, de-icing companies and supporting services.

Many airports have already implemented and benefited from the effectiveness of the A-CDM programmes. This is not a new topic for EUROCAE, as the first A-CDM standards were delivered in 2008.

Since then, the Airport CDM community has continued to update A-CDM procedures and system features. This functional evolution of A-CDM and requirements, derived from the European Pilot Common Project (PCP) or other domains with close connections to A-CDM, triggered the need to update the related EUROCAE documents.

On 26 February 2019, the Council approved the creation of a new WG to address this topic. The WG-111 shall address the Pilot Common Project (PCP) which requires an interface of A-CDM to advanced surface movement guidance and

The work programme consists of four deliverables:

- ▶ ED-141A 'Minimum Technical Specifications for A-CDM Systems'
- ▶ ED-145A 'A-CDM Interface Specification, to include SWIM interface description'
- ▶ ED-146A 'Guidelines for Test and Validation Related to A-CDM Interoperability'
- ▶ ED-xxx 'A-CDM SWIM Service Performance Specification'.

The WG-111 participants represent over 15 organisations, such as regulators, airports, ANSPs and manufacturers. They are coordinating their effort and expertise to develop and share best practices to implement A-CDM. The participants emphasised the importance of this activity to ensure a proper information exchange for each phase of aircraft operation, such that other users can access the shared information and plan appropriately. WG-111 plans to coordinate its work with other relevant initiatives for the benefit of the A-CDM user community.

WG-112 Vertical Take Off and Landing (VTOL)

CHAIRPERSONS: Oliver Reinhardt, VOLOCOPTER and Lionel Wallace, LILIUM

SECRETARY: Sebastian Reschenhofer, EUROCAE

TECHNICAL PROGRAMME MANAGER: Sebastian Reschenhofer, EUROCAE

On 2 July 2019, EASA published a VTOL Special Condition (SC) that includes new requirements and addresses peculiarities of this category of aircraft, which use combined lift and thrust units. To provide guidance to applicants for these new requirements, EASA sought the appropriate participation of European and International Experts through the development of industry standards.

During a joint EASA/EUROCAE Workshop on 06 June 2019, the urgent need for standards to support SC-VTOL was confirmed, following consultation with key stakeholders from the industry, airspace users, member states, European institutions and academia. Consequently, EUROCAE WG-112 was created and held its first meeting on 27 June 2019. This activity greatly assists the industry in moving forward on current and planned certification programmes, and the active involvement of all interested parties is encouraged.

WG-112 set an ambitious timeframe, and published the first related documents within the first year of its formation. EUROCAE supported this by introducing a lean process, using WG-112 as a pilot project.

This lean process provided valuable time and minimised administrative efforts, whilst maintaining the goal to publish high-quality standards and retaining other core principles of EUROCAE.

The WG is structured in 7 Sub Groups (SGs):

- ▶ **SG-1** Electrical Systems
- ▶ **SG-2** Lift-Thrust
- ▶ **SG-3** Safety
- ▶ **SG-4** Flight
- ▶ **SG-5** Ground infrastructure
- ▶ **SG-6** Avionics
- ▶ **SG-7** ConOps

Latest publications:

- ▶ ED-278 'Concept of Operations for VTOL Aircraft - Volume 1: General Considerations', published on 25 September 2020
- ▶ ED-289 'Guidance on determination of accessible Energy in Battery Systems for eVTOL', published on 05 May 2021

WG-112 currently has 27 deliverables in progress, which address different priorities for EASA and will assist the SC-VTOL with Means of Compliance (MoC).



WG-113 Hybrid Electric Propulsion

CHAIRPERSONS: Stephan Schliske, ROLLS ROYCE and Sylvain Clary, SAFRAN
SECRETARY: Florian Mahiddini, FLYING WHALES
TECHNICAL PROGRAMME MANAGER: Sebastian Reschenhofer, EUROCAE

The aviation industry is witnessing a revolution that aims to integrate more electrically powered vehicles. The main factor leading to this revolution is increasing environmental protection requirements. Studies into the electrification of aircraft propulsion revealed the potential of reducing carbon footprint by 50% between 2005 and 2050, while supporting the goals established by the Advisory Council for Aeronautics Research in Europe (ACARE). This gradual change in technology and architecture will require new ways of collaborating among airframers, engine manufacturers and system suppliers. It will also require changes to the related regulatory frameworks and means of compliance (MOC) for these new architectures.

Since September 2020, WG-113 is working on three new deliverables to support the EASA Special Condition for Electric and Hybrid Propulsion (SC-EHPS):

- ▶ Internal Report - 'Standards review and assessment against the SC-EHPS'
- ▶ ED-xxx 'Guidance material for endurance substantiation of Electric - Hybrid propulsion systems EHPS'
- ▶ ED-xxx 'Guidance material for durability substantiation of Electric - Hybrid propulsion systems EHPS'

WG-114 Artificial Intelligence (AI)

CHAIRPERSONS: Christophe Gabreau, AIRBUS and Béatrice Pesquet, THALES
SECRETARY: Radek Zakrzewski, COLLINS
TECHNICAL PROGRAMME MANAGER: Anna Guégan, EUROCAE

Created in August 2019, WG-114 is tasked with establishing common standards, guidance material and related documents required to support the development, certification and approval of aeronautical safety-related products based on AI technology. In addition to the development of EUROCAE documents and reports, the first objective of the working group is to act as a key forum for enabling safe and appropriate adoption and implementation of AI technologies. WG-114 intends to enable all aviation stakeholders (e.g. aerospace,

airport, ATC manufacturers, etc...) and regulatory agencies to consider and implement appropriate approaches to the certification/approval of AI-based, safety-related products.

WG-114 is jointly working with SAE G-34 to guide the safe, secure and successful adoption of AI technologies in aeronautical systems.

WG-114 focuses on implementation and certification related to AI technologies for the safer operation of aerospace systems and aerospace vehicles.

WG-114 (comprised of 500+ members) promotes and standardises Artificial Intelligence in the entire aviation eco-system (both Airborne and Ground) addressing both manned aircraft and UAS.



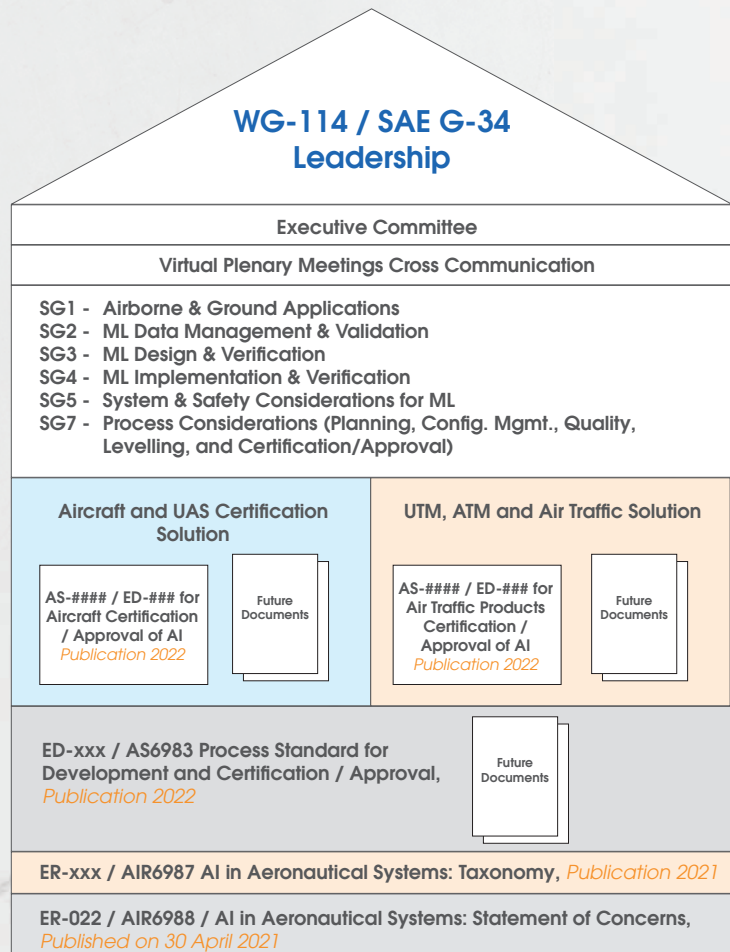
WG-114's global contributors: Boeing, Airbus, ATR, Embraer, Textron, Gulfstream, Dassault, Mitsubishi, Lockheed, Northrop Grumman, GA-ASI, HondaJet, Daher, IAI, ICAO, FAA, EASA, TCCA, ANAC, DGAC, CAA UK, CAA NZ, JCAB, ENAC, FOCA, DOD, EDA, Lilium, Aerion Supersonic, Amazon, DXC, SAP, IBM, Joby, EUROCONTROL, NASA, EDA, Honeywell, Collins, Thales, GE, P&W, RR, Safran, Raytheon, BAE, Elbit, L3Harris, Iridium, Japan Manned Space Systems, FedEx, UPS, AF-KLM, Nodein, Lufthansa, Audi, Toyota, IATA, Leonardo, Leidos, NVIDIA, Intel, Saab, Volocopter, ANSPs, Skyguide, Searidge, Woodward, Vertical Aerospace, Diehl, ADB Safegate, AVSI, ANSYS, BNAE, Copenhagen Airports, D-Risq, Daedalean AI, KIAS, Infosys, Afuzion, Patmos Engineering, QinetiQ, RelmaTech, Rockdale Systems, DLR, drR2, Federated Safety, MathWorks, SRI, Oak Ridge National Lab, etc.

Published standards:

- ▶ [ER-022 / AIR6988](#) 'Artificial Intelligence in Aeronautical Systems: Statement of Concerns' (Published on 30 April 2021)

Work in progress and deliverables:

- ▶ [ED-xxx / AS6983](#) 'Process Standard for Development and Certification / Approval of Aeronautical Safety-Related Products Implementing AI'
- ▶ [ED-xxx / AIR6987](#) 'Artificial Intelligence in Aeronautical Systems: Taxonomy'
- ▶ [ED-xxx / AIR6994](#) 'Artificial Intelligence in Aeronautical Systems: Use Cases Considerations'



WG-115 Counter Unmanned Aircraft Systems (C-UAS)

CHAIRPERSON: Jorge Munir El Malek Vázquez, INDRA

SECRETARY: Patrick Garnier, CS GROUP

TECHNICAL PROGRAMME MANAGER:

Sergiu Marzac, EUROCAE

WG-115 was created in the last quarter of 2019 and it is tasked with developing standards for the management of unauthorised Unmanned Aerial Systems (UAS) operations around airports. The WG focuses on the development of performance and interoperability requirements to counter UAS operations.

The use of unauthorised UAS (also known popularly as 'drones') in the vicinity of major airports has significantly impacted airport and flight operations. Many close UAS encounters have been reported during approach, landing and take-off of conventional aircraft, and this has an impact on flight safety. These occurrences regularly lead to the suspension of flight operations and have a significant impact on the airport, airlines and the flying public.

To prevent such disruptions, the airspace around airports need to be protected, and unauthorised UAS activities must be detected and reported at the earliest possible stage to flight crews, Air Traffic Control (ATC), airports and responsible authorities. In accordance with national regulations, neutralisation or disruption of the UAS (either the Unmanned Vehicle, the Command & Control Datalink or the Remote Pilot) could also be considered. Many nations have initiated projects to equip airports with a counter UAS operation capability. IATA, representing airlines, is also very active in the development of mitigation means to ensure safe and orderly execution of flight operations.

The methods mentioned in the previous paragraph target situations such as careless operations of UAS, contingency situations or intentionally malicious flights, among others. Professional UAS operations can, in general, be expected to follow rules and procedures in place to ensure safe operations.

These procedures may involve actions such as registering the operation, filing a flight plan, using proper identification and communication means. The implementation of U-Space will also provide a valuable situational awareness capacity about cooperative UAS operating in U-Space airspaces around airfields.

EUROCAE WG-115 is a joint WG with RTCA SC-238. Both these groups will produce harmonised documents that are technically identical.

WG-115 is developing 3 documents:

- ▶ ED-286 'Operational Services and Environment Definition (OSED) for Counter-UAS in Controlled Airspace', which was published in March 2021
- ▶ ED-xxx 'System Performance Requirements (SPR) for Non-Cooperative UAS Detection Systems,' expected by Q4/2021
- ▶ ED-xxx 'Interoperability Requirements for Counter-UAS Systems', expected by Q4/2021



WG-116 High Voltage

CHAIRPERSON: Rémy Biaujaud, SAFRAN

SECRETARY: Thierry Lebey, SAFRAN

TECHNICAL PROGRAMME MANAGER:

Sergiu Marzac, EUROCAE

Increases in electrical power requirements and the need to reduce equipment weight, particularly of electrical wiring, has led to the need for an increase of voltage levels in electrical systems in aeronautics.

The increase in voltage levels comes with additional risks and technical problems, such as defining new interface specifications between equipment and systems to be connected to the new high voltage networks. Another point of concern is deciding how to deal with the associated new risks of high voltage installations, protections, ageing of insulating materials and human safety.

WG-116 is tasked with defining new standards to mitigate these issues and help the industry and certification authorities to develop and certify new

designs for electrical and hybrid aircraft, where electrical voltages will be much higher than the current applications.

Since its creation in March 2020, EUROCAE WG-116 has organised and scoped the activities of 65 participants from 25 organisations in 10 countries, representing many stakeholders. The stakeholders include legacy aircraft manufacturers and newcomers, aircraft engine manufacturers, electrical equipment and systems manufacturers and the civil aviation authorities. WG-116 will also work in close relationship with WG-112 and WG-113, while coordinating activities with SAE AE7.

WG-116 will work on its deliverables in four dedicated sub groups to increase the overall efficiency of the WG. This would also support it in achieving the objective of a first document delivery in June 2022.

WG-117 Topics on Software Advancement

CHAIRPERSONS: Burak Ata, VOLOCOPTER and Stephen Cook, NORTHROP GRUMMAN

SECRETARIES: Fabrice Ferrand, SAFRAN and Andy Hoag, AIREON

TECHNICAL PROGRAMME MANAGER: Sebastian Reschenhofer, EUROCAE

In 2019, the report from the Forum on Aeronautical Software (FAS) Ad Hoc Unmanned Aircraft System (UAS) identified the need to create additional guidance in Commercial off-the-shelf (COTS) Open Source and Service History for all users of ED-12C/DO-178C. While this additional guidance could apply to all aviation software, it is especially useful for stakeholders focusing on the development of lower risk applications.

The certified UAS category is aligned with the ED-12C/DO-178C document suite for development. However, the open category does not have a software development standard, and the specific category currently does not have a comprehensive compliant development standard

to provide assurance to the safe operation of the UAS. The continued release of information on UAS development and UAS operations by EASA provides an opportunity for a new software development standard that will be tailored to lower risk UAS applications and the specific category as defined by EASA.

The creation of WG-117 was approved by the Council in February 2020. The activity is jointly organised with RTCA SC-240 and it works on the following documents in two Sub Groups (SGs):

- ▶ SG-1 Low Risk Applications Equipment Certifications and Approvals
- ▶ SG-2 COTS Open Source and Service History

The 6th Plenary was held from 18 to 20 May in a fully virtual environment. Nevertheless, the WG could make significant process to meet the goal of launching documents for Open Consultation in September 2021.

WG-118 Crash-Protected and Lightweight Flight Recorders

CHAIRPERSONS: Jennifer Weiss, FLIGHT DATA SYSTEMS and Hannes Griebel, GRIEBEL AEROSPACE

SECRETARY: Robin Hudson, LEONARDO DRS

TECHNICAL PROGRAMME MANAGER: Sebastian Reschenhofer, EUROCAE

While investigating incidents and accidents involving commercial air transport (CAT) operations, accident investigators identified a need to improve the quality of recorded information, especially the quality of voice recordings.

Accident investigation authorities issued safety recommendations to consider whether a repeatable and objective analysis technique

can be applied to audio recordings to establish consistent performance of cockpit voice recorder (CVR) systems. The ICAO flight recorder specific working group (FLIREC-SWG) also recommended an update and the inclusion of crew-machine interface recording, as this is required by ICAO Annex 6 provisions. Since 2016, ICAO Annex 6 also prescribes means for recovery of flight recorder data in a timely manner for new types of large aeroplanes. One solution to address these provisions is a deployable flight recorder. The possibility of using deployable flight recorders to meet certain air operation requirements and associated installation requirements (Certification Specifications (CS) for large aeroplanes, CS-25.1425) is driving the need to review this area of the standard.

In addition, in 2019, the EU adopted flight recorder carriage requirements applicable to newly manufactured aeroplanes and helicopters with a maximum certified take-off mass (MTOM) equal to or above 2250 kg. In the framework of the rulemaking task that led to the adoption of these requirements, some differences with ED-155 were identified.

Some of these differences are the minimum recording duration or the minimum list of flight parameters.

Consequently, EASA recommended an update to the European Technical Standard Order (ETSO-C124b), which refers to ED-112A 'Minimum Operational Performance Standard (MOPS) for Crash Protected Airborne Recorder Systems' and ED-155 'MOPS for Lightweight Recording Systems'. The aim of the update is to include several technical sections in the performance standard. As there are no existing Working Groups (WG) addressing flight recorders at EUROCAE, the Technical Advisory Committee (TAC) recommended the establishment of a new WG and initiated the update of these documents.

This activity greatly assists in updating the existing

MOPS for airborne flight recorders, which are mandated by operational regulations and ICAO Annex 6 requirements. It aims to provide the necessary data for accident investigation and prevention.

WG-118 should update ED-112A to address:

- ▶ the recording of the information displayed to the flight crew from electronic displays
- ▶ the operation of switches and selectors by the flight crew
- ▶ voice recorder audio quality assessments
- ▶ development in deployable recorders

At EUROCAE, the only standardisation organisation active and experienced in Flight Recorder standards, this activity is well supported, and the organisation highly appreciates the encouragement and motivation of the involved members.

Aside from the updates to ED-112A and ED-155, the TAC recently approved a third deliverable for WG-118. The need to exclude specifications for UAS/RPAS recording from ED-112A was identified by various WG members. Therefore, a separate document will supplement the existing work of WG-118.

WG-119 Radar Altimeters (RA)

CHAIRPERSON: Jean-Luc Robin, AIRBUS

SECRETARY: Samh Menshaw, THALES

TECHNICAL PROGRAMME MANAGER:

Anna Guégan, EUROCAE

WG-119 is a new Working Group addressing Radar Altimeters. Its primary objective is to develop an updated Minimum Operation Performance Standard (MOPS) that will address RA robustness against the existing and planned future Radio Frequency (RF) environment.

ED-30A 'MOPS for Low Range Radar Altimeters'. The target date for publication is Q4/2022.

The future RF environment concurrently combines the following interferences:

- ▶ Interferences at the edges of the RA band (3.800-4.400MHz) and (4.400-5.000MHz), including anticipated futures modulations and signal strength
- ▶ Interferences within the RA band (4.200-4.400MHz)
- ▶ Out of RA band interferences that could potentially have an indirect effect on the RA due to level of signal, modulation, potential harmonics, RA antenna potential weakness (susceptibility) or RA design potential weakness (resonance).

The first meeting of WG-119 took place virtually on 27 May 2020. 20 registered participants from two continents joined the meeting, and provided the framework for the next steps in this activity.

WG-119 is jointly working with RTCA SC-239. The current ED-30 and DO-155 are not technically identical. The main aim of this revision is to align these documents and to develop technically identical documents (ED-30A/DO-155A), which will supersede the current ED-30 and DO-155.

WG-120 Technical Means for Identifying Potential COVID-19 Carriers Among Passengers

CHAIRPERSON: Mike Horne, LATECOERE

SECRETARY: Sara Einollahi, AD AERO

TECHNICAL PROGRAMME MANAGER:

Sebastian Reschenhofer, EUROCAE

WG-120 is addressing the technical means to identify potential COVID-19 carriers among passengers. It was mandated to develop a MOPS for thermal camera systems to support the recovery of the aviation industry, which is heavily impacted by the COVID-19 pandemic.

In early 2020, worldwide aviation was suddenly brought to a halt by the pandemic. The virus rapidly transmitted worldwide by the prevalence of air travel and resulted in outbreaks and fatalities worldwide. As a result, the airline business has dropped by more than 90%.

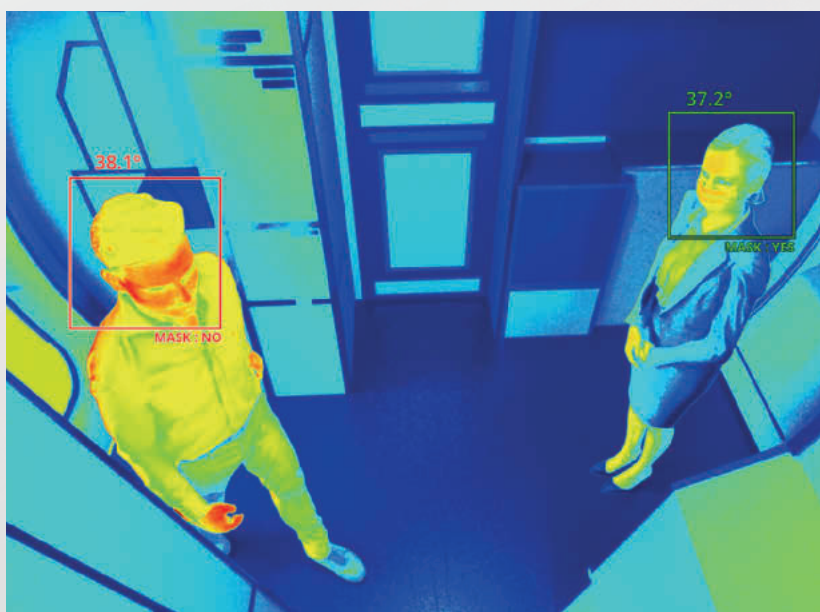
One of the main symptoms in patients suffering from the virus is a fever higher than 38°C. This temperature can easily be sensed by a thermal camera, and this technology is widely used in airports, particularly in the Asia Pacific region.

The Working Group is tasked to define the specifications and parameters for sensors, which could be used onboard commercial aircraft to monitor the temperature of passengers to a sufficiently high degree of accuracy. Timely information could highlight to the cabin

crew when a passenger presents a fever, ideally at the aircraft door, so that he can be isolated and refused permission to board if possible. A camera system would also allow the cabin crew to automatically check whether masks are being worn. The objective of this equipment is to provide passenger reassurance, following the worldwide lockdown due to the COVID-19 pandemic, and to serve the recovery of the aviation industry, which relies on passenger confidence.

The Working Group will build on the framework driven by the ICAO 'Collaborative Agreement for the Prevention and Management of Public Health Events in Civil Aviation' (CAPSCA) and the EASA Aviation Industry Charter for COVID-19.

The MOPS is expected to be launched for Open Consultation in July 2021.



WG-121 Aircraft Cleaning

CHAIRPERSON: Manfred Mohr, IATA
and Chloe Morosetti, UNITED AIRLINES

SECRETARY: Patrick Guerin, UNITED AIRLINES

TECHNICAL PROGRAMME MANAGER:
Sebastian Reschenhofer, EUROCAE

Due to the public health situation created by the spread of the novel coronavirus disease (COVID-19), travel restrictions were implemented by several nations worldwide to control the spread of the disease. The aviation industry recognised the high threat of infection and aimed to restore the confidence of the public that aircraft and the entire service chain is safe from transmission

of the disease. Modern air travel requires proven methodologies to clean aircraft interiors, such as the cabin, galley, lavatories, cargo compartments and flight deck.

WG-121 kicked off in August 2020 and after several working sessions and tremendous effort made by the entire WG, ED-287 'Guidance Document on Aircraft Cleaning and Disinfection' was published on 24 December 2020, within 124 days after establishing the WG.

After multiple reactions by the industry, the WG proposed to relaunch the document. A revised version is expected to be available in late 2021.

WG-122 Virtual Centre

CHAIRPERSON: Philippe Chauffoureaux, SKYGUIDE

SECRETARIES: Ben Stanley and Maja Marciniak, EGIS AVIATION UK

DIRECTOR TECHNICAL PROGRAMME:
Anna von Groote, EUROCAE

Further to a large stakeholder workshop held on 25 August 2020, in which over 60 experts gathered and engaged in a lively exchange on this important subject, confirming the need for standards and timeliness of this initiative, the EUROCAE Council has approved the creation of WG-122 Virtual Centre in September 2020.

WG-122 kicked off on 23 November 2020. As an initial deliverable, WG-122 concentrates on developing an 'Internal Report: Virtual Centre Standardisation'.

The purpose of this document is the development of a comprehensive report (internal report) outlining the context of the Virtual Centre concept and proposing a detailed work programme for Virtual Centres services standardisation. The status of R&D activities, industrialisation and the stakeholders' needs are taken into account.

It aims to develop a performance-based approach to the Virtual Centres services standards, focused on the outcomes in terms of perceived benefit (or need) and feasibility.

The eventual roadmap for standardisation of Virtual Centres services will include a phased approach, with priorities laid out and dependencies understood.

At the Kick Off Meeting of WG-122, seven tasks were agreed:

- ▶ Defining the Virtual Centre
- ▶ Architecture options for the Virtual Centre (concept)
- ▶ Status of R&D for Virtual Centres
- ▶ Status of industrialisation for Virtual Centres
- ▶ Identifying other EUROCAE and wider activities of relevance
- ▶ Potential regulatory and legal framework
- ▶ Benchmarking standardisation strategies (understanding state-of-the-art)

The work is done in dedicated task groups to explore the "state of play" with respect to Virtual Centres, followed by a filtering process of the options, use cases and scenarios.

The outputs from the task groups have been combined into a first draft of the WG-122 Internal Report on a strategy to standardise the Virtual Centres services (i.e. Phase 1).

This report, which is expected to be finalised in summer 2021, will be the foundation for the future work programme of standards to be developed.



FAS Forum on Aeronautical Software

The Forum on Aeronautical Software (FAS) has been established to provide a forum for those involved in the development of aeronautical software to share experiences and good practices and to provide a platform for the exchange of information regarding subjects addressed in the 'software document suite', new and emerging technologies, development methodologies, interesting use cases and other topics related to aeronautical software and related technologies.

The goals of the FAS are:

- ▶ to share lessons learned in the use of the 'software document suite' and to encourage good practices and promote the effective use of RTCA's and EUROCAE's publications.

- ▶ to develop FAS Topic Papers related to subjects covered by 'software document suite' or other related aeronautical software industry topics.
- ▶ to identify and record any issues or errata showing the need for clarifications or the need for modifications to the 'software document suite'.

The FAS is a joint RTCA/EUROCAE User Group that holds discussions and develops information papers called FAS Topic Papers (FTPs) relating to aeronautical software topics in efforts to harmonise these information papers; they are made available for educational and informational purposes only.

FTPs are published on the EUROCAE and RTCA websites.

Topics typically addressed by the FAS relate to aeronautical software, including topics covered by the following set of EUROCAE/RTCA published documents (referred to as the 'software document suite').

As a result of this comprehensive report developed by the FAS, and to implement several of the recommendations of this report, EUROCAE and RTCA jointly launched WG-117 / SC-240 (see below), looking at software for low-risk applications (e.g. UAS, GA, VTOL) as well as COTS, Open Source and Service History aspects.

The FAS is meeting regularly online as well as – more rarely – F2F.

In the spring of 2018, RTCA and EUROCAE asked the FAS to consider the question whether ED-12/DO-178, and the various supplements, were appropriate for use on projects developing systems that would operate unmanned or whether the documents could be tailored to meet UAS industry demands for low-cost, nimble, and easily applied software guidance material. The final report of this Ad Hoc group is now available and follow up actions are being coordinated between EUROCAE and RTCA.

The Forum on Aeronautical Software (FAS), face to face meeting in Cologne, November 2019



European ATM Standards Coordination Group (EASCG)



Since its creation in 2015, the European ATM Standards Coordination Group (EASCG) has developed and maintained the ATM Rolling Development Plan (A-RDP), the value of which is well recognised, and is often used by the ATM community in Europe and beyond.

The EASCG met several times over the year, and published the A-RDP v14. The RDP connects all relevant standardisation activities that are ongoing or planned within various Standard Developing Organisations (SDOs). It is updated twice a year to maintain visibility and awareness of the progress.

EASCG continued to monitor the follow up of the Airspace Architecture Study (AAS) Transition Plan (TP) implementation. The focus of the EASCG discussion is on new standardisation activities that might be needed in order to support the community in the implementation of SESAR R&D results and enabling accelerated market uptake.

In October 2020, Manuel Rivas Vila, ATM Oversight Section Manager at EASA, took charge as chairperson of the EASCG, while EUROCAE will continue to act as Secretary of the EASCG.

The handover was prepared and agreed by the European Commission, EASA and EUROCAE. This was done to make EASA more dominant in the group and to ensure closer coordination between the regulator and the SDOs. Christian Schleifer, who previously chaired the group, said at the occasion of the transfer that "this brings the EASCG on its next level and shows the importance of such a group, which has very well served the community over five years and is still the one forum to ensure a seamless transition between R&D to industrialisation and therefore in particular the standardisation and regulation part and finally allow a successful deployment of SESAR projects."

The EASCG also initiated a discussion on how to further improve the A-RDP both in terms of content and publication format; this will be continued in a series of breakout meetings and at the subsequent meetings.

For more information and to download the latest version of the RDP please visit

www.eascg.eu

www.euscg.eu

www.ecscg.eu

European Cyber security for aviation Standards Coordination Group (ECSCG)



The European Cyber security for aviation Standards Coordination Group (ECSCG) is a joint coordination and advisory group established to coordinate the cyber security of aviation related standardisation activities. Its purpose is to coordinate the cyber security standardisation activities across Europe to ensure that the necessary and appropriate standards are available in due time.

The ECSCG also acts as a bridge for similar international developments outside the region. Considering that only finite resources are available, it is important to limit overlaps between the different initiatives. It is also important to ensure system interoperability and compatibility of the relevant standardisation activities in Europe and globally.

ECSCG, face to face meeting at EUROCAE, Saint-Denis



ECSCG gathers experts from European regulators (European Commission and EASA) and European organisations active in cyber security and international SDOs. The goal is to define a way to streamline standards developing activities in Europe.

The main deliverable of the ECSCG is the European Cyber security for aviation Standardisation Rolling Development Plan (RDP). The RDP lists and categorises standardisation and regulatory

activities, providing a method for identifying and discussing overlaps and gaps.

As a basis for feedback to contributing organisations, it will improve overall coordination of standards development. The first version of the ECSCG RDP was published in 2019. V3.0 of the newly coined C-RDP, to align with A-RDP and U-RDP, is expected for Q2/2021.

European UAS Standards Coordination Group (EUSCG)



Four years into operation and after publishing six versions of the Rolling Development Plan (U-RDP), European UAS Standards Coordination Group (EUSCG), a neutral platform, continues to play an important role in streamlining UAS standardisation activities. The latest RDP version is available on its website at www.euscg.eu.

Following the approval of the position paper on 'Future of EUSCG', the group made a significant decision during the December 2020 meeting. They agreed to transfer the lead of EUSCG to EASA, thus ensuring an enhanced connection between the regulator and Standard Development Organisations (SDOs).

In March 2021, EUSCG members started to identify the gaps that must be addressed to support European drone regulations. It is intended to coordinate between SDOs and share the workload to avoid duplication and to ensure that standards are available in a timely manner.

EUSCG envisages to make the U-RDP available on a user-friendly platform with advanced functionalities to facilitate the search, identification and use of information by the UAS community.



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Online training 1 hour 00 min

Aircraft Cyber Security Development and Continuing Airworthiness

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Cyber Security e-learning

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UNMANNED AIRCRAFT SYSTEMS TRAINING

Online training 1 hour 00 min

Unmanned Aircraft Systems and Safety Training

Click below to check the news about upcoming Trainings for Unmanned Aircraft Systems and Safety Training

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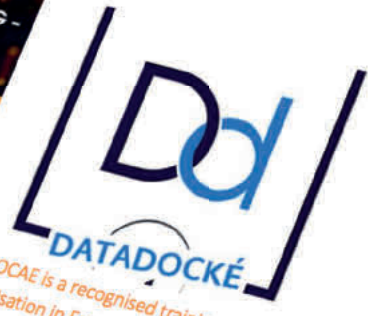
AVIATION SOFTWARE STANDARDS TRAINING - AIRBORNE ED-12C

5 days Online course

Aviation Software Standards Training - Airborne

Click below to check the news about upcoming Aviation Software Standards Trainings.

[more information](#)



EUROCAE is a recognised training organisation in France

Referenced by DataDock

Cyber Security Management for Aviation Organisations

NEW TECHNOLOGIES SUCH AS E-ENABLED AIRCRAFT, NEW GENERATION CNS/ATM SYSTEMS AND DRONES ARE CHANGING THE RISK LANDSCAPE OF THE AVIATION SYSTEM MAKING IT INCREASINGLY VULNERABLE FOR CYBER-ATTACKS.

At the same time, there is growing demand for guidance and leadership in cybersecurity, where EUROCAE WG-72 has brought a significant technical contribution through five EDs: ED-201, ED-202A, ED-203A, ED-204A and ED-205. Standards and guidance are proliferating in this space, which makes it potentially confusing for aviation stakeholders to know which is appropriate for what purpose. Guiding people through this maze is a key goal of this NEW five-half-days training course.

WHO SHOULD ATTEND?

Anyone working in aviation (airport, ANSP, airline, manufacturing industry development, producing or maintaining aircraft) plus regulatory and industrial audiences, who needs to deal with cybersecurity as part of their day-to-day activities. This includes managerial people who need to understand the regulatory and standards landscape to establish secure organisations and processes. Note that this training provides an overview of standards and regulations and how they interrelate. This course is complemented by additional courses that will provide a more in-depth understanding of specific topics covered by individual standards.

COURSE CONTENT

- ▶ Cyber threats in aviation
- ▶ The current cybersecurity regulatory landscape affecting aviation
- ▶ The current cybersecurity standards landscape ED-20X standards for airworthiness and securing the aviation sector
- ▶ Cybersecurity auditing and certification
- ▶ Standards for securing organisations including information and operational technology
- ▶ Future developments

LEARNING OBJECTIVES

The purpose of the training is to enable participants to adopt a standards-led approach to cybersecurity in aviation. The participant will be able to:

- ▶ Identify the principles and consequences of cyber security in the aviation environment
- ▶ Describe how cyber security impacts different actors in aviation
- ▶ Understand which regulations apply to a particular aviation organisation
- ▶ Explain the scope and contents of ED-20X.
- ▶ Identify the interdependencies between the different standards by mapping the links between them, including ED-201 to ED-205, EN-16495, ISO27000 series, NIST standards, DOs and SAE documents.
- ▶ Select an appropriate standard, or set of standards, to adopt for specific aviation purposes.
- ▶ Research the process to follow and the information required for internal/external audits within an aviation context.
- ▶ Describe the top-level cybersecurity processes and aspects of certification in an ATM and aircraft context.

BENEFITS OF ATTENDING

- ▶ Participants will gain access to the tools and understanding to use available standards to manage cyber risk in an aviation context in a standards-led way (which in itself brings many additional benefits)
- ▶ Learn best practice on auditing and certification
- ▶ Instructors are leading experts on aviation cybersecurity and regulations
- ▶ Share experiences with colleagues from other aviation stakeholders/countries
- ▶ Extensive course handouts including ED-201, ED-202A, ED-203A, ED-204A and ED-205
- ▶ Ideal distance learning programme to allow training at home or in the office
- ▶ Certificate of completion of the course

TRAINERS

Hannes Alparslan and Stefan Schwindt

NEXT DATES

Training planned for Autumn 2021 and Winter 2021.

For further information, please visit <https://www.eurocae.net/training>

Aviation Software Standards Training – Airborne ED-12C

EUROCAE ED-12C (EQUIVALENT TO RTCA DO-178) HAS BEEN THE BASIS FOR AIRWORTHINESS APPROVALS OF AIRBORNE SOFTWARE SINCE ALMOST 30 YEARS AND IS RECOGNISED BY ALL CERTIFICATION AUTHORITIES. KNOWLEDGE OF THIS STANDARD IS A PREREQUISITE FOR ALL PERSONS INVOLVED IN THE DEVELOPMENT OR APPROVAL OF AIRBORNE SOFTWARE.

The objective of the course is to provide the basics to understand ED-12C principles and how to build a software design system capable of fulfilling ED-12C's objectives.

The course also addresses tool qualification (ED-215) and introduces the technological supplements (ED-216, ED-217, ED-218).

WHO SHOULD ATTEND?

Anyone involved in the development or qualification of airborne software, including developers, project managers, persons in charge of quality assurance or supplier monitoring, compliance verification engineers.

A prior knowledge of software engineering is expected. However, a prior knowledge of ED-12C is not required. Persons having already practiced ED-12C (or ED-12B) can still take benefit from the course.

COURSE CONTENT

- ▶ Aviation system safety background (system safety assessment, concept of DAL)
- ▶ Introduction to ED-12C (history, basic principles, recognition by airworthiness regulation)
- ▶ ED-12C detailed concepts (processes, objectives, modulation according to the criticality level)
- ▶ Additional considerations (use of previously developed software, tool qualification, alternative methods)
- ▶ Introduction to ED-12C technological supplements (ED-217 - Object-oriented technology, ED-216 - Formal methods, ED-218 - Model-based development)
- ▶ Certification considerations (EASA/FAA regulatory requirements (AMC/AC 20-115D), overview of the certification liaison process)

LEARNING OBJECTIVES

The purpose of the training is to enable participants to have an overview of EUROCAE ED-12C, as well as associated standards (ED-215, ED-216, ED-217 and ED-218). Having completed the training, participants should:

- ▶ Have a good knowledge and understanding of ED-12C and its supplements,
- ▶ Especially, have assimilated the major concepts (processes, objectives, modulation according to the design assurance level),
- ▶ Understand the key requirements for airborne software approval and how to drive the software development process to fulfil the objectives,
- ▶ Have an overview of the detailed expectations and approval process from the certification authorities.

BENEFITS OF ATTENDING

- ▶ Participants will get a clear understanding of ED-12C principles and how to implement it for a given project
- ▶ Standards brought to life with presentations and examples
- ▶ Share experiences with colleagues from other aviation stakeholders/countries
- ▶ Participants having a prior knowledge of ED-12C will still benefit through interactive questions and answers
- ▶ Course provided by senior expert in airborne software
- ▶ Extensive course handouts distributed
- ▶ Certificate on completion of the course

TRAINER

Gilles Loopuyt

NEXT DATES

Training planned for Autumn 2021

For further information, please visit <https://www.eurocae.net/training>

Unmanned Aircraft Systems Airworthiness and Safety Training

OPERATIONS OF UNMANNED AIRCRAFT SYSTEMS, THROUGH A VARIETY OF CONFIGURATIONS, APPLICATIONS AND TYPES OF OPERATIONS, ARE INCREASINGLY BECOMING A REALITY IN THE WORLD OF CIVIL AVIATION. NEW EUROPEAN REGULATION, BASED ON RISK BASED APPROACH, WAS ADOPTED IN JUNE 2019 AND IS APPLICABLE FROM DECEMBER 2020. IT ENDORSES THE THREE PILLARS CONCEPT OF OPEN, SPECIFIC AND CERTIFIED CATEGORIES FOR UAS OPERATIONS.

EUROCAE (through its dedicated Working Groups, initially WG-73 and WG-93 and WG-105 since November 2016) has played and is playing an active role in the UAS-rule making and standardisation activities. A number of standards and guidelines documents (ED and ER documents) have been already issued to handle various topics relating to UAS Airworthiness and Operational Safety and to enable the safe integration of UAS in the civilian airspace. This training course aims at familiarising the audience with the issues related to the UAS Airworthiness and Safety. In particular, It presents the essential tools to conduct System Safety and Operational Risk Assessment, based upon design and operational risk mitigation measures, which is a key element in getting flight authorisation from Civilian Aviation Authorities (in the framework of Specific and Certified Categories, as per EC regulation 2019/947).

COURSE CONTENT

- ▶ The world of UAS and the world of certification: an overview
- ▶ UAS regulatory landscape and approach
- ▶ A glance at current EUROCAE UAS standards and guidelines
- ▶ Conducting UAS System Safety assessment and Operational Risk assessment (considering risk based approach)

LEARNING OBJECTIVES

The course aims at encompassing the whole subject of UAS Airworthiness Certification (in EASA terminology "Specific" and "Certified" categories). It is hoped that the participants will subsequently get a quite complete picture while "zooming" into a number of peculiar issues, such as Safety Assessment process activities and Operational Risk Assessment.

Whilst this 15-hour course does not claim to make the participants technical experts in these latter disciplines, it should allow them to get a good appreciation of the various tools and methods supporting the UAS flight authorisation or airworthiness certification process.

The participant will be able to:

- ▶ Get a sufficient knowledge and comprehensive view of the UAS regulatory framework and flight approval / certification process;
- ▶ Identify the risks related to UAS operations;
- ▶ Get familiarised with the UAS Safety Assessment process;
- ▶ Apply the risk-based approach based upon design and/or operational mitigation measures;
- ▶ Prepare inputs to Operational Risk Assessment in line with SORA methodology to support the granting of flight authorisation.

WHO SHOULD ATTEND?

Anyone involved in UAS design, manufacturing and operations who is involved in the process of flight authorisation granting by Civil Aviation Authorities. This includes managerial, technical and operational people (UAS Industry, Operators but also Authorities).

BENEFITS OF ATTENDING

- ▶ Participants will get a clear understanding of the UAS Airworthiness and Safety Issues and get better prepared to the corresponding issues related to the UAS flight approval process
- ▶ Related EUROCAE ED-ER documents will be brought to life with classroom presentations and exercises.
- ▶ Sharing experiences with colleagues from other UAS stakeholders and countries.
- ▶ Top Level world expert instructor
- ▶ Certificate on completion of the course

TRAINER

Michael Allouche

NEXT DATES

Training planned for Autumn 2021 and Winter 2021

For further information, please visit
<https://www.eurocae.net/training>

Aircraft Cyber Security Development and Continuing Airworthiness

THE AIRCRAFT RISK PROFILE FOR CYBER-ATTACKS HAS CHANGED SIGNIFICANTLY WITH EVER INCREASING DIGITISATION AND CONNECTIVITY, SUCH AS E-ENABLED AIRCRAFT AND USE OF IP FOR INTERNAL AND EXTERNAL COMMUNICATION. TO ENSURE SAFETY AND SECURITY OF AIRCRAFT FROM CYBER-ATTACKS, EASA HAS PUBLISHED ED 2020/006/R TO INCLUDE CYBER SECURITY IN ALL CERTIFICATION SPECIFICATIONS (CS-23, CS-25, CS-27, CS-29, CS-APU, CS-E, CS-P, CS-ETSO).

In response to industry demand for a consistent practice in security by design for aircraft and to have harmonised approach in demonstrating compliance to the new aviation Cyber Security rules, EUROCAE WG-72 has developed three standards: ED-202A, ED-203A and ED-204A. The documents ED-202A and ED-203A provide a standard and guidance for developing aircraft, aircraft systems and parts from initial design to type certification. ED-204A provides the standard and guidance for maintaining airworthiness of aircraft from a Cyber Security perspective.

WHO SHOULD ATTEND?

This course is offered in two complementary parts. Participants can choose to attend either or both parts.

Aircraft Cyber Security Development

▶ Anyone working in a development or certification role exposed to Cyber Security within the design organisations and their suppliers – including design approval holders for Type Certificates in Airplanes, Rotorcraft, Engines, Propellers; design approval holders for Supplemental Type Certificates (STC); Design Approval Holders for (European) Technical Standard Orders (ETSO/TSO); and the suppliers of systems, software and hardware to any of the Design Approval Holders.

Aircraft Cyber Security Continuing Airworthiness

- ▶ Anyone working in design organisations in departments issuing Security Operator Guidance or Instructions for Continued Airworthiness and anyone in airlines, operators and maintenance, repair, overhaul (MRO) organisations in a cyber capacity – whether IT, operational or maintenance.
- ▶ Anyone working in aviation (airport, ANSP, airline, manufacturing industry (developing, producing or maintaining aircraft) plus regulatory and industrial audiences, who needs to deal with Cyber Security as part of their day-to-day activities.

The course content is structured for all background in these roles – whether IT with a security background, aviation backgrounds in system, software or hardware development or aircraft certification.

COURSE CONTENT

Aircraft Cyber Security Development ED-202A / ED-203A

- ▶ Cyber threats in aviation addressed in development
- ▶ The current Cyber Security regulatory landscape affecting aviation development
- ▶ Aircraft Security by Design
- ▶ Cyber Security Objectives for compliance demonstration
- ▶ Product Change
- ▶ Cyber Security Certification Plans
- ▶ Future developments

Aircraft Cyber Security Continuing Airworthiness ED-204A

- ▶ Cyber threats in aviation addressed in operation
- ▶ The current Cyber Security regulatory landscape affecting aviation operation
- ▶ Maintaining Cyber Security Continuing Airworthiness
- ▶ Aircraft Cyber Security Plans
- ▶ Future Developments

LEARNING OBJECTIVES

The purpose of the training is to enable participants to adopt a standards-led approach to Cyber Security in aviation and to understand Cyber Security regulations for development and operation of aircraft, aircraft systems and constituent hardware and software. The participant will be able to:

Aircraft Cyber Security Development ED-202A / ED-203A

- ▶ Understand the new Cyber Security rules in all Certification Specifications and the associated AMC 20-42
- ▶ Establish a Cyber Security certification plan appropriate for the scope of the development activity
- ▶ Establish a Cyber Security development and verification plan with all activities and artefacts for Cyber Security certification
- ▶ Perform risk analysis for aircraft and aircraft systems
- ▶ Understand the Security Assurance Levels of ED203A and difference in allocation and application to DAL of ED12C, ED79A and ED80
- ▶ Understand some best practices in aviation development
- ▶ Understand the SAL objectives and demonstrate means of compliance to the objectives

Aircraft Cyber Security Continuing Airworthiness ED-204A

- ▶ Understand Cyber Security rules for operation of aircraft and for airlines
- ▶ Establish an Aircraft Cyber Security Plan
- ▶ Establish and demonstrate means to secure aircraft and associated ground operations
- ▶ Understand and manage Instructions for Continuing Airworthiness
- ▶ Understand how an Aircraft Cyber Security Plan can integrate with an Airline Information Security Management System

BENEFITS OF ATTENDING

- ▶ Participants will gain access to the tools and understanding to use available standards to manage cyber risk in an aviation context in a standards-led way (which in itself brings many additional benefits)
- ▶ Learn best practice on auditing and certification
- ▶ Instructors are leading experts on aviation Cyber Security and regulations
- ▶ Share experiences with colleagues from other aviation stakeholders/countries
- ▶ Extensive course handouts including ED-202A, ED-203A and ED-204A
- ▶ Ideal distance learning programme to allow training at home or in the office
- ▶ Certificate of completion of the course

TRAINERS

Hannes Alparslan and Stefan Schwindt

NEXT DATES

Training planned for Autumn 2021 and Winter 2021. For further information, please visit the EUROCAE Training website.

For further information, please visit
<https://www.eurocae.net/training>

Financial Report

EUROCAE is composed of the not-for-profit organisation, EUROCAE Association, as well as its 100% subsidiary, EUROCAE Communication.

EUROCAE generates the largest proportion of:

- ▶ The income:
 - > Membership fees
 - > Biennial EC Grant
- ▶ The expenditures:
 - > Premises
 - > Staff members' wages
 - > Social security contributions
 - > Taxes
 - > Travels (*)

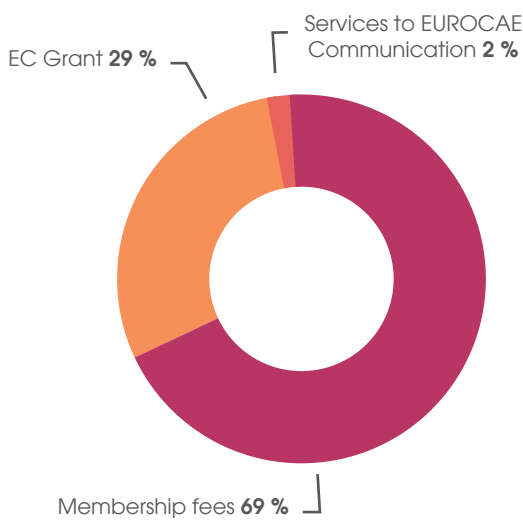
(*) Note: Due to the pandemic context, travels have been interrupted from mid-March 2020 until nowadays.

EUROCAE COMMUNICATION'S:

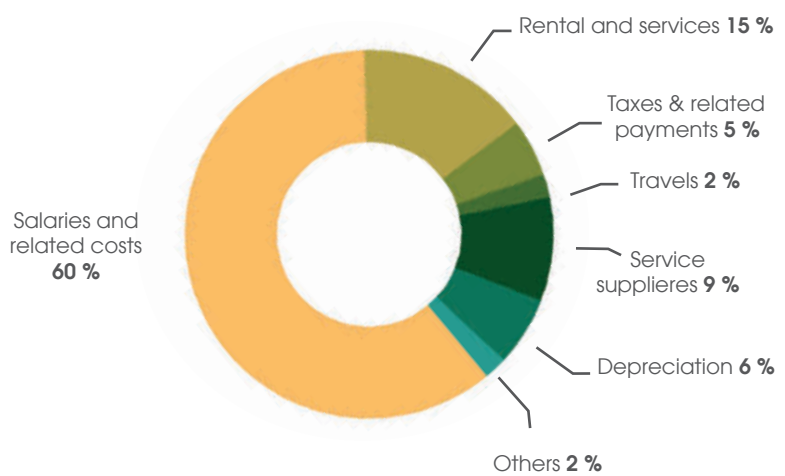
- ▶ Turnover mainly results from:
 - > Sales of EUROCAE Documents (EDs)
 - > Training sessions
 - > Events
 - > Contract agreements
- ▶ Main expenses are related to:
 - > Office rents
 - > Taxes and charges
 - > Service provisions and various purchases (*)

(*) Note: Those payments are shared between EUROCAE Communication and EUROCAE as per a sharing cost agreement in force. The latter was revised in 2020.

EUROCAE OPERATING INCOME:



EUROCAE OPERATING EXPENSES:



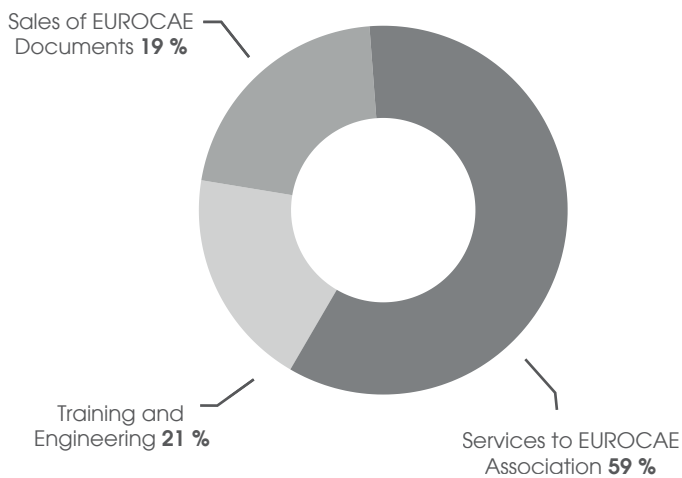
STATUTORY AUDIT:

As every year, our two entities' fiscal years were audited:

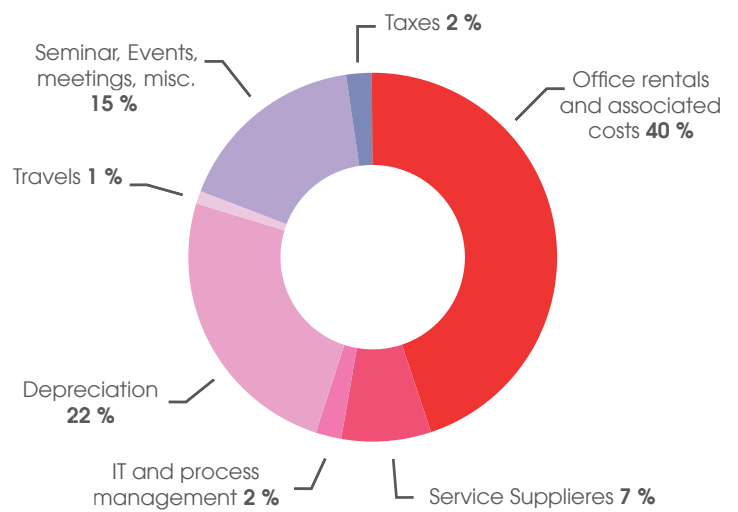
- ▶ EUROCAE's accounts ending 31 December 2020:
 - Audit report delivered on 15 April 2021
 - No findings

- ▶ EUROCAE Communication's accounts ending 30 September 2020:
 - Audit report delivered on 24 March 2021
 - No findings
 - Remark from our statutory auditor regarding the continuity of EUROCAE Communication's activity depending on EUROCAE financial support.

EUROCAE COMMUNICATION OPERATING INCOME:



EUROCAE COMMUNICATION OPERATING EXPENSES:



EUROCAE Symposium 2021

The 2021 EUROCAE Symposium took place from 28 to 30 April 2021, as a fully virtual event with participation from top industry leaders and regulators from Europe and around the world.

The event aimed at gathering strategies and priorities from relevant stakeholders. It will assist in shaping and guiding EUROCAE's strategy to support development in aviation and contribute to achieving overall targets.

The symposium looked at the following topics through dedicated panels:

Opening remarks



The 2021 edition of EUROCAE Symposium was inaugurated by **Henrik Hololei**, Director-General for Mobility and Transport, European Commission. In his statement, he emphasised the need to create a European ATM system that

is highly digitalised, resilient and environmentally efficient with the ability to safely integrate a wide variety of new aerial vehicles alongside conventional manned aircraft. Standardisation plays a crucial role in the ATM modernisation framework, and EUROCAE is contributing enormously to develop standards that are fit for purpose.



Bruno Ayrat (THALES LAS France), EUROCAE President and Council Chair, highlighted the exceptional performance of EUROCAE to embrace current challenges and priorities. He emphasised that the organisation has

significantly enlarged its scope of expertise during the past years to properly address such important topics as artificial intelligence, virtual centres, UAS, counter-UAS, hybrid electric propulsion and VTOL.



Christian Schleifer, Director General, emphasised that despite the fully virtual format, EUROCAE gained useful insights and concrete direction for its work programme which will lead to the required change.

Panel 1: Services – Future of ATM Infrastructure

In Air Traffic Services, service provision quality has become increasingly important over the past years. Digitalisation and virtualisation will support the service-oriented approach of ATM, thereby providing scalability and adaptability for future ATM.

- ▶ Interoperability and harmonisation of systems and operations is key. It needs to be supported by a concrete safety and security concept.
- ▶ The panel also investigated various aspects of virtual centre with representatives from the manufacturing industry, Air Navigation Service Providers, EASA and Air Traffic Controllers Association. It highlighted that standards and regulations need to be fit for purpose to facilitate new concepts and emphasised that a strong cooperation is required between all stakeholders.

Panel 2: Automation Artificial Intelligence

- ▶ Following an overview of the context that has fostered the emergence of AI in the aerospace industry, panel 2 provided a broad set of use cases as the basis to discuss the implementation, regulation and standardisation of this technology.
- ▶ AI is a key enabler for automation. These examples were set at different levels of AI as established by the EASA AI Roadmap. Level 1A indicates human augmentation, level 1B pertains to human assistance, level 2 is human-machine collaboration and level 3 is more autonomous machines.

Visionary Talks

The Visionary Talks gathered panelists representing ICAO, European Commission, EASA and IATA. They highlighted the main challenges and anticipated changes in the aviation landscape such as the need to:

- ▶ Shift from incremental to fundamental changes, as growth has outpaced efficiency improvements
- ▶ Address challenges in a more effective way by stimulating interoperability, digitalisation, innovation, new procedures and products enabled through a performance based approach

- ▶ Enhance complementarity between the regulatory framework and standards
- ▶ Implement efficiency improvements quickly and decisively
- ▶ Manage the integration of innovation into an effective safety management system
- ▶ Ensure sufficient availability of skilled staff to enable delivery of desired technical capabilities

Panel 3: Innovations, Environment and Sustainability

This panel discussed methods that could be employed to reduce environmental impact caused by aviation. This included utilising new technology, infrastructure, operational improvements, and market-based measures. A lot of effort is directed at finding efficient solutions to reduce emissions. From the technology perspective, electric aircraft, hydrogen propulsion and sustainable aviation fuels will be beneficial, while at the ATM level, flight trajectory optimisation, smart ATM procedures and AI applications to support ATM will bring a major change. The panel agreed that a combination of different solutions could support in achieving sustainability goals. Improving existing systems in combination with innovation is essential. However, it is also necessary to ensure that the right certification basis is selected.

Another challenge is to ensure that efficiency in the air is supported by the right infrastructure on the

EUROCAE
Symposium
 58th General Assembly
 28-30 April 2021

EUROCAE

ground. Airports are already looking for solutions aimed at operational improvements (for example, electrical pushback, one engine taxi). Collaboration between involved parties is mandatory to attain the proposed objectives.

Panel 4: Cross industry panel

The cross industry panel investigated how other sectors address innovation, and discussed emerging technologies from a product lifecycle and certification perspective.

Different approaches were outlined, as the panel was diverse. The panelists worked in different industries, ranging from pharmaceutical and medical devices, telecommunications and automotive.

The experts agreed that safety is paramount. They recognised that innovation and technological development are often long, iterative cycles. This process involves multiple stakeholders and their interests, which are usually difficult to combine. Innovative solutions need to be integrated with legacy systems and societal perspectives must be considered. Regulatory processes need to accompany these changes.

It was highlighted that such processes can be quick when there is an important safety issue at stake, as demonstrated with the development of vaccines to curb the COVID-19 pandemic.

Synergy can be established between aviation and other sectors by:

- ▶ Moving towards higher levels of automation. Aviation could benefit from experience in the automotive industry, which uses integrated, autonomous systems based on sophisticated software, electronics and sensor fusion.
- ▶ Increasing use of digitalisation and other innovative methods through different phases of the R&D cycle.
- ▶ Observing certification processes and procedures

in the medical devices industry, which are commensurate to the level of criticality of the devices. Different classes of devices have different certification processes and follow a risk-benefit analysis and approach.

The panel agreed that innovation must be accessible and implementable. The aviation industry could greatly benefit by connecting with other industries and learning from them. All stakeholders, such as industries, users, and regulators, need to work together to enable innovation and emerging technologies.

Panel 5: Role of standardisation for a sustainable recovery

The COVID crisis impacted every player in the aviation network in an unprecedented way. This panel gathered representatives from several aviation industry associations to discuss changes in their operational environment and the way they addressed these challenges and built resilience.

Short-term goals are not a solution, as the industry needs long-term recovery planning. Building resilience is critical to long-term planning and addressing future challenges. The role of standards is increasing, and global harmonisation becomes a very important priority.

There is no single path to sustainability. Deploying new technologies, collaborative efforts and defragmentation, among others, play an important role in implementing it. Governments and industries must enhance their interaction to support a quick and sustained recovery.

Conclusion

This year's event clearly reflected the shift in priorities in the aviation community. Merely 18 months ago, the focus was on capacity. However, scalability, resilience, and sustainability are the new priorities triggered by the pandemic.

Scalability, resilience, and sustainability

The future aviation system will have to be highly automated, digitalised, resilient and environmentally efficient. It must safely integrate a wide variety of new aerial vehicles alongside conventional manned aircraft. This major change must be supported by technological development and innovation, especially in the ATM infrastructure and service provision. The increasing use of automation, artificial intelligence and machine learning will greatly assist in achieving this goal.

Many initiatives are ongoing or planned to reach the ambitious goals leading aviation towards net zero carbon emissions. These include:

- ▶ Electric aircraft, hydrogen propulsion, sustainable at the aircraft level aviation fuels
- ▶ Flight trajectory optimisation, smart ATM procedures and AI applications to support ATM, as well as improvements on the ground, at the ATM level

Aviation must look at other industries to leverage on their experience to integrate innovative technology into existing systems.

Innovation is happening now

The discussions showed that technological innovation is happening now. However, it must be approached in a smart way to achieve maximum benefit for those involved.

All stakeholders must collaborate on performance based regulations and certification procedures to address challenges in a more effective way. This would stimulate interoperability, digitalisation, innovation, and new procedures and products.

Standards are a key enabler

Standardisation, in complement to performance based regulation, plays an important role to address existing challenges. The outcome of this symposium will shape, tailor and guide EUROCAE's strategy.

EUROCAE is the European leader in the development of worldwide recognised industry standards for aviation. It has demonstrated its ability to deliver high quality standards in time by being agile and adapting to industry needs. EUROCAE will continue to serve its members and the global aviation community. It aims to achieve these goals and support sustainable recovery and future development towards a more resilient, scalable, and greener aviation.

For more details and video recordings please visit our website at <https://eurocae.net/events/annual-symposium-2021-summary/>

SAVE
THE
DATE

28 - 29 APRIL 2022 EUROCAE SYMPOSIUM 2022

EUROCAE has started planning its 2022 Symposium, which will take place in Poland.

The EUROCAE 59th General Assembly will take place on 28 April 2022.

EUROCAE's Engagement in China

Following an initial engagement in China in April 2019, EUROCAE is pursuing its working relationship with Galleon. Galleon offers aviation consulting and other services in partnership with Chinese companies and organisations. As a result of the relationship with Galleon, EUROCAE is now regularly participating in events with other Chinese organisations.

EUROCAE will present in the 10th edition of the Civil Avionics International Forum (CAIF), which is scheduled to take place in Shanghai from 22 to 23 June 2021.

A similar dynamic is observed in EUROCAE membership and working groups. China-based organisations are increasingly participating in EUROCAE activities. Collaboration is thriving on topics related to Global Navigation Satellite System (GNSS) with further integration of Galileo and Bei-Dou (BDS) systems, as well as topics related to new entrants such as VTOL and UAS. This development will allow further coordination and harmonisation of industry standards and facilitate international trade.

International Aviation Software Summit 2021

EUROCAE and RTCA jointly organised the International Aviation Software Summit on June 23 and 24 with 8 live sessions and 10 on-demand sessions.

Hundreds of aviation professionals around the world, including CEOs, CTOs, researchers, professors, software engineers, safety experts, certification experts and regulators, joined the event to witness discussions on the use of software in aviation.

The event emphasised the importance of ensuring a balanced approach in certifying new software applications to encourage technological advancement. When integrating new certification processes, regulators have to ensure a high level of safety while relying on a risk based operation-centric approach supported by industry standards. Regulators need to adapt to emerging industry needs and work closely with standard developing organisations (SDOs) to prepare the certification basis in a timely manner to foster growth, innovation and business opportunities. Working together with the industry on consensus based standards could be a way to address current challenges.



SDOs specified the breadth of aviation software standards activities that are underway and demonstrated how standards provide support in placing new products and capabilities in the market. Until now, software development assurance standards have allowed the aviation industry to maintain the highest levels of safety, although the complexity of products and systems has immensely increased. Going forward, standards will have to be maintained and adapted to sustain emerging technologies. Regulations and standards should be complementary to support certification. It is important that all stakeholders work jointly to ensure that required standards are available in a timely manner. Otherwise, lack of necessary standards could become an impediment in deploying new technology.

EUROCAE - RTCA Annual Coordination Meeting

The annual coordination meeting between RTCA and EUROCAE took place in November 2020.

This meeting was organised to discuss developments in our organisations, review joint and non-joint standardisation activities, share a strategic outlook to the future, and to consider ways to foster and enhance their relationship with ICAO. As part of the discussions, EUROCAE and RTCA reaffirmed their strong partnership, agreeing that future standardisation initiatives should be, by default, pursued in a joint manner. The processes and procedures that have been in place for a long time, backed by the

Memorandum of Cooperation, will be used and reinforced to enable this cooperation in the future.



EUROCAE - ACI Europe Joint Workshop

Sustainable operations have become a priority in the aviation industry, as several organisations are listing the environment as one of the top priorities in their strategic roadmaps. EUROCAE is committed to this goal and is engaging in activities such as electric aircraft, hydrogen aircraft and is willing to support green standards for ground operations. In November 2020, EUROCAE and ACI Europe's Technical, Operations & Safety and Environmental Strategy Committees organised a workshop dedicated to sustainable airport operations. Participants shared their vision, ideas, experiences, challenges and possible solutions pertaining to greener operations and decarbonisation at airports. There was a session dedicated to standardisation, where Sergiu Marzac presented EUROCAE's airport portfolio, which included working groups on Advanced Surface Movement Guidance and Control Systems (WG-41), Foreign Object Debris Detection Systems (WG-83), Runway Weather Information Systems



(WG-109), and Airport Collaborative Decision Making (WG-111). The presentation triggered a discussion from participants on how standardisation could support sustainable airport operations and the areas in which standards are needed. Participants agreed to build on the information exchanged during the workshop and to follow this with potential new standardisation activities.

EUROCAE - AIDA Joint Workshop

EUROCAE and Japanese Aviation Innovation Development Association (AIDA) jointly organised a workshop to present certain EUROCAE activities to Japanese stakeholders. This workshop focused on areas of specific interest for our partners in Japan, notably VTOL, UAS and counter UAS, sustainability (e.g., hydrogen and fuel cell systems and hybrid electric propulsion), artificial intelligence, and airport systems and applications.



EUROCAE WG Leadership Summit

In November 2020, EUROCAE organised a Leadership Summit with the leaders of the active Working Groups (WGs) and their Sub Groups (SGs). This event discussed the latest developments and the improvements required from the Secretariat to further support WG activities.

This year's session focused on cybersecurity and how other standardisation activities can benefit from the expertise and experience of WG-72. Cyrille Rosay, chair of WG-72, presented an overview of the current situation, standards and regulatory frame, which was followed by a lively discussion among the participants.

Christian Schleifer, Director General, inaugurated the event and highlighted the important role of WG leaders in achieving the goals of EUROCAE as a global standardisation organisation.



He emphasised that the role of standards is increasing and that EUROCAE is ready to support this need. He thanked the WG leaders for their effort to sustain ongoing activities during these challenging times and asked the WG leaders to convey our appreciation to all 3400+ experts for their continuous engagement in the various EUROCAE WGs!

EUROCAE at GUTMA Webinar

In October 2020, Christian Schleifer, Director General of EUROCAE participated in the webinar organised by GUTMA 'Standard landscape - What is next for global harmonisation'. Together with John Walker (ISO) and Phil Kenul (ASTM), Christian Schleifer discussed the challenges of U-space global harmonisation and the initiatives that standardisation bodies are currently working on and have already delivered. The conversation was moderated by GUTMA board member, Amit Ganjoo. EUROCAE presented its contribution to support deployment of innovative U-space solutions, elaborating on:

- ▶ ED-267 'Operational Services and Environment Definition (OSED) for the Detect and Avoid (DAA) capabilities to support Very Low Level (VLL) operations conducted by Unmanned Aircraft Systems (UAS)'
- ▶ ED-269 'Minimum Operational Performance Standard (MOPS) for UAS Geo-Fencing', already referenced by the regulator as an Acceptable Means of Compliance (AMC)



- ▶ ED-270 'MOPS for UAS geocaging'
- ▶ ED-282 'MOPS for UAS electronic identification (E-IDENT)'

ASTM focused on their remote ID standard and indicated ways the remote ID and E-Ident standards complement each other. In other areas, EUROCAE and ASTM agreed that better collaboration is required to identify and avoid potential overlapping activities.

ICAO Global Symposium on Innovation

ICAO hosted the Global Symposium on the Implementation of Innovation in Aviation from 8 to 11 December 2020 in an online format in three separate time zones. It built upon the success of the Innovation Fair 2019 and aims to further discussions related to increased use of innovation in aviation.

Director General of EUROCAE, Christian Schleifer, moderated Panel 6 on Artificial Intelligence in Aviation and discussed with the following panelists:

- ▶ Paul Bosman, EUROCONTROL
- ▶ Jean-Marc Cluzeau, EASA
- ▶ Marco Merens, ICAO
- ▶ Béatrice Pesquet-Popescu, Thales
- ▶ Romaric Redon, Airbus
- ▶ Edward Xu, EHang



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EUROCAE at OECD/NEA Multi-sector Workshop on Innovative Regulations

In December 2020, the OECD Nuclear Energy Agency (NEA), in collaboration with the Canadian Nuclear Safety Commission, hosted an international, multi-sector workshop on safely regulating innovative and disruptive technologies. In the nuclear energy industry, regulatory frameworks vary across each sector and country. Each of these have their own set of stakeholders, safety standards, history, and legal framework. Despite these differences, regulatory frameworks share a common goal: to allow society to reap the benefits of a particular activity or technology, while ensuring that risks to individuals and society are maintained at an acceptable level. Sharing this strategic goal means that regulators from different sectors and countries can learn from one another by exchanging best practices. This workshop provided a forum to share experiences in standardisation, design review, licensing, certification and reporting systems, and international coordination. This workshop inspired EUROCAE to further look at other sectors and learn from their best practices.

Day 2 was dedicated to Aviation and discussions were held among the following panelists:

- ▶ Simon Moore, Assistant Secretary, Safety and Future Technology, Australian Department of Infrastructure, Transport
- ▶ Vassilis Agouridas, UAM Initiative Leader (EU Smart Cities Marketplace at AIRBUS Urban Mobility)
- ▶ Silvia Gehrer, Regional Director, (EUR/NAT) Office, ICAO



- ▶ Jagoda Egeland, Advisor to the Secretary-General, International Transport Forum at the OECD
- ▶ Christian Schleifer, Director General, EUROCAE

It was moderated by Mr. Ramzi JAMMAL, EVP and Chief Regulatory Operations Officer, Canadian Nuclear Safety Commission.

The panel presented the ways aviation coordinates, regulates and harmonises globally, the certification process in aviation, the importance of safety and how it is uncompromised, and how industry standards support a performance and risk based regulatory frame while implementing disruptive technologies. Christian Schleifer took part in the panel 7, representing aviation together with other sectors, like medical, and summarised recommendations for the nuclear energy sector.

CNS Workshop

In May 2021, the High Level Group on implementation of the Single European Sky (European Commission – DG MOVE, EASA, EUROCONTROL, SESAR Joint Undertaking, SESAR Deployment Manager, European Defence Agency) established a CNS advisory group composed of experts from its members and EUROCAE.

The group has recently developed a set of draft recommendations for policy and decision makers to ensure a smooth organisation, management and implementation of CNS infrastructure in Europe. The implementation of the proposed recommendations will require a collective effort and common view of a large range of civil and military stakeholders and European organisations.

It is therefore essential that experts from relevant stakeholder groups are consulted on findings and draft recommendations of the CNS advisory group. EUROCAE was pleased to invite its members to a jointly organised initial stakeholder consultation workshop on the group's draft recommendations on CNS infrastructure in Europe. The experts who contributed to the report presented the recommendations. In order to structure the interactions, we used the Slido web interface to organise short surveys during the workshop and collect questions from the audience.

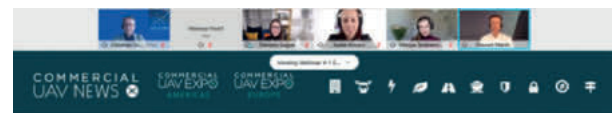


EUROCAE at Commercial UAV Expo Webinar

Commercial UAV Expo organised a webinar in April 2020, which was moderated by Danielle Gagne, Editorial Analyst, Commercial UAV News. The following panelists discussed the current and upcoming regulatory environment and the way this would impact the drone ecosystem:

- ▶ Eszter Kovács, Founder and CEO, DroneTalks & Manageld
- ▶ Mariya Tarabanovska, Co-Founder, Flight Crowd
- ▶ Stewart Marsh, Head of Aerospace, Cambridge Consultants
- ▶ Christian Schleifer, Director General EUROCAE

A discussion was held on how U-space is being defined by the new European drone regulations and how EUROCAE is supporting the implementation by complementing this regulation with high quality standards. The EASA risk based and highly performance based regulatory framework for an overall unmanned traffic management and service system will need guidance and support material on how to comply with the regulation. Technology and innovation are enabling this activity and it will play a crucial role in implementing U-space in the European airspace.



FEATURED PANELISTS:



Risks must be addressed and mitigated, therefore DAA solutions, eventually in combination with AI applications across all airspace users are needed. Connectivity will be provided via satellites or 4G and 5G networks. Finally, the public perception and social acceptance of drones must be addressed ahead of implementation.

EUROCAE Publications

EUROCAE Documents (EDs) are developed by Working Groups bringing together renowned experts in their area and following an established process.

EUROCAE has published more than 200 documents in the field of aeronautics. Several documents were jointly developed with our American partners, and many of these EDs are referenced in ETSOs and TSOs, referred in ICAO SARPs, EUROCONTROL ESARRs and FAA standards. They are recognised worldwide for their high-quality and perceived as state-of-the-art technical specifications.

Our EDs address system and equipment performance specifications, safety and performance requirements, interoperability requirements, technical specifications and guidance material.

The documents are either dedicated to airborne or ground applications (mainly CNS and ATM), while others cover common air and ground requirements.


EUROCAE Reports (ERs) describe results of Working Groups, which are of general interest, but it is inappropriate to publish them in the form of a specification or as another type of ED.

Our Full Members are entitled to consult our whole catalog for free. EDs are available for download via our eShop at the following address: <https://eshop.eurocae.net>

Other members and non-members can buy EUROCAE Documents from our eShop: www.eurocae.net/eshop/catalog

NEW EDs PUBLISHED FROM NOVEMBER 2020 TO APRIL 2021 ARE MARKED WITH THIS SIGN:



1/WG7/70	MPS for airborne 75 MHz marker beacon receiving equipment	WG-7
1/WG7C/1-74	MPS for airborne Doppler radar ground speed and/or drift angle measuring equipment	WG-7
1/WG7C/2-74	MPS for airborne automatic dead reckoning computer equipment utilising aircraft heading and Doppler obtained velocity vector data	WG-7
ED-12C	Software considerations in airborne systems and equipment certification	WG-71
ED-12C Corr 1	Software Considerations in Airborne Systems and Equipment Certification Corrigendum 1	 WG-71
ED-14G	Environmental Conditions and Test procedures for airborne equipment	WG-14
ED-14G Change 1	Environmental Conditions and Test procedures for airborne equipment	WG-14
ED-18	Audio systems characteristics and MPS aircraft microphones (except carbon), aircraft headsets, handsets and loudspeakers, aircraft audio selector panels and amplifiers	WG-18
ED-22	MPS for airborne VOR receiving equipment	WG-7
ED-22A	MPS for airborne VOR receiving equipment	WG-7
ED-22B	MPS for airborne VOR receiving equipment	WG-7
ED-23B	MOPS for airborne VHF Receiver-Transmitter operating in the frequency range 117.975 – 136.975 MHz	WG-7
ED-23C	MOPS for airborne VHF Receiver-Transmitter operating in the frequency range 117.975 – 137.000 MHz	TF-Climax

ED-24	MPS for airborne VHF communications equipment operating in the frequency range 118.000 – 135.975 MHz (Part 2 - transmitter)	WG-7
ED-25	Performance Specification for experimental aerosat L-BAND avionics	WG-15
ED-26	MPS for airborne altitude measurements and coding systems	WG-9
ED-27	MOPR for airborne area navigation systems based on VOR and DME as sensors	WG-13
ED-28	MPS for airborne area navigation computing equipment based on VOR and DME as sensors	WG-13
ED-29	MPS for airborne omega navigation equipment	WG-16
ED-30	MPS for airborne low range radio (radar) altimeter equipment	WG-6
ED-31	MPS for ground distance-measuring equipment (DME)	WG-17
ED-36	MOPS for Microwave Landing System (MLS) (Airborne Receiving Equipment)	WG-19
ED-36B	MOPS for MLS Airborne Receiving Equipment	WG-28
ED-38	MPS for airborne weather ground mapping and assisted approach pulse radars	WG-3
ED-39	MOPR for airborne area navigation systems, based on two DME as sensors	WG-13
ED-40	MPS for airborne computing equipment for area navigation system using two DME as sensors	WG-13
ED-41	MPS for airborne fuel quantity gauging systems	WG-22
ED-42	MPS for a fuel flowmeter to aircraft standards	WG-22
ED-43	MOPR for the SSR transponder and the altitude measurement and coding systems	WG-9
ED-46B	MOPS for airborne ILS localizer receiving equipment ▶ Including Amendment N°1 – October 1995 & Amendment N°2 – July 1997	WG-43
ED-47B	MOPS for airborne ILS glide path receiving equipment ▶ Including Amendment N°1 – 15 July 1997	WG-43
ED-51	MPS for airborne automatic direction finding equipment ▶ Including Amendment N°1 – October 1987	WG-7
ED-52	MPS for conventional and Doppler VHF omnirange (C VOR and D VOR) (ground equipment) ▶ Including Amendment N°1	WG-23
ED-53A	MOPS for microwave landing system (MLS) (ground equipment) ▶ Including Amendment N°1 – August 1994	WG-32
ED-54	MOPR for distance measuring equipment interrogator	WG-25
ED-55	MOPS for flight data recorder systems	WG-21
ED-56A	MOPS for cockpit voice recorder system	WG-18
ED-57	MPS for distance measuring equipment (DME/N and DME/P) (ground equipment) ▶ Including Amendment N°1 – 26 October 1992	WG-25
ED-58	MOPS for area navigation equipment using multi-sensor inputs (airborne equipment)	WG-13
ED-62B	MOPS for Aircraft Emergency Locator Transmitters 406 MHz	WG-98
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ED-64	Changes to be applied to FAA Advisory Circular No. 25-11 "Transport category airplane electronic display systems" for adoption as JAR AC	WG-24

ED-65	MOPS for passenger protective breathing equipment		WG-36
ED-67	MOPS for devices that prevent unintentional or continuous transmissions		WG-38
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ED-69	MOPS for wheels and brakes on JAR part 25 civile aeroplanes		WG-40
ED-73E	MOPS for SSR Mode S Transponders		WG-49
ED-73F	MOPS for Secondary Surveillance Radar Mode S Transponders	★	WG-49
ED-74	MOPS for combined ILS and MLS airborne receiving equipment ▶ Including Amendment N°1 – 15 July 1997		WG-13
ED-75D	MASPS Required Navigation Performance for Area Navigation		WG-85
ED-76A	Standards for Processing Aeronautical Data		WG-44
ED-78A	Guidelines for Approval of the Provision and Use of Air Traffic Services supported by Data Communications		WG-53
ED-79A	Guidelines for Development of Civil Aircraft and Systems		WG-63
ED-80	Design assurance guidance for airborne electronic hardware		WG-46
ED-81	Certification of aircraft electrical/electronic systems for the indirect effects of lightning ▶ Including Amendment N°1 – 26 August 1999		WG-31
ED-82A	MOPS for Mode S aircraft data link processors		WG-49
ED-83	Recommendations on ground collision avoidance systems		WG-44
ED-84A	Aircraft Lightning Environment and Related Waveforms		WG-31
ED-85A	Data-Link application system document (DLASD) for the “Departure Clearance” Data-Link service		WG-45
ED-86	Equipment characteristic for Mode S transponders with extended interface functions (mark 4 transponder)		WG-49
ED-87D	MASPS for A-SMGCS including new Airport safety Support Service Routing Service and Guidance Service		WG-41
ED-88	MOPS for multi-mode airborne receiver (MMR) including ILS, MLS and GPS used for supplemental means of navigation		WG-43
ED-89A	Data-Link application system document (DLASD) for the “ATIS” Data-Link service		WG-45
ED-91A	Lightning Zoning		WG-31
ED-92C	Minimum Operational Performance Standard (MOPS) for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz		WG-92
ED-93	MASPS for CNS/ATM message recording systems ▶ Including Amendment N°1 – 23 November 1998		WG-50
ED-94C	Supporting Information for ED-12C and ED-109A		WG-71
ED-94C Corr 1	Supporting Information for ED-12C and ED-109A Corrigendum 1	★	WG-71
ED-96	Requirements specification for an avionics computer resource (ACR)		WG-48
ED-98C	User Requirements for Terrain and Obstacle Data		WG-44
ED-99D	User Requirements for Aerodrome Mapping Information		WG-44
ED-100A	Interoperability Requirements for ATS Applications using Arinc 622 Data Communications		WG-53
ED-102A	MOPS for 1090 MHz Extended Squitter Automatic Dependant Surveillance – Broadcast (ADS-B) & Traffic Information Services – Broadcast (TIS-B)		WG-51

ED-102A Corrigendum 1	MOPS for 1090 MHz Extended Squitter Automatic Dependant Surveillance		WG-51
ED-102B	MOPS for 1090 MHz Extended Squitter ADS-B and TIS-B	★	WG-51 SG-1
ED-103A	MOPS for Inflight Icing Detection Systems		WG-95
ED-104A	MOPS for ground ice detection systems		WG-54
ED-106A	Data-Link application system document (DLASD) for the “Oceanic Clearance” Data-Link service		WG-45
ED-107A	Guide to certification of Aircraft in a High Intensity Radiated Field (HIRF) Environment		WG-31
ED-108A	MOPS for VDL Mode 4 Aircraft Transceiver		WG-51
ED-109A	Guidelines for CNS/ATM Systems Software Integrity Assurance		WG-71
ED-109A Corr 1	Software Integrity Assurance Considerations for Communication, Navigation, Surveillance and Air Traffic Management (CNS/ATM) Systems	★	WG-71
ED-110B Change 1	Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1		WG-78
ED-111	Functional specifications for CNS/ATM Recording		WG-50
ED-112A	MOPS for Crash Protected Airborne Recorder Systems		WG-90
ED-113	Aircraft lightning direct effects certification		WG-31
ED-114A Change 1	MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment To Support Category I Operations		WG-28
ED-114B	MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment To Support Precision Approach and Landing		WG-28
ED-115	MOPS for light aviation secondary surveillance radar transponders		WG-49
ED-116	MOPS for surface movement radar sensor systems for use in advanced surface movement guidance and control systems (A-SMGCS)		WG-41
ED-117A	MOPS for Mode S Multilateration Systems for Use in Advanced Surface Movement Guidance and Control Systems (A-SMGCS)		WG-41
ED-119C	Interchange Standards for Terrain, Obstacle and Aerodrome Mapping Data		WG-44
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ED-123	MOPS for Flight Deck Door Monitoring System		WG-66
ED-124	Integrated Modular Avionics (IMA) Development, Guidance and Certification Consideration		WG-60
ED-125	Process for Specifying Risk Classification Scheme and Deriving Safety Objectives in ATM		WG-64
ED-126	SPR/Interop document for NRA ADS-B application		WG-51
ED-128	Guidelines for Surveillance Data Fusion in Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Levels 1 and 2		WG-41
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ED-130A Change 1	Guidance for the Use of Portable Electronics Devices (PEDs) On Board Aircraft - Change 1		WG-99

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ED-137/3B	Interoperability Standards for VoIP ATM components - Volume 3: European Legacy Telephone Interworking	WG-67
ED-137/4B	Interoperability Standards for VoIP ATM components - Volume 4: Recording	WG-67
ED-137/5B	Interoperability Standards for VoIP ATM components - Volume 5: Supervision	WG-67
ED-137A	Interoperability Standards for VoIP ATM Components	WG-67
ED-137C/1	Interoperability Standard for VOIP ATM Components - Volume 1: Radio	WG-67
ED-137C/1 Change 1	Interoperability Standard for VOIP ATM Components - Volume 1 Radio - Change 1	WG-67
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ED-137C/2 Change 1	Interoperability Standard for VOIP ATM Components - Volume 2 Telephone - Change 1	WG-67
ED-137C/2-1	Interoperability Standard for VOIP ATM Components - Volume 2 Telephone - Addendum 1	WG-67
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ED-153	Guidelines for ANS Software Safety Assurance	WG-64
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ED-155	MOPS Lightweight Flight Recording Systems	WG-77
ED-156A	ADS-B Application Interoperability Requirements for VDL Mode 4	WG-51
ED-158	User Manual for certification of aircraft Electrical and Electronic systems for the indirect effects of lightning	WG-31
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ED-179B	MASPS for enhanced vision systems synthetic vision systems combined vision systems and enhanced flight vision systems	WG-79
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ED-194B	Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Applications (ASA) System	WG-51 SG-3
ED-195A	Safety, Performance and Interoperability Requirements Document for Aircraft Spacing Flight-deck Interval Management (ASPA-FIM)	WG-51
ED-195B	Safety and Performance and Interoperability Requirements Document for Airborne Spacing Flight-deck Interval Management (ASPA-FIM)	WG-51 SG-3
ED-200A	"Surface Movement Guidance and Control Systems Report of EUROCAE WG-41; Vol I + Vol II"	WG-41
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ED-217	Object-oriented technology supplement to ED-12C and ED-109A		WG-71
ED-218	Model-based development and verification supplement to ED-12C and ED-109A		WG-71
ED-219	Aircraft Fuel Cell Safety Guidelines		WG-80
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ED-223	MOPS for the Aeronautical Mobile Airport Communication System (AeroMACS)		WG-82
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ED-231A	Interoperability Standard for Baseline 2 ATS Data Communication - Baseline 1 Accommodation		WG-78
ED-232	SPR for Traffic Situational Awareness with Alerts (TSAA)		WG-51
ED-233	Safety and Performance Requirements Document for CDTI Assisted Visual Separation (CAVS)		WG-51
ED-234	User Guides Supplement to ED-14G		WG-14
ED-235	"MASPS for Foreign Object Debris Detection Systems		WG-83
ED-236	MOPS for Flight-deck Interval Management (FIM)		WG-51
ED-236A	Minimum Operational Performance Standards (MOPS) for Flight-deck Interval Management (FIM)		WG-51 SG-3
ED-236A Ch. 1	Minimum Operational Performance Standards (MOPS) for Flight-deck Interval Management (FIM) Change 1	★	WG-51 SG-3
ED-237	MASPS for Criteria to Detect In-Flight Aircraft Distress Events To Trigger Transmission of Flight Information		WG-98

ED-238	Operational Services and Environment Definition (OSED) for Traffic Awareness and Collision Avoidance in Class A, B and C Airspace under Instrument Flight Rules	WG-73
ED-239	Aircraft Design and Certification for Portable Electronic Device (PED) Tolerance	WG-99
ED-240A	Minimum Aviation System Performance Standards (MASPS) for Remote Tower Optical Systems	WG-100
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ED-242A	MASPS for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP)	WG-82
ED-242B	MASPS for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP)	WG-82
ED-243A	MOPS for Avionics Supporting Next Generation Satellite Systems (NGSS)	WG-82
ED-243B	Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS)	WG-82
ED-245	MASPS for Installation of Fuel Cell Systems on Large Civil Aircraft	WG-80
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ED-250	Minimum Operational Performance Standard for a Runway Overrun Awareness and Alerting System	WG-101
ED-251	Operational Services and Environment Definition for RPAS Automatic Taxiing	WG-105 SG-52
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ED-255	MASPS for a Combined Vision System for Helicopter Operations	WG-79
ED-256	MOPS for ACAS Xa with ACAS Xo functionality	WG-75
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ED-257	Safety Performance and Interoperability Requirements Document Defining Takeoff Minima by Use of Enhanced Flight Vision Systems	WG-79
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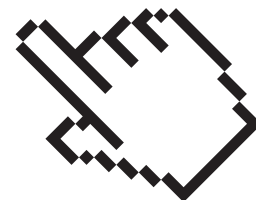
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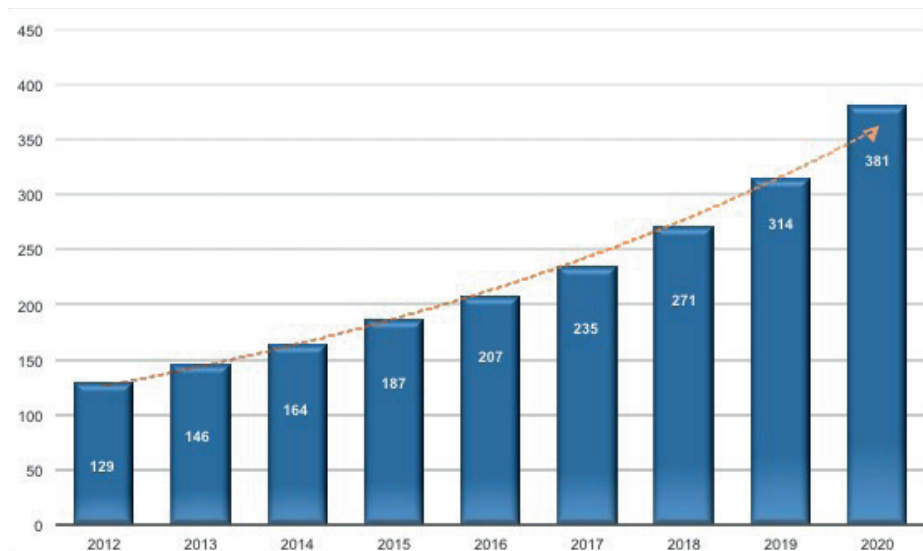
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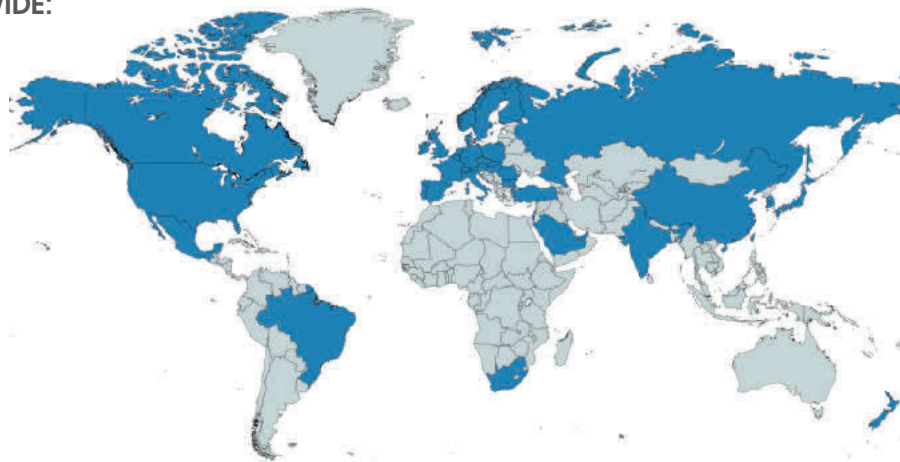
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