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Dear EUROCAE members,

On behalf of the EUROCAE Council, it is my privilege to present the Council Chair report for 2021. For the second consecutive year, in 2021, the COVID-19 crisis severely impacted

activities around the world. The aviation business had suffered huge losses in 2020, and only initiated recovery in the second half of 2021 with the lowering of travel restrictions. Despite this difficult context, EUROCAE sustained and even developed its activities. This proves that the Association and its Secretariat have effective ways of working and processes in place that ensure high resilience with regards to standardisation activities, and that the aviation domain as a whole sets priorities in designing new technologies and operations that can help business recovery.

Again, this year, I would like to start this report by thanking the whole EUROCAE team, the Secretariat of course, but also all the experts contributing to Working Groups, who ensured the continuity of standardisation activities.

2021 was a year of big changes for EUROCAE. First, the Council and the Secretariat implemented the new Constitution that was adopted by the General Assembly last year. This resulted in implementing a new legal structure for EUROCAE. The main visible impact of this change was the closure of EUROCAE Communication. All EUROCAE assets and activities are now covered by EUROCAE Association, which remains as the only legal entity. EUROCAE Communication was formally closed in June, and EUROCAE now fully operates according to the new legal structure.

Another major change that occurred in 2021 and early 2022 concerns the Director General. After eight years of being a very successful Secretary General (now Director General), Christian Schleifer decided to leave EUROCAE to move to other duties, where we hope he will meet with similar success. After a thorough evaluation of her candidature, the Council decided to appoint Anna von Groote as the new Director General. The Council is fully confident that Anna has the qualities and expertise required to continue and enhance the evolution of EUROCAE's activities.

I would like to highlight some of the key achievements in 2021. At the end of 2021, there were 401 EUROCAE Members, compared to 381 members at the end of 2020. This year marked another year of membership expansion, as has been the case for the last 10 years. It is remarkable in many ways, especially considering that there were 129 members in 2012. As previously analysed, the growth corresponds to the expansion of the scope of standards and Working Groups, thereby creating interest from a larger community.

Despite the crisis, EUROCAE remained extremely active and efficient in terms of standards development in 2020 and 2021, both in terms of active Working Groups and number of published EUROCAE documents. An average of 50 Working Groups were active in parallel in 2021, which clearly reflects the high level of activity and marks a record in EUROCAE history.

28 EUROCAE Documents were published in 2021, covering a broad range of topics serving the aviation community, including RPAS, remote towers, VTOL, and health- and COVID-related topics. This number is very similar to the ones in 2019 and 2021, and it is much higher than the average of previous years, which shows that EUROCAE has reached a new stable level of activity, despite the COVID crisis.

The performance for delivering high quality standards in a planned timeframe remained very high. The Quality Management System was consolidated and deployed in 2021, ensuring the quality of the deliverables due to well-defined and properly tooled processes. The rate of EUROCAE Documents published according to their planned schedule was above 85%, slightly below the ambitious target of 90%, which still demonstrated a high level of efficiency from the Working Groups and Secretariat.

The Technical Advisory Committee (TAC) continued its activities in 2021, issuing a new version of the Technical Work Programme (TWP), which provided a comprehensive analysis of the standardisation challenges for aviation, as well as a set of strategic orientations supporting EUROCAE technical activities. The TWP was made publicly available and can be accessed free of charge from EUROCAE eShop.

In terms of international relations, partnerships, and visibility, EUROCAE was present in, or organised, major events throughout 2021. Of particular note was the joint EUROCAE-RTCA International Aviation Software Summit on 23-24 June 2021. Cooperation with other standardisation organisations was also fostered through several bilateral meetings and new or updated agreements.

In 2021, a new Grant Agreement was prepared with the European Commission to cover activities in 2021 and 2022. This Grant will support EUROCAE activities in the development of standards in line with EU ATM and Space policies, as well as in support of EASA regulatory framework. These activities are in line with those carried out under previous Grant Agreements. While the submission and finalisation of the draft agreement was delayed for administrative reasons, European Commission has officially confirmed the retroactive eligibility of activities since 1 January 2021.

After a difficult year in 2020, training activities have slightly recovered. Several training sessions were planned and organised in 2021, both remote and on-site. However, due to the difficult sanitary conditions, only half of the planned sessions were performed. In parallel, the training offer is being developed with the preparation of new training courses.

Overall, 2021 was a positive year for EUROCAE. The achievements in 2021 were possible thanks to the remarkable commitment and efficiency of the Secretariat, both for technical and administrative matters. It is their dedication to EUROCAE which enabled the Association to perform so well through such a difficult year, there I would like to thank them on behalf of the Council. This concludes the Council Chair report on 2021 activities.

Before moving to the presentation of EUROCAE strategy and 2022 objectives, I need to share an important Council decision, taken in 2022, with the General Assembly, which results from the current situation in Ukraine. On 10 March, in accordance with European Regulation defining restriction measures to be taken against Russia, the Council decided to suspend the membership of all EUROCAE Members based in Russia, as well as suspend access to the website and eShop from Russia. 9 members were subject to such suspension

and were individually informed by mail, explaining the context and decision.

I will now present the main elements of EUROCAE strategy and its application in terms of 2022 objectives for the association. The EUROCAE strategy is defined through vision and mission statements, and a number of strategic lines, which are derived into key objectives for 2022:

### EUROCAE VISION

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

### EUROCAE MISSION

In support of EUROCAE's vision, the mission of the organisation is defined as:

Take an active role in coordinating European and global standardisation activities and develop high-quality standards that:

- ▶ build upon state-of-the art expertise of its members
- ▶ are fit for purpose and adopted internationally
- ▶ support operations, development, and regulations
- ▶ address emerging global aviation challenges.

### STRATEGY LINES

- ▶ Strengthen the European leading role of EUROCAE as an international aviation standardisation organisation
- ▶ Be the European Standard Developing Organisation (SDO) responding to European needs and strategies
- ▶ Increase the effectiveness of the process while maintaining the high quality and robustness of EUROCAE standards
- ▶ Ensure EUROCAE's sustainability and independence

### KEY OBJECTIVES

- ▶ Deliver standards in accordance with the approved Technical Work Programme (TWP) 2022
- ▶ Support the European ATM Standards Coordination Group (EASCG), the European UAS Standards Coordination Group (EUSCG), and the

European Cyber security in aviation Standards Coordination Group (ECSCG) as defined in the Grant Agreement.

- ▶ Perform the duties as defined in the EC-EUROCAE grant agreements
- ▶ Be recognised as a key standardisation organisation in the new SESAR 3 R&I framework
- ▶ Update, modernise, and perform the duties as necessary for an effective Communication and Public Relation (PR) plan
- ▶ Update and further develop the EUROCAE Quality Management System (QMS) based on the process management structure
- ▶ Review the EUROCAE partnership agreements for effectiveness and execution, and perform annual/periodic meetings as defined and required
- ▶ Support expansion of standardisation activities into new aviation domains
- ▶ Further increase the membership of airspace users and airports
- ▶ Promote EUROCAE and its products (EDs) for more recognition and better global visibility
- ▶ Continue execution of EUROCAE/EASA Framework Contract (or other as approved) through Specific Contracts (SCs)
- ▶ Increase revenue from sales and distribution of ED documents, and protect EDs against illegal downloads and distribution
- ▶ Implement the EUROCAE training strategy and rollout of the 2022 training programme with additional products
- ▶ Conduct the annual EUROCAE Symposium

These objectives have been defined by the Council, in consultation with the Secretariat, in order to:

- ▶ ensure continuity with the objectives and achievements of previous years, capitalising on the successful outcomes of past actions
- ▶ continue providing a high level of service to the Members of the Association
- ▶ ensure proper positioning of EUROCAE in the evolving European aviation, and in particular ATM environment.

They should be considered ambitious yet achievable, as were the objectives set for previous years. These objectives are part of a comprehensive EUROCAE Business Plan, where it is complemented with clearly defined Key Performance Indicators (KPI). These KPIs are tracked by the Secretariat and monitored by the Council to ensure proper steering of the Association by the Council.

We are now at the end of this report. As previously mentioned, we had some significant changes within EUROCAE since the last General Assembly. One change is the legal structure, which induced new ways of working and reporting for the Secretariat, hopefully making it simpler than before. The other significant change is the Director General. These changes are certainly creating challenges for the Association, yet also opportunities. EUROCAE is in good health today, with a high level of activity and sound financial situation. We can certainly be confident that EUROCAE will successfully continue its development, and we welcome Anna von Groote as Director General to support the Association in this evolution.



Bruno Ayrat  
*EUROCAE President*

## EUROCAE Appoints New Director General

**EUROCAE appoints Anna von Groote as new Director General. She will assume her new role on 14 February 2022 and will succeed Christian Schleifer-Heingärtner.**

"It was an amazing flight, where I was able to act as pilot in command over nearly eight years. This journey was full of adventures, sometimes rain and snow, we experienced strong winds at times, including headwind, thunderstorms, and other reasons that caused a diversion. At cruising level, over the clouds, we had sunshine, smooth air and had good range with the chosen power setting. After this long-haul flight, we have safely landed at the destination. Now it is time to change the cockpit crew, refuel the airplane, do a walk around and oil check before EUROCAE will be back in the air climbing to the next higher level. I'm extremely happy that Anna will take over controls and will steer EUROCAE for the next leg. She knows EUROCAE inside out, she is aware of the normal and emergency procedures, and she has the ratings, skills and experiences needed to conduct this next flight. Happy landings Anna! For me, it is time to start preparing my next intercontinental flight, while always keeping this EUROCAE flight in good memory. A big "Thank You" to the whole crew, on ground and in the air," said Christian Schleifer-Heingärtner.

The appointment was confirmed following the decision made by the EUROCAE Council. "In eight years as head of EUROCAE Secretariat, Christian significantly developed and improved EUROCAE. We recognise his tremendous achievements, and the EUROCAE Council unanimously thanks him for his commitment over these years and wishes him the best for his future. We have full confidence in Anna to efficiently drive the association towards further success," said Bruno Ayrat, EUROCAE President.



"I am honoured to lead EUROCAE, the European leader in the development of worldwide recognised industry standards for aviation. I look forward to working with the great Secretariat team, the governing bodies and all Members and Partners of the Association to continue towards our shared goals for a safe, efficient, and more sustainable aviation," says Anna von Groote.

Anna has been working in aviation standardisation since 2006. She has been with EUROCAE since 2011 and was responsible for the management of standards development activities and related tasks as Director Technical Programme. She holds a Master's Degree in European Studies from University of Bonn, and a Master of Laws (LL.M.) in Technology and Intellectual Property Law from Liverpool University.



Dear members, colleagues, and friends of EUROCAE,

This is my first time addressing you in the editorial section of the Annual Report, as I started my new role as EUROCAE Director General in February 2022,

taking over from Christian Schleifer-Heingärtner. I am truly honoured to have been appointed to lead this established and dynamic organisation and to continue developing EUROCAE with the support of our members, partners, experts in the WGs, governing bodies and, of course, the great team at the Secretariat.

The last two years have been a challenge for the global aviation community, but activities at EUROCAE have not come to a halt during these unprecedented times. I am very pleased to see the efficiency and effectiveness of our standardisation process maintained, and even increasing, with 50 active Working Groups (WG), which are busy developing high-quality standards in support of European and global priorities. Some of the key standards that were published, and main activities that were launched in the last year include:

- ▶ ED-292 'Minimum Aviation System Performance Standard for Runway Weather Information Systems' in December to support the implementation of ICAO Global Reporting Format, which entered into force on 5 November 2021.
- ▶ ER-026 'Virtual Centre Standardisation', providing a comprehensive overview of the use cases and outlining a standardisation roadmap which follows a phased approach, with priorities laid out and dependencies understood.
- ▶ The introduction of 5G technology has put spectrum at the centre of discussions in the global aviation community, and at EUROCAE. In a context of multiplication of commercial services using spectrum, it is important that aviation spectrum is used efficiently while maintaining the highest level of safety. Several new activities have been initiated to address this subject, e.g., WG-119 *Radar Altimeter*, WG-99 *Portable Electronic Devices (PED)*,

and a new WG addressing spectrum use and best practices in aviation. All these activities are jointly executed with our partner, RTCA.

- ▶ ED-269 'Minimum Operational Performance Standards for UAS Geofencing' as the standard for the common unique digital format for 'geographical zones', recognised by EASA ED Decision 2022/002/R relating to geographical zones and cross-border operations.
- ▶ Standards supporting the aviation community's response to the pandemic, such as ED-287A 'Guidance Document on Aircraft Cleaning and Disinfection', and ED-297 'Minimum Operational Performance Standards for Thermal Camera Systems', as well as the new WG-123 *Infectious Passenger Handling in Air Ambulance Operations*, tasked to develop guidelines for aeromedical passenger handling and transport with respect to COVID-19 and other infectious diseases in air ambulance operations.

I would like to express my gratitude to all our members, in the meantime, over 400 organisations and 4500 experts, for your continued support, for actively engaging in the WGs, and for developing these standards and many others!

At EUROCAE, we value partnerships with other standards-developing organisations (SDOs), and today, those partnerships, especially with RTCA and SAE International, stand stronger than ever. But we also continue to create new synergies, with organisations such as ASTM International, Global UTM Association (GUTMA), Standards R&D Centre in South Korea, and others, whilst nurturing existing relationships with longstanding partners in Europe and internationally.

At EUROCAE, this year was one with an important change, the implementation of the new legal structure, approved by the General Assembly in 2021. The legal status project was initiated in November 2017 with the aim to improve, simplify, and streamline the organisational structure and governance, as well as tax and accounting complexity, and integrate commercial activities into EUROCAE Association, previously conducted under EUROCAE Communication. There is no impact of this change on the standardisation process, but

the new structure allows the Association to operate in a more efficient way, reducing administrative demand. All relevant changes have been completed.

In addition, the change of Director General, mentioned above, was a key event. Furthermore, some changes occurred in the team. In the last year, we added a PR & Communication Specialist and Training Manager, who is leading our communication activities to new heights and providing the Association with an increased presence and visibility. We also added a new role to support our IT infrastructure in a quick and dynamic manner. Several important advancements have been introduced and more will follow in the coming months. Some job vacancies are open as we are growing fast, and I am confident that these open positions will be filled quickly. I am very happy to report that the strong team at the Secretariat continues to efficiently serve our members and experts.

Following two years of severe restrictions, we see cautious signs of recovery, as events took place on site or at least in a hybrid format, such as the World ATM Congress in Madrid in October 2021, the Aerospace Tech Week in Toulouse in November 2021, and the European Rotors in Cologne in November 2021.

A major highlight was the EUROCAE Symposium and General Assembly 2022, which took place in Warsaw, Poland on 28-29 April 2022. This event was attended by 80 participants on site and up to 200 experts joined the live streaming and discussions virtually. The event featured several sessions, with the first day focusing on Urban Air Mobility and VTOLs, UAS, and U-Space, and the second day consisting of a varied programme, discussing the challenges in cybersecurity due to the increase in digitalisation and the development of artificial intelligence, followed by a panel discussion on sustainable aviation technologies, and aim to uncover whether space-based solutions can replace ground infrastructures. EUROCAE will evaluate these conclusions and reflect on possible future standardisation activities with the Council and Technical Advisory Committee. Following two years with no or virtual-only events, it was a great opportunity to meet our members and partners

again and engage in lively exchanges during the Symposium sessions, as well as enjoy our traditional Gala Dinner and honour special contributors during the Award Night.

Looking ahead into 2022-23, we are facing many new challenges and priorities, such as the urgent need for a more sustainable aviation, the increase in digitalisation and virtualisation, and space and space-based solutions, while continuing to recover from the effects of the COVID pandemic. EUROCAE has shaped its Technical Work Programme (TWP) to reflect these priorities, and we stand ready to support the aviation community in addressing these priorities and look forward to continuing working with all of you towards our shared goals for a safe, efficient, and more sustainable aviation.

2023 will mark the 60<sup>th</sup> anniversary of EUROCAE. To honour this milestone, the Annual Symposium and General Assembly will take place in Paris on 26-27 April 2023.

We hope to welcome many of you during that occasion, if not earlier in our working group meetings. In the meantime, I hope you enjoy reading our Annual Report, and I look forward to meeting you soon.

Anna von Groote  
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 over 400 members from leading aviation organisations and companies in the world under its logo.

## EUROCAE works to...

...develop standards to suit the needs of the aviation industry, while supporting European and global regulations. Our standards, referred to as EUROCAE Documents (EDs), aim to increase safety and market potential, facilitate interoperability, encourage technological development, and accelerate the introduction of innovative technology.

To develop standards, we offer a platform, which is organised by Working Groups (WGs), where our members contribute on a voluntary basis. Over 4,500 experts are collaborating in more than 50 active WGs to develop future EDs or maintain existing standards.

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

To date, EUROCAE has published more than 300 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 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 400 members, including manufacturers, service providers, regulators, research institutes, and international organisations.

EUROCAE membership is available to organisations and industries worldwide.

## EUROCAE offers and manages...

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

## COUNCIL May 2021 - April 2022



### COUNCIL OFFICERS

President Bruno AYRAL / THALES LAS France SAS  
 Vice-President Michael HOLZBAUER / FREQUENTIS AG  
 Vice-President / Guillaume ROGER / DGAC / DTA / STAC  
 Treasurer / Philip CHURCH / EGIS AVIATION UK

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
Phillip HUGHES	EUROCONTROL
Andrew LEESON	NATS
Peter HOTHAM	SESAR JU
Benoît GADEFAIT	SAFRAN
Stéphane MARCHÉ	HONEYWELL AEROSPACE
Francisco SANCHEZ ROMERO	INDRA SISTEMAS
Patrick SOUCHU	DSNA
Marc VENIER	COLLINS AEROSPACE
Frank ZETSCHÉ	DFS GmbH

## COUNCIL May 2022 - April 2023

The Council is made up of not less than 8 members, and not more than 20 members. For the exercise 2022-2023, 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 also chairs the Council, two Vice-Presidents, and the Treasurer.

### 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

The Council normally meets 4 times per year, either at the EUROCAE premises in Saint-Denis or virtually.



# Technical Advisory Committee (TAC)

May 2021 – April 2022

**CHAIRPERSON:**

Eric BOUCHARD / DASSAULT AVIATION

**VICE-CHAIRPERSON:**

Jean-Marc LOSCOS / DSNA (until April 2022)  
Roy POSERN / FRAPORT (since April 2022)

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 different stakeholder groups. The Secretariat is 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 provides advice to the Council and offers 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 well placed to ensure alignment of EUROCAE activities with external entities and regulatory bodies. It places activities within the context of European aviation developments such as the Single European Sky (SES), EASA, SESAR, CleanAviation, and other programmes and initiatives, and coordinates standardisation efforts with our main partner organisations in support of international harmonisation and global interoperability.

In April 2022, the Council reappointed Eric Bouchard as TAC Chair. At the same time, the Council appointed Roy Posern as TAC Vice-Chair, succeeding Jean-Marc Loscos, who has served as TAC member since 2014 and as Vice-Chair since 2017. Jean-Marc was replaced by Siegfried Schäfer, DFS, as new representative of the ANSP community.



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	SESAR JU	European R&D community
Jean-Marc LOSCOS Siegfried SCHÄFER	DSNA (until March 2022) DFS (since March 2022)	Air Navigation Service Providers
Manfred MOHR	IATA	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 Anna VON GROOTE	EUROCAE (until February 2022) EUROCAE (since February 2022)	

## 59th GENERAL ASSEMBLY

After two years of virtual events, the 59th General Assembly of EUROCAE Association was held on 28 April 2022 in hybrid format, with many members in attendance in Warsaw, Poland.

- ▶ Council Chair's report,
- ▶ Financial results,
- ▶ Ceiling of annual Full Members subscription,
- ▶ Statutory auditor's 6-year mandate renewal

The General Assembly was chaired by the President of EUROCAE, Bruno Ayral, who presented the annual report and the Council strategy. In particular, the President informed members about the Council decision regarding EUROCAE's response to the current political situation in Ukraine. Philip Church, Treasurer, presented the financial report. No questions were raised.

The General Assembly also elected 20 Council Members who will exercise their function for a period of one year, according to the Constitution.

The new Council met on the following day to elect Bruno Ayral (THALES LAS France SAS) as President and the three other Council Officers, Michael Holzbauer (FREQUENTIS AG) and Guillaume Roger (DGAC / DTA / STAC) as Vice Presidents, and Philip Church (Egis Aviation UK) as Treasurer.

Through electronic voting, participants approved the following items:

## EUROCAE Partners

At EUROCAE, our goal is to maintain a relevant and dynamic standardisation process, aligned with the latest developments in 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 strong relationships 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:

- ▶ **Memorandum of Understanding between EUROCAE and ASTM**, signed in July 2021
- ▶ **Memorandum of Understanding between EUROCAE and the Standards R&D Centre (South Korea)**, signed in September 2021
- ▶ **Memorandum of Understanding between EUROCAE and Grand Defil – Confiance.AI**, signed in January 2022
- ▶ **Updated Memorandum of Cooperation between EUROCAE and SAE International**, signed in April 2022

All our cooperation agreements are regularly reviewed, and if necessary, updated to ensure their continued relevance.

## EUROCAE MAINTAINS AGREEMENTS WITH THE FOLLOWING ORGANISATIONS:

- ▶ Airports Council International Europe (ACI Europe)
- ▶ ASD-STAN
- ▶ ASTM International
- ▶ Civil Air Navigation Services Organisation (CANSO)
- ▶ Confiance.AI
- ▶ EUROCONTROL
- ▶ European Committee for Standardisation (CEN, ESO\*)
- ▶ European Committee for Electrotechnical Standardisation (CENELEC, ESO\*)
- ▶ European Aviation Safety Agency (EASA)
- ▶ European Cockpit Association (ECA)
- ▶ European Telecommunications Standards Institute (ETSI, ESO\*)
- ▶ General Aviation Manufacturers Association (GAMA)
- ▶ Global UTM Association (GUTMA)
- ▶ International Council of Aircraft Owner and Pilot Associations (IAOPA)
- ▶ International Air Transport Association (IATA)
- ▶ International Civil Aviation Organisation (ICAO)
- ▶ International Federation of Air Traffic Controllers' Associations (IFATCA)
- ▶ Japan Aviation Innovation Development Association (AIDA)
- ▶ RTCA
- ▶ SAE
- ▶ SESAR Joint Undertaking
- ▶ SESAR Deployment Manager
- ▶ Standards R&D Centre (South Korea)

\* ESO: European Standardisation Organisation



## MoU with ASTM International

On 12 July 2021, EUROCAE and ASTM International signed a Memorandum of Understanding (MoU). The agreement will foster information exchange and cooperation in the aviation and aerospace sectors aiming to reduce duplication of efforts and to promote harmonisation, interoperability, and compatibility of technical solutions in global aviation.

The MoU was signed during a virtual ceremony by EUROCAE's Former Director General, Christian Schleifer, and ASTM International, Vice President of Global Policy, Cooperation and Communications, Jeff Grove.



Specifically, we will work together for the advancement of the following objectives:

- ▶ Explore opportunities for EUROCAE and ASTM to collaborate within their respective standards development processes;
- ▶ Facilitate technical standardisation dialogue between EUROCAE and ASTM in the identified areas of interest;
- ▶ Share information on ASTM and EUROCAE standards development activities and emerging technologies, trends, or regulatory drivers of mutual interest for the benefit of the organisations' stakeholders;
- ▶ Avoid duplication in coordinating our work program, complementing our activities while further fostering global harmonisation and worldwide interoperability.

EUROCAE and ASTM International have had a successful and constructive relationship for several years, including ASTM participating in European standards coordination efforts led by EUROCAE. This MoU will empower experts and committees from both EUROCAE and ASTM to learn from each other and promote alignment in areas of common interest including UAS Traffic Management (UTM), runway friction, Electric Vertical Take-off and Landing (eVTOL), and more.

## EUROCAE - RTCA Collaboration

On 16 and 17 November 2021, EUROCAE and RTCA met for the annual coordination meeting in Washington, D.C. EUROCAE Former Director General, Christian Schleifer, TAC Chair, Eric Bouchard, and EUROCAE Former Director Technical Programme, Anna von Groote, met with counterparts in RTCA, President & CEO, Terry McVenes, AI Secen, Vice President, Aviation Technologies and Standards, as well as PMC Chair, Chris Hegarty, and Board of Directors Chair, Steve Brown.

This annual meeting was a great opportunity to discuss emerging topics, review current joint and non-joint activities, and coordinate potential future standardisation programmes.



For the first time this year, representatives from EASA and FAA joined the meeting to exchange on topics of common interest, which was a valuable addition to the meeting agenda. Today, about 50% of EUROCAE's work programme is executed jointly with RTCA, with the objective of developing technically identical standards. This contributes significantly to global interoperability and international harmonisation.

## Collaboration with SAE International



During the EUROCAE Symposium in Warsaw on 28 April, representatives from global standards organisations, EUROCAE and SAE International have signed an updated Memorandum of Cooperation (MoC).

The agreement will foster information exchange and cooperation in the aviation and aerospace sectors aiming to harness the expertise of stakeholders and to promote harmonisation and interoperability in advancing technical solutions in global aviation.

The MoC was signed by EUROCAE Director General, Anna von Groote and SAE International Senior Director of Standards, David Alexander. "The cooperation of global aviation stakeholders is an increasingly vital part of ensuring safety while facilitating innovation. As we support the

community in advancing aviation technology and ensuring a sustainable future of flight, we value our productive and important partnership with EUROCAE and look forward to growing our cooperation," noted David Alexander during the signing ceremony.

EUROCAE and SAE International look back at a long-standing partnership for the joint development of standards in support of global interoperability and aviation solutions. Today, about 10% of EUROCAE's published standards and ongoing standards development activities are carried out jointly with SAE International.

This updated MoC builds on the fruitful collaboration between SAE International and EUROCAE and provides further clarification of the framework for joint standards development to Working Groups and technical committees, as well as to the organisations' teams in managing joint activities.

## EUROCAE Signs MoU with Standard R&D Center of Sejong University

In September 2021, Standard R&D Center of Sejong University (South Korea) and EUROCAE agreed on collaboration principles and mechanisms to support the development of aviation industry standards and signed a Memorandum of Understanding (MoU) in this respect.

The MoU establishes a foundation for cooperation between the two organisations, and it intends to raise awareness of EUROCAE standardisation activities in South Korea, including but not limited to areas like Unmanned Aircraft Systems (UAS), Vertical Take-Off and Landing (VTOL), and Counter UAS (C-UAS).

Under the framework of the MoU, EUROCAE and Standard R&D Center will exchange information, share expertise and best practices, and participate in each other's activities. Standard R&D Center will join EUROCAE as a Full Member by the end of 2021.

"Companies around the world are contributing to the development of technical standards and certification procedures to contribute to the deployment of new technological solutions and foster UAS industry growth. In Korea, we need more involvement in this area and the MoU with EUROCAE is a very good opportunity in this respect", Dr. Lee mentioned.

Former EUROCAE Director General, Christian Schleifer-Heingärtner, said, "EUROCAE established contacts with Professor Lee in 2019 and we are very glad that our relationship led to the signing of this MoU. To extend our presence in South Korea is a great opportunity for EUROCAE to support the aviation community with the standards we develop in different domains. The partnership with Standards R&D Center under the leadership of Professor Lee will certainly bring an added value in enabling the deployment of new solutions and implementation of new technologies by Korean aviation stakeholders. We are looking forward to identifying our first activities under the MoU umbrella."

Strengthening cooperation with other regions of the world is one of EUROCAE's key objectives to develop internationally recognised standards, which can truly be global only if they result in inputs from concerned stakeholders worldwide.

Building on this collaboration, on 1 December, EUROCAE and Standard R&D Center organised a workshop for the Korean aviation industry with the main scope of introducing EUROCAE as a standard developing organisation and the domains that are addressed in our standards. The activities under this partnership will certainly bring an added value in enabling the deployment of new solutions and implementation of new technologies by Korean aviation stakeholders.

Based on the success of the above-mentioned event, on 5 April 2022, EUROCAE hosted a follow-up meeting with Standard R&D Center at our premises in Saint-Denis, France. The meeting aimed to strengthen the mutually beneficial partnership by developing a roadmap that would contribute to sharing of progress of VTOL and UAS standardisation activities, but it would also allow Korean organisation to directly contribute to standards development activities. Standard R&D Center invited EUROCAE to visit Korea to meet Korean aviation industry members, regulators, and other stakeholder groups.

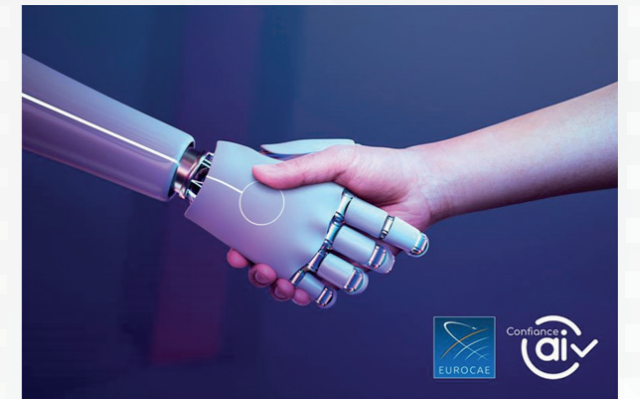


## EUROCAE Signs MoU with SystemX for Confiance.ai Programme

In July 2021, SystemX, the Institute of Technological Research leading the Confiance.ai programme, and EUROCAE agreed on collaboration principles and mechanisms to support the development of aviation industry standards and signed a Memorandum of Understanding (MoU) in this respect.

Driven by a group of 13 French companies and research organisations, Confiance.ai is the technology pillar of the Grand Défi "Ensuring the security, reliability and certification of systems based on artificial intelligence". Launched in January 2021 and led by SystemX Institute of Technological Research (IRT), this 4-year project aims to design a platform of sovereign, open, interoperable, and sustainable methods and tools that will enable AI to be integrated into critical products and services in a safe, reliable, and secure manner. It brings 40 industrial and academic partners in Saclay and Toulouse together to perform around seven R&D projects.

The MoU establishes a foundation for cooperation between the two organisations, and it intends to raise awareness of EUROCAE standardisation activities in artificial intelligence, including but not limited to working group 114. The partners involved in the Confiance.ai programme aim to create a technical environment to guarantee a high level of trust in critical services and systems based on artificial intelligence. Through this collaboration, the Confiance.ai community and EUROCAE will exchange general and technical information, share expertise, and eventually propose common recommendations. The trustworthy environment will be designed to meet the most advanced European standards on the subject, driven by the aeronautics sector. SystemX has joined EUROCAE as a Full Member in the end of 2021.



"At the forefront of standardisation, aeronautics is one of the key sectors addressed by the Confiance.ai community. We are happy to set up this partnership with EUROCAE, virtuous on both sides, on the subject of the standardisation of AI integration in systems", remarked Paul Labrogère, CEO of SystemX.

"Confiance.ai has very well identified the advantages artificial intelligence can bring to the industry and has a focus on critical systems. EUROCAE partnering with Confiance.ai will bring the needed expertise and know-how into EUROCAE's standardisation process to further pave the way for a dependable integration into safety critical systems in aviation", said Christian Schleifer, former Director General, EUROCAE. This partnership enriches and guides the development of future standards for AI-based systems.



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# Domains of Activity

## AVIONICS

This domain encompasses all standardisation activities which are related to equipment and systems on board aircraft. It also covers all on-board systems contributing to the CNS (Communication, Navigation and Surveillance) capability. In addition, this domain encompasses standardisation activities related to the various system development activities.

## AIR TRAFFIC MANAGEMENT (ATM)

This domain addresses various standardisation activities that concern ATM functions and components and contribute to the safe and efficient movement of aircraft during all phases of operations and to global interoperability. It also covers ground systems providing CNS capability and specific topics related to specialised services (e.g., meteorological, aeronautical).

## 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.

## SPACE

This domain includes all standardisation activities related to space-based solutions, either for providing CNS capability in all phases of operations, or for proposing ATM and Space Traffic Management (STM) capacities. STM is a new concept, which is understood in Europe as relating to the means and rules to access, conduct activities in, and return from outer space safely, sustainably, and securely.

## ADVANCED AIR MOBILITY (AAM)

This domain, and its subset of Urban Air Mobility (UAM), encompasses emerging concepts such as piloted, unmanned or uncrewed aircraft systems, namely UAS, RPAS, and VTOL, for which a set of standards are needed to support their safe integration in the airspace. It also covers related topics, like UAS Traffic Management (UTM or U-space in Europe) and ground infrastructure, that are necessary for global integration in the operational environment. New concepts for general aviation will also fall in this domain.

## AIRMED

Air Medical (AIRMED) is a new domain in the EUROCAE portfolio. It addresses measures to support in countering the current public health situation (COVID-19) and possible future pandemics. Common guidance and guidelines are needed for the safe detection, handling, and transportation of infectious passengers, aircraft cleaning, disinfection, and similar topics.



## SUSTAINABILITY

This domain aims to provide support in building a greener aviation. Standards related to technological and operational measures, such as new energy sources, improved airframe, optimised operations, and other relevant areas are clearly in the scope of this domain. The human pillar of sustainability is also addressed via the Next Generation Aviation Professional (NGAP) Programme.

## RF SPECTRUM

This domain encompasses various aspects linked to the use and management of the Radio Frequency Spectrum, and the interoperability issues between aviation systems or functions and their environment, either on-board or in the open.

## IT & SOFTWARE

This domain covers initiatives to guarantee the safe design, development, and qualification of aviation software, both for on-board and in ground systems. It also covers the specific topic of artificial intelligence applied in aviation.

## SECURITY

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

## TRANSVERSAL

The scope of this domain is to accommodate activities on topics that are clearly within the scope of EUROCAE, but do not solely fit within a single domain, such as environmental qualification, aeronautical database, and design and safety.

## Standards Development – Working Group Activities

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

In 2010, EUROCAE was managing 26 Working Groups (WGs). The number steadily grew over the last years, expanding into new technical domains. At the end of April 2022, 48 WGs are actively developing standards, which is still at the highest level in our history with a peak record of 52 active WGs in the first trimester of 2022.

Since January 2022, two new WGs were created and started their activities with a kickoff meeting, where the leadership team was elected and the workplan was defined.

In the same period, four WGs were declared 'dormant' by the Council, recognising that they had completed the Work Programme defined by the Technical Advisory Committee (TAC) and had produced the expected standards.

WG-120, and WG-121, both related to COVID-19 public health situation, were extremely efficient, and the standards were published in less than 16 months post the decision of their creation by the Council.

Active Working Groups



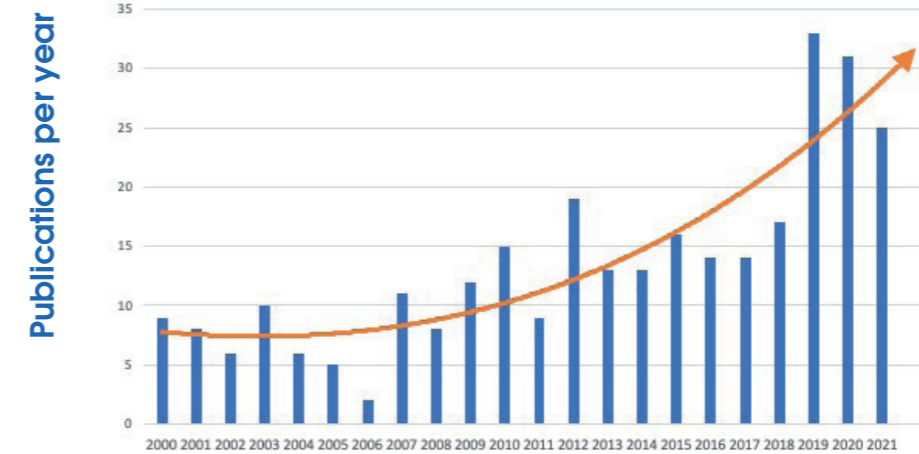
22 of these WGs are joint with Special Committees (SC) from RTCA, our partner Standard Developing Organisation (SDO) based in the US, and 7 WGs work jointly with SAE (another US SDO partner) committees. In addition, RTCA and EUROCAE are jointly running the Forum on Aeronautical Software (FAS), providing advice on standards related to aviation software development and certification.

This international collaboration is extremely valuable for the quality, global recognition, and applicability of our standards.

Today, over 4500 experts develop standards in our WGs. This wealth of knowledge is a crucial factor for the high quality of our standards, and we thank every expert for their contribution.

Details on each WG 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 only released a handful of EUROCAE Documents (EDs) and EUROCAE Reports (ERs) per year, nowadays, around 30 deliverables are published every year, once again with an upward trend. 10 new documents have already been published on EUROCAE eShop in 2022.



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.

This development process is documented in the EUROCAE Quality Management System (QMS), through procedures and work instructions that are implemented by EUROCAE Secretariat and the WGs.

The progress made by WGs towards the completion of their deliverables is well monitored through key performance indicators (KPI), which are presented to the Council twice every year. The performance of the standards development activities, and the process applied is therefore considered to be very effective, thanks to the hard work and dedication of WG leaders and participants



## Working Groups

WG	TITLE	DOMAIN
WG-14	Environment	Transversal
WG-28	Ground Based Augmentation Systems (GBAS)	Space
WG-31	Electromagnetic Hazards	Transversal
WG-41	A-SMGCS	Airports
WG-44	Aeronautical Databases	Transversal
WG-49	Mode S Transponders	Avionics
WG-51	Automatic Dependent Surveillance - Broadcast (ADS-B)	Avionics
WG-59	Flight Data Processing (FDP) Interoperability	ATM
WG-62	GNSS	Space
WG-63	Complex Aircraft Systems	Transversal
WG-67	Voice on Internet Protocol (VoIP) for ATM	ATM
WG-72	Aeronautical Systems Security	Security
WG-75	Traffic Alert and Collision Avoidance Systems (TCAS)	Avionics
WG-76	AIS/MET Datalink Services	ATM
WG-78	Standards for Air Traffic Data Communications Services	ATM
WG-79	Enhanced Vision Systems (EVS), Synthetic Vision System (SVS)	Avionics
WG-80	Hydrogen and Fuel Cell Systems	Sustainability
WG-81	Interoperability of ATM Validation Platforms	ATM
WG-82	New Air-Ground Data Link Technologies	Space
WG-83	Airport Foreign Object Debris (FOD) Detection Systems	Airports
WG-85	4D Navigation	ATM
WG-92	VDL Mode 2	ATM
WG-95	In-Flight Ice Detection Systems	Avionics
WG-96	Wireless On-Board Avionics Networks	RF Spectrum
WG-97	Interoperability of Virtual Avionic Components	IT & Software

WG	TITLE	DOMAIN
WG-98	Aircraft Emergency Locator Transmitters	Avionics
WG-99	Portable Electronic Devices (PEDs)	RF Spectrum
WG-100	Remote & Virtual Tower (RVT)	Airports
WG-101	Runway Overrun Awareness and Alerting System	Avionics
WG-102	GEN-SUR SPR	ATM
WG-103	Independent Non-Cooperative Surveillance System (INCS)	ATM
WG-104	SWIM Services	ATM
WG-105	Unmanned Aircraft Systems (UAS)	AAM
WG-106	Electronic Flight Bag (EFB) Software Applications	Avionics
WG-107	DME Infrastructure supporting PBN Positioning	ATM
WG-108	ATN/IPS	ATM
WG-109	Runway Weather Information Systems	Airports
WG-110	Helicopter Terrain Awareness and Warning Systems (HTAWS)	Avionics
WG-111	Airport Collaborative Decision Making (A-CDM)	Airports
WG-112	Vertical Take Off and Landing (VTOL)	AAM
WG-113	Hybrid Electric Propulsion	Sustainability
WG-114	Artificial Intelligence	IT & Software
WG-115	Counter UAS (C-UAS)	Airports
WG-116	High Voltage Systems and Components in Aviation	Sustainability
WG-117	Topics on Software Advancement	IT & Software
WG-118	Crash-Protected and Lightweight Flight Recorders	Avionics
WG-119	Radar Altimeters	RF Spectrum
WG-120	Technical Means for Identifying Potential COVID-19 Carriers Among Passengers	AirMed
WG-121	Aircraft Cleaning	AirMed
WG-122	Virtual Centre	ATM
WG-123	Infectious Passenger Handling in Air Ambulance Operations	AirMed
WG-124	Spectrum	RF Spectrum

## WG-14 Environment

**CHAIRPERSON:** Marc Ponçon, AIRBUS Helicopters  
**SECRETARY:** Gilles Crousier, SAFRAN

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 in ED-234 'User Guide Supplement to ED-14G'.

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

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

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

In 2021, Marc Ponçon, 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)

**CHAIRPERSON:** Linda Lavik, INDRA

WG-28's activities are driven by the objective 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, 'MOPS for GNSS GBAS Ground Equipment to Support for Precision Approach and Landing' 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). ED-114B Change 1 will also identify dependencies between ground and airborne elements of GBAS for consideration in equipment approval.

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



## WG-31 Electromagnetic Hazards

**CHAIRPERSON:** Franck Flourens, AIRBUS  
**SECRETARY:** Dan Morgan, ELEMENT

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

The Terms of Reference of WG-31 has been 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 use of simulation in support of compliance processes.

The WG is divided into five subgroups to deal with these matters in parallel with equivalent SAE AE2 and SAE AE4 subgroups. WG-31 maintains good group dynamics to address its current deliverables, while ensuring convergence with SAE AE2 on topics of general interest.

In the last year, new organisations joined the WG, which provided further expertise for the task group working on simulation. The new members have improved the diversity of the group with a better representation of general aviation, companies working on simulation software, airworthiness authorities, and research laboratories.

In 2020, the efforts of Franck Flourens, chair of WG-31, were duly recognised. He was presented with 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

In 2019, WG-41 published ED-87D 'Minimum Aviation System Performance Standard (MASPS) for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)'. This document is 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 on the establishment of PCP supporting the implementation of the European Air Traffic Management (ATM) Master Plan (MP). In 2020-2021, the WG continued its work on general interoperability requirements for A-SMGCS and on the technical requirements for 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. Coordination with Single European Sky ATM Research (SESAR) Joint Undertaking (JU) (SJU) and European ATM Standards Coordination Group (EASCG) is maintained to integrate the outcome of latest SESAR activities on A-SMGCS and to support SESAR Deployment Roadmap with WG-41's work.

In April 2022, the group finalised ED-87E 'Minimum Aviation System Performance Standard (MASPS) for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)' to extend it with functional descriptions and performance requirements of the Guidance Service as defined by EUROCONTROL and develop appropriate test procedures.

For upcoming years, WG-41's Terms of Reference contains the provision of a set of documents further describing A-SMGCS interoperability in a technical context as well as specifications for supporting sensor systems for use in A-SMGCS.

## WG-44 Aeronautical Databases

**CHAIRPERSON:** Stéphane Dubet, DSN  
**SECRETARY:** Sasho Neshevski, EUROCONTROL

WG-44 was created in 1997, and it 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 the publication of ED-77A in 2019, WG-44 remained in active monitoring status to monitor the industry feedback on WG-44 family of standards and collected new requirements for aeronautical

data and related applications (e.g., for Data Driven Charting). In practice, virtual meetings have been organised to gather and discuss proposals and information on potential new work topics.

The activity was resumed in 2020 with the work on Considerations for Aeronautical Data Alteration.

ED-302 was published in June 2022 and constitutes a guidance document that clarifies and expounds on the criteria and processes associated with the alteration of aeronautical data in support of the requirements defined in EUROCAE ED-76A/RTCA DO-200B.

It does not define any requirements, rather it provides considerations, examples, and guidelines for the disposition and processing of altered aeronautical data. ED-302 is technically equivalent to RTCA DO-394.

Currently WG-44/SC-217 is addressing the remaining deliverables in its work programme:

- ▶ Standards for Processing Aeronautical Data – publication in Q3/2023
- ▶ User Requirements for Navigation Data – publication in Q4/2023

## WG-49 Mode S Transponder

**CHAIRPERSON:** Eric Potier, EUROCONTROL

WG-49/SC-209 developed revision F of ED-73/DO-181 'Minimum Operational Performance Standards (MOPS) for Secondary Surveillance Radar Mode S Transponders', which was published in December 2020 to:

- ▶ resolve errors reported by transponder manufacturers,
- ▶ resolve misalignment between EUROCAE MOPS and RTCA MOPS,
- ▶ reflect the latest 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, and
- ▶ add functions or data to support new ED-102B/DO-260C 'MOPS for 1090 MHz Extended Squitter ADS-B and TIS-B', including a possible new phase modulation scheme, which is developed by WG-51 SG-1 ADS-B 1090 MHz Extended Squitter MOPS

In addition, ED-73F contains basic requirements necessary to include future collision avoidance functionality (ACAS X) into the transponder.

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

Early work on the implementation of ED-73F/DO-181F revealed some shortcomings in the document resulting in the development of a Change 1 to ED-73F/DO-181F with updates, corrections, and additional material. In particular, the 'Basic Dataflash' function was reviewed, which led to a reduction of the supported registers. Change 1 to ED-73F/DO-181F was published on 25 January 2022. Following the publication of Change 1 to ED-73F, WG-49 continues 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  
**SECRETARY:** Jörg Steinleitner, EUROCONTROL

WG-51 had worked in three active subgroups, two of which have completed their Work Programme:

### ▶ Subgroup 1

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

Early work on the implementation of ED-102B/DO-260C revealed some shortcomings in the document, resulting in the development of Change 1 to ED-102B/DO-260C with updates, corrections, and additional material. The main item addressed in Change 1 is a modification to the Traffic Uplink Management Message in order to ensure backward compatibility with Version 2 TISB/ADS-R Surface Status Message. Change 1 to ED-102B/DO-260C was published on 25 January 2022. Currently, the subgroup is dormant.

### ▶ Subgroup 2

maintains its dormant status.

### ▶ Subgroup 3

SG-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 3 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 6 April 2020. Change 1 was published on 21 December 2020.

On 8 September 2021, WG-51 SG-3 received approval from the TAC to develop an Internal Report titled 'Summary of Activities and Proposed Changes to ED-194B and ED-236A'. The group is collecting the required material to finalise the report by 31 October 2022. Potential follow-up activities will be subject to TAC approval.

### ▶ Subgroup 4

SG-4 is responsible for the update of ED-129C 'Technical Specification for an ADS-B Ground System' which aims to be published in December 2022. In addition to corrections to previous versions of the document, ED-129C will also contain a partial implementation of ADS-B Version 3 as defined in ED-102B/DO-260C.

This work will be followed by revision A to ED-142 'Technical Specification for a Wide Area Multilateration System with Composite Surveillance Functionality', which will be published in June 2023. The document will contain requirements for the development of a ground infrastructure that utilises functionalities of multilateration and ADS-B in a composite way.

In line with the current Terms of Reference, WG-51 SG-4 will begin its work on ED-129D, which will include a full implementation of ADS-B Version 3 as defined in ED-102B/DO-260C. This deliverable is scheduled for publication in June 2025.

## WG-59 Flight Data Processing (FDP) Interoperability

**CHAIRPERSONS:** Andrés Grijalba, ENAIRE, and Patrick Souchu, DSNA  
**SECRETARY:** Juan Jose Meana Vega, INDRA

WG-59 is tasked to revise 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 remit of SESAR Joint Undertaking (SJU) have performed extensive exercises. The results of these exercises were made available to WG-59 for inclusion in ED-133A.

An intermediate version of ED-133A was available in March 2020, and it was provided to interested parties to perform initial steps towards deployment. In line with the latest Terms of Reference (ToR), ED-133A is expected to be published by the end of 2022.

## WG-62 GALILEO

**CHAIRPERSON:** Pierre Bouniol, THALES GROUP  
**SECRETARY:** Mikael Mabilieu, GSA

The European Commission 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 in WG-62 is focused on the development of 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, as it leads 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 SC-159. The attendance of the WG meetings has grown to include most of the organisations that will be impacted by the content of the MOPS. Regular virtual conferences, which include RTCA members, are held between meetings to progress on the content of the document.

In 2021, five plenary meetings took place, joint with RTCA SC-159 SG-2. In addition, SBAS DFMC MOPS authors' and editors' groups are regularly holding review meetings.

In 2022, WG-62 SG-1 was created with the support of China Electronics Technology Group (CETC) and Commercial Aircraft Corporation of China (COMAC). WG-62 SG-1 is tasked with drafting an Internal Report on Beidou System and BeiDou Satellite-Based Augmentation System (BDSBAS).



## WG-63 Complex Aircraft Systems

**CHAIRPERSON:** Christopher Lacey, AIRBUS  
**CO-CHAIRPERSON / SECRETARY:** Julien Chaou, LIEBHERR AEROSPACE

WG-63, jointly with S-18 Aircraft & Systems Development and Safety Assessment Committee, is tasked to provide industry with guidelines relating to the development and safety of aircraft, systems, and equipment. To this end, the WG develops standards reflecting industrial practices that relate to both Safety and Development Assurance. The WG is developing the following documents:

- ▶ **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
- ▶ **ER-xxx**  
Using STPA During Development and Safety Assessment of Civil Aircraft
- ▶ **ER-xxx**  
Applicability of Existing Development Assurance and System Safety Practices to Unmanned Aircraft Systems and Vertical Take-Off and Landing systems

ED-79B and ED-135 are in comment resolution process and are in the pipeline to be published in 2022.

WG-63/S-18 are evaluating the applicability of existing development assurance and system safety practices to UAS and VTOL. This task could produce results that may be included in future updates of ED-79B and ED-135. To perform this task, WG-63 is coordinating with WG-105 UAS SG-4 Design and Airworthiness and WG-112 VTOL that are respectively producing guidelines on UAS Functional Hazard Analysis (FHA) and VTOL safety assessment (Common Mode Analysis (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 'Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment', ED-79B 'Guidelines for Development of Civil Aircraft and Systems', ER-023 'Development Assurance Principles for Aerospace Vehicles and Systems'...)
- ▶ to offer an opportunity to academics and universities to provide some insight on the new safety-related methodologies and processes (System-Theoretic Process Analysis, Model Based Safety Assessment, Model-Based Safety Engineering, ...)
- ▶ 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.
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## WG-67 Voice over Internet Protocol (VoIP) for ATM

**CHAIRPERSON:** Liviu Popescu, EUROCONTROL  
**SECRETARY:** Roberto Weger, SITI

WG-67 has published 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 currently working in line with its updated Terms of Reference (ToR) on Revision A of ED-136 and ED-138, both of which are expected to be published in mid-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).

With respect to ED-137C, the group is collecting reports and change requests, as a result of implementation of the standards. As soon as sufficiently mature material is available, the TAC will receive a request for an update of the ToR to develop additional change documents for various volumes of the standard.



## WG-72 Aeronautical Systems Security

**CHAIRPERSON:** Cyrille Rosay, EASA  
**SECRETARY:** Theodore Kalthoff, NIAR

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 by regulators.

WG-72 is composed of three subgroups whose activities are fully joined with RTCA SC-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 'Process Standard for Security Certification and Declaration of ATM/ANS Ground Systems', which focuses 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 developed ED-205 on ATM/ANS ground system, which was published in March 2019. ED-205 Revision A 'Process Standard for Security Certification and Declaration of ATM/ANS Ground Systems' is planned to be published in June 2022.

WG-72 SG-3 developed ED-204A/DO-355A 'Information Security Guidance for Continuing Airworthiness' and this deliverable was published in September 2020. The publication of ED-206 on Security Event Management is planned for June 2022.



▶ **ED-206 'Guidance on Security Event Management'**

This 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.

▶ **ED-201A 'AISS Framework Guidance Document'**

This was developed by WG-72 SG-4, and it was published in December 2021.

In addition to its own activities, WG-72 provides its expertise to support activities in other working groups, 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 *New Air-Ground Data Link Technologies*, WG-105 *Unmanned Aircraft Systems* and WG-114 *Artificial Intelligence*.

## WG-75 Traffic Collision Avoidance System (TCAS)

**CHAIRPERSON:** Bill Booth, EUROCONTROL  
**SECRETARY:** Garfield Dean, EUROCONTROL

WG-75, working jointly with RTCA SC-147, has developed several documents describing various variants of the Airborne Collision Avoidance System (ACAS):

- ▶ **ED-256/DO-385** 'MOPS for Airborne Collision Avoidance System X (ACAS X) (ACAS Xa AND ACAS Xo)', which was published in October 2018.
- ▶ Following the publication of ED-256/DO-385, early work on the implementation of the system led to several observations, which were corrected by publishing [Change 1 to ED-256/DO-385](#) on 17 September 2019.
- ▶ **ED-275/DO-386** 'MOPS for ACAS Xu', the ACAS variant for Unmanned Aircraft Systems, which was published on 21 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/DO-382](#) 'MASPS for the Interoperability of Collision Avoidance Systems', which was published on 11 September 2020.

While the development of the 'MOPS for ACAS sXu', a document geared towards requirements of small unmanned aircraft was factually developed as an RTCA only deliverable. WG-75 will be fully involved in the drafting of the document addressing ACAS Xr, which is titled 'MOPS for Rotary Aircraft' and is expected to be published in 2025. Given the expertise available in WG-105 UAS and WG-112 VTOL, members of these working groups were invited to join the activity.

## WG-76 AIS/MET Datalink Applications

**CHAIRPERSON:** Vacant  
**SECRETARY:** Macarena Martin Viton, AIRBUS

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, and publication of the final document is expected in mid-2023.

WG-76 has also been tasked to develop Change 1 to ED-89A 'Data-Link Application System Document (DLASD) for the "ATIS" Data-Link Service' to overcome limitations in the standard, preventing the application of the new Global Reporting Format (GRF) for Runway Condition Reporting, which was published by ICAO and adopted by EASA. ED-89A limits the length of D-ATIS messages to 800 characters, which is insufficient to include GRF information for complex runway layouts. The intention is to increase the maximum length of the messages to at least 1500 characters. However, concerns were raised by Communication Service Providers that the transmission of these messages may not be possible within the performance requirements of ED-89A. Investigations are being

performed to confirm the feasibility of such a solution. This work is performed as a EUROCAE WG-76 only activity.

In a next step and performed as a joint activity with RTCA SC-206, WG-76 will develop a full Revision B of ED-89. The purpose of this work is to turn ED-89 into a technology agnostic standard. Thus far, the application described in ED-89 relied on ACARS as communication standard. As this is an older technology, the implementation of GRF is considered as an opportunity to redefine D-ATIS as a technology independent service. The publication of ED-89B is scheduled for 31 March 2023.

In line with the latest version of its Terms of Reference, WG-76 is also working with SC-206 to review

DO-370 'Guidelines for In Situ Eddy Dissipation Rate (EDR) Algorithm Performance', which is an RTCA only document. Since its publication in 2017, the technology for the detection and reporting of turbulence has progressed. The purpose of the Internal Report (IR) is to summarise the changes required to DO-370 in order to align it with the latest technology. The IR will not be published but will be a source for additional activities, such as the revision of DO-370 or as a complementary separate document. This will be subject to TAC decision after the IR has been finalised, which is foreseen for 31 March 2023. To achieve a harmonised global implementation, the work will be performed jointly by EUROCAE and RTCA.

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

**CHAIRPERSON:** Carlo Tiana, COLLINS AEROSPACE  
**SECRETARY:** Trish Ververs, HONEYWELL

EUROCAE Working Group 79 *Enhanced Vision Systems, Synthetic Vision Systems* is tasked with developing regulatory guidance documents covering all aspects of airborne vision systems and harmonising guidance between US and European regulators by coordinating its work with RTCA SC-213.



Following the publication of ED-255 'Minimum Aviation System Performance Standard (MASPS) for a Combined Vision Guidance System for Rotorcraft Operations' in 2019, which were 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 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' providing 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 of this group has also 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, BLUE SPIRIT AVIATION  
**SECRETARY:** Carlos Mourao, EMBRAER

WG-80 was established in 2008, and it 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 Standard (MASPS) for Installation of Fuel Cell Systems on Large Civil Aircraft', was developed and subsequently published. In December 2019, ER-020/AIR7765 'Considerations for Hydrogen Fuel Cells in Airborne Applications' was published.

The WG is currently working on two standards. The first one will address MASPS for liquid hydrogen fuel cells onboard aircraft. This document will define technical guidelines for the safe development, testing, integration, validation, and certification of liquid hydrogen including fuel storage and fuel distribution. The second deliverable, 'MASPS for Gaseous Hydrogen Storage for General Aviation', was launched in late 2021, and it will cover gaseous hydrogen systems in general aviation systems.

Hydrogen fuel is a promising and environmentally friendly alternative to fossil fuels. It will help the aviation industry reach emission reduction targets by 2050, namely 75% CO2 and 90% NOx emissions reductions, relative to the year 2000.

## WG-81 Interoperability of ATM Simulators

**CHAIRPERSON:** Thomas Damm, DFS  
**SECRETARIES:** Jose Manuel Cordero, ENAIRE

WG-81 developed Revision B of ED-147A 'ATM Validation Platforms Interoperability Specification', which was published on 5 November 2021. It aims to maintain the Reference Information Model and to introduce the Model Driven Approach (MDA). This revision extends the scope of ED-147 to include feedback received from SESAR projects. In particular, aspects of weather processing were improved and the handling of the Flight Object was modified.

ED-147 implementations have been a key enabler for cross ATM-Domain validation exercises in SESAR.

Due to their capabilities of connecting various existing industry-based pre-operational ATM Validation Platforms (IBP), new operational concepts could be validated and their implementation in industry prototypes could be verified. In order to support the usage of ED-147B, ED-148 'Guidance to Achieve ATM Validation Platforms Interoperability', was updated and published on 5 November 2021. Scheduled for publication in Q3/2023, the WG will develop 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

WG-82 is tasked to develop standards related to new air-ground data link technologies involving airport surface, satellite, and enroute/Terminal Manoeuvring 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 drafting the following documents, jointly with RTCA SC-222 *AMS(R)S*. The publication is expected in Q2/2024:

- ▶ **ED-242D** '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-243D** 'Minimum Operational Performance Standards (MOPS) for Avionics Supporting Next Generation Satellite Systems (NGSS)' ED-243D will be expanded with an update of terminal specification for SwiftBroadband (SBB) terminals for Long-Term Evolution (LTE) and ATCt blocking immunity.

WG-82 works with RTCA SC-223 *Aeronautical Mobile Airport Communication System (AERO-MACS)*. The following joint document is planned to be published in Q2/2022:

- ▶ **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-82 has also launched a new activity on L-band Digital Aeronautical Communications System (LDACS). The target date for publication for the following documents is Q4/2024.

- ▶ **ED-xxx** 'MASPS for L-band Digital Aeronautical Communications System (LDACS) for Data and Voice Communications'
- ▶ **ED-xxx** 'MOPS for L-band Digital Aeronautical Communications System (LDACS) for Data and Voice Communications'

## WG-83 Foreign Object Debris Detection (FOD)

**CHAIRPERSON:** Stephane Larose, THALES LAS  
**SECRETARY:** Arthur Ni, Flyinstinct

*Systems* is tasked with developing guidance documents to support airports in implementing systems that deal with FOD detection.

Created in 2010, EUROCAE Working Group 83 *Airport Foreign Object Debris (FOD) Detection*

After developing ED-235 'Minimum Aviation System Performance Specification for Foreign

Object Debris Detection System' in 2016, the WG proceeded with the definition of the associated OSED to help airports in defining their CONOPS using a FOD detection system.

In August 2020, ED-274 'OSED for Aerodrome Foreign Object Debris Detection Systems' was published, which provides guidance on the operation of an automatic FOD detection system on an aerodrome movement area. ED-274 contains requirements to be addressed to facilitate an FOD detection system deployment and subsequent operation.

## WG-85 4D Navigation

**CHAIRPERSON:** Okuary Osechas, DLR  
**SECRETARY:** Ricardo de Sousa, NATS

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

On 9 June 2020, the Council approved the reactivation of WG-85 '4D Navigation'. In line with its 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 'MOPS for Airborne Surveillance Applications (ASA) Systems', as well as ED-236/DO-361 'MOPS for Flight-deck Interval Management (FIM)'. This will facilitate the RNP system's support for future aircraft.

As technology evolves, the WG will concentrate its efforts on ED-235A 'Minimum Aviation System Performance Specification for Foreign Object Debris Detection System'. The document is being updated to take capabilities of latest technologies such as sensors and artificial intelligence for FOD identification and classification into account.

The work on ED-75/DO-236 is complimentary to current activities in WG-107. The MASPS that is being developed by WG-107 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 WG-85/SC-227 concerning assumptions about DME infrastructure performance. The publication of ED-75E/DO-236C is scheduled for Q2/2022.

On 27 July 2021, the TAC approved an update to WG-85's ToR by adding a new deliverable to its Work Programme, ED-xxx 'MOPS for Required Navigation Performance for Area Navigation'. This document thus far was an RTCA only deliverable (DO-283). Since the implementation of the MOPS should be harmonised globally, it was agreed to perform the revision of DO-283 as a joint activity. Publication of the standard is foreseen for Q1/2024.

## WG-92 VDL Mode 2

**CHAIRPERSON:** Stéphane Pelleschi, COLLINS AEROSPACE

WG-92 is working jointly with RTCA SC-214 VDL subgroup and in close coordination with AEEC Datalink Committee. With the introduction of Aeronautical Telecommunications Network/Internet Protocol Suite (ATN/IPS) and the related need for security, there is an opportunity to update VDL Mode 2, such that will optimise ATN/IPS operations. The joint working group is currently discussing the improvements needed for ATN/IPS and defining the scope and timeline for a future MOPS update.

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 WG-108/SC-223,

- ▶ 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 is working on ED-92D 'Minimum Operational Performance Standards (MOPS) for an Airborne VDL Mode 2 Physical Link and Network Layer', which is expected to be published in 2022. WG-92/SC-214 added another deliverable to their work programme, namely ED-xxx 'Signal-in-Space Minimum Aviation System Performance Standards (MASPS) for Advanced VHF Digital Data Communications and it is expected to be published in 2023.

## WG-95 In-Flight Ice Detection Systems

**CHAIRPERSON:** Francois Larue, ADV-Icing  
**SECRETARY:** Vince LoPresto, Collins Aerospace

WG-95 was initially created in 2012 and tasked by EUROCAE Council to update ED-103 'Minimum Operational Specification for In-Flight Ice Detection System (FIDS)'. Now, almost 10 years later, it was time to bring the MOPS to the state-of-the-art requirements for in-flight ice detection.

The main reason for the reactivation was the concern of several experts, who detected errors and raised a need to clarify some 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.

ED-103B was published on 8 April 2022, and WG-95 was set dormant by EUROCAE Council.

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

**CHAIRPERSON:** Uwe Schwark, AIRBUS

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 that 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', currently in comment resolution following the closure of the Open Consultation (OC) in March 2020, and ED-xxx 'Minimum Operational Performance Specification (MOPS) for a Wireless Avionics Intra-Communication System'.



## WG-97 Interoperability of Virtual Avionic Components

**CHAIRPERSON:** Olivier Fourcade, AIRBUS  
**SECRETARY:** Virginie Frouté, DASSAULT AVIATION

Physical test benches used in the aircraft development are complex platforms with high initial and recurrent costs. They are generally on the critical path of development and cannot be easily deployed or multiplied to increase the available validation capacity.

One means to alleviate these problems, Virtual and Hybrid Testing, is a promising solution that has already demonstrated its benefits in other industries (cell phone...). However, in the avionics industry, it brings specific challenges, 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.
- ▶ To ease a global process that describes the exchange and the 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 virtual or hybrid bench to extend the actual technical perimeter of revision A and to reach the necessary level of fidelity asked to claim certification creditability.

## 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, EUSPA and Manuel Lopez-Martinez, EUSPA

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, developed the following document, which was published in June 2020:

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

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

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

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-99 Portable Electronic Devices (PEDs)

**CHAIRPERSON:** Robert Keibel, AIRBUS, and Stephan Schulte, LUFTHANSA

WG-99 is responsible for developing and maintaining standards for Portable Electronic Devices (PEDs).

The WG is tasked to develop the following documents jointly with RTCA SC-234:

- ▶ ED-130B 'Guidance for the Development of Portable Electronic Devices (PED) Tolerance for Civil Aircraft'
- ▶ ED-239A 'Aircraft Design and Certification for Portable Electronic Device (PED) Tolerance'

Reactivated in November 2021, it is remarkable that within six months, the WG successfully prepared a first draft, submitted it for Open Consultation (OC), and resolved the comments received on both documents. The publication of ED-130B and ED-239A is planned for Q2/2022.

## WG-100 Remote and Virtual Tower

**CHAIRPERSON:** Joern Jakobi, DLR  
**SECRETARY:** Vacant

Working Group 100 *Remote and Virtual Tower* was launched in June 2014. In September 2016, the ED-240 'Minimum Aviation System Performance Standard (MASPS) for Remote Tower Optical Systems' was released, and in October 2018, an update to the standard (ED-240A) was published. These EDs are applicable to all optical sensor configurations (visible, as well as infrared spectrum) that are to 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.

In 2021, based on feedback received from the user community on ED-240A, WG-100 finalised ED-240A Change 1, which was subsequently published. It features a refurbishment in terms of improved user-friendliness and readability, a better explanation

of developing and measuring Detection and Recognition Range Performance (DRRP) requirements, and more consistent verification and validation procedures. It also includes material on how the document can be addressed by different stakeholders, augments the material to give additional guidance and incorporates the latest developments and experience of the WG members as they are involved in new Remote Tower installations in Europe, North America, and Asia.

Currently, WG-100 is working on ED-240B, which intends to cover the processing and integration of information produced by existing or emerging surveillance systems/sensors, such as 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/or other sensors.

## WG-102 GEN-SUR SPR

**CHAIRPERSON:** Roland Mallwitz, DFS  
**SECRETARY:** Jörg Steinleitner, EUROCONTROL

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 GEN-SUR safety and performance objectives, from which 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 led to a final Council decision with publication in Q2/2022. The WG is now dormant.

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

**CHAIRPERSON:** Tim Quilter, AVEILLANT  
**SECRETARY:** Hannes Stahl, Hensoldt

Mitigating clutter originating from wind farms and detecting small Remotely Piloted Aircraft are new demands being placed on 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 supplemented by a host of new designs made possible through technical advancements that have occurred in recent years. As technologies develop, 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 WG has made significant progress on assembling a balanced specification that is agnostic enough so as not to unnecessarily constrain designs, yet precise enough to ensure that systems produced in accordance with it are interoperable and capable of meeting user requirements. The WG comprises a diverse mix of sensor manufacturers and ANSPs. Whilst the participation is largely European, there are also representations from America and Asia.

ED-288 was submitted to Open Consultation in December 2020. Comment resolution proved to be complex, and the changes applied are such that a second Open Consultation will be required.

## WG-104 System Wide Information Management (SWIM)

**CHAIRPERSON:** Oliver Krüger, DFS  
**SECRETARY:** Eric Roelants, EUROCONTROL

WG-104 has developed the following SWIM related documents:

- ▶ ED-254 'Arrival Sequence Service Performance Standard', published on 3 July 2018
- ▶ ER-018 'SWIM Service Standardisation Package', published on 11 July 2018
- ▶ ED-294 'SWIM Service Specification Template and Methodology', published on 9 December 2021
- ▶ ER-024 'Final Report on the Activities Undertaken by WG-104', published on 11 January 2022

As this completes the Work Programme foreseen for the group, it is proposed to put it on 'dormant' status. The decision will be taken by the Council in the course of 2022. However, it can be expected that other EUROCAE WGs may develop SWIM compliant services in the future. WG-104 could then be reactivated to support such activities.

## WG-105 Unmanned Aircraft Systems (UAS)

**CO-CHAIRS:** Alexandra Florin, WING and Maurizio Goiak, LEONARDO  
**SECRETARY:** Akaki Kunchulia, IRIS AUTOMATION



WG-105 is tasked to develop the necessary standards to enable safe integration of UAS, or Remotely Piloted Aircraft Systems (RPAS) when controlled and monitored from a Remote Pilot Station (RPS), into all classes of airspace. Due consideration is given to emerging European regulations, which are built on a risk-based approach, depending on the category of operation (open, specific, or certified) and of industry requirements.

WG-105 is organised in six Subgroups (SGs), and the work performed by these SGs are coordinated by a Steering Committee, which comprises of the chairpersons, secretary, TPM, subgroup leaders and invited stakeholder representatives, to ensure developmental consistency.

### The current SGs are:

- ▶ Detect and Avoid (DAA)
- ▶ Command, Control and Communication, Spectrum and Security (C3&S)
- ▶ UAS Traffic Management (UTM)
- ▶ Design and Airworthiness (D&Aw)
- ▶ Enhanced RPAS Automation (ERA)
- ▶ Specific Operations Risk Assessment (SORA)

The subgroups are working on several deliverables in the following areas:

### DAA

- ▶ DAA against conflicting traffic for RPAS operating under IFR in Class A-C airspaces
- ▶ DAA against conflicting traffic for RPAS operating under IFR and VFR in all airspace classes
- ▶ DAA for UAS operating in VLL

### C3&S

- ▶ RPAS C2 Datalink
- ▶ UAS Communications by Cellular Networks
- ▶ C2 MASPS European Stakeholders Report

### UTM

- ▶ Geographical Zones and U-Space data provision and exchange
- ▶ Network Identification Service of unmanned aerial vehicles for A/UTM/U-Space
- ▶ Flight Planning and Authorisation Service for Global Awareness in A/UTM/U-Space
- ▶ Traffic Information/Situation Dissemination Exchange Format and Service
- ▶ U-Space Geo-awareness Service

### D&AW

- ▶ Remote Pilot Stations
- ▶ Special Condition Light-UAS

### ERA

- ▶ All deliverables have been published

### SORA

- ▶ UAS Safety Analysis for the Specific Category with Low and Medium Levels of Robustness
- ▶ SAIL II Application of SORA
- ▶ GNSS for UAS
- ▶ Automatic Protection Function for UAS

The Work Programme is regularly updated according to our member's needs and to adapt to the evolving landscape of the UAS industry.

## WG-106 Electronic Flight Bag (EFB) Software Applications

**CHAIRPERSON:** Eric Lesage, AIRBUS  
**SECRETARY:** Manuel Gucemas, THALES GROUP

The quick development of Electronic Flight Bags (EFBs) has increased its use over the last years, such that they became a very common and important tool for flight operations and have replaced paper in most cockpits.

Increasingly present, EFBs also feature more advanced functions that depart from the simple replacement of paper while offering new possibilities to enhance flight operations and information available to the flight crew. Consequently, EFB applications and their hosted functions become more complex to evaluate and to approve for use in operations by the national aviation authorities.

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

ED-273 'MOPS for Electronic Flight Bag (EFB) Application' was published in August 2021.

ED-273 provides a systematic and comprehensive means to address the design, development, evaluation, and validation of the EFB applications in proportion to the safety risk of their intended use in flight operations. It is intended to be used by any organisation developing EFB applications and may also be used by regulators for the establishment of the approval basis of EFB applications.

In parallel, EASA referred to ED-273 for the MOPS of the new ETSO-2C521 for EFB software applications approval introduced by NPA 2021-07.

The WG is now dormant.



## WG-107 DME Infrastructure Supporting PBN Positioning

**CHAIRPERSON:** Gerhard Berz, EUROCONTROL  
**SECRETARY:** Maurizio Scaramuzza, SKYGUIDE

The 12<sup>th</sup> 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 Area Navigation (RNAV) and Required Navigation Performance (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 on-board 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 ground functions, the objective is to revise ED-57 to reflect current equipment performance. To provide clearly documented means for Air Navigation Service Providers to offer an RNP reversion mode based on DME/DME positioning, a separate MASPS is being 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 document, ED-75/DO-236. While WG-107 focuses on ground equipment, WG-85 together with RTCA SC-227, has developed a revision of ED-75D/DO-236C Change 1, which improves the behaviour of the airborne components. To ensure consistency of WG-107 deliverables with ED-75E/DO-236D, close cooperation between WG-107 and WG-85/SC-227 has been established. WG-107 is expected to complete this work by the end of 2022.

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

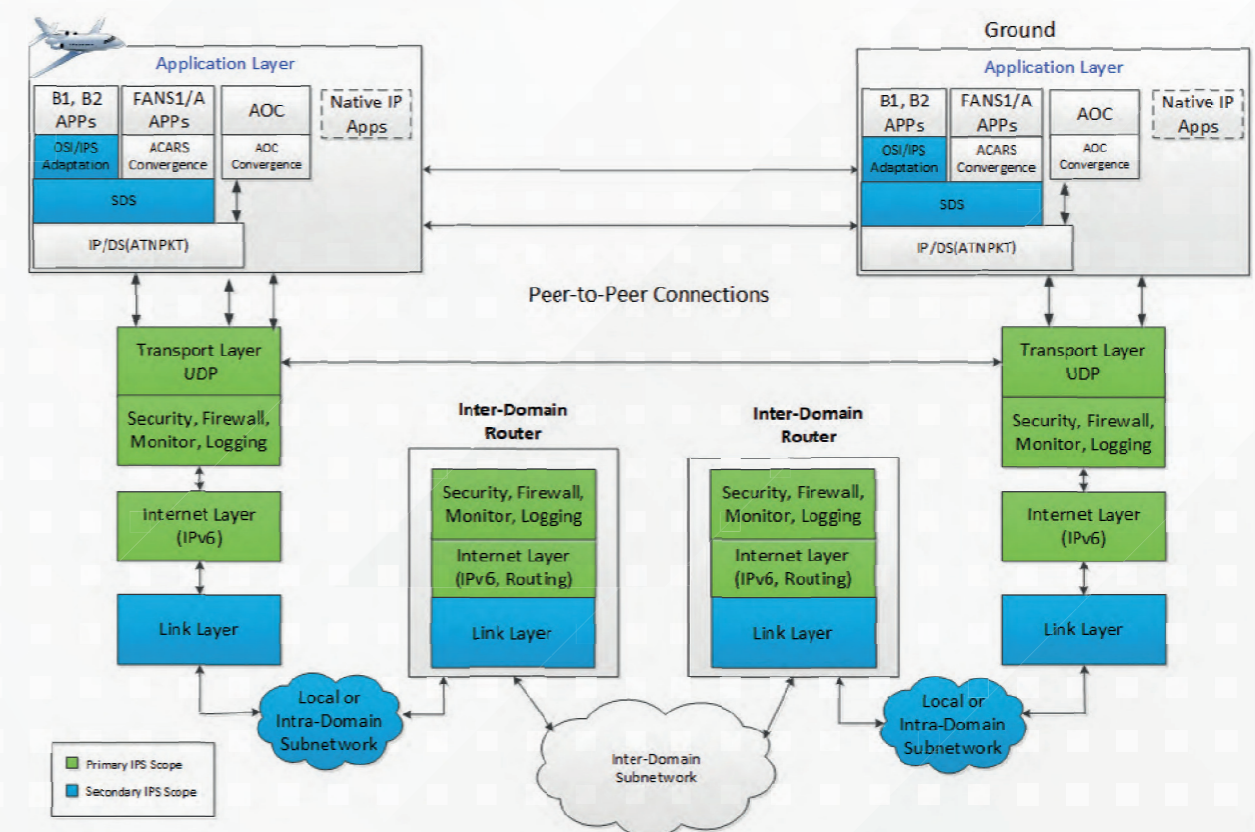
**CHAIRPERSON:** Stéphane Pelleschi, COLLINS AEROSPACE

WG-108, jointly with RTCA SC-223, developed ED-262/DO-379 'Technical Standard of Aviation Profiles for Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)', which was published in September 2019. A revision of the standard is ongoing following the ATN/IPS standards development work carried out by ICAO.

In addition, Minimum Aviation System Performance Standard (MASPS) on ATN/IPS end-to-end interoperability supporting certification of the avionics systems and deployment and implementation of the ATN/IPS network is being developed by the group.

A technical standard for the end-to-end interoperability supporting airborne certification, titled 'Technical Standard of Aviation Profiles for Internet Protocol Suite' is also being developed. As ATN/IPS is defining a complete network involving avionics and ground systems, there is a need to provide guidance on the deployment. The document will provide a set of profiles of existing standards used for the ATN/IPS implementation.

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.



## WG-109 Runway Weather Information Systems

**CHAIRPERSON:** Guillaume Roger, DGAC STAC  
**SECRETARY:** Niklas Jost, FRAPORT

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.

Given the technical limitations of the current methods and the regulatory developments in progress, EUROCAE established WG-109 in 2018 with the task to develop minimum requirements for RWIS, define the performance expected from the systems, and a way of verifying that the latter is achieving the performance expectations.

The need for performance requirements and performance assessment procedures for RWIS is also highlighted by current regulatory developments. The GRF applicability date set by ICAO was 5 November 2021, whereas EASA decided that GRF is mandatory in Europe on 12 August 2021.

WG-109 would like to support the introduction and fulfilment of GRF by standardising requirements, terminology, and performance validation in collaboration with all stakeholders. This marks an important contribution to future Runway Condition Reporting. The WG includes participants from about 30 companies globally, representing several stakeholders such as airport operators, sensors and systems manufacturers, aircraft manufacturers, flight crews and civil aviation authorities, thus reflecting both the complexity and the importance of RWIS systems.

In December 2021, ED-292 'Minimum Aviation System Performance Standard for Runway Weather Information Systems' was published, which is one of the first standards to specify the minimum performance requirements to support airports in implementing the relevant ICAO Standards and Recommended Practices and EASA regulation related to GRF. Currently, the group is in active monitoring status observing the application of the standard and gathering inputs for future activities.



## WG-110 Helicopter Terrain Awareness and Warning Systems (HTAWS)

**CHAIRPERSON:** Yasuo Ishihara, HONEYWELL  
**SECRETARY:** Mark Prior, UK CAA

Several accidents during offshore helicopter operations have shown that there was a clear need for Helicopter Terrain Awareness and Warning Systems (HTAWS). Therefore, EUROCAE WG-110 was created and tasked to develop Minimum Operating Performance Standard (MOPS) for these systems in support of offshore helicopter operations.

WG-110, working jointly with RTCA SC-237, published ED-285/DO-376 'Minimum Operational Performance Standard for Offshore Helicopter

Terrain Awareness and Warning System (HTAWS)' on 22 March 2021. To correct minor graphical errors, ED-285 Change 1 was published in May 2022.

The current work programme consists of a second deliverable, ED-xxx 'Minimum Operational Performance Standard for Helicopter Terrain Awareness and Warning Systems (HTAWS) for Onshore Helicopter Operations'. This standard is expected to be published in Q2 2023.

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

**CHAIRPERSON:** Segun Alyande, HEATHROW AIRPORT via ACI EUROPE  
**SECRETARY:** Ieyasu Sugimoto, ADB-SAFEGATE

A-CDM is a programme aimed at improving operational performance at airports. The programme involves not only the airport operators but also other stakeholders such as ANSPs, aircraft operators, ground handlers, de-icing companies, and supporting services.

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

On 26 February 2019, EUROCAE Council approved the creation of a new Working Group (WG) to update existing EDs on A-CDM and to take

requirements on A-CDM in the appropriate context of A-SMGCS into account, regarding routing and dynamic taxi times, and SWIM A-CDM Service definition, providing requirements for the interoperability between the ATM and airport domain. The work programme of WG-111 consists of four deliverables:

- ▶ ED-141A Minimum Technical Specifications for A-CDM Systems
- ▶ ED-145A A-CDM Data Model Specification
- ▶ ED-146A Guidelines for Test and Validation Related to A-CDM Interoperability
- ▶ ED-xxx A-CDM SWIM Interface Specification

WG-111 members represent over 15 organisations, including regulators, airports, ANSPs, and manufacturers among others. The group is coordinating its efforts and expertise to develop and share best practices for A-CDM implementation. The participants emphasised the importance of this activity and the need to ensure proper information exchange for each phase of aircraft operation, such that other users can access this 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 Tauszig, EASA  
**SECRETARY:** Sebastian Reschenhofer, EUROCAE

EUROCAE Working Group (WG) 112 was created as reaction of a joint EUROCAE/EASA workshop and held its first meeting on 27 June 2019. WG-112 is tasked to develop industry standards to complement EASA's SC-VTOL with Means of Compliance (MoC). WG-112 set an ambitious timeframe by publishing the first related documents as soon as possible. EUROCAE supports the ambitious publishing targets with the introduction of a lean process, using WG-112 as a pilot project. This lean process helped to gain valuable time and minimise administrative efforts, whilst maintaining the core principles of EUROCAE and the goal to publish high quality standards.



Currently, the Steering Committee is defining new tasks to support EASA's third priority list of MoC complementing the SC-VTOL. 22 standards are under development in WG-112.

The WG is structured in eight 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
- ▶ **SG-8** Seats (joint with SAE Seat committee)

### Latest publications:

- ▶ **ED-278** 'Concept of Operations for VTOL Aircraft - Volume 1: General Considerations' – published on 25 September 2020
- ▶ **ED-278A** 'Concept of Operations for VTOL Aircraft - Volume 1: General Considerations' – published on 8 February 2022
- ▶ **ED-289** 'Guidance on determination of accessible Energy in Battery Systems for eVTOL Applications' – published on 5 May 2021
- ▶ **ED-289** Change 1 'Guidance on determination of accessible Energy in Battery Systems for eVTOL Applications' – published on 21 September 2021
- ▶ **ED-290** 'Guidance on High Voltage Definition and Consideration for Personal Safety' – in comment resolution
- ▶ **ED-293** 'Concept of Operations for VTOL Aircraft – Volume 2: Commercial Passenger Air Taxi Transport' – published on 13 December 2021
- ▶ **ED-295** 'Guidance on VTOL Flight Control Handling Qualities Verification' – in comment resolution
- ▶ **ED-296** 'Guidance on Use of High-Voltage Electrical Distribution for eVTOL Applications' – published on 17 May 2022
- ▶ **ED-298** 'Guidance on Minimum Primary Flight Instruments for VTOL Aircraft' – published on 23 March 2022
- ▶ **ED-299** 'Guidance for Vertiport Operators and Operations' – in comment resolution

## WG-113 Hybrid Electric Propulsion

**CHAIRPERSON:** Sylvain Clary, SAFRAN  
**SECRETARY:** Jisha Noushad, FLYING WHALES

Hybrid electric propulsion is the revolution of the 2020s, as it will introduce new technologies in the aeronautics industry. These technologies will require standards to support Europe industries in obtaining certification and to maintain a high level of safety.

WG-113 *Hybrid Electric Propulsion* was created in late 2019, and it is working on three deliverables to support the Special Condition for Electric and Hybrid Propulsion (SC-EHPS). A first deliverable, ER-025 'List of Standardisation Needs for Hybrid Electric Propulsion' was published in April 2022.

Other documents under development include:

- ▶ 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

**CHAIRPERSONS:** Béatrice Pesquet-Popescu, THALES LAS and Christophe Gabreau, AIRBUS  
**SECRETARY:** Radek Zakrzewski, COLLINS

Working Group (WG) 114, jointly working with SAE G-34, was created in August 2019 to guide the safe, secure, and successful adoption of AI technologies in aeronautical systems.

The WG 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 developing EUROCAE documents and reports, the first objective of the WG was to act as a forum to discuss AI technologies, and their safe and appropriate adoption and implementation.

The first EUROCAE Report developed by WG-114, ER-022 'AI Considerations for Development and Certification/Approval of Aeronautical Safety-Related Products: Statement of Concerns' was published in April 2021. This document reviewed existing standards and performed a gap analysis

to understand how and why existing standards cannot be reliably used. It also provides a list of concerns that need to be addressed to produce a future means of compliance for the certification of Artificial Intelligence (AI) within safety critical aeronautical systems.

In addition, two EUROCAE Reports are in the pipeline to be published:

- ▶ **ER-xxx**, 'Artificial Intelligence in Aeronautical Safety-Related Systems: Taxonomy'
- ▶ **ER-xxx**, 'Artificial Intelligence in Aeronautical Safety-Related Systems: Use Cases Considerations'

The WG is also working on ED-xxx 'Process Standard for Development and Certification/Approval of Aeronautical Products Implementing AI', which will establish industrial best practices for the development and the certification/approval of AI embedded into aerial vehicle and ground products. This standard is expected to be published in 2023.

## WG-115 Counter UAS (C-UAS)

**CHAIRPERSON:** Vacant  
**SECRETARY:** Philippe Robin, CS GROUP

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 (popularly known 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 needs 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 and Control Datalink, or the Remote Pilot) could also be considered.

The implementation of U-space will also provide 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, therefore both these groups will produce harmonised documents that are technically identical.

In 2021, WG-115 published ED-286 'Operational Services and Environment Definition (OSED) for Counter-UAS in Controlled Airspace', which introduces the overall capability of a C-UAS System, including the detection capabilities of unauthorised UAS in a protected area of influence around an airport, and it address the resulting hazard or threat in a risk-based balanced manner.

Currently, the group is working on two documents to address System Performance Requirements (SPR) for Non-Cooperative UAS Detection Systems and Interoperability Requirements for Counter-UAS Systems.



## WG-116 High Voltage

**CHAIRPERSON:** Rémy Blaujaud, SAFRAN  
**SECRETARY:** Thierry Lebey, SAFRAN

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 new risks and technical problems, such as defining new interface specifications between equipment and systems to be connected to the new high voltage networks. Another topic would be understanding how to deal with associated new risks of high voltage installations, protections, ageing of insulating materials, and human safety.

Working Group (WG) 116 is tasked with defining new standards to mitigate these issues and help the industry and the 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, WG-116 has regular working meetings with experts representing 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 VTOL and WG-113 Hybrid Electric Propulsion, while coordinating activities with SAE AE11.

The current WG-116 deliverables include:

- ▶ **ED-xxx** Technical Specification for interface characteristics and power quality of aircraft high voltage propulsive electrical systems – publication in Q2 2022
- ▶ **ED-xxx** Guidance document for high voltage risk mitigation at EWIS and human safety level – publication in Q2 2022
- ▶ **ED-xxx** Aging mechanisms of electrical insulation materials in a high energy system – publication in Q2 2023
- ▶ **ED-xxx** Test guidelines for electrical insulation materials and components for a high voltage system – publication in Q2 2023
- ▶ **ED-xxx** Electrical insulation aging and life models for a high energy system – publication in Q2 2023

The last three documents are developed jointly with SAE AE11.

## WG-117 Topics on Software Advancement

**CHAIRPERSON:** Burak Ata, VOLOCOPTER  
**SECRETARIES:** Andy Hoag, AIREON

In 2019, the Forum on Aeronautical Software (FAS) Ad Hoc Unmanned Aircraft System (UAS) report identified the need to create additional guidance in the areas of 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 seen as especially useful for stakeholders focused on the development for lower risk applications.

The certified UAS category is aligned with ED-12C/DO-178C document suite for development. However, the open category does not have a software development standard, and the specific category does not currently have a comprehensive compliant development standard to provide assurance for the safe operations 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, which will be tailored to lower risk UAS applications and the specific category defined by EASA.

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

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

During Plenary Meeting 10, the WG decided to split SG-2 deliverable into two parts, the first release, expected for mid-2022, addressing the supplementation of ED-12C/DO-178C for Software Level C and Software Level D, and ED-109A/DO-278A for AL3, AL4 and AL5 for COTS and Open Source. The second release, expected for mid-2023, will incorporate the full scope for COTS/OSS and Service history for all Software Levels (ED-12C/DO-178C) and AL levels (ED-109A/DO-278A).

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, such as differences in 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 EUROCAE standards, 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 directly in the performance standard. As there was no existing Working Group (WG) addressing flight recorders within 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 aiming to provide the necessary data for accident investigation and prevention.

WG-118 will 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, and
- ▶ development in deployable recorders.

For EUROCAE, the only standardisation organisation active and experienced in flight recorder standards, this activity is well-supported, and EUROCAE highly appreciates the encouragement and motivation of the WG members.

Besides updating ED-112A and ED-155, the WG is working on a Minimum Aviation System Performance Standard (MASPS) for Crash Protected Recording Systems for UAS and RPAS.

## WG-118 Crash-Protected and Lightweight Flight Recorders

**CHAIRPERSONS:** Jennifer Weiss, FLIGHT DATA SYSTEMS, and Hannes Griebel, GRIEBEL AEROSPACE  
**SECRETARY:** Robin Hudson, LEONARDO DRS

During several investigations of incidents and accidents involving commercial air transport (CAT) operations, accident investigators identified a need to improve the quality of recorded information, in particular 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) was also recommending 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 the 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 also driving the need to review this area of the standard.

In addition, in 2019, the EU adopted flight recorders carriage requirements applicable to newly

## WG-119 Radar Altimeters (RA)

**CHAIRPERSON:** Jean-Luc Robin, AIRBUS

WG-119 is addressing Radar Altimeters robustness against the Radio Frequency (RF) environment. Its primary objective is to update ED-30A 'Minimum Operation Performance Standard (MOPS) for Low Range Radar Altimeters'. This MOPS will address RA robustness against existing RF environment and planned future RF environment. The environment taken into consideration includes any impact related to the development and deployment of 5G technology. The target date for publication of this deliverable 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 future modulations and signal strength,

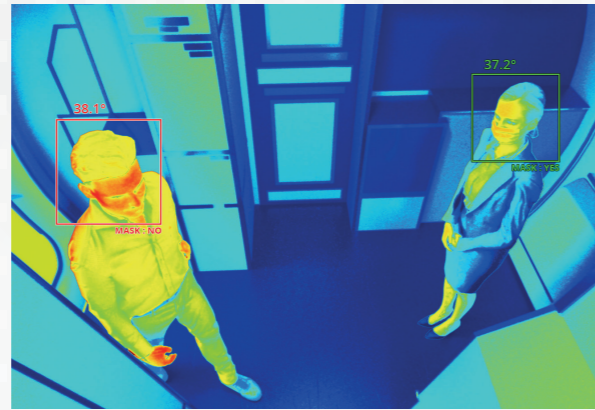
- ▶ Interferences within the RA band (4.200-4.400MHz),
- ▶ Out of RA band interferences that could potentially have an indirect effect on the RA due to level of signal, modulation, potential harmonics, RA antenna potential weakness (susceptibility) or RA design potential weakness (resonance).

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 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 AEROSPACE

WG-120 was launched in mid-2021, and it was 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. 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 measures due to the COVID-19 pandemic, and to serve the recovery of the aviation industry, which relies on passenger confidence.

ED-297 'Minimum Operational Performance Standard (MOPS) for Thermal Camera Systems' was published on 27 October 2021, and WG-120 was set dormant.

## WG-121 Aircraft Cleaning

**CHAIRPERSON:** Manfred Mohr, IATA, and Chloe Morosetti, UNITED AIRLINES  
**SECRETARY:** Patrick Guerin, UNITED AIRLINES

WG-121/SC-241 kicked off in August 2020 as a reaction to the public health situation. After several working sessions and tremendous effort made by the whole WG, ED-287 'Guidance Document on Aircraft Cleaning and Disinfection' was published on 24 December 2020, just 124 days after the WG was created.

After several reactions by the industry, the WG decided to revise the document. The new version corrected editorial and formatting issues from the previous version. Some of the wording was modified in some sections to facilitate better understanding of the technical concepts. ED-287A was published on 20 December 2021, and WG-121 was set dormant.

## WG-122 Virtual Centre

**CHAIRPERSON:** Philippe Chauffoureaux, SKYGUIDE (until January 2022); Nicolas Suarez Tetzlaff, ENAIRE (since March 2022)  
**SECRETARIES:** Ben Stanley and Maja Marciniak, EGIS AVIATION UK

focused on the outcomes in terms of perceived benefit (or need) and feasibility. The roadmap for standardisation of Virtual Centres services follows a phased approach, with priorities laid out and dependencies understood. ER-026 is the foundation for the future work programme of standards to be developed.

Following 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, WG-122 was kicked off in November 2020.

In January 2022, WG-122 Chairperson, Philippe Chauffoureaux (Skyguide) stepped down from his role. Philippe was instrumental in setting up the work and led the WG through the first phase of activities, which was successfully completed in with the finalisation of ER-026. He was succeeded by Nicolas Suarez Tetzlaff, ENAIRE.

Since its creation, the WG has worked on its initial deliverable, a report on 'Virtual Centre - Strategy for Standardisation - Phase 1'. This report was published as ER-026 in January 2022.

As a next step, WG-122 will focus on developing a taxonomy of services for Virtual Centres, specifically focusing on service identification and interfaces between entities. This deliverable is expected to be finalised and issued as a EUROCAE Report in Q1/2023.

The report outlines the context of the Virtual Centre concept and proposes a detailed work programme for Virtual Centres services standardisation. It provides a comprehensive review of the current context and a detailed work programme for future standardisation activities, while taking the status of R&D activities, industrialisation, and stakeholders' needs into account. It aims to develop a performance-based approach to the Virtual Centres services standards, while remaining



## WG-123 Infectious Passenger Handling in Air Ambulance Operations

**CHAIRPERSONS:** Dr. Walter Klimscha and Dr. Alex Veldmann, UNICAIR  
**SECRETARY:** Dr. Cai Glushak, EURAMI

In April 2021, the EUROCAE Secretariat was contacted by the aeromedical industry as common guidelines for the safe handling and transportation of infectious passengers were missing. After consulting EASA for help, they were referred to EUROCAE for standards development. Although the main reason for this activity is related to COVID-19 pandemic, however, it is quite likely that other infectious diseases will impact the aviation industry in the future.

After several meetings between medical experts and members of EUROCAE Technical Advisory Committee (TAC), the creation of WG-123 was recommended to EUROCAE Council. Consequently, WG-123 was created, and a kickoff meeting was held on 10 February 2022.

The initial task is to develop guidelines for aeromedical passenger handling and transport with respect to COVID-19 and other infectious diseases. The guidance document for aeromedical handling and transport of infectious passengers is expected for publication in Q1/2023.

## WG-124 Spectrum

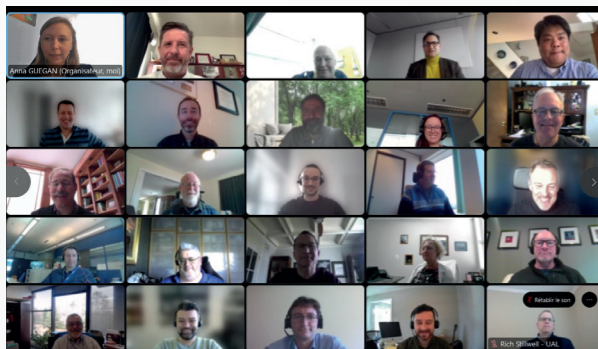
**CHAIRPERSON:** John Micallef, EUROCONTROL

WG-124 was established to provide guidance to ensure that radio frequency (RF) characteristics of aeronautical Communications, Navigation and Surveillance (CNS) systems use the spectrum efficiently while respecting the necessary safety margins. The guidance will facilitate any future evaluation of compatibility with other systems and ensure that usage of the allocated spectrum is as efficient as possible, fully taking into account the specificities of aeronautical CNS systems. The deliverables are envisaged to be referenced by EASA, other CAAs, ICAO, and national/international spectrum regulators, as appropriate, in guidance material for aviation systems.

The first meeting, jointly with SC-242, took place virtually in March 2022.

WG-124 is tasked with the development of the following documents:

- ▶ ED-xxx 'Spectrum Guidance for Developers of Standards for Aviation Wireless Systems' with target publication date in Q3/2024
- ▶ ER-xxx 'Compendium on Radio Frequency (RF) Performance of Aeronautical Standardized RF Systems' with target publication date in Q1/2023
- ▶ ER-xxx 'Primer on Aeronautical Radio Frequency (RF) Systems, their Regulatory Framework, and Operational Considerations' with target publication date in Q1/2024



## 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 (FTP) 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"):

- ▶ ED-12C Software considerations in airborne systems and equipment certification
- ▶ ED-94C Supporting Information for ED-12C and ED-109A
- ▶ ED-109A Software Integrity Assurance Considerations for Communication, Navigation, Surveillance and Air Traffic Management (CNS/ATM) Systems
- ▶ ED-215 Software tool qualification considerations
- ▶ ED-216 Formal methods supplement to ED-12C and ED-109A
- ▶ ED-217 Object-oriented technology supplement to ED-12C and ED-109A
- ▶ ED-218 Model-based development and verification supplement to ED-12C and ED-109A

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.

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 above), looking at software for low-risk applications (e.g., UAS, GA, VTOL) as well as COTS, Open Source and Service History aspects.



## EUROCAE Next Generation Aviation Professionals (NGAP) Programme

The Next Generation Aviation Professionals (NGAP) Programme is an initiative, which was introduced by ICAO in 2009 to ensure that sufficient qualified and competent aviation professionals would be available to operate, manage and maintain the future international air transport system. EUROCAE has relaunched its own NGAP Programme, which was initially introduced in 2020.

In 2021, EUROCAE launched a stakeholder analysis form to obtain our members' concerns regarding hiring, retention, and attracting talent in aviation, as well as their views on gender equality and how education and training must evolve to adapt to future technologies. We received responses from a diverse set of stakeholders, ranging from industries across various domains in aviation, universities, research institutes, SDOs, and regulators. The outcome of this survey is briefly summarised in the following table:

QUESTION	ANSWER
<b>Awareness of NGAP Programme:</b>	<ul style="list-style-type: none"> <li>▶ 67% of participants are aware of NGAP Programme and its objectives</li> <li>▶ 29% of participants' organisations have a similar programme</li> </ul>
<b>Gender equality:</b>	<ul style="list-style-type: none"> <li>▶ 90% of participants believe that there is insufficient female representation in various sectors in aviation</li> <li>▶ 55% of participants' organisations have an initiative to support gender equality in aviation</li> <li>▶ 23% of participants are a member in a women's organisation for aviation</li> </ul>
<b>Initiatives that participants would like to engage in:</b>	<ul style="list-style-type: none"> <li>▶ 67% would like to participate in a forum to engage with the public and introduce an interest in aviation by discussing technical topics</li> <li>▶ 64% would be interested in developing EUROCAE deliverables, e.g., to analyse skills assessment, skills requirements for future technologies, and competency-based training requirements</li> </ul>



### Initiatives that participants would like to engage in:

- ▶ 48% of participants would like to provide guest lectures on standardisation and other relevant topics to students
- ▶ 36% would like for EUROCAE to establish a student ambassador programme at universities to support NGAP objectives
- ▶ 31% would be interested in having limited seats in EUROCAE trainings with university or student pricing
- ▶ 29% of participants would be interested in attending trainings based on NGAP deliverables with university pricing options
- ▶ 62% of participants would like to develop EUROCAE discussion papers addressing relevant topics
- ▶ 57% would like to participate in workshops to discuss pressing topics and concerns with other stakeholders
- ▶ 50% of participants would like for EUROCAE to act as a facilitator by establishing a job platform between our member organisations and university career centres

Following the encouraging responses received in the stakeholder analysis form, the EUROCAE Secretariat organised a series of workshops to define the programme. The aim of the workshops was to discuss the Terms of Reference (ToR) for this activity and identify a possible list of tasks and deliverables, which could potentially serve as the work programme for the future working group. As several activities that could support the EUROCAE NGAP Programme were listed in

the survey, a feasibility analysis was conducted to identify suitable ways to kickstart the programme. The outcomes of the workshops and proposals for potential future activities will be discussed in line with EUROCAE procedures at the Technical Advisory Committee (TAC) and Council, which will decide on the further steps to be taken and possible activities to be initiated.



## 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 developed A-RDP v17. The A-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.

The focus of the EASCG discussion is on new standardisation activities that might be needed to support the community in implementing the results from SESAR R&D activities and enabling accelerated market uptake.

The EASCG also initiated a discussion on how to further improve the A-RDP both in terms of content and publication format to ensure that it reflects standardisation needs and progress of ongoing standardisation activities. An update to the Terms of Reference was initiated to reflect this scope of the A-RDP.

## 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 cyber security in aviation related standardisation activities. Its purpose is to coordinate the cyber security-related standardisation activities across Europe to ensure that necessary and appropriate standards are available in due time.

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

ECSCG gathers experts from European regulators (European Commission and EASA), European organisations active in cyber security, and international SDOs to discuss the terms of reference for the coordination group with the goal 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 (C-RDP). The C-RDP lists and categorises standardisation and regulatory activities, providing a method to identify and discuss overlaps and gaps.



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

The C-RDP is a useful tool to gain visibility of existing standards and thereby, it improves overall coordination of standards development. The first version of the ECSCG RDP was published in 2019.

V4.0 of the newly coined C-RDP, to align with A-RDP and U-RDP, is expected for Q2/2022. More information on ECSCG and C-RDPs are available on the [ecscg.eu](http://ecscg.eu) website.

## European UAS Standards Coordination Group (EUSCG)



The EUSCG is a joint coordination and advisory group established to coordinate UAS-related standardisation activities across Europe, essentially stemming from the EU regulations and EASA rule-making initiatives. The EUSCG provides a link to bridge the European activities to those at international level. EASA functions as the chair of this group, and EUROCAE provides the secretariat role, which ensures coordination between the regulator and participating Standard Developing Organisations (SDOs).

The key task of the EUSCG is to develop, monitor, and maintain an overarching European UAS standardisation Rolling Development Plan (U-RDP), based on the standardisation roadmap developed by EASA and other organisations and inputs from the EUSCG members, and where needed, other key actors in the aviation domain. To this end, the seventh version of the UAS Rolling Development Plan (U-RDP) was published in April 2022, and it is available on its dedicated website, [www.euscg.eu](http://www.euscg.eu).

The EUSCG also facilitates the sharing of work among the regulator and SDOs, thus avoiding the risk of overlapping developments and gaps. The next step in the EUSCG workplan is to make the U-RDP available on a more user-friendly platform with advanced functionalities to facilitate the search, identification, and use of information from U-RDP by the UAS community.

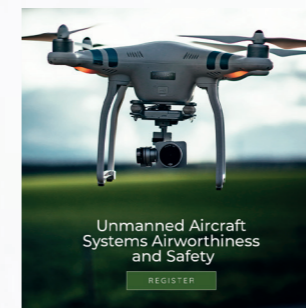
For more information and to download the latest version of the RDP please visit  
[www.eascg.eu](http://www.eascg.eu)  
[www.euscg.eu](http://www.euscg.eu)  
[www.ecscg.eu](http://www.ecscg.eu)

## EUROCAE Trainings

EUROCAE provides a high-quality portfolio of aviation trainings based on the standards we publish. Our courses are tailored for aviation professionals across the globe. It aims to acquaint trainees with EUROCAE

standards, which are drafted in response to industry demand for a consistent practice and aims to provide a harmonised approach in demonstrating compliance to new aviation rules.

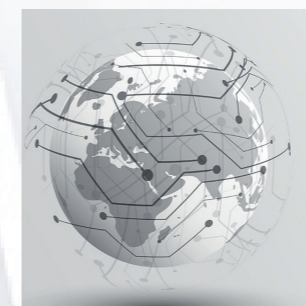
### Unmanned Aircraft Systems Airworthiness and Safety Training



This training course aims at familiarising the audience with issues related to UAS Airworthiness and Safety. 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).

With this training, participants will be able to identify risks related to UAS operations and prepare inputs for risk assessments, in line with SORA methodology. 16 participants attended the training in 2021 and two sessions are scheduled in June and October 2022.

### Voice over Internet Protocol (VoIP) Training



Two sessions are scheduled in September and December 2022 for this new course that enables participants to get a sufficient knowledge and comprehensive view of the different components of a VoIP ATM system and their mutual interfaces through a full overview of the latest updated ED-136, ED-137, ED-138 (18 EDs).

Anyone involved in ATM VoIP development and implementation of ATM VoIP design, manufacturing, and operations should attend this course. This includes managerial, technical and operational people (ATM VoIP suppliers, users, and authorities).

### ED-80 Design Assurance Guidance for Airborne Electronic Hardware



The purpose of the training is to enable participants to understand ED-80 standard and how it is used and complemented by major Certification Authorities. This course explores the qualification of electronic hardware in airborne systems. The target audience is anyone working in aviation and regulatory or industrial audiences. One session is scheduled in October 2022.

## Aviation Software Standards Training

### ATM Training



The purpose of this training is to provide participants with an overview of relevant EUROCAE standards to apply for systems and software development in aviation (ED-109A, and ED-153). This course allows participants to identify basic principles, their implementation, and consequences of good software engineering practices in the aviation domain. Furthermore, a detailed description of how software safety regulations, standards, and certification affect different actors in aviation is provided, which allows participants to understand how standards can enable the effective management of software development costs in safety critical systems. Two sessions are scheduled in June and November 2022.

### ED-12C Airborne Training



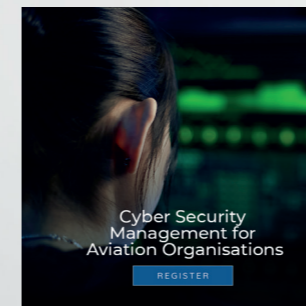
EUROCAE ED-12C has been the basis for airworthiness approvals of airborne software for 30 years and is recognised by all certification authorities. Knowledge of this standard is a prerequisite for all persons involved in the development or approval of airborne software. The objective of this course is to provide the basics to understand the principles of ED-12C and how a software design system must be built to fulfil the objectives listed therein.

The target audience is anyone involved in the development or qualification of airborne software, including developers, project managers, persons in charge of quality assurance or supplier monitoring, and compliance verification engineers. A prior knowledge of software engineering is expected, however, a prior knowledge of ED-12C is not required. Three sessions are scheduled in June, September, and November 2022.

## Cyber Security trainings

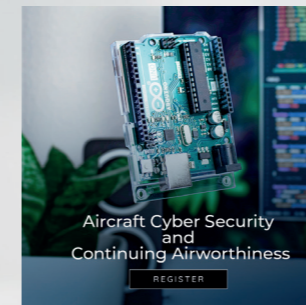
In response to industry demand for a consistent cyber security practice for the design of aircraft and to have a harmonised approach in demonstrating compliance to new aviation cyber security rules, EUROCAE WG-72 Aeronautical Systems Security has developed three standards, ED-202A, ED-203A, and ED-204A. The documents ED-202A and ED-203A provide guidance for developing aircraft, aircraft systems, and aircraft parts from initial design to type certification. ED-204A provides guidance for maintaining airworthiness of aircraft from a cyber security perspective. Overall, 48 participants attended the trainings in 2021.

### Cyber Security Management for Aviation Organisations



This training gives a general overview of cyber security in aviation and teaches participants how to adopt a standards-led approach to cyber security. Trainees will be able to identify basic principles, their implementation, and effects of cyber security in the aviation environment, and describe how cyber security impacts different actors in this sector. In 2022, 10 participants attended the first session, and two other sessions are scheduled in October and December 2022.

### Aircraft Cyber Security and Continuing Airworthiness



The training consists of two parts, a development part, and a continuing airworthiness part, which provides detailed information and insight into the current regulatory landscape surrounding cyber security. Participants can either join a single part or a combined training. 5 participants attended the training in February 2022 and three other sessions are scheduled in June, October, and November 2022. Additional information can be found on EUROCAE's website.

### How to book trainings:

Places are limited, so you are advised to book early online through our registration forms you will find on our website: [www.eurocae.net/training](http://www.eurocae.net/training)

For any further information or request, please contact Samy Belkadi, PR and Communication Specialist at [trainings@eurocae.net](mailto:trainings@eurocae.net)

# Financial Report

EUROCAE Organisation is composed of the non-for-profit organisation, EUROCAE, 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 COMMUNICATIONS:

- ▶ 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: The operation for EUROCAE Association and EUROCAE Communication has been merged. The operation for EUROCAE Communication has been seized since June 2021.

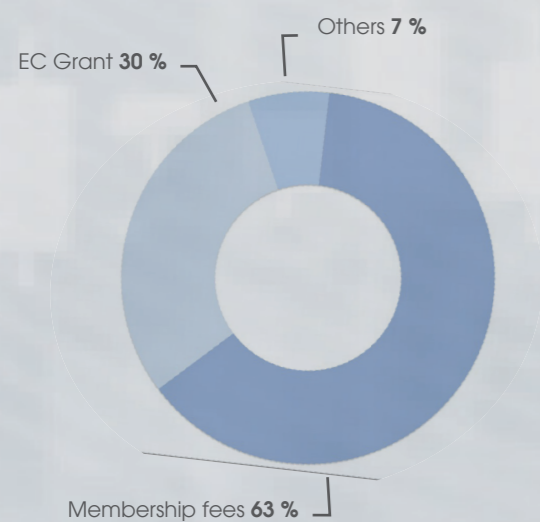
## STATUTORY AUDIT:

As every year, our 2 entities' fiscal years were audited:

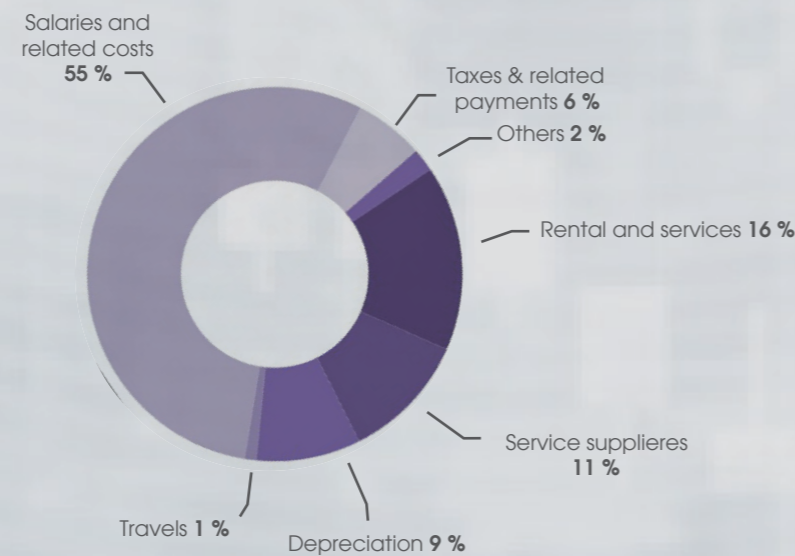
- ▶ EUROCAE's accounts ending 31<sup>st</sup> December 2021:
  - > Audit report delivered on 15<sup>th</sup> April 2022.
  - > No findings.
- ▶ EUROCAE Communication's accounts ending 30<sup>th</sup> September 2021:
  - > Audit report delivered on 24<sup>th</sup> March 2021.
  - > No findings.

Remark from our statutory auditor regarding the continuity of EUROCAE Communication's activity depending on EUROCAE financial support.

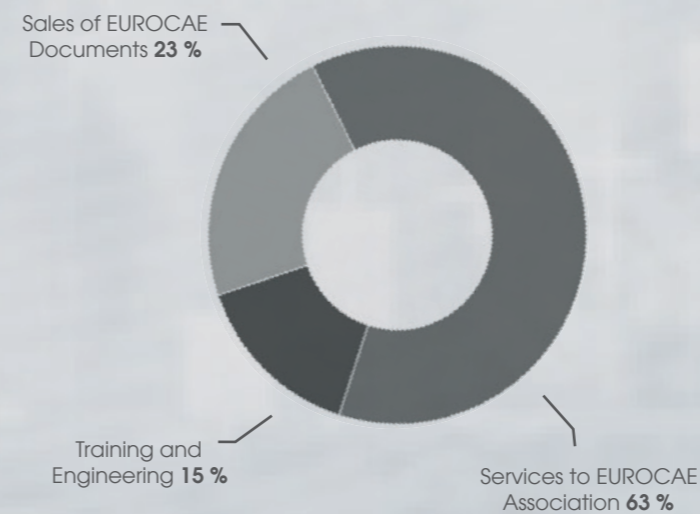
### EUROCAE OPERATING INCOME:



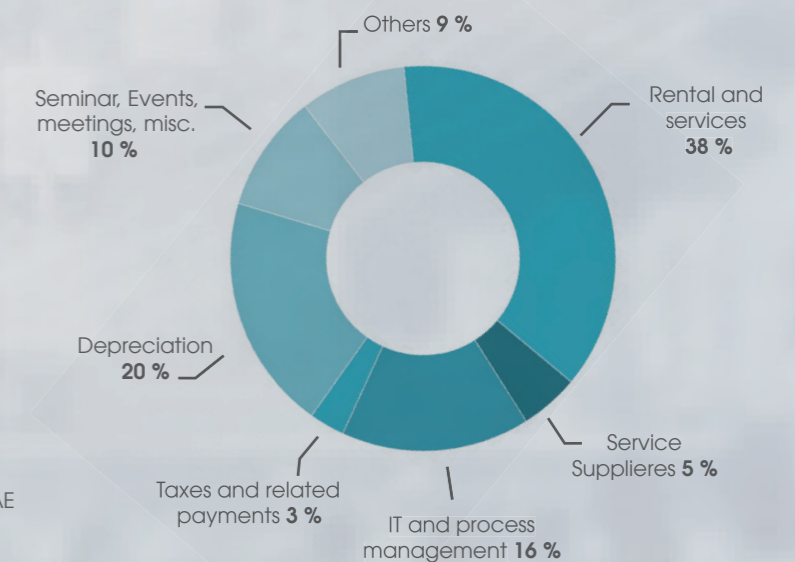
### EUROCAE OPERATING EXPENSES:



### EUROCAE COMMUNICATION OPERATING INCOME:



### EUROCAE COMMUNICATION OPERATING EXPENSES:



## EUROCAE Symposium 2022

The 2022 EUROCAE Symposium took place in Warsaw, Poland from 28 to 29 April 2022, as a hybrid event with participation from top industry leaders and regulators from Europe and around the world. This event was attended by 80 participants on site and over 200 experts joined the live stream online. 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. After two years with no or virtual only events, it was a great opportunity to meet our members and partners again and engage in lively exchanges during the Symposium sessions and enjoy our Gala Dinner and Award Night.

The Symposium was organised around six panels, the outcomes of which are described below.

### Panel 1: Air Taxis – concept or reality?

VTOL aircraft will revolutionise air mobility. This new technology is being developed at a pace rarely seen before in the aviation industry. The question is, are we ready? The panel members debated this question from a regulatory, technical, infrastructure, and societal point of view, together with a vision of how VTOL aircraft will change both modern aviation and the way we live. The panel arrived at the following conclusions:

- ▶ The biggest challenges are infrastructure on the ground. Vertiports and airspace integration requires that a whole new system be developed and validated, especially to connect rural places.
- ▶ Although operations are planned to begin in 2024, it appears that society is still sceptical about this ambitious plan. Therefore, social acceptance will be one of the key factors.
- ▶ Collaboration between industry, regulators, and standardisation bodies is essential to guarantee that all aspects of VTOL operations are ready.

EUROCAE WG-112 VTOL, and its 600 registered experts, are a perfect example of this integrated approach, and the WG is committed to contributing to the final goal.

### Panel 2: How Are Aviation Stakeholders Preparing for (EU) 2021/664?

Drones are growing increasingly prevalent, and to perform efficient operations, the establishment of U-space is crucial. (EU) 2021/664 is one of the cornerstones enabling the safe operations of UAS in the U-space airspace. The panel discussed the U-space concept, debated the possibility to integrate U-space and ATM, identified safety challenges around U-space services, and discussed how various players in aviation are addressing this rapidly evolving landscape. We saw that:

- ▶ Common standards are required for all digital services, and we must ensure that standards relevant to operations in U-space are available.
- ▶ Harmonised procedures will also be needed to react in case of dynamic reconfiguration, avoid manned aircraft in a U-space airspace, or react to a non-conformant drone.
- ▶ ANSPs are preparing for the implementation of the U-space airspace, in particular the ability to implement a dynamic airspace reconfiguration.
- ▶ Early interaction of SESAR demonstrations and validations projects with standardisation activities play a key role to support the early movers in the implementation of U-space regulation, as well as maturing and validating more advanced services.
- ▶ Mature ATM industry partners already provide solutions that are not only related to U-space/ATM interfaces but also support U-space implementation.



### Panel 3: UAS Technology

Being one of the most dynamic sectors in aviation over the last couple of years, UAS has achieved a mature level of technology supported by extensive R&D and validation exercises. The panel investigated how technology has evolved over the years, discussed the regulatory risk-based, operation centric approach as well as some potential future evolutions. The panelists noted that:

- ▶ EASA defines Means of Compliance and guidance in support of UAS certification and operations, but also identifies priority gaps which need to be addressed by SDOs. The UAS regulatory framework needs high quality industry standards to ensure the completeness of the ecosystem.
- ▶ Civil-military synergies present opportunities to boost development of drone technologies in Europe and beyond. As such, Detect and Avoid, Command and Control Datalinks, and Artificial Intelligence/Machine Learning Applications are key enablers of autonomy and UAS integration into the airspace.
- ▶ There is a need, and an opportunity, for small/medium UAS manufacturers to voice their views on regulation and standardisation.

EUROCAE WG-105 UAS will continue its engagement and work on the important aspects discussed in panels 2 and 3.

### Panel 4: Ensuring Cyber Resilience: developments in this ever-changing domain

The EU regulation, also known as Part-IS, is expected to provide the means to ensure the resilience of the European Aviation ecosystem against information security menaces. This panel discussed the ways to demonstrate compliance with the regulation and the means to ensure a common level playing field and its oversight.

One of the main outcomes was that strategic coordination in the EU is intended to make aviation an evolutionary cyber-resilient system, able to maintain its essential functionalities under attack and to be self-strengthening by adopting a "built-in security" approach.

- ▶ For authorities, information sharing, and trust are essential for empowering the aviation ecosystem to move from individual to collective cyber resilience.
- ▶ For the aviation industry, compliance to an increasing number of overlapping cybersecurity regulations (sectorial, global/regional, civil/military, safety/capacity) shall shift towards a global and business risk-based security management system implementation.

▶ For airlines and operators, implementation of EU "Cyber" Regulation is seen in a digital transformation landscape. As such, it implies the need for harmonisation of different cyber

security regulations, with impacts at different levels of organisations

- ▶ Trainings, methodologies tools, and support to states are essential means.
- ▶ A standard-based approach to addressing the security challenges for aviation as a whole must be encouraged, whenever possible.

EUROCAE WG-72 *Aeronautical Systems Security* is a central venue for all stakeholders to develop the supporting industry standards.

### Panel 5: Sustainable Aviation Technologies

In the recent years, many initiatives were launched to ensure sustainability in aviation. This panel looked at ongoing projects for sustainable energy sources and propulsion systems and spoke about expectations, challenges, and the importance of industry standards to support certification and bringing these new technologies into the market. The highlights of the discussion were:

- ▶ Carbon neutrality by 2050 is an ambitious goal, which requires effort from all parties to be successful. Standardisation activities are key and are needed on time to support new technologies considered to this end.
- ▶ At aircraft level, the main challenges are noise, emissions, and contrails. Practical experience with Sustainable Aviation Fuel (SAF) and hydrogen as well as solutions on the ATM side, for example, optimised flight trajectories, seem to indicate that the industry is developing quickly.

Not only aircraft but its operations are also to be considered, which brings forth some challenges for airports. More activities remain to be performed in this important area.

### Panel 6: Space – the new frontier

Aviation development is increasingly intertwined with space technology innovation as exploitation of the exosphere presents a new outlook. Space offers a wide range of possibilities enhancing aviation safety, such as high-altitude operation, GNSS, and more. The panel highlighted that:

- ▶ Space was given high visibility at the EU level through the EU Space Programme.
- ▶ The EU Space strategy is focusing on space-based services such as Copernicus, Galileo, and EGNOS, space-based secure connectivity system, and space traffic management.
- ▶ The panel was the occasion to receive an update on the latest development from major space actors:
  - European Space agency on the IRIS project
  - Indra on ASD-B and VHF Space-Based solutions
  - European Commission on Space Traffic Management
  - EUROCONTROL on High altitude operation
- ▶ This is a domain of particular importance for EUROCAE, and it already is an item in our Technical Work Programme.
- ▶ EUROCAE will evaluate all the conclusions obtained and reflect with the Council and Technical Advisory Committee on possible future standardisation activities resulting from these discussions.



In addition, the event offered a great opportunity to sign the updated Memorandum of Cooperation between EUROCAE and SAE International, and to recognise the participation of experts

who received the EUROCAE Awards for their invaluable contribution to standardisation activities in support of aviation.



«A special congratulations to all of them!»



- Lifetime Achievement:** David Bowen
- WG Leadership:** Philippe Chauffoureaux
- Global Harmonisation:** E. F. Charles (Chuck) LaBerge
- Best Contribution:** Philippe Leplae
- International Award:** Vaughn Maiolla
- President's Award:** Jean-Marc Loscos

# SAVE THE DATE

**26 - 27 APRIL 2023**

## EUROCAE SYMPOSIUM 2023

Based on the successful EUROCAE Symposium in April 2022, EUROCAE has already started to plan for its 2023 Symposium which will take place in Paris.

**The EUROCAE 60<sup>th</sup> General Assembly will take place on 26 April 2023.**

## EUROCAE's Engagement in China

Following an initial engagement in China in April 2019, EUROCAE is pursuing its working relationship with Galleon. China-based organisations are increasingly participating in EUROCAE activities. Collaboration is particularly exciting on topics related to Global Navigation Satellite System (GNSS) with further integration of Galileo and BeiDou (BDS) systems and the launch of WG-62 SG-1. The same dynamic is also visible in topics related to new entrants such as VTOLs and UAS. This development will allow further coordination and harmonisation of industry standards and facilitate international trade.



## 10<sup>th</sup> Civil Avionics International Forum (CAIF)

22-23 June 2021 | Shanghai, China | Virtual

Fostering initial engagement in 2019, EUROCAE delegation virtually participated in the 10<sup>th</sup> Civil Avionics International Forum (CAIF) 2021. EUROCAE was invited to deliver keynote speeches on civil aviation standardisation and international cooperation.

Christian Schleifer, former EUROCAE Director General, delivered a speech on the current challenges and priorities in certification supported by standardisation. This was illustrated by concrete examples coming from areas such as cyber security, Runway Overrun Awareness and Alerting System (ROAAS), Global navigation Satellite System (GNSS), and Artificial Intelligence.

Anna Guégan, Technical Programme Manager, provided an overview of EUROCAE's progress in standard development activities for Global Navigation Systems and expressed the importance of developing common standards to improve safety and ensure the best use of the technology. This marked the beginning of the ongoing discussion on how to best integrate BeiDou System and BeiDou Satellite-Based Augmentation System (BDSBAS) into standards developed for Galileo/European Geostationary Navigation Overlay Service (EGNOS) and Global Positioning System (GPS) environments.

EUROCAE is looking forward to pursuing the development of its membership in China to ensure that its standards are truly global.

## International Aviation Software Summit 2021

23-24 June 2021 | Virtual

For the first time, in June 2021, EUROCAE and RTCA jointly organised the International Aviation Software Summit. The Summit took place virtually on 23 and 24 June, was free to attend, and included three hours of programming each day plus on-demand sessions.

The event attracted experts from industry, government, and academia to collaborate on current software standards applications and create dialogue for future development. The event addressed traditional and new entrant software needs. It was attended by almost 500 participants.

This event emphasised the importance of ensuring an evolution of our well proven software standard suite to allow technological advancement, virtualisation, and automation. While integrating new certification processes, regulators must ensure the same level of safety, while relying on a risk-based and operation-centric approach supported by industry standards. Regulators have indicated the need to adapt to emerging industry needs and work closely with standard developing organisations to prepare the certification frame in a safe and timely manner.

Working together with regulators, operators, and the industry on consensus-based, high quality standards is an integral to address current challenges. The standards developing organisations specified the breadth of aviation software standards activities that are underway and demonstrated how standards support in placing new products and capabilities into the market.

Until now, software development assurance standards have allowed the aviation industry to maintain the highest levels of safety, whilst the complexity of products and systems has increased immensely. Going forward, standards will have to be maintained and adapted to sustain emerging technologies and address new entrants in aviation. Regulations and standards should be complementary to support the certification process. It is important that all stakeholders work jointly in ensuring that the right standards are available in a timely manner. Otherwise, lack of necessary standards could become an impediment in deploying new technologies.



### PROGRAMME

#### Live Sessions – Day 1 – June 23

- ▶ Opening Session: A Fireside Chat with FAA and EASA
- ▶ Practical Software Development for Today's Aviation Ecosystem
- ▶ ASTM and SAE: Applications for Today's Software Standards
- ▶ Expanding Software Rules and Regulations for New Entrants (UAM, UAS)

#### Live Sessions – Day 2 – June 24

- ▶ Opening Session: FAA and EASA on Innovation and Accommodating New Entrants
- ▶ Supplements: Pathways to Success and Pitfalls to Avoid
- ▶ FAS (Forum for Aeronautical Software) Retrospective and Future: Complimenting the Implementation of Existing Standards
- ▶ Paving the Way to Autonomous Auto Flying (UAM, UAS)

This importance was shared by EASA and FAA, as well as other certifying authorities globally, by actively contributing to the discussions and the event. Collaboration from early stages, balanced regulatory approach, and predictability of certification methodologies are key to ensure the development of this emerging industry.

## Webinar on The Drone Standards Landscape

On 14 July 2021, Christian Schleifer-Heingärtner, former Director General at EUROCAE, was invited to participate in a webinar organised by the Drone Talks Academy and dedicated to 'The Drone Standards Landscape'.

Moderated by Ruby Sayyed, Head of ATM Advocacy at IATA, the panel consisted of John Walker (ISO), Phil Kenul (ASTM), Al Secen (RTCA), and Christophe Mazel (ASD-Stan).

This online event was an opportunity to provide the audience with a status of EUROCAE's contribution to drone standardisation activities and to discuss the interrelation between the industry, regulatory updates from aviation authorities, and day-to-day operations.

In case you missed the webinar, the full session is available at Watch On-Demand: [The Drone Standards Landscape - DroneTalks](#).



## 14<sup>th</sup> USA/Europe Air Traffic Management Research and Development Seminar

20-24 September 2021 | New Orleans (USA) | Virtual

The Federal Aviation Administration (FAA) and EUROCONTROL have jointly organised an international seminar for Air Traffic Management Research and Development (ATM R&D) since 1997. These seminars are held every two years, alternating between USA and Europe, and have become the top event for ATM researchers. The ATM R&D Seminars are particularly important in view of the need to agree and develop solutions that are globally relevant, encompassing SESAR, NextGen, and other international programmes. The seminars promote international collaboration, create and reinforce relationships between leading ATM experts, academia, industry, government, and researchers world-wide, and encourage discussion and consensus on major issues.

On day two, the programme included a panel on 'Global Standards'. Moderated by Eric Nelderman (FAA), the panel included Francois Triboule (EASA), Terry McVenes (RTCA), and Christian Schleifer (EUROCAE). While the introduction from EASA focused on Artificial Intelligence (AI), which was one of the main topics at this seminar, Terry and Christian introduced RTCA and EUROCAE and standardisation in general before diving into more detail to understand how ATM R&D contributes and leads to specific standard developing activities.

This was the perfect opportunity to exchange expectations, opinions, and experience from both sides and discuss how SDOs can assist in ATM R&D coordination and globally harmonised deployment.

Christian Schleifer also shared EUROCAE's current ATM related work programme, discussed examples and lessons learned from ATM modernisation programmes, how we encourage and ensure world-

wide participation in our activities, and our process to develop high quality globally accepted standards.

## World ATM Congress (WAC)

26-28 October 2021 | Madrid

Every year, the WAC brings together the world's leading industry experts, stakeholders, and ANSPs. Aviation thought leaders gathered for three days of conference sessions, product demonstrations and launches, contract closures, and educational and networking opportunities.

EUROCAE attended the event and enjoyed the opportunity to network, learn about new technologies and developments, and promote our standardisation activities. During an educational session, Isabel Franke-Chaudet from Egis, discussed how the pandemic has put a spotlight on the aviation industry, and why it must become more agile to cope with structural shocks. The airspace architecture study foresees that ADSPs will play a key role to deliver this through the introduction of more scalable and resilient ATM.

In her presentation, she discussed the role of standardisation to achieve the ADSP promise, how we can avoid pitfalls from the past, and looked the current standardisation landscape, mainly focusing on EUROCAE WG-59 Flight Data Processing Interoperability and WG-122 Virtual Centre.

Expodrónica, Spain's premier drone event, was co-located at the WAC.

EUROCAE was invited to participate at the 'UAS challenges in a Civil - Military context' panel focused on civil/military synergies. EDA and NATO organised the panel and gave the strategic overview, while four national organisations provided



extremely interesting examples of their drone applications.

EUROCAE former Director General, Christian Schleifer, spoke in this session and gave a presentation on technical challenges therein, while focusing on the work of WG-105 UAS in developing standards to support the safe integration of all types of UAS into all classes of airspace. He also reported on today's collaboration examples and good practices that EUROCAE has in place.

This session showed that there are more synergies that need to be addressed together as follow up actions to this panel.





## EUROCAE at Aerospace Techweek 2021

EUROCAE participated at the Avionics Expo annual event in Toulouse, France on 3 and 4 November 2021.

EUROCAE shared a booth with EUROCONTROL and the presence at the booth led to good contacts and interesting discussions with the attendees. This was also an occasion to distribute EUROCAE's publications, such as Broadcast and Annual Report.

EUROCAE participated in three conference sessions:

- ▶ Luc Deneufchattel moderated the session on mandates and regulatory framework updates.
- ▶ Alexander Engel participated in the session on data, usage of data, and trends and monitoring, and presented the progress made by WG-75 Traffic Alert and Collision Avoidance Systems (TCAS).



- ▶ Anna Guégan provided an update on WG-114 Artificial Intelligence at a session titled 'Innovations in the Industry'.

The Aerospace Techweek 2021 was very well-attended and offered a great opportunity to reconnect with the aviation community.

## European Rotors 2021

The 2021 edition of EASA's Rotorcraft and VTOL Symposium was held during the European Rotors event from 16-18 November in Cologne, Germany.

The presentations and workshops offered a forum to understand and review the latest developments with respect to safety for rotorcraft and VTOL aircraft. The event also provided an opportunity to connect with existing and potential EUROCAE members and discuss our standardisation activities.



## EUROCAE at ICAO Runway Safety Seminar

From 22 to 24 March 2022, EUROCAE was invited to present at the ICAO Runway Safety Seminar: Technological View organised by ICAO at EUR/NAT office in Paris. It was a great opportunity to promote EUROCAE airport portfolio Working Groups and highlight the standards that have been developed to enable technological solutions to improve runway safety.

EUROCAE presented on all three days of the event and provided an in-depth overview of its airport portfolio:

- ▶ WG-41 Advanced Surface Movement Guidance and Control Systems (A-SMGCS)
- ▶ WG-83 Foreign Object Debris Detection Systems (FOD)
- ▶ WG-109 Runway Weather Information Systems (RWIS)
- ▶ WG-111 Airport Collaborative Decision Making (A-CDM)

The audience was introduced to the main standard provisions on systems performance for specific domains. EUROCAE presented the benefits of using standards, which include maintaining safety of airport operations, increased user efficiency, and other gains achieved through clearly defined performance requirements of A-SMGCS, FOD, RWIS, and FOD systems.

As a next step, EUROCAE will build on the Memorandum of Cooperation signed with ICAO and will engage with ICAO EUR/NAT Regional Office to support the regional initiatives in enhancing runway safety, while raising awareness on standardisation activities. The use of new technology will introduce additional efficiency gains in achieving objectives pertaining to runway safety.



In addition, EUROCAE aims to partner with ICAO, EASA, ACI Europe, and other aviation organisations in organising specialised events to address the most important topics in the runway safety agenda.

## EASA High Level Conference on Drones

29-30 March 2022 | Amsterdam

The EASA High Level Conference on Drones was organised on 29-30 March 2022 in conjunction with Amsterdam Drone Week.

Interactive technical workshops were held on 30 March and several topics were discussed such as the application of guidelines related to design verification of UAS, technical specifications on vertiports, U-space implementation in an UAM environment together with ATM integration of manned UAM vehicles, and licensing and operational requirements for UAM operators.

In her role as Technical Programme Manager of WG-105 and Secretary of European UAS Standards Coordination Group (EUSCG) at EUROCAE, Abinaya Kannan participated in Technical Workshop 1a on 'UAS Operation in the Specific Categories – Application of the SORA for Operation in Urban Environment'. The other panelists included Leonardo Capacci, UAS Operations Expert at EASA, Jeremie Neveux, Continuing Airworthiness Senior Expert at EASA, and Geert Vanhandenhove, Manager Flight Operations at Helicus.

L. Capacci presented an overview of the authorisation process, introduced SORA 2.5, and explained how operational authorisation can be obtained based on a risk assessment methodology. Pre-defined Risk Assessments (PDRA) were explained in detail, along with the PDRA that are currently under development. J. Neveux explained the requirements for ensuring continuing airworthiness and how the requirements imposed on manned aircraft could be translated into requirements for unmanned aircraft. The regulatory landscape and vision for continuing airworthiness for certified versus specific UAS was described.



To present a practical experience on an operation in urban area, G. Vanhandenhove from Helicus described medical mobility solutions and healthcare use cases for UAVs in the specific category. Medical drone logistics were described and the benefits of certification for high-risk medical cargo missions were listed. A. Kannan presented the perspective of a Standards Developing Organisation and explained the need for standards in support of the specific category of UAS. The role, tasks, and importance of EUROCAE WG-105 and EUSCG were described, projects such as AW-Drones and Horizon Europe Project: UAS Standards were briefly discussed, and ongoing standardisation work in U-space and SORA was listed.

Questions on how to bridge the gap for standards that are currently unavailable were answered, proposals for new standardisation activities were obtained from the audience, and information on how one could become a EUROCAE member was presented. You can view the full recording of Technical Workshop 1a on EASA's YouTube channel, and for further information on WG-105 UAS and EUSCG, please contact Abinaya Kannan.

## 22<sup>nd</sup> Integrated Communications, Navigation and Surveillance Systems (ICNS) Conference

5-7 April 2022 | Herndon (USA) | Virtual

The 2022 ICNS programme focused on the promises, challenges, and developments in the areas of policy, verification, validation, and certification of autonomous operations in CNS and ATM. Anna von Groote, Director General, delivered the opening keynote to this year's ICNS Conference, looking at CNS and Spectrum Developments in European and International Standardisation.

As the pace of technology improvements advance at an accelerating rate, the development of international aeronautical standards describing increasingly complex systems for the provision of communications, navigation and surveillance (CNS) is a challenging task. To react to those challenges, aviation must take a holistic look at the long-term evolution of CNS requirements and actively improve our processes.

International harmonisation and global interoperability are important to maintain safety, security, quality, and integrity, and to consider and coordinate the efficient use of spectrum. The regulatory and standardisation framework must keep up with the rapid pace of innovation, in close collaboration with R&D projects and community, to accommodate innovation in aviation.



In her keynote, Anna discussed the challenges that lay ahead for a more integrated CNS in areas such as new entrants, UAS, U-Space, VTOL, the ever-increasing digitalisation of ATM, cybersecurity, artificial intelligence and machine learning, space and space-based technologies, as well as the recent activities on spectrum. Worldwide interoperability and global harmonisation need international inputs to develop globally accepted and applicable standards.

Developed in collaboration through consensus-based, open processes, EUROCAE standards will support these global aviation targets and help address global aviation challenges. Working together will enable a safe, secure, smarter, and more sustainable aviation.



i-cns.org

## EUROCAE Publications

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

EUROCAE has published more than 200 documents, all of them addressing various domains in aviation. Several documents were jointly developed with US partners and many documents are referenced in ETSO/TSOs, ICAO SARPs, EUROCONTROL ESARRs, and FAA standards. They are recognised worldwide for their high quality and as state-of-the-art technical specifications.

These EDs cover system or equipment performance specifications, safety and performance requirements, interoperability requirements, technical specifications, or guidance material.

Some documents are dedicated to the airborne side, others to the ground side (mainly CNS and ATM), while others cover common air and ground requirements.

EUROCAE Reports (ER) describe results of Working Groups, which are of general interest but not appropriate to publish in the form of a specification or other type of ED.

**All full members are entitled to consult our whole catalog for free. EDs are available for download via our e-shop, <https://eshop.eurocae.net>. Other members and non-members may buy EUROCAE Documents from our eShop: [www.eurocae.net/eshop/catalog](http://www.eurocae.net/eshop/catalog).**

**New EDs published from May 2021 to May 2022 are marked with this sign ●.**

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

<b>ED-12C Corr 1</b>	Software Considerations in Airborne Systems and Equipment Certification Corrigendum 1	WG-71
<b>ED-94C Corr 1</b>	Supporting Information for ED-12C and ED-109A Corrigendum 1	WG-71
<b>ED-73F</b>	MOPS for Secondary Surveillance Radar Mode S Transponders	WG-49
<b>1/WG7/70</b>	MPS for airborne 75 MHz marker beacon receiving equipment	WG-7
<b>1/WG7C/1-74</b>	MPS for airborne Doppler radar ground speed and/or drift angle measuring equipment	WG-7
<b>1/WG7C/2-74</b>	MPS for airborne automatic dead reckoning computer equipment utilising aircraft heading and Doppler obtained velocity vector data	WG-7
<b>ED-12C</b>	Software considerations in airborne systems and equipment certification	WG-71
<b>ED-14G</b>	Environmental Conditions and Test procedures for airborne equipment	WG-14
<b>ED-14G Change 1</b>	Environmental Conditions and Test procedures for airborne equipment	WG-14
<b>ED-18</b>	Audio systems characteristics and MPS aircraft microphones (except carbon), aircraft headsets, handsets and loudspeakers, aircraft audio selector panels and amplifiers	WG-18
<b>ED-22</b>	MPS for airborne VOR receiving equipment	WG-7
<b>ED-22A</b>	MPS for airborne VOR receiving equipment	WG-7
<b>ED-22B</b>	MPS for airborne VOR receiving equipment	WG-7
<b>ED-23B</b>	MOPS for airborne VHF Receiver-Transmitter operating in the frequency range 117.975 – 136.975 MHz	WG-7
<b>ED-23C</b>	MOPS for airborne VHF Receiver-Transmitter operating in the frequency range 117.975 – 137.000 MHz	TF-Climax

<b>ED-24</b>	MPS for airborne VHF communications equipment operating in the frequency range 118.000 – 135.975 MHz (Part 2 - transmitter)	WG-7
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<b>ED-159</b>	Safety, Performance and Interoperability Requirements Document for ATSA-ITP Application	WG-51
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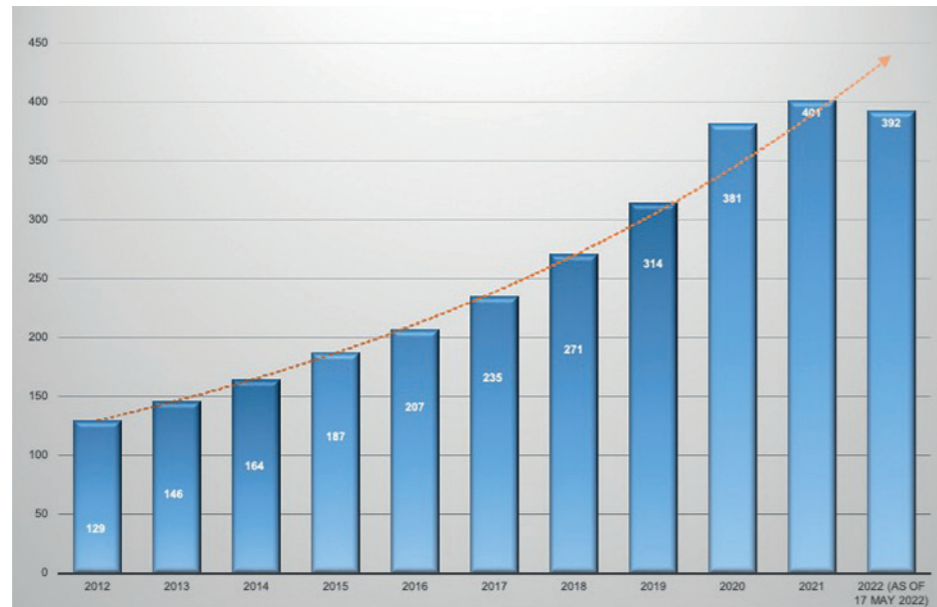
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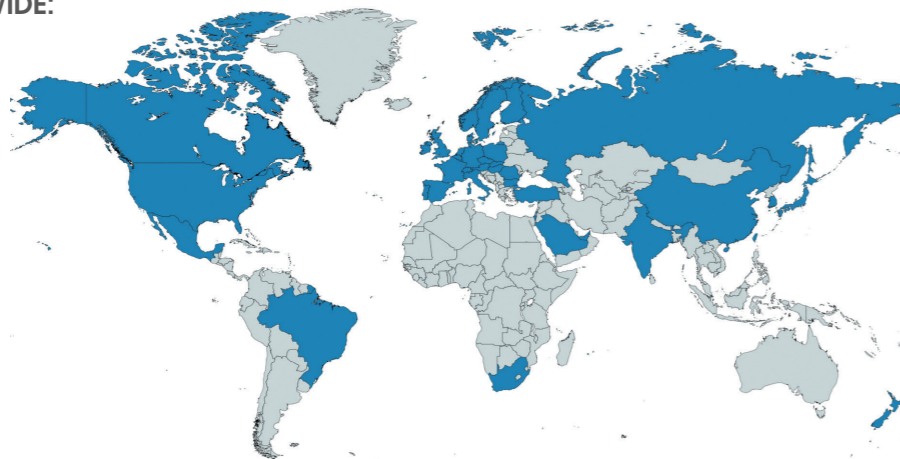
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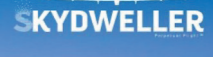




























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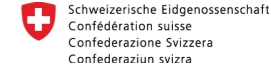














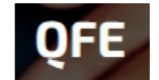


















































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Boschung Mecatronic AG		Elbit Systems LTD	
Bundesstelle für Flugunfalluntersuchung		Electronics and Telecommunications Research Institute (ETRI)	
CAV Systems Ltd		Element Materials Technology Warwick	
Cavotec SA		ELMAN SRL	
CGX AEROinSYS		ELTA (ECA GROUP)	
CHANGI AIRPORT GROUP (S) PTE LTD		EMC PARTNER AG	
CNES		EpiGuard AS	
DAHER-SOCATA		EUMETNET	
Dassault Systemes		Eventide Inc	
DAUtec GmbH		Exacom, Inc.	
Dayton Granger inc		f.u.n.k.e. AVIONICS GmbH	
Deep Blue Srl		FACC Operations	

## MEMBERS LIST

FADA-CATEC		Kanematsu GmbH		OTT HydroMet Fellbach GmbH		Swiss FOCA	
FlightSafety Simulation Systems		Kappa optronics		Overair		Systems Technology, Inc.	
Fundación Para El Fomento de la Innovación Industrial		KLAAT		Phoenix Recording Systems Limited		Taiwan Transportation Safety Board	
German Military Aviation Authority		Kongsberg Defence and Aerospace		Pilatus Aircraft		Teconer Oy	
GKN - Fokker Elmo		LATECOERE		QFE		Tekever UAS	
GL Communications Inc.		Leichtwerk AG		qualcomm technologies incorporated		TOPVIEW SRL	
GRADIANT		LSA Electromagnetics Limited		Rai Way		Transportation Safety Board of Canada	
GuardREC AS		MedCareProfessional GmbH		Rheinmetall Italia S.p.A.		TTTech Computertechnik AG	
HeliOffshore Limited		MEP		RUAG AG		TU Braunschweig - Institute for EMC	
Highlands and Islands Airports		Météo-France		Saft		Tyrol Air Ambulance	
Hitachi Energy Ltd		MTU Aero Engines AG		Saint-Gobain		UNICAIR GmbH	
IACIT		Munich Airport		SCALIAN		Universal Avionics Systems Corporation	
Industrieanlagen-Betriebsgesellschaft mbH		NAITEC		Septentrio Satellite Navigation		Vaisala	
Instituto Nacional de Técnica Aeroespacial		NICE Systems UK Ltd		Shanghai Aircraft Design and Research Institute		Vector Informatik	
Iryna Borshchova		Northvolt		Shenyang AeroTech Co.,Ltd		Wingtra AG	
Isavia ANS		NTSB (EUROCAE)		SkyFive AG		ZAL Zentrum für Angewandte Luftfahrtforschung	
ISDEFE		NUAIR Alliance		Sopra Steria		ZF Luffahrttechnik	
ITV Consult AG		OMB Saleri		Spaceopal GmbH			

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