EUROCAE Supports the Drone Industry Through Standardisation

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EUROCAE is the European leader in the development of worldwide recognised industry standards for aviation. It takes an active role in coordinating European and global standardisation activities and developing 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, and address emerging global aviation challenges.

EUROCAE is an independent non-profit organisation with 60 years of experience in the domain of aviation standardisation. It has a long-standing successful record in high quality and safety critical standardisation and has been recognised for following the World Trade Organisation's code of good conduct for standardisation, which is testament to its open, transparent, and consensus-based process.

EUROCAE aims to increase safety and market potential in the aviation industry, facilitate interoperability, and encourage technological development in the interest of its members. We offer a platform to develop internationally recognised standards, either as a EUROCAE Document (ED), EUROCAE Report (ER), or an Internal Report. The activities are organised by Working Groups (WGs). We currently have around 50 WGs, 450+ worldwide members, including manufacturers, service providers, regulators, and research institutions, and over 5000 global experts who actively contribute to the development or revision of standards on a voluntary basis.

EUROCAE WG-105 Unmanned Aircraft Systems (UAS) is tasked to develop the necessary standards to enable safe integration of UAS into all classes of airspace, with due consideration of the emerging European regulatory proportionate risk-based approach, of the related categories of operations (Open, Specific and Certified) and of industry requirements. WG-105 maintains a close coordination and alignment with EASA, and its work programme is developed according to the needs of the industry, while supporting future EU drone regulation to enable safe and efficient drone operations. The WG is divided into six subgroups (SGs) to encompass the broad scope of the topics addressed:

- SG-1: Detect and Avoid (DAA)
- SG-2: Command, Control, Communication, and Security (C3&S)
- SG-3: U-space/UAS Traffic Management (UTM)
- SG-4: Design and Airworthiness (D&AW)
- SG-5: Enhanced RPAS Automation (ERA)
- SG-6: Specific Operations Risk Assessment (SORA)

As the SGs perform diverse activities, a Steering Committee (SG-0) was established to manage and coordinate the status of activities in WG-105. It comprises of the WG Co-chairs, Secretary, Technical Programme Manager, SG leaders, and invited stakeholder representatives. Over 20 standards have been published since its inception in 2016. This is a non-exhaustive list of some of the standards that have been published since 2016:

- DAA: o ED-271 Minimum Aviation System Performance Standard for Detect & Avoid (Traffic) in Class A-C airspaces
  - ED-258 Operational Services and Environment Definition for Detect and Avoid [Traffic] in Class D-G Airspaces under VFR/IFR
  - ED-267 Operational Services and Environment Definition for Detect and Avoid for VLL

- C3&S:
  - ER-016 RPAS 5030-5091 MHz CNPC LOS and BLOS Compatibility Study
  - ED-266 Guidance on Spectrum Access, Use and Management for UAS

- UTM: o ED-269 Minimum Operational Performance Standard for UAS Geo-Fencing
  - ED-270 Minimum Operational Performance Standard for UAS Geo-Caging
  - ED-282 Minimum Operational Performance Standard for Unmanned Aircraft System Electronic Reporting

- D&AW:
  - ER-019 Inputs to RPAS AMC 1309
  - ED-272 Minimum Aviation System Performance Standard for Remote Pilot Stations Supporting IFR Operations in Non-Segregated Airspace
  - ED-279 Generic Functional Hazard Assessment for UAS and RPAS

- ERA:
  - ED-281 Minimum Aviation System Performance Standards for RPAS Automation & Emergency Recovery
  - ED-283 Minimum Aviation System Performance Standards for RPAS Automatic Take-off and Landing (ATOL)
  - ED-284 Minimum Aviation System Performance Standards for RPAS Automatic Taxiing
  - ED-251 Operational Services and Environment Definition for RPAS Automatic Taxiing
  - ED-252 Operational Services and Environment Definition for RPAS Automatic Take-off and Landing
  - ED-253 Operational Services and Environment Definition for Automation and Emergency Recovery

- SORA:
  - ED-280 Guidelines for UAS Safety Analysis for the

Specific Category with Low and Medium Levels of Robustness
- ED-301 Guidelines for the Use of Multi-GNSS Solutions for UAS Specific Category – Low Risk Operations SAIL I and II

ED-301 was published in August 2022 and is intended for operations in Low Risk (SAIL I and II) in the specific category. Further versions of this document will deal with Medium and High Risk in the same category. SORA Operational Safety Objective (OSO) #13 is also applicable to higher Specific Assurance and Integrity Levels (SAIL) operations in the specific category but with different level of assurance, which may take the form of a Service Level Agreement (SLA) with external Global Navigation Satellite System (GNSS) service providers. This changes the approach with respect to Low Risk operations, so a new standard will be defined instead of evolving ED-301. ED-xxx titled 'Guidelines for the Use of Multi-GNSS Solutions for UAS: Medium Risk' has been initiated to address this. It is expected to be published in Q2 2024.

Some of our published standards have been recognised as Acceptable Means of Compliance (AMC) or Guidance Material (GM) by EASA. This means that applicants can use a recognised EUROCAE standard to demonstrate compliance to a certain section of a regulation.

There are several ongoing activities in each SG:

- SG-1 DAA o Draft ED-271A, Minimum Aviation System Performance Specification for Detect and Avoid [Traffic] under IFR
  - Minimum Operational Performance Specification (MOPS) for Detect and Avoid [Traffic] under IFR
  - Minimum Operational Performance Specification for Detect and Avoid in Very Low-Level Operations
  - European Industry Position Report on RTCA SC-147 ACAS sXu

- SG-2 C3&S
  - Draft ED-265, Minimum Operational Performance Specification for RPAS Command and Control Data Link (C-Band Satellite)
  - Minimum Operational Performance Specification for UAS Communications by Cellular Networks
  - UAS C2 MASPS European Stakeholders Report

- SG-3 U-space/UTM
  - Technical Specification for Geographical Zones and U-Space Data Provision and Exchange
  - Minimum Operational Performance Standard for Network Identification Service of Unmanned Aerial Vehicles for A/UTM/U-space
  - Minimum Operational Performance Standard for Flight Planning and Authorisation Service for Global Awareness in A/UTM/U-space
  - Minimum Operational Performance Standard for Traffic Information/Situation Dissemination Exchange Format and Service
  - Minimum Operational Performance Standard for U-space Geo-Awareness Service

- SG-4 D&AW
  - Minimum Operational Performance Standard for

Command Unit Core Layer of UAS to be Operated in the EASA Certified Category of Operations
- Guidance Document to Support the Development of Means of Compliance (MoC) for EASA Special Condition Light-UAS – Medium Risk

- SG-6 SORA
  - Guidelines on the Automatic Protection of the Flight Envelope from Human Errors for UAS
  - Draft ED-280A, Guidelines for UAS Safety Analysis for the Specific Category – Low and Medium Levels of Robustness
  - Guidelines for SAIL II Application of SORA
  - Guidelines for the Use of Multi-GNSS Solutions for UAS: Medium Risk

EUROCAE has established cooperation agreements with several organisations to ensure that activities within the UAS domain are coordinated and discussed. A MoU/MoC has been set up with most major Standard Developing Organisations (SDOs), and we maintain a liaison status at ISO/TC 20/SC 16, which addresses Unmanned Aircraft Systems. An MoU has also been established with GUTMA to discuss U-space topics. EUROCAE WG-105 provides inputs to ANSI Unmanned Aircraft Systems Standardization Collaborative (UASSC) Roadmap on a regular basis to support coordination of activities between Europe and North America.

The main purpose of WG-105 is to complement the UAS regulatory framework with performance-based standards. As the aviation industry shifts from prescriptive regulatory frameworks to performance-based regulations, standards are the need of the hour. When standards are recognised by the regulator, they become a means for stakeholders to comply with the corresponding regulation. There are several initiatives and ongoing activities by stakeholders from different domains that address UAS topics, therefore it is crucial to ensure a coordinated and harmonised elaboration and implementation of UAS functionalities.

The European UAS Standards Coordination Group (EUSCG) was established with this objective, and it functions as a joint coordination and advisory group that streamlines standardisation activities across Europe, essentially those stemming from EU regulations and EASA rulemaking initiatives. The EUSCG provides a link to bridge European activities to those at the international level. The main task of the EUSCG is to develop, monitor, and maintain an overarching European UAS Standardisation Rolling Development Plan (U-RDP), which is based on the standardisation roadmap that is developed by EASA and other organisations, and it includes inputs from EUSCG members. This facilitates the sharing of work between the regulator and SDOs, thus avoiding the risk of duplication and overlapping developments, while addressing gaps therein. EUSCG is chaired by EASA, and EUROCAE provides the secretary role. More information on EUSCG and the U-RDP are available at **euscg.eu**.

EUROCAE is open to worldwide participation and invites organisations to participate in the standard development process. EUROCAE is a membership-based organisation, and it offers a full and a limited membership. A candidate

membership option is also available, which is free of cost, so that members can participate in our activities for up to three months to understand the scope and nature of the standards being developed. EUROCAE standards are subject to an open consultation process, where the draft standard is distributed to the public via EUROCAE Workspace, and everyone is invited to review and comment on the document.

If you are interested in obtaining additional information, or if you would like to become a EUROCAE member, please check the membership page on our web site.

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