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FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 1: Update on the ICAO 2023-2025 Business Plan and Long-term Strategic Planning
1.2: Strategic alignment of global plans for performance improvement

INDUSTRY STANDARDS IN SUPPORT OF ICAO PROVISIONS

(Presented by European Organisation for Civil Aviation Equipment (EUROCAE)
on behalf of EUROCAE and RTCA)

EXECUTIVE SUMMARY

Understanding the rapid pace of technology development and innovation, collaboration between ICAO and standards development organizations (SDOs) will become increasingly important to allow for the safe, efficient and effective uptake and integration of new technologies and business models across all aviation domains.

This paper re-emphasizes the role of industry standards in support of ICAO provisions, in particular performance-based Standards and Recommended Practices (SARPs). It describes opportunities for ICAO to make better use of industry standards to complement ICAO provisions and facilitate safe integration of advanced and legacy technologies employed by aviation stakeholders.

Action: The Conference is invited to:
a) note the information provided;
b) encourage ICAO to pursue a performance-based approach in the development of ICAO provisions, by incorporating industry consensus-based standards by direct reference, subject to validation of the standard being fit for purpose; and
c) invite ICAO to further collaborate with SDOs to move towards a more coordinated standards development work programme.

1. INTRODUCTION

1.1 Global interoperability and international harmonization are crucial to the safety of the global aviation industry. Correspondingly, global standardization is one of ICAO's core functions. The SDOs have been working since decades to support ICAO and the global aviation community in this endeavour. This collaboration has been intensified over the last years, notably since 2017 with the signature of updated Memoranda of Understanding between ICAO and the SDOs and the establishment of a document platform, enabling document exchange and access to relevant standards.

1.2 Several ICAO Air Navigation Conference recommendations and ICAO Assembly resolutions[1] recommend that ICAO should utilize, to the maximum extent appropriate and subject to the adequacy of a verification and validation process, the work of other recognized SDOs in the development of SARPs, Procedures for Air Navigation Services (PANS) and ICAO technical guidance material. Further, it is recommended to establish and lead a suitable coordination with other standards development organizations to make the best use of the capabilities of these other standards development organizations. In most cases this is achieved through a note in the SARPs or other provisions. To date, over 100 such references to industry standards are already included in ICAO provisions.

1.3 In order to support the aviation community to introduce innovative technology , even closer collaboration should be sought on all levels, with ICAO concentrating on providing a global framework, and relying on industry standards to provide technical details. This approach is based on the regulatory frame focusing on high-level essential requirements (the "what") while referring to technical specifications to show compliance against these essential requirements (the "how"). In this manner, standardization can be both responsive to regulatory requirements but also forward looking to support future regulations under development.

1.4 The benefit of this approach is clear: the regulator defers to a second level of documentation, which is more flexible and can more easily adapt to a changing environment when needed, promoting the acceptance and adoption of innovative solutions by the aviation community. The regulator benefits from the broad representation of experts and the expertise offered through the standards development organization process. In addition, the separation between the high-level essential requirements and the technical standards accelerates the development of both levels of provisions, reduces the risk of redundancy and duplications of efforts, and allocates the community's resources appropriately.

2. DISCUSSION

2.1 Standards play an important role in enabling innovation and technological development. In this context, standards bridge the gap between operationally validated and performance-measured research and development results and provide a common baseline for harmonized implementation . The ever-faster pace of innovation requires a stronger engagement between regulators at global, regional and national levels and the standards development organizations to accompany the safe and efficient introduction of new technologies. These benefits have already been recognized by the ICAO Assembly.[2]

2.2 In particular, for highly innovative business models and technology concepts, such as advanced air mobility (AAM) and new entrants, hyperconnectivity of the air navigation system, artificial intelligence, trajectory-based operations, to name only a few, collaboration and an integrated approach to the management of the various levels of standards development will be crucial to create a clear regulatory framework that ensures interoperability and harmonization through reference to industry standards.

2.3 The safe, effective deployment of these innovations will only be made possible by advancements in the use of standardized, interoperable technologies. Standards development organizations are well placed to address the challenges of a changing environment, where disruptive and new technologies emerge and develop rapidly, and new and different stakeholders enter the aviation and adjacent transportation sectors. The standards development organizations provide an open, transparent and inclusive platform for discussion and standard development. At the same time, through the participation of a wide range of stakeholders and the essential coordination efforts with the regulators and industry, the standards

[1] e.g., ANC-12 Recommendation 6/13, Assembly Resolution 37-15, Assembly Resolution A38-11, Resolution A39-22: Formulation and implementation of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) and notification of differences

[2] Assembly Resolution A40-27: Innovation in Aviation

development organizations are well aware of the overall vision and strategy in aviation at global and regional levels and are key for proper alignment and execution. This promotes the acceptance and adoption of innovative solutions by the community, supported through a robust regulatory and standardization system.

2.4 ICAO should continue to act on its previous engagements and make more and better use of standards to benefit from this broad representation of experts, by which its own expertise will be increased and the quality of the overall system of ICAO provisions and supporting material will be improved. In addition, it will enable the development of a framework to support the effective deployment of innovative technologies and safe integration of new entrants into the aviation landscape. This should be coordinated via the Standards round table (SRT).

2.5 However, such enhanced use of industry standards will necessitate a close(r) coordination of the various work programmes, from first proposal to publication of the standards. This will enable agreement at an earlier stage about the share of work between ICAO and the standards development organizations, how the SARPs and industry standards will complement each other, and to identify potential overlaps, gaps and ensure timely availability of fit-for-purpose and high-quality standards.

2.6 Some good examples exist where comprehensive mappings are maintained. This practice will have to be encouraged in all relevant panels and working groups (WG) as well as at management level between ICAO and the standards development organizations, mainly via the SRT. In the context of the ICAO-led SRT, the standards development organization had in the past mapped their deliverables and activities to the ICAO work programme. This work should be reinvigorated and enhanced.

2.6.1 In this context, the ongoing development in the data communication area, air/ground safety services, is a great example of such integrated planning, where ICAO WG-I, EUROCAE WG-108, RTCA SC-223, and Airline Electronic Engineering Committee's Internet Protocol Suite (IPS) Subcommittee are working collaboratively to define a suite of aeronautical telecommunication network (ATN)/IPS protocols intended for aviation safety services. This includes quarterly coordination meetings, and in some cases even joint meetings that develop different levels of standards (SARPs, minimum aviation system performance standards, minimum aviation system performance standards, etc.), resulting in a comprehensive global frame of high-level provisions and relevant technical requirements to enable worldwide interoperability.

2.7 AN-Conf/14-WP/3, presented by the ICAO Secretariat, introduces several priority focus areas (PFAs) supporting the Organization's strategy as well as a planning framework, embarking on a longer-term strategic planning process. Many of these PFAs can benefit from closer collaboration between ICAO and SDOs, such as AAM and new entrants; cybersecurity; long-term global aspirational goal; or even the transformational objective. These PFAs are designed to ensure the harmonised development of their focus topics in the aviation sector across various regions, fostering interoperability. AN-Conf/14-WP/7, presented by the ICAO Secretariat, further recognizes that "ICAO, States and regional safety oversight organizations (RSOOs) need to coordinate and collaborate with industry and other Stakeholders to promote a safe, consistent, globally harmonized introduction and integration of the new and evolving aviation technologies and concepts."

2.8 The SDOs stand ready to support these efforts through the development of consensus-based relevant, robust, high-quality standards.

3. CONCLUSION

3.1 EUROCAE and RTCA therefore reiterate our support for the Air Navigation Commission recommendations and Assembly Resolutions in force and encourage ICAO to mitigate risk via the use of consensus-based industry standards developed by recognized SDOs. The organizations reiterate our support a move towards a more coordinated standards development work programme.

3.2 SDOs are well placed to address the challenges of a changing environment, where disruptive and new technologies and business models emerge and new and different stakeholders enter the aviation sector. The SDOs provide an open, transparent platform for discussion and standard development. At the same time, through the participation of a wide range of stakeholders and the essential coordination efforts with the regulators and industry, the SDOs are informed of the overall vision and strategy in aviation across the globe and are key for proper alignment and execution, such as the *Global Air Navigation Plan* (GANP, Doc 9750) and *Global Aviation Safety Plan* (GASP, Doc 10004) at ICAO level. This promotes the acceptance and adoption of innovative solutions by the community, whilst ensuring a consistent approach.

3.3 We encourage ICAO to pursue and enhance a performance-based approach in the development of ICAO provisions, by incorporating consensus-based industry standards by direct reference, subject to validation of the standard being fit for purpose.

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