



WORKING PAPER

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**
1.1: Reprioritization of the ICAO 2023-2025 Business Plan

FACILITATING SAFETY INTELLIGENCE THROUGH GLOBAL SAFETY INFORMATION MANAGEMENT EXCHANGE

(Presented by the United States and co-sponsored by Australia)

EXECUTIVE SUMMARY

This paper presents a mechanism by which safety information collected by States can be made interoperable to ensure that it is shared for data-informed decision-making. Given the global nature of international civil aviation, it is vital that this data sharing be consistent and compatible across States. Sharing of safety-related data, information, and intelligence between States can help to better identify existing and emerging risks in the aviation system, allowing for a more holistic analysis and aligned safety outcomes. By establishing a safety information exchange, States can directly support safety decision-making, proactive risk management, and effectively comply with their obligations under the Convention on International Civil Aviation and improve the overall level of aviation safety worldwide. Australia and the United States conducted a proof-of-concept study to validate the mutual benefits of a global safety information exchange using Annex 8 – *Airworthiness of Aircraft* safety data as a use-case. This paper highlights the urgency and approach for strengthening safety data and information exchange internationally and recommends the Global Safety Information Management Exchange (GSIME) initiative to guide authorities and organizations in identifying opportunities for global engagement.

Action: The Conference is invited to agree to Recommendation 1.1/x – ICAO Framework for Global Aviation Safety Data Exchange in paragraph 3.

1. INTRODUCTION

1.1 The collection and analysis of safety data is the cornerstone of a robust safety management system. Furthermore, when stakeholders across authorities and organizations collaborate to share safety data, information and intelligence for a more holistic analysis, the derived safety controls enhance safety. Two prominent examples of data-informed safety initiatives that have significantly enhanced aviation safety in the United States are the Commercial Aviation Safety Team (CAST) and Aviation Safety Information Analysis and Sharing (ASIAS). Information sharing is intended to give a broader perspective on risk, especially to detect hazards that may not be visible through typical data streams. Global cooperation in the exchange and management of safety information is critical to achieving timely and effective safety outcomes, both domestically and internationally.

1.2 Aviation is undergoing a digital transformation leveraging vast amounts of diverse data generated across the aviation lifecycle; from design, production, operations, maintenance, air traffic, aerodromes, personnel licensing and associated surveillance activities. With globalization of the industry and the expansion of commercial air transport across the world, States' obligations under the ICAO framework for safety data sharing are in the spotlight. The exchange of safety intelligence including the analytical approach and methods to enable data-informed decision-making is recognized as a foundational element of long-term enhancements in the safety of civil aviation.

1.3 In order to create sustained opportunities for international collaboration to identify existing hazards, emerging risks, potential risks mitigations and meet ICAO's Standards and Recommended Practices (SARPs), it is important States focus on establishing these foundational elements:

- a) a robust system for safety data collection from operators and other aviation stakeholders;
- b) a positive safety culture that promotes voluntary safety reporting and establishes a community of learning; and
- c) a strong partnership between regulators and industry to improve safety management, including the implementation of data protections and confidentiality policies.

1.4 ICAO's *Global Aviation Safety Plan* (GASP, Doc 10004), Annex 8, and specifically Annex 19 – *Safety Management*, Chapter 5 strongly emphasize the importance of exchanging safety information and agreeing on the level of protections and conditions of the information being shared regionally and globally. While this paper focuses on Annex 8 and 19, other Annexes should be considered to promote data and information exchange to help provide a higher fidelity picture of the risk profile and directly support safety decision-making and proactive and predictive safety management in today's fast-changing environment.

2. DISCUSSION

2.1 While ICAO is strengthening its frameworks for safety management, aviation authorities and organizations lack a structured approach to facilitate and implement data and information exchange between States and aviation stakeholders. Establishing an international data and information exchange requires significant commitment from all stakeholders, including the provision of resources to collect, analyse, and protect the data, information and intelligence shared. The United States shared this idea at the 41st Session of the ICAO General Assembly in information paper A41-WP/556, *Advanced Data Analytics in Aviation Safety*. The Federal Aviation Administration (FAA) established an initiative entitled Global Safety Information Management Exchange (GSIME) and partnered with Australia Civil Aviation Safety Authority (CASA) to conduct a proof-of-concept. In December 2023 at the thirteenth meeting of the Regional Aviation Safety Group – Asia and Pacific Regions (RASG-APAC/13-WP/18), the United States shared progress under the GSIME initiative, which focused on developing a practical guide to identify and document relevant considerations required for regulatory organizations to initiate and implement an exchange for data, information, and intelligence with other authorities. This received resounding support from Asia-Pacific regional States, many of whom also expressed interest in partnering on proof concept use cases.

2.2 The collection, analysis, protection, confidentiality, and sharing of safety data, information and intelligence is critical to improving the global aviation industry's safety record. An important element of effective data sharing is protecting safety information against uses other than aviation safety. The integrity of any data and information exchange rests upon the identification and protection of the supplied safety data and information from unauthorized access and disclosure. Any disclosure for purposes other than safety management can compromise the voluntary provision of safety data. Annex 19 suggests that States establish voluntary safety reporting systems to compliment mandatory reporting systems. ICAO encourages States to implement data protections in their legal frameworks to promote safety reporting and a positive safety culture. The United States places significant emphasis in this area and has enshrined into law protections (49 U.S. Code Section 44735 – Limitation on Disclosure of Safety Information) from disclosure for voluntarily shared safety data.

2.3 Data and information sharing covers a broad spectrum and ranges from raw data sets to qualitative, de-identified and aggregated information. Significant value (safety intelligence that directly supports decision-making) can be derived from various forms of data and information. While de-identification offers a layer of data protection, whenever possible identified data acquisition should be considered. Identified data offers the richest analytical environment, enabling partners to extract the most nuanced and actionable safety intelligence. The GSIME initiative recognizes the importance of data protection and confidentiality, therefore an initial strategy can prioritize leveraging publicly available data to build a foundation for authorities to exchange data on safety issues. This approach allows authorities to establish the value of safety data exchange while mitigating initial challenges.

2.4 The United States, in collaboration with Australia, conducted a proof-of-concept study to validate the mutual benefits of a global safety information exchange using Annex 8 safety data as a use-case. The results of this study highlight various challenges States may face in establishing a safety data and information exchange. This study and its findings are captured in a playbook, as found in AN-Conf/14-WP/105, *Global Safety Information Management Exchange – Playbook*, which serves as a practical guide to assist States in identifying opportunities and working through potential challenges to establish a safety information exchange. The Playbook highlights underlying considerations and serves as a resource to establish a structured safety information exchange with a governance framework. It incorporates a scalable methodology for varying scope and complexity of the intended safety information exchange.

3. CONCLUSION

3.1 The GSIME objective is to enhance safety management by exchanging data and information with international aviation organizations and authorities to directly support safety decision-making and proactive risk mitigation. Safety data and information exchange between authorities can lead to enhanced safety outcomes across territories and facilitate the mutual recognitions of standards in alignment with ICAO's SARPs. The GSIME Playbook proposes a step-by-step approach to establish an exchange of safety data, information, and intelligence with other authorities.

3.2 The Playbook could be studied by ICAO and adopted as global guidance to assist States in complying with their safety information sharing obligations under the ICAO framework. The Playbook is meant to be a dynamic document that is continuously updated as more information and data exchanges are conducted.

3.3 In light of the above, the Conference is invited to agree to the following recommendation:

Recommendation 1.1/x — ICAO Framework for Global Aviation Safety Data Exchange

That ICAO:

- a) consider the *Global Safety Information Management Exchange – Playbook* (GSIME Playbook, AN-Conf/14-WP/105) as an initial how-to-guide for global sharing of aviation safety data;
- b) consider assigning to an appropriate expert group to study, refine and adopt the methodology in the GSIME Playbook to establish the ICAO Framework for Global Aviation Safety Data Exchange; and
- c) publish the ICAO Framework for Global Aviation Safety Data Exchange in a future edition of the ICAO *Global Aviation Safety Plan* (GASP, Doc 10004) and be incorporated into the ICAO *Safety Management Manual* (Doc 9859) on data collection and protection.

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