Governance guidance for cross-border data sharing

Outline

1. Executive Summary

1.1   The exchange of safety data and safety information is recognised as a fundamental element of long-term improvements in the safety of civil aviation. The International Civil Aviation Organization (ICAO)'s Global Aviation Safety Plan and Annex 19 have placed significant emphasis on the importance of exchanging safety data and safety information globally and regionally.

1.2   To achieve the regional goals as set out in the Asia Pacific Regional Aviation Safety Plan ("AP-RASP"), the region has identified safety actions to further promote the sharing of data and information among States and industry stakeholders. It is therefore envisaged that more data and information sharing initiatives among organisations and States could be established. The AP-RASP introduced a safety action to develop guidance material on governance framework for cross-border data sharing initiatives, to encourage and facilitate the exchange of safety information.

1.3   The purpose of this document is to provide a practical reference for Civil Aviation Authorities, Industry and any other organisations, on the development of a governance framework for cross-border data sharing initiatives. The document focuses on key aspects of a governance framework and underlying considerations, including core principles, responsibilities of parties, and data confidentiality.

2.   Introduction

2.1   The exchange of safety data and safety information is recognised as a fundamental element of long-term improvements in the safety of civil aviation. The International Civil Aviation Organization (ICAO)'s Global Aviation Safety Plan and Annex 19 have placed significant emphasis on the importance of exchanging safety data and safety information globally and regionally. In the Asia Pacific region, efforts to share data and information have been valuable in identifying safety issues and supporting effective and timely action to address safety risks. Some examples of such efforts are the Safety Enhancement Initiatives developed by the Asia Pacific Regional Aviation Safety Team ("APRAST") and the Asia Pacific Regional Data collection, analysis and information sharing project ("AP-SHARE").

2.2   To achieve the regional goals as set out in the Asia Pacific Regional Aviation Safety Plan ("AP-RASP"), the region has identified safety actions to further promote the sharing and exchange of information among States and industry stakeholders. It is therefore envisaged that more data sharing initiatives among organisations and States could be established, to encourage and facilitate the sharing and exchange of information. A key element of such data sharing initiatives is to build trust among the participating organisations on the use of data and information for the intended purposes. To prevent any use of the data and information other than the intended purposes, it is imperative that such data and information are properly protected and managed. The AP-RASP has therefore introduced a safety action to develop guidance material on governance framework, for cross-border data sharing initiatives ("Initiatives")

3.   Purpose

3.1   The purpose of this document is to provide a practical reference for Civil Aviation Authorities and the Industry, and any other organisations, on the development of a governance framework for these Initiatives. Recognising that there is a considerable amount of literature on the objectives, need and legal aspects for protection of data and information, such as in ICAO Safety Management Manual (Doc 9859), this document will not examine these aspects in detail. Rather, the focus of this document is to address the key aspects of a governance framework and the underlying considerations including the core principles, responsibilities of the parties, and data confidentiality. Given that these Initiatives could vary in terms of scope and complexity, depending on the objectives and intended outcomes, the stakeholders involved should determine the appropriate levels of governance and structure that will meet the needs of the Initiative.

3.2   Establishing an Initiative is an undertaking that requires significant commitment from stakeholders, both in terms of resources to collect and analyse the data shared and processes to safeguard the information. To ensure that the data and information sharing mechanism is implemented effectively, it is imperative to take a holistic approach and have a concerted effort among the relevant stakeholders. Apart from the technical, organisational and procedural aspects, it is also necessary to address aspects like legal, financial, culture and communication to ensure effectiveness. It is

also important to identify key metrics that will define the success of the effort and to provide a mechanism for periodic review.

4. Target Audience

4.1   This document is targeted at all relevant stakeholders in the aviation industry that are embarking on such Initiatives. These stakeholders include, but are not limited to the following:

     a.   Civil Aviation Authorities
     b.   Industry
     c.   Analytics solution providers
     d.   Academia

5. Key Components of a Governance Framework

5.1 Core Principles

5.1.1   The Initiative should operate according to core principles that set out the high-level objectives and policies in relation to the Initiative. Each entity could acknowledge their understanding and willingness to adhere to the principles via signed agreements. Examples of core principles to adopt are as outlined below:

     a.   Safety data and safety information should be used to advance safety goals only, with the focus on systemic issues

     b.   Safety data and safety information from the Initiative should not be used to support investigations of accidents and incidents and should not be used for punitive or enforcement purposes

     c.   The sharing and exchange of safety data and safety information through the Initiative should be in line with the principles of protection in ICAO's Annex 19 on Safety Management

     d.   Roles, responsibilities and accountabilities of participants, contributors and observers should be clearly defined within the governance plan of the Initiative

     e.   Processes for data handling and analysis should be carried out with transparency and in accordance within the governance of the Initiative

     f.   The governance process should be determined by consensus and should be clear to all members

     g.   Confidentiality of sensitive data and information should be maintained at all times

     h.   Participation in the initiative and the provision of data should be entirely voluntary; entities that provide data should retain ownership of such data at all times

5.2   Governing Structure

5.2.1   A good governing structure can help drive the work of the Initiative more effectively. The Initiative could be directed by a Governing Board formed by and consisting of the members of the Initiative. The Governing Board could be supported by a Secretariat. The Governing Board could form Working Groups as needed. In addition, a Data Service Provider may be engaged to perform the technical functions of the Initiative.

Governing Board

5.2.2   Member organisations in the Initiative could provide representatives to the Governing Board, which sets strategic direction and monitors its progress. The Governing Board could meet periodically (e.g. twice yearly) to re-evaluate strategy and priorities, and to receive updates on the progress of the work done by the Initiative. The Governing Board could be co-led by Civil Aviation Authority and Industry co-chairs in order to collectively drive the development of the Initiative in the interest of the member organisations. Accordingly, all decisions by the Governing Board could be achieved through the process of achieving consensus. The Governing Board's primary responsibilities could be to:

a. Oversee the activities of the Initiative to ensure conformance with the governance plan
b. Prioritise work of the Initiative
c. Define the scope of work for new activities and oversee Working Group progress
d. Review outcomes of the work of the Initiative and determine appropriate follow up actions, if any
e. Make changes, as needed, to the governance plan
f. Review requests for membership for the Initiative
g. Formulate policies and procedures
h. Make decisions about dissemination of outcomes to external organisations
i. Select the Secretariat and approve all entities on the Secretariat
j. Oversee financial performance of the Secretariat
k. Provide coordination between the Initiative and other relevant organisations on risks and mitigation needs

Secretariat

5.2.3   The Secretariat for the Initiative could be responsible for coordinating the work of the Initiative in alignment with the priorities set by the Governing Board. In addition, the Secretariat could manage the administrative and project management functions of the Initiative. There are various potential modalities for the Secretariat function, which may not require full-time commitment depending on funding availability and workload of the Initiative. Some examples include, but not limited to:

a. Outsourcing the Secretariat function to a third-party organisation; or

    b. Function being undertaken on a part-time basis by States/ industry participating in the Initiative (either fixed, or rotated amongst participating organisations).

5.2.4 The Secretariat's primary responsibilities could be to:

    a. Support Working Group(s) to execute work at the direction of the Governing Board

    b. Integrate inputs across various organisations and safety information sources in support of Working Group(s)

    c. Implement Governing Board decisions on sharing outcomes of work completed

    d. Conduct all work and information sharing activities in accordance with the governance plan

    e. Update and maintain the governance plan, as directed by the Governing Board

    f. Maintain a list of members and subject matter experts in the Initiative

    g. Maintain annual budget and report to the Governing Board on financial and technical status

Working Groups

5.2.5 The Governing Board could establish Working Groups as needed to drive the technical aspects of the work as required for the Initiative. Working Group participants could be from Initiative member organisations or subject matter experts from non-member organisations. It would be good for participants to have sufficient knowledge on the relevant concepts and regulations related to flight data sharing and flight data analytics. For continuity purposes, it is recommended that the Working Group members are registered individually (as opposed to having organisation representation). Working Groups could be co-led by Civil Aviation Authority and Industry co-chairs.

5.2.6 Working Groups could have the following responsibilities:

    a. Work with the Governing Board to determine the scope of the analysis, the sources of data, the analytical approach and tools, the form of the result, and setting of requirements to engage a suitable Data Service Provider

    b. Work with Data Service Provider on the technical analytical work of the Initiative, which may include:

        i. Providing detailed definitions for analytical results that will be generated by member organisations for inclusion in integrated analysis

        ii. Interpret results of analysis with the provision of subject matter expertise and knowledge

        iii. Make safety recommendations and/or safety enhancement initiatives

    c. Submit outcomes to the Governing Board

Data Service Provider

5.2.7 The Data Service Provider could have the following responsibilities:
   a. Acquire data and develop analytical tools for analysing, visualising and sharing of results
   b. Support the Working Groups in carrying out studies at the direction of the Governing Board
   c. Ensure the safe and secure custody, transfer and storage of data and information, in accordance with the Core Principles
   d. Establish and maintain appropriate security measures regarding the storage and use of data and information
   e. Require contractors (if any), to establish and maintain appropriate security measures to safeguard against the authorised access of data and information.

5.3 Data Confidentiality, De-identification and Storage

5.3.1 The integrity of any Initiative rests upon protection of the supplied data. Any disclosure for purposes other than safety management can compromise the voluntary provision of data. It is therefore essential for the Initiative to clearly identify the means to protect the data and information, such as through a confidentiality agreement. The agreement should also address other critical aspects such as how data would be de-identified and stored in a proper manner.

Data Confidentiality

5.3.2 Access to data should be limited to the Data Service Provider, given its responsibilities to analyse the data and as an added means to safeguard the confidentiality of the shared data. Should the Working Group or other participants require access to the data, they could be required to commit to a set of rules of engagement, to ensure data confidentiality. Examples of such rules are as follows:

   a. Working Group members shall consider all data to be proprietary property of the data sharing organisation, since the data and information being disclosed is highly sensitive.

   b. Working Group members shall not use any data or information presented by another participating organisation for commercial, competitive, punitive, or litigation purposes.

   c. Working Group members shall not share or disclose the proprietary data or information provided by participants with external parties, without the written consent of the owner.

   d. Working Group members shall not record (audio or video), take photographs of presentations, discussions or expositions and share discussion proceedings or outcomes with external parties.

e.   Working Group members shall agree to work to implement solutions to safety issues identified during this meeting with the help of the information presented.

f.   Working Group members shall treat all participants with equality, respecting all viewpoints as worthy of consideration.
4.2

g.   Anyone not following the Rules of Engagement may be asked to leave and may not be allowed to attend any future meetings.

Data De-identification

5.3.3   Data used for the Initiative should be maintained in a secure environment with limited access. Data fields referring to individual employees should be removed before storing information for the Initiative.

5.3.4   Results or insights from the Initiative's data analyses should always be aggregated and de-identified before they are shared. At a minimum, no individual employee, airline or flight should be identified in the results. For example, references to flight identification number, aircraft tail number, and date should be removed from reports of individual flights. Any reports of aggregate results should also only include airports that are served by three or more airlines in the data set.

5.3.5   Additional de-identification should be applied before sharing results with the Governing Board, including the removal of location-specific information. Working Groups could have access to location-specific information when it is critical to the validation of the safety events and understanding of safety issues. This is with the purpose to ensure safety, and not for enforcement purposes or to apportion blame.

Data Storage, Protection and Retention

5.3.6   All the safety data and specific events data should be stored securely in a database or any other means that allows access control. The appointed Data Service Provider of the Initiative would be responsible to ensure the safe and secure custody, transfer and storage of data in accordance with the Core Principles.

5.3.7   The duration of retention of data should achieve a balance between effective safety analysis and mitigating risk of any loss or unauthorised access to data. As a recommendation, the data related with a specific flight or event should only be kept a maximum of six to twelve months whereas the de-identified data could be kept up to 5 years. The retention period should also consider the potential costs and storage capacity of the Data Service Provider. Video, sound recordings or raw reports from pilots or controllers should not be kept as far as possible after extracting essential information.

5.4   Responsibilities of Parties

5.4.1 A successful Initiative would require the significant commitment from stakeholders. As specific expertise lies with respective stakeholder groups, this

section aims to provide some guidance in terms of the contributions and responsibilities of the various stakeholders.

Responsibilities for All Members

5.4.2   All members should agree to:

    a.   Adhere to the Core Principles of the Initiative and other elements of the governance plan.

    b.   Provide subject matter experts, including pilots, controllers, manufacturers, or regulators with deep knowledge of aviation, to support the Initiative.

    c.   Maintain the confidentiality of results until the Governing Board makes a determination about the form and distribution of results.

5.4.3   In addition, all members elected to the Governing Board should agree to:

    a.   Attend meetings of the Governing Board to make decisions about priorities and governance.

Other Responsibilities Specific to Civil Aviation Authorities

5.4.4   Civil Aviation Authorities could provide the following support in addition to the general responsibilities for all members:

a.   Provide insight about local regulatory context that may be helpful in a study or analysis.

b.   Ensure that safety information from the Initiative is not used for enforcement investigations or actions.

c.   Follow the guidance in ICAO Doc 9859 Chapter 7, in relation to the protection of safety information associated with the Initiative.

d.   Provide other safety information that might be relevant to a study or analysis, such as accident or incident reports.

Other Responsibilities Specific to Service Providers

ANSPs

5.4.5   ANSPs could provide summary safety metrics based on data sources and event definitions. It is anticipated that different ANSPs would have different levels of infrastructure to support the measurement of safety events from air traffic data. The focus of ANSP participation is to develop the capability to generate meaningful metrics that can be integrated with other sources of safety information in the Initiative. ANSPs could work to build a capability to locally extract, archive and process information from radar data, air traffic control information, weather, and other relevant sources.

<u>Airlines</u>

5.4.6 Airlines could contribute to the Initiative by providing digital flight data and safety reports to the Data Service Provider through a suitable method of data sharing. The Governing Board could assess and determine the suitability of the proposed mode of data sharing to be included in the Initiative.

5.4.7 Airlines may also provide any data that would be beneficial to an ongoing study directly to the Working Group for inclusion in Initiative. Any data provided would be protected in accordance with all other sensitive data or information provided for the Initiative.

<u>Other Organisations</u>

5.4.8 Other organisations that provide information that may be helpful in safety studies or analysis under the Initiative may become members of the Initiative, subject to approval from the Governing Board. Such organisations could include aircraft and avionics OEMs, industry associations, international organisations, etc. Any member organisation may also provide data to the Working Group under a separate agreement, as appropriate, for inclusion in Initiative analyses.

Responsibilities of Associate Member Organisations

5.4.9 On determination of the Governing Board, an associate membership (no voting rights) could be extended to organisations who possess the knowledge and experience in conducting safety data sharing programs and are willing to assist in on-going participation in Governing Board meetings. Upon agreement from the co-chairs, invitations would be extended by the Secretariat for participation. These organisations would be expected to undertake the relevant membership responsibilities, share experiences, analyses of their own, and lessons learned through the process of governance in their own programs. Financial and in-kind contributions from associate member organisations would also be encouraged.

6. Annex – Sample Agreement Document for participating in an Initiative

Statement of Intent to Become a Member of the *[Data-sharing Initiative]*

This Statement of Intent is made by the Organisation as identified below, hereinafter referred to as "Member". The Member agrees to support the *[Data-sharing Initiative]* which will collect and analyse safety data and safety information to advance aviation safety.

The Member agrees to act in accordance with the core principles and responsibilities described in the Governance Plan for the *[Data-sharing Initiative]* (hereinafter referred to as "Governance Plan"). Core principles are as described in Section *[X]* of the Governance Plan, and responsibilities for all members are detailed in Section *[X]*. By signing, the Member agrees to use information gained from the *[Data-sharing Initiative]* to advance safety goals only, and not for punitive or enforcement purposes.

The Member agrees to provide subject matter expertise and *[provision for funding/ fees].*

The Member may terminate its involvement in the *[Data-sharing Initiative]* at any time and for any reason by providing a minimum of *[X]* calendar days of notice to the Secretariat. The Governing Board may suspend or terminate a member's involvement in the *[Data-sharing Initiative]* if it finds that an organisation has violated core principles.

Signed by:

Name_____

Position_____

Organisation _____

Date_____

Recorded by the Secretariat on _____