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ASSEMBLY – 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 29: Aviation Safety – Monitoring and Analysis
Agenda Item 30: Aviation Safety – Implementation Support

FACILITATING THE SHARING AND ANALYSIS OF SAFETY DATA

(Presented by Singapore)

EXECUTIVE SUMMARY

In order to drive further improvements in aviation safety, safety initiatives will depend more heavily on data analytics involving also the use of operational data such as air traffic control and flight data. Currently, States, regulators, airlines, air navigation service providers and aviation organisations collect data according to their specific areas. If the data from these various sources can be integrated and analysed at a broader level, this could potentially uncover safety vulnerabilities or hazards that would otherwise not be detected. Some States and regions already have or are contemplating systems for the sharing and analysis of safety data. The benefits of such data sharing and analysis systems are evident. This paper seeks to encourage the development and implementation of safety data sharing and analysis programmes and systems at the regional level with a view that the regional data and analysis be shared globally.

Action: The Assembly is invited to:

a) encourage RASGs to develop and implement regional safety data sharing and analysis programmes and systems; and
b) request the Council to develop a framework that facilitates the sharing and analysis of safety data through regional systems and across regional systems, including the need for adequate protection of safety information;

Strategic Objectives:	This working paper relates to the Safety Strategic Objective.
Financial implications:	If proposed actions are undertaken, RASGs need budget and resources for development and implementation, through ICAO's budget and voluntary contributions.
References:	Doc 10004, *Global Aviation Safety Plan*

(3 pages)

1. INTRODUCTION

1.1 In order to drive further improvements in aviation safety, safety initiatives will depend more heavily on data analytics. If typical safety data and operational data such as air traffic control and flight data can be integrated and analysed at a broader level, this could potentially uncover safety vulnerabilities or hazards that would otherwise not be detected. There is much potential for the aviation community to tap on "big data" or analytics to enhance aviation safety. This paper seeks to encourage the development and implementation of safety data sharing and analysis systems at the regional level with a view that the regional data and analysis be shared globally.

2. DISCUSSION

2.1 As part of safety management, States, regulators, airlines, air navigation service providers and aviation organisations collect and analyse data within their specific areas. Typical safety data include statistics of safety occurrences (such as runway incursions and excursions, loss of separation, etc.) and accident or incident investigation reports. There is also operational data from aerodrome, weather, air traffic control and aircraft systems. Integrated analysis of typical safety data and operational data has the potential to greatly enhance safety management.

2.2 However, this potential has yet to be fully realised. As each entity generally has access to only its own safety information, it may not be able to ascertain the overall context of safety events or the safety issues. There are safety vulnerabilities that would only become apparent after the data from different sources are integrated and analysed to identify broader trends. There is therefore scope for States to aggregate safety data and operational data from their service providers, particularly across various domains. For instance, by integrating and analysing safety occurrences, flight, weather, aerodrome and air traffic control data from an air navigation service provider, and flight data from airlines using that airspace, one could obtain safety trends from the perspective of the entire air transport operations. Another benefit is that individual service providers would be able to benchmark their own safety performance against the safety trends.

2.3 Some States already have systems for the sharing and analysis of safety data. The United States' Aviation Safety Information Analysis and Sharing (ASIAS) system is an example of such an integrated safety data sharing and analysis system. ASIAS integrates and analyses FAA datasets, airlines' flight data, public available data and aircraft manufacturers' data to identify safety trends and assess the impacts of changes in the aviation operating environment. There are other States already contemplating similar systems to enhance aviation safety at State level.

2.4 A more complete picture could be formed if such systems were developed and implemented at the regional level to integrate and analyse data from the States in the region. Regional safety data sharing and analysis programmes and systems can potentially be set up by the Regional Aviation Safety Groups (RASGs) to support regional safety enhancement initiatives and the objectives in the ICAO Global Aviation Safety Plan. The various regional data and analysis could potentially be shared to form a coherent global picture. To realise the potential, a framework would be needed to facilitate the sharing and analysis of safety data through regional systems and across regional systems. This framework could cover the standardisation of elements such as data taxonomy and definitions, which are necessary for accurate data comparison and analysis.

2.5 This is an appropriate time for ICAO to start the development of a framework to facilitate the sharing of regional aggregated data and analysis, as regional systems are being developed or planned. The framework would guide the development of regional systems to facilitate the smooth exchange of data across regions in the future. It would also avoid cumbersome efforts in the future to harmonise regional systems developed without a global framework.

2.6 Whether at the State, regional or global level, the protection of safety data and information especially through such programmes and systems is critical to ensure the continued success of the programmes and systems. While some States may have national legislation on the use of safety information, it may not be immediately clear how safety data provided through a regional mechanism by foreign entities and other States may be treated. In this regard, it would be useful for ICAO to develop practicable guidance for the protection of such information so as to facilitate the sharing and analysis of safety data at the regional and global levels.

3. CONCLUSION

3.1 The collection and analysis of typical safety data and operational data can be very useful for States to enhance aviation safety. There is much scope for RASGs to develop regional programmes and systems to enable sharing and analysis of such data from States, service providers and other sources at the regional level, and for ICAO to develop a framework that facilitates the sharing of the regional data and analysis on a global scale. Their success will be better assured if effective policies and measures on the protection of safety data are provided for.

4. RECOMMENDATIONS

4.1 The Assembly is invited to:

a) encourage RASGs to develop and implement regional safety data sharing and analysis programmes and systems; and

b) request the Council to develop a framework that facilitates the sharing and analysis of safety data through regional systems and across regional systems, including the need for adequate protection of safety information.

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