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WORKING PAPER

ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 26: Safety management and safety data

CANSO SAFETY METRICS PROGRAMME

(Presented by the Civil Air Navigation Services Organisation (CANSO))

EXECUTIVE SUMMARY

The High-level Safety Conference (HLSC 2010) recommended that ICAO convene a group of experts to determine harmonized safety metrics, associated data requirements and processes to enable integrated safety analysis and to ensure consistent development of related safety measures.

The Civil Air Navigation Services Organisation (CANSO) supports this effort since its member air navigation service providers (ANSPs) have identified the need for a suite of safety metrics to demonstrate ANSP performance in the safety domain. The harmonization of safety metrics definitions and the associated data requirements and processes will enable comparability and help both predict and measure the impact of safety management practices.

Action: The Assembly is invited to:
a) note the work CANSO has been doing in the area of safety metrics; and
b) agree on the need for the development and definition of global safety metrics and associated data requirements, which are necessary for a harmonized approach to global safety analysis.

Strategic Objectives:	This working paper relates to Strategic Objective A.
References:	Doc 9935, *Report of the High-level Safety Conference (2010)*

[1] Arabic, Chinese, English, French, Russian and Spanish versions provided by CANSO.

1. INTRODUCTION

1.1 During the High-level Safety Conference (HLSC 2010) there was a clearly expressed desire for the sharing and integration of safety information through the harmonization of key safety metrics and the coordination of safety analysis methods. The willingness to share sensitive safety information is an essential step toward a more proactive approach to managing the risks inherent to a complex and dynamic operating environment, and it was agreed that ICAO would convene a group of experts to make safety information sharing a reality through the development of common safety metrics, harmonized analysis methods as well as the required technical capabilities.

1.2 One of the conclusions of the Conference was that the integrated analysis of data generated by both the state safety programme (SSP) and continuous monitoring approach (CMA) will yield significant benefits in the conduct of safety oversight. The realization of such benefits will be dependent upon the free exchange of safety information derived from analysis of common safety metrics as well as the development of advanced analysis capabilities.

1.3 Another conclusion on the sharing of safety information was that it is important to define and harmonize safety metrics, and the associated data requirements and processes in support of integrated safety analysis. It was therefore recommended that ICAO should convene a group of experts to determine harmonized safety metrics, associated data requirements and processes to enable integrated safety analysis and to ensure consistent development of related safety measures.

1.4 As CANSO recognizes the importance of harmonization in the definition and methodology of safety metrics, and has been doing important work in this area for a number of years, this paper serves to support the establishment of a safety metrics study group and provide CANSO's commitment to participate in the work.

2. DISCUSSION

2.1 CANSO Member ANSPs identified the need for a suite of safety metrics to demonstrate ANSP performance in the safety domain. It was felt that the best way to measure safety performance is through the use of a combination of both lagging and leading indicators.[2] Lagging indicators measure data from accidents and incidents that have occurred in the past ("historical data") in order to obtain conclusions. Leading indicators measure safety activities, behaviours and accomplishments. Leading indicators increase management involvement and active participation by employees and they also provide opportunities for continuous improvement.

2.2 While each type of metric gives some insight into safety performance, none of them is singly sufficient as both a success indicator and good management tool. However, all of them together built into a balanced scorecard might provide the necessary mix of results measurement and process insight for improvement. Connecting the leading indicators to the lagging indicators in a meaningful way, can both predict and measure the impact of safety management practices.

2.3 CANSO's Safety Steering Committee (SSC) therefore identified and prioritized the development of metrics in four initial areas:

[2] Indicator – a statistical measure that provides an indication, especially of trends; Metric – a standard of measure

a) Lagging indicators:
   1) instrument flight rules-to-instrument flight rules (IFR-to-IFR) losses of separation (LOS); and
   2) runway incursions (RIs);

b) Leading indicators:
   1) safety maturity; and
   2) safety culture.

2.4 A Safety Metrics Workgroup was formed and its work plan agreed in 2008 with the objective to support the development of an agreed suite of safety metrics. The workgroup reports to the CANSO Safety Standing Committee and is comprised of four work streams namely, IFR-to-IFR LOS, RIs, Safety Maturity and Safety Culture. It is anticipated that over a period of five years the Safety Metrics Workgroup will deliver the methodologies, data requirements, processes and metrics associated with IFR-to-IFR LOS, RIs, Safety Maturity and Safety Culture.

2.5 The output measures will be presented to the CANSO Executive and Membership starting with the IFR-to-IFR LOS, followed by RIs, Safety Maturity and ending with the Safety Culture metric, which is anticipated for the Spring of 2011, subject to SSC approval. For 2010, data from 21 ANSP's has been received for IFR-to-IFR LOS. CANSO now has data covering six years on IFR-to-IFR LOS.

2.6 It is intended that the safety data will be used by the CANSO Executive and CANSO Members that have contributed to the process, and by CANSO Safety Directors to help identify additional safety management activities that will support the reduction of safety risk on a global basis.

2.7 **Key success factors**

2.7.1 There are several requirements that will support the success of the CANSO Safety Metrics programme. The main one is achieving the buy-in and support from CANSO Member ANSPs to contribute to the work. Trust in the confidential use of the data provided is an important factor. But so is a good understanding of the benefits a safety metrics program can provide.

2.7.2 Some of the challenges have been in getting agreement among participants for the safety metrics and indicators, since many service providers are already using a number of different metrics and indicators. Another issue is the uniform and homogenous use of the safety metrics. A common view or definition on safety incidents and accidents will be necessary to make data comparable.

3. CONCLUSION

3.1 Since harmonization of safety metrics, associated data requirements and processes will enable comparability and an integrated safety analysis, CANSO fully supports this work activity as proposed by ICAO. The ICAO safety metrics study group is expected to begin work in Spring 2011, and CANSO would be happy to share its experiences and help progress the development of a harmonized set of safety metrics and in the coordination and development of safety analysis methods.

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