



WORKING PAPER

ASSEMBLY — 39TH SESSION

ECONOMIC COMMISSION

Agenda Item 41: Aviation Data — Monitoring and Analysis

MODERNIZATION OF THE ICAO STATISTICS PROGRAMME

(Presented by the Council of ICAO)

EXECUTIVE SUMMARY

This working paper reports on the re-engineering of the ICAO Statistics Programme and its analytical activities. The ICAO Statistics Programme provides States, United Nations agencies, international organizations, industry and other stakeholders with comprehensive and reliable aviation data and analysis in accordance with the provision in Assembly Resolution A38-14, Consolidated statement of continuing ICAO policies in the air transport field. This paper also presents ICAO's plan for future work related to the Statistics Programme (a part of aviation data and analysis) under its Strategic Objective, *Economic Development of Air Transport*. The programme will contribute by increasing financing and investment activities related to the development of air transport, while supporting the ICAO No Country Left Behind (NCLB) initiative.

Action: The Assembly is invited to:

- a) review the work accomplished by ICAO with respect to the modernization of the ICAO Statistics Programme as presented in paragraphs 2 and 3;
- b) endorse the Organization's plan for future work thereon as presented in paragraph 4; and
- c) consider the information contained in this paper for the update of Assembly Resolution A38-14, Consolidated statement of continuing ICAO policies in the air transport field.

<i>Strategic Objective:</i>	This working papers relates to Strategic Objective D — <i>Economic Development of Air Transport</i> .
<i>Financial implications:</i>	The activities referred to in this paper will be undertaken subject to the resources available in the 2017–2019 Regular Programme Budget and/or from extra budgetary contributions.
<i>References:</i>	Doc 10027, <i>Report of the Economic Commission of the 38th Session of the Assembly</i> , Doc 10022, <i>Assembly Resolutions in Force</i> (as of 4 October 2013) A39-WP/7, Report on cooperation with the United Nations, International Organizations and other stakeholders in the area of data and analyses A39-WP/8, Consolidated statement of continuing ICAO policies in the air transport field A39-WP/xx, Proposed draft budget of the Organization for 2017, 2018 and 2019

1. BACKGROUND

1.1 The need for comprehensive and reliable aviation data is recognized by Articles 54, 55 and 67 of the *Convention on International Civil Aviation*. The wide-ranging scope of the ICAO Statistics Programme and its legacy data, spanning more than four decades, provides critical support to all aspects of the work of ICAO relating to safety, air navigation capacity and efficiency, environment protection, and economic development of air transport. In addition, air traffic statistics are used to determine the assessment of ICAO Member States.

1.2 Since 2002, the Integrated Statistical Database (ISDB) application has been used to collect, process, and disseminate aviation data. However, as the design of the ISDB is based on the technology from nearly two decades ago, when the availability of resources was less of a constraint, a “business as usual” approach can no longer be effective in meeting the needs and demand for faster interoperability of data, discerning of trends, and generation of visualized analytics. At this time, the ICAO Statistics Programme should aim to:

- a) expand the scope, coverage and quality of data;
- b) avoid duplication of efforts; and
- c) reduce operating costs and the administrative burden on States.

2. RE-ENGINEERING OF THE ICAO STATISTICS PROGRAMME

2.1 Since 2014, the ICAO Statistics Programme has been modernized as part of the Enterprise Data Management (EDM) initiative, which aims to harmonize different sources of data at the organizational level, using standard reference tables and taxonomies by creating a holistic repository of cross functional data. Listed below are some of the re-engineering processes related to the ICAO Statistics Programme, along with the associated benefits.

- a) **Application interface.** The new application makes repetitive tasks fully automated. The interface software and database, which stores legacy and existing data, have been migrated to more cost-effective platforms. Consequently, the cost of storing data and the time required for processing have been significantly reduced.
- b) **Interoperability.** The database, which uses harmonized methodologies, allows flexible sharing of ICAO’s data and analysis with States, UN agencies, international organizations, industry and other stakeholders. For example, the Statistical Data and Metadata Exchange (SDMX) Standards, recommended by the United Nations Statistical Commission (UNSC) have been incorporated into the database. Existing ICAO air transport reporting forms pertaining to airport statistics were also replaced with an ICAO-ACI harmonized airport data collection, initiated in January 2016. Data from various statistical providers with different systems can now be assembled quickly, economically and efficiently, leading to a reduction of administrative burdens and costs for both ICAO and Member States. Additional information in this regard will be provided in A39-WP/7, *Report on cooperation with the United Nations, International Organizations and other stakeholders in the area of data and analyses*.

- c) **Big Data.** In recent years, data sets are becoming increasingly large and complex, making them unmanageable for traditional data processing applications. For example, aircraft movement data captured in real time cannot be processed under the existing applications. ICAO is a member of the UNSC global working group which is currently working to establish standards on the technical and policy aspects of Big Data. The UNSC standards will be incorporated into the re-engineered applications that will enable ICAO to collect, process and analyze large data sets in a cost effective and efficient manner. Additional information in this regard will be provided in A39-WP/7, *Report on cooperation with the United Nations, International Organizations and other stakeholders in the area of data and analyses*.
- d) **Data dissemination.** Re-engineering was also applied to the data's dissemination process. The new ICAO Data+ web-platform (<https://www4.icao.int/newdataplus/>), which is available for free by States, was enhanced with visual analytical functions, allowing users to quickly visualize trends, differences and similarities between data selections and make competitive benchmarking analyses. By using this web-platform, the cost of distribution was reduced by CAD 80 000 per year while generating more revenues from third-party users (over CAD 400 000 annual gross revenues).

3. TOOLS AND ANALYSIS

3.1 The re-engineering of the Statistics Programme created opportunities for ICAO to leverage its harmonized raw data and transform them into useful information for economic analyses purposes.

- a) **Business analysis tools.** Since mid-2014, various business analysis tools have been developed to analyze and visualize ICAO data thereby assisting in the decision-making process (<https://www4.icao.int/etools/>). The following are examples of the tools: air service agreement maps, aeronautical treaty maps, traffic and financial trends, air traffic mapping, airports and air navigation services tariffs evaluation. The latest available business tool measures the expected economic benefits of implementing safety-related Standards and Recommended Practices (SARPs). Progress has also been made regarding the use of modern analytical and forecasting tools to reduce time and improve the efficiencies of the analytical process.
- b) **ICAO CO₂ Reporting and Analysis System (ICORAS).** The data used for ICORAS has been integrated into the EDM, and the methodology to estimate fuel burn in ICORAS has been modified to reflect the recommendations by the Committee on Aviation Environmental Protection (CAEP).
- c) **Airline operating economics study.** ICAO's study on regional differences in international airline operating economics is used by States, international organizations and the airline industry to evaluate the impact of regulatory change for environmental planning and assessment. Results of the study are also used by the International Air Transport Association (IATA) to prorate passenger revenues from interline journeys and by the Universal Postal Union (UPU) to determine basic airmail conveyance rates, thus generating approximately CAD 200 000 annual gross revenue. The application and the data used for the study have been integrated into the EDM, resulting in savings in time and associated costs.

- d) **Air transport indicators.** Key air transport indicators for internal use (<http://www.icao.int/sustainability/Pages/FactsFigures.aspx>) and monthly monitoring sheets (<http://www.icao.int/sustainability/Pages/Air-Traffic-Monitor.aspx>) have been developed. These provide snapshots on monthly and yearly trends of civil aviation activities to meet the monitoring, assessment and benchmarking needs of Member States.
- e) **Aviation satellite account (ASA).** ICAO is currently working with the National Accounts Advisory Group under the UNSC, as well as with States and international organizations, to develop a standardized framework for the economic measurement of aviation activities, including aviation's contribution to Gross Domestic Product (GDP), the number of jobs created by aviation, aviation consumption, and the impact of aviation on balance of payments. The draft ASA framework will be available as reference material for the 39th Session of the Assembly.

4. FUTURE WORK

4.1 A comprehensive and reliable set of aviation data and analysis are required to promote financing for air transport development, reduce investment risks and uncertainty, set clear goals and targets, monitor progress, and evaluate the return on the investments. It promotes the use of aviation by States as an effective development driver that stimulates financing, trade, tourism and other economic activities in their development framework.

4.2 The focus and priority of future work related to the Statistics Programme is presented below. Details of the tasks are described in A39-WP/7, *Report on cooperation with the United Nations, International Organizations and other stakeholders in the area of data and analyses.*

- a) Finalize the re-engineered processes by 2018 to collect, process, analyse and disseminate aviation data;
- b) further simplify processes to share data that are of common interest in the air transport field in order to harmonize data, avoid duplicity of efforts, reduce costs and minimize burden on Member States;
- c) promote the use of ICAO data and analysis to increase financing and investments for the development of air transport activities, consistent with ICAO's NCLB initiative; and
- d) convene the Second Meeting of the Aviation Data and Analysis Panel (ADAP/2) in 2017, with a view to recommending the removal of any redundancies, suggest further improvements in processes, and ensure the alignment of the ICAO Statistics Programme with the emerging needs of Member States.