



**Agenda Item 5: Air Navigation Matters**  
**5.2 Global Air Navigation Matters**

**THE EVOLUTION OF ELECTRONIC TOOLS AND DATA:  
A STRATEGIC PLAN FOR THE CREATION OF A COMMUNITY-DRIVEN  
DECISION-SUPPORT DIGITAL ENVIRONMENT FOR THE GLOBAL AVIATION  
COMMUNITY**

(Presented by the Secretariat)

<b>SUMMARY</b>	
This paper presents an overview of the continued transition of the ICAO centered, paper-based, data collection and reporting processes into a set of tools designed to support the implementation of the global strategies, including the Global Aviation Safety Plan (GASP) and the Global Air Navigation Plan (GANP).	
<b>Reference:</b>	
• 38 <sup>th</sup> Session of the ICAO Assembly, ICAO Headquarters, Montréal, Canada, 24 September to 4 October 2013	
<b>Strategic Objectives</b>	<i>This information paper is related to Strategic Objectives: A. Safety – Enhance global civil aviation safety B. Security – Enhance global civil aviation security C. Environmental Protection and Sustainable Development of Air Transport</i>

**1. Introduction: Why ICAO must change its role in Aviation Data Management**

1.1 ICAO had traditionally been tasked with the collection, processing and dissemination of aviation data in order to allow States to use data as a significant catalyst for the safe and orderly growth of international civil aviation services and to make sure that it is operated in a sound and economic manner.

1.2 In its role as a key source of advisory material for decision-makers, both at global and regional levels, ICAO is also responsible for generating a wide-range of information, from “Air Transport Statistics Traffic Forecasts” (such as Circular 333 - *The Global Air Transport Outlook*) and “Safety Reports” to process feedback received by States on items such as proposed amendments to the Annexes.

1.3 To that end, and as a response to Member State’s evolving needs, a digital eco-system of over 200 websites and a few dozen databases supporting activities related to safety, air transport and air navigation were produced at ICAO in the past two decades.

1.4 The digital eco-system, entailing a myriad of various types of applications, was produced to meet specific ICAO-centric immediate needs, such as creating a website for a particular study group or to support an ICAO data set such as the list of location indicators or the ICAO Statistics Programme.

1.5 However, as recognized at the 37<sup>th</sup> Session of the ICAO Assembly, the ICAO-centric approach was cumbersome, mostly manual and costly.

## 2. Reporting Progress: What ICAO has done in the last three years

2.1 To resolve the above-mentioned undesired effects of the ICAO-centric approach to data management, it was determined that transformation to a user-centric approach was necessary. To that effect, ICAO has taken significant steps over the last three years towards becoming more “user-centric.” These developments include:

- a) Creating a web-based system that groups together different safety-related datasets and allows effective integrated safety analysis called iSTARS (available at the secure portal <https://portal.icao.int/iSTARS>)
- b) Implementing a unique air transport statistical site for both internal and external users called ICAODATA+ (available at <http://www2.icao.int/en/G-CAD/Pages/default.aspx>)



- c) Grouping all tools related to ICAO Standards and Recommended Practices (SARPs) and their implementation into a single platform called the SARPs Management and Reporting Tool (SMART) (available at [www.icao.int/USOAP](http://www.icao.int/USOAP))
- d) Launching a platform that would become the single entry point for all “air navigation” related data at the Twelfth Air Navigation Conference (available at <http://portal.icao.int/SPACE>)

### 3 **Heading in the right direction: The principles that drive the development of aviation tools**

3.1 The demand for new tools to be developed to obtain valuable aviation data is increasing due to the needs of many States and others in the aviation sector. Without a strategic plan for tool development, this demand creates the risk of ending up with as many disconnected tools as there are disconnected websites and databases.

3.2 To avoid the above, ICAO is following a set of guiding principles, listed below, as it continues the complex task of re-tooling the aviation regulatory community:

- a) *Access* — all aviation stakeholders should have access to accurate data and information critical to performing their responsibilities
- b) *Harmonization* — all aviation data critical for the sustainable development of air transport should be harmonized with the full participation of all States
- c) *User-centric* — aviation tools are not developed for ICAO purposes but those of the greater aviation community. To that end, ICAO will create a “digital space” to publish and exchange tools not just for the data and information that ICAO holds, but for all data and information as required by decision-makers to implement strategic plans
- d) *Focused on Aviation* — aviation tools are developed to solve aviation problems. They are not “IT” projects designed to meet the needs of the aviation community, but aviation projects to solve aviation problems that makes use of “IT”
- e) *Quality Management* — all aviation data should come with a statement of quality to ensure interpretation in the correct context

3.3 As the number of aviation tools grow, it is useful to categorize the tools based on familiar aviation terminology as follows:

- a) **Planning tools** (similar to navigation tools): they allow users to “set” the course required and derive the necessary “actions”
- b) **Monitoring tools** (similar to surveillance tools): they provide information to keep users “aware” of the most current situation and aviation trends (including reports and alerts)
- c) **Communication tools**: they allow cooperation and communication among States, stakeholders and ICAO
- d) **Decision-support system tools** (similar to flight management systems): they integrate information from the other three sets of tools to assist with efficient decision-making.

### 4. **What’s next: Continuing the logical evolution**

4.1 As ICAO continues to implement the strategy of aviation tools over the coming years it will focus on the following:

- a) Create and share open exchange formats and technical specifications for ICAO, States and others to publish data, analysis and tools
- b) Publish ICAO data, analysis and tools in the open formats with digital guarantees for security (to ensure that data is not shared with those not entitled)

- c) Create a “catalogue” of ICAO data, analysis and tools to enable States and stakeholders to install and use them according to their specific needs
- d) Monitor, collect, provide feedback and enhance the tools according to the community’s actual needs
- e) Develop and launch a set of tools as required to support the near-term objectives contained in the global strategies including the GASP, and the GANP
- f) Migrate all paper-based processes to support achievement of ICAO digital formats

4.2 In this same regard, at the 38th ICAO Assembly, ICAO presented the ways and means to report progress of regional implementation through the planned online system referred as the Regional Performance Dashboard (March 2014), which will also support an annual Global Air Navigation Report (April 2014). This initiative was broadly supported under an Assembly resolution that invites PIRGs to use ICAO standardized tools or adequate regional tools to monitor and, in collaboration with ICAO, analyze the implementation and performance status of the air navigation system.

## **5. The right business model: Return on investment for value added services**

5.1 In order to ensure sustainability of the digital space, participation by the stakeholders cannot be “mandate” driven. It must be needs-based and user-driven, and be supported by a healthy funding mechanism. To that end, ICAO will consider the following when developing the policies related to the digital space:

- a) Making safety critical data, analysis or tools available free-of-charge, when possible, within the Regular Programme or on a cost recovery basis when not
- b) Re-investing in the continuous evolution of the digital space and sustainability of support infrastructure
- c) Re-investing any savings generated by replacing paper-based processes into maintenance and further development of the collective digital space for the benefit of aviation

## **6. Conclusion**

6.1 ICAO is developing of a set of aviation tools designed to support the implementation of the GANP and GASP.