

**60<sup>th</sup> CONFERENCE OF  
DIRECTORS GENERAL OF CIVIL AVIATION  
ASIA AND PACIFIC REGIONS**

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**AGENDA ITEM 3: AVIATION SAFETY**

**ENHANCEMENT OF AVIATION SAFETY THROUGH  
AI-ENABLED SAFETY DATA PROCESSING AND ANALYSIS**

(Presented by the Republic of Korea)

**SUMMARY**

In line with ICAO's strategic direction on data-driven safety management, as outlined in *Annex 19 – Safety Management* and the *Global Aviation Safety Plan (GASP)*, Member States are actively working to collect, process, and analyze safety data and information in support of proactive safety management. However, as the volume and diversity of safety data continue to grow, there is an increasing need for advanced technologies capable of processing and analyzing such data efficiently and accurately. In response, the Republic of Korea (ROK) is advancing the integration of artificial intelligence (AI) into safety data processing and analysis to strengthen data-driven proactive safety management. This paper outlines the ROK's initiatives in this area and proposes enhanced cooperation among Member States to further improve aviation safety across the Asia-Pacific region.

## ENHANCEMENT OF AVIATION SAFETY THROUGH AI-ENABLED SAFETY DATA PROCESSING AND ANALYSIS

### 1. INTRODUCTION

1.1 ICAO emphasizes a proactive and data-driven approach to safety management, as outlined in the provisions of *Annex 19 – Safety Management* and the *Global Aviation Safety Plan (GASP)*. In alignment with this global strategic direction, the Republic of Korea (ROK) recognizes the growing need to integrate advanced technologies—such as artificial intelligence (AI)—into safety data processing and analysis to enhance the effectiveness of data-driven decision-making in support of proactive safety management.

1.2 To this end, various pilot projects have been carried out and are still ongoing, while detailed implementation plans are currently being developed to enable gradual, full-scale application. This discussion paper aims to share the ROK's experience and to propose cooperation among Asia-Pacific Member States in this area.

### 2. DISCUSSION

2.1 In January 2025, the Republic of Korea (ROK) promulgated the *Act on the Promotion and Utilization of Artificial Intelligence (AI)*, which aims to encourage the responsible use of AI technologies at the national level. In line with this national policy, the aviation safety sector is also making efforts to incorporate AI into its activities.

2.2 In the area of safety data collection and analysis, AI-integrated pilot projects have been conducted and are currently ongoing by the specialized agency — the Korea Aviation Safety Data Analysis Center (KASDAC), a third-party organization entrusted with managing the National Safety Data Collection and Processing System (K-SDCPS) to strengthen the protection of safety data and enhance technical proficiency in data processing and analysis.

2.3 The AI-integrated pilot projects are being applied both to text-based safety reports and electronically generated safety data, including the following use cases:

- a) converting text-based safety reports into structured, taxonomy-based data formats;
- b) identification of precursors and associated consequences using electronically generated data, including flight data; and
- c) identification of hazards from diverse safety information using generative AI.

2.4 These efforts aim to refine the scope and strategic direction of AI adoption in the processing and analysis of safety data, while progressively expanding its application to various data types collected through K-SDCPS, including occurrence reports, flight data, surveillance reports, maintenance records and significant weather information.

2.5 As technology continues to advance, the Republic of Korea is enhancing K-SDCPS beyond its initial role as a basic data integration platform, further evolving it into a comprehensive Digital Archive designed to efficiently manage and process large-scale, multi-source datasets. In addition, Generative AI tools tailored to support safety practitioners in their decision-making, as well as AI-enabled safety risk maps that visualize identified hazards and risks through predictive modeling and safety indicators, are also under development.

2.6 To ensure a stable and phased implementation that extends beyond those initial efforts, the Republic of Korea is developing a National AI Roadmap for Aviation Safety. This roadmap is expected to outline a structured vision for the incremental, responsible, and ethical integration of AI into the State Safety Programme (SSP). It is intended to serve as a strategic framework for guiding the deployment of aviation safety-specific AI applications within real-world contexts.

2.7 The ROK believes that the application of AI technology to SDCPS processes can provide significant benefits to States by helping them enhance the efficiency of their safety management activities. Sharing experiences and undertaking joint projects among Member States can further strengthen the overall effectiveness of safety data processing and analysis, thereby broadening the impact of AI-enabled systems across regional and global aviation communities.

### **3. ACTION BY THE CONFERENCE**

3.1 The Conference is invited to:

- a) Note the ROK's strategic efforts to incorporate AI technology into K-SDCPS processes to support data driven proactive safety management, aligned with the Annex 19 – Safety Management and GASP and principles;
- b) Recognize the importance of developing aviation safety-specific AI applications—such as generative AI for safety report analysis, flight and weather data-based precursor detection, and AI-enabled risk visualization tools—that enhance data-driven, proactive safety decision-making;
- c) Encourage APAC Member States and stakeholders to collaborate by sharing experiences and best practices on AI adoption in aviation safety management; and
- d) Collaborate with Regional Member States to advance joint initiatives and strengthen both regional and global cooperation in the application of AI for data-driven, proactive safety management—not only among civil aviation authorities, but also with third-party agencies involved in the management of SDCPS.

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