



ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 13: Aviation Security — Policy

ESTABLISHING GLOBAL POLICY FRAMEWORK FOR AI-BASED FUNCTION
CERTIFICATION IN AVIATION SECURITY EQUIPMENT

(Presented by the Republic of Korea)

EXECUTIVE SUMMARY

The increasing integration of Artificial Intelligence (AI) into aviation security equipment—such as Automated Prohibited Item Detection Systems (APIDS) and intelligent metal detectors—offers significant advancements in threat detection capabilities. However, existing ICAO guidance, including Doc 8973, does not sufficiently address the performance certification of AI-enabled systems, which exhibit non-deterministic behavior and learning-based functionality.

Growing global demand for certification of AI-integrated security equipment has revealed a critical gap in standardized evaluation methodologies and international alignment. To address this, ICAO is encouraged to incorporate AI-specific performance guidance into its regulatory framework and facilitate information sharing and pilot initiatives among Member States.

Action: The Assembly is invited to:

- Request ICAO to incorporate AI-specific performance evaluation and testing guidance into updates of Doc 8973 and related AVSEC documents;
- Encourage Member States to share best practices, certification criteria, and test protocols for AI-enabled aviation security systems;
- Promote efforts toward gradual convergence of national certification approaches for AI-integrated equipment, to support mutual recognition and reduce redundant testing burdens.

<i>Strategic Goals:</i>	This working paper relates to Strategic Goal of <i>Every Flight is Safe and Secure</i> .
<i>Financial implications:</i>	Modest financial and administrative resources may be required for guidance material updates and stakeholder coordination activities among ICAO and Member States.
<i>References:</i>	ICAO Doc 8973 – <i>Aviation Security Manual</i> ICAO Annex 17 – <i>Aviation Security</i> Global Priority 4: Improve technological resources and foster innovation

1. INTRODUCTION

1.1 Artificial intelligence (AI) is increasingly utilized in aviation security equipment, enabling advanced threat detection and anomaly recognition. These capabilities are already being incorporated into systems such as Automated Prohibited Item Detection Systems (APIDS) in screening systems and intelligent walk-through metal detectors.

1.2 However, current ICAO guidance, including Doc 8973, does not provide sufficient technical criteria or evaluation methodologies to assess the performance of AI-enabled systems. As AI is inherently adaptive and non-deterministic, traditional rule-based certification frameworks are inadequate for validating its functionality, accuracy, and security compliance.

1.3 The Republic of Korea has observed a rapid increase in certification requests for AI-integrated security equipment. This trend highlights the urgent need for internationally consistent certification principles.

2. DISCUSSION

2.1 AI-enabled systems pose challenges that include:

- a) The absence of performance criteria that account for probabilistic behavior, learning mechanisms, and input sensitivity;
- b) Difficulty in testing systems that evolve through re-training or updates post-certification;
- c) Lack of international alignment on validation datasets, accuracy benchmarks, and acceptable error thresholds;

2.2 Several national and regional bodies such as ECAC and the TSA have developed procedures tailored to their own requirements. Without international coordination, manufacturers face duplicated testing and fragmented compliance pathways.

2.3 Incorporating AI-specific content into ICAO Doc 8973 and related materials would help define baseline expectations for performance and operational reliability. Moreover, promoting information sharing and collaborative testing between States can support convergence and increase confidence in new technologies.

2.4 To address the certification gap associated with AI in aviation security systems, ICAO should act to modernize its technical guidance by updating Doc 8973 to include AI-specific performance standards and evaluation methodologies. Furthermore, ICAO can facilitate alignment among States through collaborative pilot activities and information-sharing initiatives.