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**ASSEMBLY — 42ND SESSION**

**EXECUTIVE COMMITTEE**

**Agenda Item 20: Innovation in Aviation**

**AIRPORT DIGITAL TRANSFORMATION (DX) MATURITY ASSESSMENT MODEL FOR GLOBAL EXPANSION**

(Presented by the Republic of Korea)

**EXECUTIVE SUMMARY**

As airports around the world accelerate their digital transformation to enhance operational efficiency and passenger experience, the absence of a standardized framework for evaluating digital maturity has become a growing concern. Recognizing this gap, Incheon International Airport has developed an airport-specific Digital Transformation (DX) Maturity Assessment Model that enables structured evaluation and benchmarking of digital capabilities across key operational domains.

The model provides a five-level maturity scale—from Initiating to Leading—and assesses airports in areas such as smart operations, data utilization, digital services, strategic governance, and workforce readiness. To support implementation, a web-based evaluation platform has been developed to guide users through the entire assessment process, from input to automated report generation.

Currently applied at Incheon Airport, the model is planned for broader application in Asia and Africa. This paper proposes that ICAO and Member States consider adopting or adapting the model to promote mutual benchmarking, policy alignment, and global advancement of airport digital transformation efforts.

<i>Strategic Goals:</i>	This working paper relates to <i>The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All, Every Flight is Safe and Secure and Aviation Delivers Seamless, Accessible, and Reliable Mobility for All.</i>
<i>Financial implications:</i>	This paper has no financial implications for ICAO. For Member States, the adoption of the DX Maturity Assessment Model may contribute to improved resource allocation, operational efficiency, and long-term cost effectiveness through data-driven digital transformation strategies.
<i>References:</i>	

## 1. INTRODUCTION

1.1 Digital transformation (DX) is becoming a critical factor in modern airport operations, improving efficiency, passenger satisfaction, and overall resilience. However, there is currently no internationally recognized framework for assessing the level of digital maturity across airports. This lack of standardization hampers the ability of airports and States to benchmark progress, identify gaps, and plan strategic investments.

1.2 In response to this need, Incheon International Airport Corporation (IIAC) developed an airport-specific DX Maturity Assessment Model in 2023. The model is designed to serve as both a diagnostic tool and a strategic guide for digital advancement.

## 2. OVERVIEW OF THE DX MATURITY ASSESSMENT MODEL

2.1 The DX Maturity Assessment Model is tailored to the unique characteristics of the airport industry and evolving technological trends. It consists of structured indicators across five core dimensions:

- a) digital infrastructure and technologies;
- b) data-driven operations;
- c) digital services and passenger experience;
- d) digital strategy and investment; and
- e) organization and workforce.

2.2 Each airport is assessed on a five-level maturity scale, ranging from “Initiating” to “Leading”. The model incorporates both quantitative and qualitative indicators and requires supporting evidence to ensure transparency. To facilitate implementation, a web-based platform was also developed, enabling end-to-end support from data entry to automated report generation.

## 3. IMPLEMENTATION STATUS AND USE CASES

3.1 Since its development, the model has been regularly applied at Incheon International Airport, helping to monitor progress and guide digital strategies. Expansion efforts are underway to introduce the model to other airports in Asia and Africa, in cooperation with interested stakeholders.

3.2 The model supports not only internal diagnostics but also strategic decision-making in areas such as investment prioritization, policy development, and public-private collaboration.

#### **4. OPPORTUNITIES FOR INTERNATIONAL COLLABORATION**

4.1 Member States are encouraged to consider adopting or piloting the model as a means of benchmarking airport digital maturity and enhancing mutual learning. Incheon International Airport is available to provide technical support as needed.

4.2 We propose that ICAO collaborate with Member States and relevant partners to jointly enhance the DX Maturity Assessment Model, support its global expansion, and pursue standardization. The model may also be considered for designation as a global framework for assessing digital maturity at airports, and relevant components could be incorporated into ICAO guidance materials.

#### **5. CONCLUSION AND SUGGESTIONS**

5.1 This paper highlights the importance of a common framework for assessing airport digital maturity and introduces a model that has been successfully implemented and is ready for broader use. ICAO and its Member States are invited to explore opportunities for adoption, collaboration, and standardization to support the global advancement of airport digital transformation.

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