

# Incheon Airport DX Strategy

Incheon Airport has implemented a holistic DX strategy across all operations

## Airport-wide Initiative



*"We will mobilize the airport's full capabilities to accelerate digital transformation across its entire operational ecosystem."*

- CEO Mr. Lee Hag-Jae(May 2024)

## DX Innovation Framework

### VISION

**Incheon Airport: A Game Changer Transforming the World**

#### Governance

(11 items)

- **Digital Maturity Assessment Framework**
- Performance Management for IT Project
- Accelerating IT Project Process

#### Culture

(9 items)

- Cultivating Digital-Ready Culture
- DX-driven Innovation Task Group

#### Action items

(31 items)

- Airport Operation : TAM, Robotics
- Passenger Service : OneID, Commerce Platform
- Infrastructure : 5G Connectivity, Digital Twin
- Workplace : AI Platform

# Airport DX Maturity Assessment Model

A shared framework can empower airport to assess, compare, and accelerate their DX journey

## Why an Airport DX Framework?

- Currently, there is no standardized framework to evaluate digital maturity across airports globally
- Traditional DX models(BCG DAI, DQ..) are tailored to manufacturing, finance ...



**Airport-specific needs  
are not reflected**

## ICN DX Assessment Journey

Development and Assessment/Phase 1  
- Digital maturity  
(Dec. 2023)



Development and Assessment/Phase 2  
- Digital maturity and Capability  
(Sep. 2024)



Enhancement of the Assessment Model  
through Expert Consultation  
(Aug. 2025)

## How is it structured?

- ① Digital Technology and Infrastructure**
  - Digital Twin, AI, Smart Mobility, IoT Sensor, High-Speed Communication
- ② Data-Driven Operations**
  - Data Quality, Data Governance, Integrated Data Platform
- ③ Service Digitalization & Passenger Experience**
  - Biometric, Self-Service Implementation, Mobile Service
- ④ DX Strategy and Investment**
  - DX Strategy, Open Innovation, Partnership
- ⑤ Organization and Talent**
  - Agile, DX Organization, DX Literacy Training

# Airport DX Maturity Assessment Model

## Web-based assessment with AI insight and benchmarking

### End-to-End Web Platform

#### Evaluate Airport Indicators

##### 1. Level of Digital Twin Implementation

A Digital Twin is a powerful tool that mirrors real-world physical assets in a virtual environment. It enables airports to be monitored and simulated, thereby improving efficiency across design, construction, planning, and operations. This indicator evaluates the maturity level of digital twin implementation, from geospatial information setup to full CPS (Cyber-Physical System) integration.

[Area] Digital Technology and Infrastructure

[Core Indicator] Yes

- ☐ 1Score - Partial geospatial data established (2D)
- ☒ 2Score - Complete geospatial data coverage for the airport (2D/3D)
- ☐ 3Score - Integration and real-time monitoring of passenger flow and facility data into a digital twin platform
- ☐ 4Score - Simulation of passenger flow and facility data via digital twin platform
- ☐ 5Score - Full simulation and physical control environment established using a digital twin (CPS)

Evaluator Comment

Digital twin systems are used in key facilities for real-time monitoring and simulations.

Best Practice (optional)

Solaris International Airport, a full-scale digital twin platform models real-time conditions across terminal facilities, aircraft stands, passenger flows, and energy consumption.

Upload evidence (PDF or ZIP)

파일 선택 선택된 파일 없음

- All processes including data submission, assessment, and results are fully web-based

### AI-Powered Best Practices

#### Best Practice

D1

Best Practice Score  
4.0Point

Vancouver International Airport (YVR) in Canada has implemented a digital twin using real-time 3D technology (Unity), becoming the first in North America to integrate real-time operational data across the entire airport, including inside an airport terminal. This digital twin is actively used by over 200 operations staff through a runtime application and provides real-time operational insights to more than 600 airport employees. It facilitates efficient handling of maintenance, safety, and sustainability challenges. By linking real-time and historical data, it supports data-driven decision-making and interdepartmental collaboration, ultimately transforming overall airport operations and passenger experience.



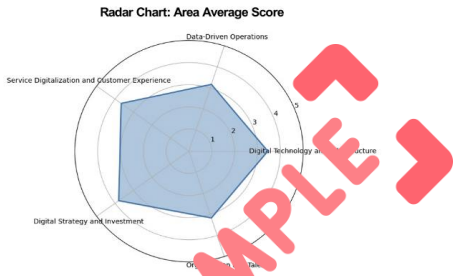
YVR 디지털 트윈 플랫폼



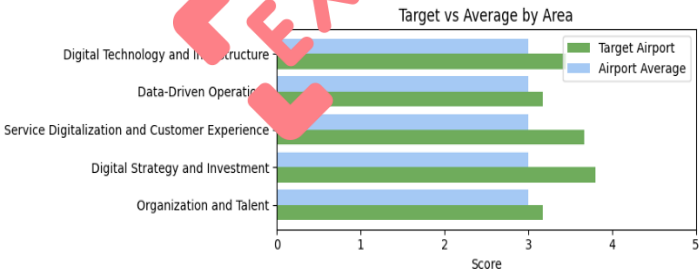
YVR 여객터미널 3차원 모델링

- Generative AI collects and presents global airport best practice cases

### Benchmarking Insights



#### Comparison: Target Airport vs Airport Average



- Provides positioning against industry average and leading airports

# Airport DX Maturity Assessment Model

Expert guidance with automated PDF reporting

## Expert-Driven Strategy

**D1: Level of Digital Twin Implementation**

A Digital Twin is a powerful tool that allows mirrored physical assets in a virtual environment. It enables airports to be reconstructed and simulated, thereby improving efficiency across design, construction, planning, and operations. This indicator evaluates the maturity level of digital twin implementation from geospatial information setup to full DDD (Digital-Physical-System) integration.

**Score**

1. **Score** (0-5)

2. **Score** (0-5)

3. **Score** (0-5)

4. **Score** (0-5)

5. **Score** (0-5)

**Comment**

6. **File Upload**

7. **Best Practice**

### Digital Transformation Roadmap

Strategic Implementation Plan for Enhanced Digital Maturity

**1. SHORT-TERM IMPLEMENTATION**  
(Within 6 months) Foundation Building & Quick Wins

The lower-scoring areas include Digitalization and Customer Experience and Organization and Talent (3.3 and 3.4), requiring immediate improvement. Quick Response (QR) tools, mobile applications, and digital signage for baggage claim congestion guidance, along with the expanded adoption of IoT and AI-based chatbot services, can rapidly enhance passenger experience. In addition, the introduction of an omnichannel strategy is essential, extending beyond the current use of Instagram, YouTube, and Facebook to include channels tailored for Asian markets. Within the airport, digital tools that enable the direct collection of passenger feedback are also needed to strengthen engagement.

**2. MID-TERM DEVELOPMENT**  
(6 months to 1 year) Integration & Expansion

In the area of Digital Technology and Infrastructure, a key mid-term strategy is the implementation of digital twins. A digital twin is a system that visualizes real-time collected data based on digital spatial information, and when integrated with BIM and IoT platforms, it can significantly maximize the efficiency of airport operations. However, successful adoption requires careful consideration of future expansion aspects such as synchronization and simulation. In the area of Organization and Talent, although the target airport established a dedicated digital transformation unit in 2025, its effectiveness remains limited due to insufficient KPIs and budget authority. Addressing these gaps is necessary to enhance execution capability.


**3. LONG-TERM TRANSFORMATION**  
(1 to 3 years) Innovation & Leadership

As a long-term strategy, the expansion and planning of high-speed communication networks (5G/6G), along with cybersecurity measures to prepare for the era of quantum computing, are essential. While the target airport is advancing digital transformation through partnerships with domestic companies, leading international airports are driving transformation by maintaining partnerships with global firms (e.g., Changi-AWS, Heathrow-Gemini). Furthermore, advanced airports are aggressively pursuing AI talent acquisition for the future. The target airport should benchmark these practices and pursue talent development and recruitment in parallel to strengthen its competitive edge.

Success depends on systematic implementation, stakeholder alignment, and continuous performance monitoring.

- Provides domain-specific strategies with short- and long-term DX roadmaps

## Automated Reporting



Incheon Airport

### Incheon International Airport

Digital Transformation Assessment Report

May 2025

Prepared by Incheon International Airport Corp.

### Digital Maturity Summary

Total Score: 3.44 / 5.0

Maturity Level: **Operationalizing**

**Level Description:**

**Foundational** (Score: less than 2.0)  
The airport has only basic or ad-hoc digital systems in place. Digital initiatives are fragmented, and there is limited strategic alignment or investment in digital transformation.

**Operationalizing** (Score: 2.0 to 3.49)  
The airport is actively deploying digital tools and processes across departments. Some integration exists, and digital initiatives are guided by organizational goals, but full maturity has not yet been achieved.

**Fully Enabled** (Score: 3.5 and above)  
The airport has a comprehensive digital transformation strategy implemented across all key operational areas. Technologies are well-integrated, data-driven decisions are standard, and continuous innovation is embedded in the culture.

*This score represents the airport's overall level of digital transformation maturity.*

- Final results are generated as professional PDF reports