



ICAO

*International Civil Aviation Organization***The Fourth Meeting of System Wide Information Management Task Force (SWIM TF/5)**

Web-conference, xx – xx August 2021

Agenda Item 9: State, Regional and Global SWIM Updates**THE STATUS OF SWIM AS AN ATM BACKBONE IN THE REPUBLIC OF KOREA**

(Presented by Korea Airports Corporation (KAC), Republic of Korea)

SUMMARY

This paper presents the status of SWIM as an ATM backbone network in the Republic of Korea. It describes the national roadmap to implement the local SWIM backbone network.

1. INTRODUCTION

- 1.1 Ministry of Land, Infrastructure and Transport (MOLIT) has established the master plan of ATM and Navigational Aid (Nav aids) systems and now revising the master plan for the next five years.
- 1.2 This plan is to improve airport competitiveness, develop the aviation industry, strengthen interconnections, and prepare a systematic roadmap. ICAO also recommends implementation of SWIM and promotes the transition to extend the global information sharing environment for ATM information.
- 1.3 The Republic of Korea actively transits to and implements the Common aeronautical VPN (CRV) that a new network for ICAO APAC region is adopted, from current international network such as satellite communication for AFTN, X.25 and X.400 dedicated lines.
- 1.4 The Republic of Korea also has world-class Information and Communication Technology (ICT) such as 5G and Internet of Things (IoT). Adaptation of such technologies to aviation communication infrastructure has been progressed comparatively slowly. However, this master plan would boost up the successful implementation of the efficient network.

2. DISCUSSION

- 2.1 The master plan for the national aeronautical network is carried out in two stages. The first stage is to implement a national backbone network based on optical and wireless communication infrastructure. The second stage is to exchange local ATM information and other data using a SWIM service as follows :

Agenda Item 9

9– 11/08/21

- 2.1.1. Stage1 is to establish a small Packet Optical Transfer Network (POTN, 2~10Gbytes) between airports with the existing optical communication and next-generation wireless communication network;
- To connect the airports and Air traffic control (ATC) facilities with triangle-type backbone network for domestic and build the AeroMACS for airports. ATC, airport operators and other stakeholders can use the aviation data for R&D, safety analysis, etc.
 - To deploy the CRV for international communication and replace satellite communication and X.25 (Aeronautical Fixed Telecommunication Network, AFTN) with China and Japan.
- 2.1.2. Stage2 is to implement SWIM infrastructure deployment in the airports and ATC to provide ATM information;
- 2.2 The key point of this plan is that information from related systems is exchanged via SWIM with the participation of ATM stakeholders such as the Air Traffic Management Office (ATMO), Regional Office of Aviation (ROA), Korea Airports Corporation (KAC), Incheon International Airport Corporation (IIAC), Korea Meteorological Administration (KMA), and airlines.

	AS-IS	TO-BE	
		Stage 1	Stage 2
Global Network (China-ROK-Japan)	X.25, Satellite, AIDC	Transition to CRV <i>including integration, test</i>	CRV only
Airport	Fiber, Line	Transition to AeroMACS, Airport Backbone	AeroMACS, Airport Backbone only
Next Generation Backbone	Point-to-Point(P2P)	R&D	SWIM Backbone (5 nodes) only
Flight Information	Flight Operations Information System (FOIS)	FOIS + Weather + Geographical	Separation of Public Information Service

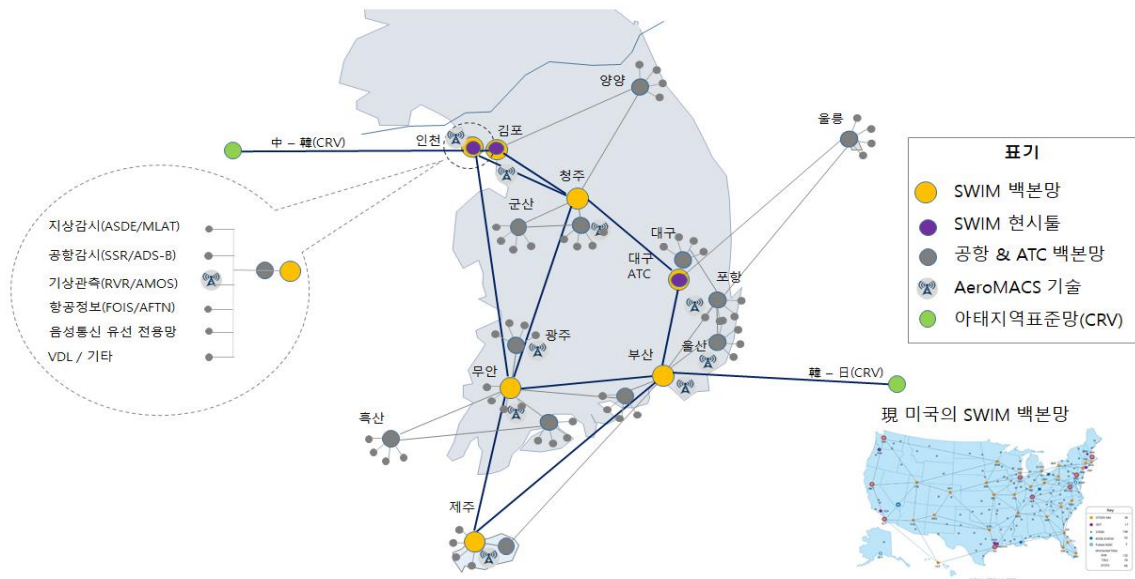
TABLE 1 Roadmap for Transition to SWIM

- 2.3 The Republic of Korea would expect to actively respond to changes in the global environment and achieve the improved the network performance and cost savings effect through this plan. And it is also expected to contribute to the establishment of a collaborative environment through the global ATM information exchange as the role of backbone for the spread of SWIM and the exchange of ATM data.
- 2.4 The Republic of Korea has been actively participating as a member of the ICAO APAC SWIM TF and expects that the successful implementation of this plan would contribute to the expansion of SWIM. The brief schedule is as follows :
- 2.4.1 Korea Airports Corporation (KAC) with Incheon International Airport corporation's active cooperation developed the data integration and distribution system in 2019, and KAC is in the trial operations. Air Navigation Facilities Division (ANFD) in Korea Office of Civil Aviation (KOCA), MOLIT is drafting the national regulation for data management and security system and ANFD will coordinate with related national organizations for the cyber security.

2.4.2 ROK will complete the establishment of CRV between Korea, China and Japan after COVID-19('22.12), and will conduct the transition to the next-generation local backbone network ('22~'24);

- Stage1 is to establish the local SWIM data distribution system at Gimpo international Airport and distribute data through SWIM ('22~'24); and
- Stage2 is to extend SWIM to other airports by2025 in the Republic of Korea including Incheon International Airport.

2.4.3 ROK’s new aviation intra network will be like as below and Yellow is the SWIM infrastructure deployment to exchange the real time information in a service-oriented architecture (SOA) for users, ATC, Mil, airport operators, weather authority and other stakeholders. It will boost up the usage of aviation data with standard models nationally and internationally. FAA’s SWIM Backbone is a best one for reference.



* Source: https://www.faa.gov/air_traffic/technology/swim/stddshttp;

[figure. New aviation intra network and FAA’s SWIM Infrastructure Deployment for example]

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate
