



ICAO

International Civil Aviation Organization**Twenty Eighth Meeting of the Communications/
Navigation and Surveillance Sub-group (CNS SG/28)
of APANPIRG***Bangkok, Thailand, 1 July – 5 July 2024*

Agenda Item 4: Information Management (IM)

4.3 Outcomes of SWIM Events

OUTCOMES OF SYSTEM WIDE INFORMATION MANAGEMENT SEMINAR

(Presented by the Secretariat)

SUMMARY

This paper presents the outcomes of SWIM Seminar held on 13 May 2024 for meeting information.

1. INTRODUCTION

1.1 The ICAO Asia/Pacific System-Wide Information Management (SWIM) Seminar 2024 was held on **13 May 2024** at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand. The theme of the Seminar was ***Building Asia/Pacific Regional SWIM: The Journey to Version One***. The objectives of the Seminar were to connect SWIM operational requirements with related technical developments, i.e. continuing from identifying possible use cases (outcome from Working Session on SWIM Business Requirements Brainstorming held on 6-7 November 2023) to translating these to technical requirements/developments. Additionally, this event aimed to foster the exchange of lessons learned from acquiring technical solutions, including implementation options and business models, to address operational use cases. The SWIM Seminar report and presentations can be accessed by [this link](#).

1.2 This paper summarized the outcomes of the SWIM seminar for CNS SG28 Meeting information.

2. DISCUSSION

2.1 The Seminar was attended by **94** participants from **18** States/Administrations, **3** International Organizations and one industry partner. The Seminar was opened by Dr. Amornrat Jirattigalachote, Strategic Planning Manager (Engineering), Policy and Strategy Management Bureau of Aeronautical Radio of Thailand Ltd. (AEROTHAI), Co-Chair of SWIM Task Force, and Ms. Kristin Cropf, SWIM Programme Manager, Federal Aviation Administration (FAA) and Co-Chair of SWIM Task Force. Dr Amornrat Jirattigalachote, Co-Chair of the SWIM Task Force, moderated the Seminar. Ms. Soniya Nibhani, Regional Officer ANS (CNS) Implementation, facilitated the Seminar with the support of Ms. Varapan Meefuengsart, the Programme Assistant from the ICAO Asia and Pacific Regional Office.

2.2 A total of **Eight** (8) presentations were delivered by Experts from China, Hong Kong China, Japan, Malaysia, the Republic of Korea, Singapore, Thailand, and a SWIM TF Co-Chair. The presentation materials can be accessed by the [link](#).

The Summaries of all presentations are as follows:

SP01 – Setting the Scene

2.3 Dr. Amornrat Jirattigalachote, ICAO APAC SWIM Task Force Co-Chair, shared the background information on the motivation to conduct the Seminar and the specific topics that would be explored.

SP02 – Building Asia/Pacific Regional SWIM: The Journey to Version One – China's Experience

2.4 Mr. Lisi Su, Senior Engineer, Southwest Regional Air Traffic Management Bureau of Civil Aviation Administration of China, presented China's experience in their ICAO APAC SWIM Task Force participation. In particular, progress made in FF-ICE/R1 Service Validation and Implementation and SWIM Discovery Service (SDS) Development was shared. Mr. Su also informed about China's contribution to SWIM Implementation Pioneer Ad-hoc Group (SIPG) related work such as SWIM Technical Infrastructure (SWIM TI) development, IP network set up, and message exchange. In addition, the progress of SWIM development in China, along with the adopted business model and the selected technical options, were presented. Lastly, lessons learned from domestic SWIM and regional SWIM implementation were shared with participants.

SP/03 – Building Asia/Pacific Regional SWIM: The Journey to Version One – Hong Kong China's Experience

2.5 Mr. Henry Chan, Electronics Engineer, Hong Kong Civil Aviation Department (HK CAD), presented the business models and technical options adopted in the past and considered for the future of HK CAD's SWIM development and implementation. Information on objectives and scopes, which the chosen business models and technical options served, were also shared. Moreover, Mr. Chan provided examples of use cases and their rationale for selection, especially for the upcoming SWIM-over-CRV Demonstration and Surveillance Data Sharing in the SWIM Technical Trial. Moreover, the lessons learned on setting up Enterprise Messaging Service (EMS) and message routing tests were highlighted.

SP/04 – Implementing SWIM – The Singapore Experience

2.6 Mr. David Leow, Head (Air Traffic Management Software Engineering), Civil Aviation Authority of Singapore (CAAS), introduced Singapore's SWIM journey and experiences in building APAC SWIM. Mr. Leow recalled CAAS's SWIM implementation timelines, starting from participation in the two Mini Global Demonstrations in 2013 and 2016, during which CAAS was introduced to the concept of SWIM, till the completion of CAAS SWIM Phase 1 implementation in 2023. Additionally, the decisions made on business models and technical options, together with the lessons learned along the journey, were shared. Furthermore, the presentation also provided the current use cases and future considerations for CAAS SWIM, as well as the experiences and lessons learned so far from participation in the SIPG.

SP/05 – Building Asia/Pacific Regional SWIM: The Journey to Version One – AEROTHAI's Experience

2.7 Mr. Arthit Tosukolvan, Executive Air Traffic Systems Engineer, AEROTHAI, presented AEROTHAI's experience in participating in SIPG and Surveillance Sharing in SWIM Trial Implementation Group (S3TIG). He shared examples of use cases being explored, along with the business model and technical option adopted for AEROTHAI's SWIM development and

implementation so far. The system architecture adopted by AEROTHAI and built on AEROTHAI's existing EMSs to establish the SWIM TI based on the hierarchy architecture was also highlighted. Lastly, he shared details on the regional SWIM governance-related topics discussed among SIPG members and lessons learned, especially from developing AEROTHAI's SWIM TI, participating in SIPG, and preparing for the SWIM-over-CRV Demonstration as well as Surveillance Data Sharing in SWIM Technical Trial.

SP/06 – Building Asia/Pacific Regional SWIM: The Journey to Version One – ROK's Experience

2.8 Mr. Sehwan Han, Senior Research Engineer, Korea Airports Corporation (KAC), shared the Republic of Korea (ROK) experience in SWIM development. Mr. Han introduced ICT trends in 2023 and 2024 and informed about ROK's Digital Platform Government (DGP) Masterplan (2021-2025), which was established to promote Digital Transformation (DX) in the public sector. Information on the establishment of ROK's Open Data Portal was also highlighted. Moreover, details on business models and technical options for SWIM testbed and SWIM implementation in ROK were presented. The Seminar was briefed on the ROK high-level architecture for SIPG participation and the SWIM-over-CRV Demonstration. In addition, an example of use cases in different lifecycle stages of service consumption was shared.

SP/07 – SWIM Updates in JCAB

2.9 Mr. Yasushi Iwasawa, Special Assistant to the Director, Japan Civil Aviation Bureau (JCAB), briefed about the SWIM updates in Japan. He shared information about SWIM architecture, initial SWIM services, and methods of using/providing SWIM information services. Draft plans for the initial SWIM services launch as well as the future plan for connecting the local SWIM with the regional SWIM, were also presented. Lastly, lessons learned from the development to support the SWIM-over-CRV Demonstration and Surveillance Sharing in the SWIM Technical Trial were discussed.

SP/08 – Building Asia/Pacific Regional SWIM: The Journey to Version One – The Malaysia Experience

2.10 Mr. Anwar Awang Man, Senior Solution Consultant, TM One, presented Malaysia's experience in SWIM development and implementation. The Seminar was informed that the Civil Aviation Authority of Malaysia (CAAM) has appointed TM as a technology partner for the country's SWIM development. The development of Malaysia's SWIM Roadmap document, communication network infrastructure upgrade, National Enterprise Messaging Service (NEMS) and ATM Information Exchange Interoperability Framework (ATMIEIF) were highlighted. For contribution to the regional SWIM development, Malaysia's considerations on APAC EMS Architecture were shared. Furthermore, the Seminar briefed with APAC EMS connection setup agreed among the SIPG members and Malaysian surveillance data flow design for the upcoming Surveillance Sharing in the SWIM Technical Trial. Lastly, the current use cases, lessons learned so far, and future plans were discussed with the participants.

Closing of Seminar

2.12 Dr. Amornrat Jirattigalachote expressed her gratitude to the delegates for their active participation and contribution, especially in sharing ideas and questions. At the wrap-up session, she summarised the key messages from each presentation. Based on the outcomes of the Q&A session, the following further dialogues and actions are required for various aspects:

- SIPG to document all lessons learned by participants, including EMS providers, data contributors, data consumers, and observers, of the SWIM over CRV Demonstration and Surveillance Sharing in SWIM Technical Trial to be held on 28-29 May 2024, for APAC States/Administrations to refer to when commencing their SWIM

- development and implementation.
- Regarding the APAC SWIM TI architecture,
 - The rationale for selecting a specific architecture should be well documented in detail.
 - When designing and selecting a specific regional architecture, due consideration should be given to the diversity of Member States/Administrations within APAC, specifically in operational requirements, budget, and resources.
- The *Workshop for Preparation of New CRV Requirements and Specifications for Future SWIM/Other Aviation Services* planned to be held in **Guam, USA, from 17-20 September 2024** should discuss the benefits and drawbacks of “GRE tunnel structure of CRV” as it is considered as a “CRV limitation” that is restraining SWIM TF to design a more-efficient regional SWIM Technical Infrastructure, based on the assumption that the current GRE tunnel-based CRV infrastructure does not support “any to any” connection.
- Detailed deliberation on criteria for classifying an information service as safety-critical or not-safety-critical is required. Some of the criteria proposed in the Seminar were:
 - Criteria should be based on the safety criticality of an application using an information service, not the information itself;
 - Safety-critical information should be information used for aircraft separation provision;
 - Information services providing information for situational awareness can be classified as not-safety-critical.
- In a case where a hierarchy architecture is adopted as the APAC SWIM TI architecture, the performance and function requirements of gateway EMS and edge EMS should be given to support Member States/Administrations in determining their implementation decisions.

2.13 The Seminar was informed that an additional **SWIM regional event** is being planned to be conducted in Q4 2024. **Indonesia** proposed hosting the event there. The event will be tentatively scheduled from **6-8 November 2024**. The ICAO Secretariat will coordinate with Indonesia for further formal processes. The detailed information about the event along with agenda items, will be shared with APAC States/Administrations by the end of June 2024.

2.3 Dr. Amornrat Jirattigalachote extended sincere appreciation to all speakers for joining the Seminar and sharing the information with APAC Member States/Administrations. Additionally, she expressed appreciation and gratitude to the event participants.

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.
