



ICAO

*International Civil Aviation Organization*

**Twenty Fifth Meeting of the Communications/  
Navigation and Surveillance Sub-group (CNS SG/25) of  
APANPIRG**

Video Tele-Conference, 18 – 22 October 2021

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**Agenda Item 3:** Aeronautical Fixed Service (AFS)

3.4. Review Report of the Fifth Meeting of System Wide Information Management Task Force (SWIM TF/5) including:

- Outcome of SWIM workshop;

**OUTCOMES OF SWIM WORKSHOP**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the outcomes of the two days SWIM Workshop organised by ICAO APAC Office with support of SWIM TF key contributors and other volunteer members from 6 July- 7 July 2021.

**1. INTRODUCTION**

1.1 The Twenty Fourth meeting of Communications/Navigation and Surveillance Sub-Group (CNS SG/24) of APANPIRG proposed to SWIM TF to consider to prepare another SWIM workshop for APAC region. This workshop was in response to the sub-group action item. The workshop focused on how SWIM can better support the current operations and enabled the operations following the future operational concepts such as FF-ICE and cross-border data sharing, emphasized on the bottom-up viewpoint for SWIM implementation in APAC region.

1.2 ICAO APAC SWIM Workshop was held from 6 July to 7 July 2021 via Video Tele-Conference. The SWIM Workshop was attended by **Two hundred and thirty one** (231) participants from **Twenty one** (21) States/Administrations, one (1) International Organization, a group of airlines industries and an observer namely Frequentis. The SWIM Workshop report, presentations, and other resources can be accessed by following link:

<https://www.icao.int/APAC/Meetings/Pages/2021-SWIM-Workshop.aspx>

1.3 This paper summarized the key outcomes of Two day ICAO APAC SWIM Workshop.

**2. DISCUSSION**

2.1 Dr. Amornrat Jirattigalachote, PhD, Policy and Strategy Management Bureau Aeronautical Radio of Thailand Ltd moderated the SWIM Workshop. Total **Thirteen** (13) presentations including one demonstration were delivered by Experts from different parts of the World in SWIM

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Workshop. Throughout the SWIM Workshop, **57** questions were asked and more than **60** feedbacks for the SWIM Workshop were provided by Participants with **100% positive responses**.

2.2 The main outcomes of ICAO APAC SWIM Workshop are highlighted below:

**Day-1: 6 July 2021****a. SP01 – Overview of SWIM Concept**

2.2 Mr. Yukinobu Ryu, Special Assistant to the Director, Japan Civil Aviation Bureau presented the overview of SWIM Workshop. He explained the needs of SWIM and informed that today's ANS Systems are not designed and implemented to be globally interoperable. He explained the benefits of SWIM and definition of SWIM as per Doc 10039- Manual on System Wide Information Management Concept along with its application using the scenario of SWIM as the "Marketplace".

**b. SP02 – Philosophy for Asia Pacific SWIM Implementation**

2.3 Mr. David Leow, Head (Air Traffic Management Software Engineering), Civil Aviation Authority of Singapore presented philosophy for Asia Pacific SWIM Implementation. He explained SWIM concept, justifications of SWIM, and difficulties in SWIM Implementation based on previous experiences. It was summarised that overall philosophies are to identify operations both current and future that would benefit from SWIM. He further described SWIM Implementation steps and informed that Governance is already being developed at the ICAO APAC SWIM Task Force. Participants were informed that ICAO Trust Framework Study Group (TSFG) have made proposals for a demo of potential trust mechanism between Eurocontrol and US-FAA and there is the need to combine both the development of Governance with this bottom up implementation philosophy.

**c. SP03 – Operational use cases and requirements collection**

2.4 Mr. Sugoan Fucharoen, Senior ATM Data Officer, AEROTHAI, discussed the collection of operational use cases and requirements for SWIM Development, which is the foundation upon which the technical development should be based. Only by developing SWIM in a way that supports ATM operational needs can the benefits be derived from this technological advancement. To enable the effective collection of use cases, Mr. Sugoan introduced the participants to the Operational Scenario Template, which had been presented at the SWIM TF/3 and provided participants with hands-on experience in transcribing the operational event flow into the template.

**d. SP04 – Airlines' SWIM perspective**

2.5 Mr. John Moore, Assistant Director, Safety & Flight Operations, IATA, shared the concept of SWIM from the perspective of airlines. He presented constraints for airlines and explained that the airlines seek greater equity in airspace access, greater access to timely and meaningful information for decision support, more autonomy in decision-making, including strategic and pre-tactical congestion management, ability to better deliver business, and individual outcomes. Furthermore, he explained Trajectory Based Operations (TBO) and its operational benefits in SWIM along with SWIM supporting ATFM efficiencies, whole-of-network management, challenges for airlines to become SWIM capable, and the way forward.

**e. SP05 – SWIM: An enabler for FF-ICE and TBO**

2.6 Ms. Diana Liang, Enterprise Portfolio Manager, Federal Aviation Administration (FAA), and Ms. Kristin Cropf, SWIM Programme Manager, FAA explained SWIM as an enabler for FF-ICE and TBO. They informed about ICAO ATM Requirements and Performance Panel (ATMRPP) and Information Management Panel (IMP) and explained that for TBO implementation, main factors are Flight and Flow Information for a Collaborative Environment (FF-ICE), Connected Aircraft (CA),

and System Wide Information Management (SWIM). Furthermore, SWIM as a Building Block for TBO was explained and its operational and technical considerations for Information Exchange in TBO. Lastly, FAA SWIM Implementation and SWIM in the Context of FF-ICE were explained.

*f. SP06 – Multi-Regional TBO Demonstration Introduction*

2.7 Ms. Diana Liang further shared an introduction to Multi-Regional TBO Demonstration. She informed that in 2021-2023, FAA, international partners and industry will be conducting a Multi-Regional TBO demonstration to showcasing the capabilities of using SWIM as the foundation, utilizing the latest information exchange standards, connected aircraft, FF-ICE pre and post departure capabilities, limited cybersecurity, and integration of ATFM and AMAN. Multi-Regional TBO Phase 1 and Phase 2 Timeline were described to the participants. Lastly, Multi-Regional TBO Demonstration-Technical exercise video were played which were appreciated and requested by the delegates to share.

**Day-2: 7 July 2021**

*g. SP07 – Multi-Regional TBO Demonstration: Technical architecture overview*

2.8 Mr. Xiaodong Lu, Principle Researcher, Electronic Navigation Research Institute and Mr. Arthit Tosukulvan, Executive Air Traffic Systems Engineer, AEROTHAI shared and described AEROTHAI Technical Architecture for Multi-Regional TBO Demonstration.

*h. SP08 – Mini-Demonstration: FF-ICE/TBO Pre-Flight Planning with Security Service*

2.9 Japan Civil Aviation Bureau (JCAB) and Aeronautical Radio of Thailand (AEROTHAI) jointly demonstrated FF-ICE/TBO operational applications through a scenario involving a Japan Airlines flight planning and flying from Tokyo-Narita International Airport to Bangkok-Suvarnabhumi International Airport. The scenario was a snippet of a larger scenario developed for the upcoming Multi-Regional TBO Demonstration Project and demonstrated 3 applications including (1) FF-ICE/R1 pre-departure trajectory planning and filing, (2) departure process in an FF-ICE/TBO environment, and (3) cybersecurity service in SWIM.

*i. SP09 – From SWIM in ASEAN demonstration to implementation*

2.10 Mr. David Leow shared presentation on journey from SWIM in ASEAN Demonstration to SWIM Implementation. He re-capped SWIM in ASEAN Demonstration, which were done in the year 2019. He explained scenario principles for demonstrating SWIM and its benefits to flight and ATM operations and reminded types of scenarios demonstrated. Furthermore, he presented and explained High Level SWIM Demo Architecture and Standards Used for Information Exchange. Lastly, major lessons learned and way forward for APAC SWIM Implementation were explained. Participants may download the documentation of SWIM ASEAN Demonstration from the following link: <https://tinyurl.com/aseanSWIM-Demo>

*j. SP10 – Republic of Korea's (ROK) SWIM journey*

2.11 Mr. Sehwan Han, Junior Research Engineer, Korea Airports Corporation shared the Republic of Korea (ROK) SWIM Journey. ROK efforts to implement SWIM and ICAO efforts to share surveillance Data in SWIM were explained. Furthermore, ROK SWIM architecture, ROK SWIM services for flight information processing, ROK SWIM services for surveillance data processing, SWIM basic and composed services, and SWIM registry and service description were explained in detail. He presented some SWIM enabled applications and informed about ROK different collaboration efforts of organising SWIM Workshops and Seminars with ATM stakeholders and SWIM Trial Operation. Lastly, major lesson learned and way forwards for further SWIM Implementation in ROK were explained.

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*k. SP11 – MET/ATM integration on SWIM*

2.12 Mr. Marco Kok, Scientific Officer, Hong Kong Observatory presented the topic on MET/ATM Integration on SWIM. He gave a brief account on IWXXM Implementation Status in APAC, benefits of MET information exchange in IWXXM and new IWXXM design to better support SWIM. Participants were informed about recent SWIM activities related to MET and ATM at global and regional levels. Two examples of MET/ATM integration on SWIM involving data fusion of MET data with flight data and aeronautical data in SWIM formats, together with end-user use cases related to Ground Delay Program and Airborne Re-routing, were presented and explained to participants. He also shared the possibility of MET information provision tailored to aircraft trajectory updates under future Trajectory Based Operations (TBO) on SWIM.

*l. SP12 – FAA SWIM Journey*

*Speaker: Ms. Kristin Cropf, SWIM Programme Manager, Federal Aviation Administration*

2.13 Ms. Kristin Cropf, SWIM Programme Manager, FAA shared FAA SWIM journey with participants. As major lesson learned, SWIM Industry-FAA Team (SWIFT) program was shared which is a partnership with industry to bring together operations, business, and technical minds to better leverage NAS Information Services. Challenges with increase in External Consumer Demand and SWIM Cloud Distribution Service were discussed. Participants were informed about future focus area of Enhanced SWIM Cloud Service (ESCS), SWIM Services, Security (IAM, PKI, and IATF), Governance/SWIM Registry, and SWIM services of NAS Common Reference (NCR) and FF-ICE/R1 through CSS-FD. Lastly, several way to Security Enhancements such as using Automated Certificate Management Environment (ACME), International Aviation Trust Framework (IATF), lessons learned from validation activities and Multi-Regional TBO Demonstration and Authorization Services were explained.

*m. SP13 – DSNA SWIM Journey*

2.14 Mr. Frederic Lecat, Service Oriented Architecture, Mission Europe/European Programmes, DSNA France shared DSNA SWIM journey with participants. Firstly, European SWIM Project Team along with its five tasks namely Roadmap, services and registration, enablers, state implementation support, and communication were explained. Secondly, EUR SWIM Elements/Pre-requisites Tracking along with a glimpse at some European key enablers were discussed. Lastly, Current progress of SWIM Implementation in DSNA, France, Service roadmap, E.U. U-space services roadmap, and Partnering roadmap implemented in DSNA were explained.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the outcome of the ICAO APAC SWIM Workshop and take any necessary follow-up actions; and
- b) discuss any matters as appropriate.

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