



International Civil Aviation Organization

ICAO

Eleventh Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/11)

Video Teleconference, 02 – 06 August 2021

Agenda Item 2: Review Outcomes of Related Meetings

UPDATE ON SWIM REGIONAL COORDINATION

(Presented by IATA on behalf of ICAO APAC SWIM Task Force)

SUMMARY

This paper presents a brief on key SWIM activities being undertaken in Asia & Pacific Region including topics discussed in the SWIM Task Force/4 meeting in November 2020.

1. INTRODUCTION

1.1 The actions of the APAC SWIM Task Force include identifying and communicating all SWIM related activities (and their interdependencies) in planning or development within other Working Groups (WGs) and Task Forces (TFs). It is to liaise with relevant regional TF/WGs to refine operational and communications requirements, provide guidance to those WG/TFs developing and using SWIM, and influence outcomes from other WGs and TFs that will support successful expansion of SWIM. This involves confirming inclusion on agendas and appropriate discussions ensuing.

1.2 Whilst Task 10 specifically states “Coordinate SWIM TF and MET IE/WG outcomes and activities”, the action is primarily about broader coordination of SWIM activities in APAC (not solely MET) and raising awareness of the work of the SWIM Task Force.

1.3 This summary endeavours to report on all activities related to SWIM in APAC but acknowledges there may be some missing. This is not intentional, and any additional input and updates are welcomed.

1.4 Given meeting delays caused by the COVID-19 pandemic, some of the updates from 2020 may have been surpassed by further work in 2021. It is also unrealistic to include all details within this update so the audience is invited to visit the [Meeting Report for SWIM TF/4](#) to access content for broader discussions on SWIM research and development activities in the region.

2. DISCUSSION

APAC Regional SWIM Implementation

2.1 The Information Management Panel (IMP) updated the agreed definition of SWIM Region to: *A geographical area in which a group of States and/or ATM stakeholders has agreed upon common regional governance in support of system wide information management implementation.*

Note: A SWIM region can be an ICAO region or any other community of interest agreeing on common governance.

SWIM Discovery Service (SDS):

2.2 The concept of a SWIM Discovery Service (SDS) was introduced at SWIM TF/4. The ability to search for and locate (discover) services offered by a growing number of independently developed and autonomously managed SWIM domains is highly important and is a precursor for achieving global information exchange.

2.3 The US FAA and Korea Airports Corporation (KAC) are collaborating in an effort to define and test an approach for enabling federated service discovery across geographical and organizational boundaries. In this approach, a “discovery service” is a core SWIM service that allows a user to search for and obtain service metadata from multiple sources in one consolidated result. Discovery services do not need a centralized discovery mechanism since they are self-advertising and also advertise each other.

2.4 To formalize the approach, the FAA has produced an SDS Implementation Specification v.1.0.0 (<https://discovery.swim.aero/sds/1.0.0/>) that establishes guidelines and techniques for developing a discovery service capable of interacting with other SDS-compliant discovery services.

Security and Trust in the Context of SWIM Discovery Service

2.5 The work of SDS identified the need to address issues of security and trust that might occur when multiple independently operated discovery services exchange information.

2.6 An example scenario (an end user wanting to “find all operational flight services”) that required intercommunication among three different discovery services illustrated the issues. The parties are investigating using a federated identity management solution approach to secure the communication.

2.7 The meeting also heard an overview of the latest relevant security technologies and discussed the proposed APAC Mutual Trust Infrastructure being developed as part of the Security Management sub-task of the SWIM TF and its relationship to issues of trust between discovery services.

SWIM Service Category Taxonomy

2.8 A SWIM Service Category Taxonomy was described and offered as a standard approach for classifying SWIM Services. It is designed for the purpose of organizing SWIM services into classes or categories to make the services easier to find or manage.

2.9 It is described as a 3-level hierarchy with a top level “SWIM Service” classified into two categories, “Information Service” (services that provide information products) and “Core Service” (services that provide support capabilities). Each category would have sub-categories; e.g., “Weather Service” would be a sub-category of Information Service, and “Security Service” would be a subcategory of Core Service.

2.10 The virtue of this taxonomy is that it can be extended horizontally by adding more categories to any level of the hierarchy, or vertically by further dividing a particular category into more specialized subcategories; in this way it is able to meet future business needs.

2.11 Rendering the taxonomy into machine language (see <https://semantics.aero/servicecategory>) would also allow it to support applications for service discovery or governance processing.

FF-ICE/R1 Service Validation and Implementation:

2.12 Japan, China and Republic of Korea have jointly conducted a demonstration to validate the implementation of FF-ICE services and the process of related messages for FF-ICE/R1 operation through two scenarios by considering the FF-ICE/R1 capable ASPs and AUs (eASP and eAU).

2.13 The demonstration showed that the SWIM-based FF-ICE operation is capable of providing related information in greater detail and allow the eAU and the eASP to share their expectations in an unambiguous manner via the exchange of trajectory information.

Meteorology:

2.14 MET Information Exchange (MET/IE) WG/19 and MET Services (MET/S) WG/ were held in the week 22-26 March.

2.15 Multiple States provided updates on varying extents of testing and using IWXXM for the sharing of MET data.

2.16 The meeting recognized that, in order for an online register of APAC IWXXM exchange status to be an effective tool for facilitating States' implementation of IWXXM exchange, the register should contain up to date information provided by all APAC States.

2.17 To aid education on the topic, a list of Frequently Asked Questions (FAQs) on IWXXM is being developed for MET Sub-Group to approve later this year.

2.18 The combined APAC Meteorology/Air Traffic Management Webinar and Tenth Meeting of the Meteorological Requirements Working Group (MET/ATM Webinar and MET/R WG/10) was held 24-28 May 2021.

2.19 The meeting heard that ICAO, in close coordination with WMO, has embarked on enabling the transition to digital meteorological information exchange that will support the meteorological component of SWIM.

2.20 To support MET/ATM integration, the MET SG (in particular, an ad hoc group of MET/R WG) has embarked on developing examples of use cases and user requirements for SWIM-based MET information services, specifically to meet the needs of ATFM in the APAC Region.

Collaboration in Sharing of Surveillance Data in SWIM

2.21 The First Meeting of the Surveillance Study Group (SURSG/1) was held from 20 to 22 April 2021 to promote and implement surveillance data sharing at sub-regional level to improve the efficiency and safety of air navigation service.

2.22 The group was formed from the Decision CNS SG/24/16 (SURICG/5/1) - Establishment of Study Group under SURICG on Sharing of Surveillance Data in SWIM.

2.23 The objectives of the Study Group are to study and provide expert views and recommendations to achieve harmonized sharing of surveillance data in SWIM in the APAC Regions along with the possible models of sharing of surveillance data in SWIM according to the Surveillance Strategy adopted by APANPIRG and in support of ICAO's GANP and ASBU initiatives.

2.24 The meeting heard from several States on various surveillance data sharing applications and three potential infrastructure models for Data Contribution and Dissemination using SWIM, namely Distributed model, Centralised model and Hybrid model.

2.25 It was noted several countries already utilise non-SWIM methods for surveillance sharing.

2.26 Task Groups have been established to progress the work of the meeting. These groups will be seeking input from various other expert groups.

Airport Collaborative Decision Making (A-CDM):

2.27 The Sixth Meeting of the Asia/Pacific Airport-Collaborative Decision-Making Task Force (APA-CDM TF/5) was held 28-30 April 2021.

2.28 The meeting heard the progress of the development of joint operational procedure guidance for the integration of Air Traffic Flow Management (ATFM) and Airport Collaborative Decision Making (A-CDM) operations as entrusted to an expert group of the APA-CDM TF.

2.29 Several States are developing individual local/national models for integrating the operations of A-CDM and ATFM at various levels. A Small Working Work is to be established to further explore A-CDM and ATFM enabling systems and integration solutions including SWIM concepts and infrastructure.

2.30 CANSO and ACI held an ATFM / A-CDM Integration Workshop on 2-3 June 2021 during which it was discussed how SWIM and existing XMLs can support connecting the two disciplines for an overall improvement in benefits for service providers and aircraft operators.

Common aeRonautical Virtual Private Network (CRV):

2.31 The Eighth Meeting of the Common aeRonautical Virtual Private Network Operations Group (CRV OG/8) was held 17-19 May 2021.

2.32 Several States updated on progress for implementing CRV. This included examples of IWXXM translation and exchange services and also the sharing of surveillance data.

2.33 PCCW Global described the system architecture of their SWIM service and their progress to build a surveillance data-sharing platform with EMS and Service Registry. The meeting was informed that PCCWG is working with Frequentis Comsoft to host their SDDS-NG (Surveillance Data Distribution System – Next Generation) in PCCW SWIM for qualified States / Administrations / Stakeholders to publish or subscribe surveillance data by following the guidelines of the CRV OG & SWIM TF.

Aeronautical Information:

2.34 The 16th Meeting of the ICAO Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF/16) was held 7-11 June 2021.

2.35 In response to a query on what development or research activity in the exchange of aeronautical information using AIXM was occurring, the meeting was informed that the States involved in the SWIM in ASEAN demonstration would be an appropriate point of enquiry. The Secretariat, noting that this was a key area of interest for AAITF, undertook to make further enquiries.

Cyber-security:

2.36 An ICAO Asia/Pacific Regional Cybersecurity webinar was held on Monday, 14 June 2021 with the theme: "Management Framework for CNS/ATM Systems".

2.37 ICAO provided an update on the [International Aviation Trust Framework](#) (IATF) and stressed that interoperability requires global coordination and cooperation.

2.38 The IATF is defined as “a framework to reduce the cyber-attack surface and enable reliable and trusted exchange of information for aviation using the Internet infrastructure.” and was described as having two primary components:

- Digital identity - which is the digital equivalent of physical/personal identity; and,
- Network information security for a virtual global network to connect regional and local aviation networks in a secure manner and provide for the necessary performance in the aviation system

2.39 Among other things, the technical requirements include a need for a dedicated IPv6 address block and development of a draft policy for the initial allocation and assignment of IPv6 addresses.

2.40 The webinar was also provided a brief a Security Solution for Information Services in SWIM. This included a framework comprising applications, services, infrastructure and boundary protection. It also looked at solutions including authentication, authorisations, preventing data diffusion, and methods for information validation.

Aeronautical Communications Services (ACS):

2.41 The Eighth Meeting of the Aeronautical Communications Services (ACS) Implementation Coordination Group of APANPIRG (ACSICG/8) was held by video tele-conference, 21-23 June 2021.

2.42 The meeting covered detailed presentations and discussions on AMHS to SWIM transition including mixed environment operations, and how the ACSICG and the SWIM TF combined work will be crucial in the planning for such a transition and for defining how the two systems will interoperate in an AMHS /SWIM gateway mixed environment.

ICAO APAC SWIM Workshop:

2.43 ICAO APAC SWIM Workshop was held as a webinar 6-7 July 2021 focusing on how SWIM can better support current operations and enable future operational concepts such as FF-ICE and cross-border surveillance data sharing, emphasizing on the bottom-up viewpoint for SWIM implementation in APAC region.

2.44 Multiple States and agencies shared their experiences to date and future plans and expectations for being SWIM-enabled. All presentations can be viewed [here](#).

2.45 SWIM TF/5 is scheduled for 9-11 August 2021.

ENRI Forum on SWIM

2.46 The Electronic Navigation Research Institute (ENRI) in Japan hosted a virtual seminar on SWIM in January 2021.

2.47 Presentations included:

- SWIM in Japan – Towards the next stage of CARATS (JCAB)
- FAA SWIM activities: Implementation of Future Research (US FAA)
- SWIM – An Airline Perspective (IATA)
- A Regional Picture on SWIM Related Activities (ICAO RO)
- SWIM Research & Development in ENRI (ENRI)

SWIM Education and Training:

2.48 Due to COVID-19, the Second Meeting of ICAO Information Management Panel (IMP/2) has been suspended to Q2 in 2021, therefore, the development of the draft SWIM Manual Vol.II will be delayed until after that. Also, the delivery of SWIM related SARPs may be delayed a few years.

2.49 APAC SWIM Implementation Materials and APAC SWIM Education Programme were also delayed from their original schedule due to loss of resources in ICAO APAC Office and impact of COVID-19. The reasonable target date for completion of regional documents now would be after the availability of the global implementation manual as the gaps for the regional needs could be identified.

2.50 ICAO APAC is progressively loading SWIM reference and education material to the SWIM-APAC site of the ICAO Secure Portal. To gain access please follow these steps:

- Access the portal website: <https://portallogin.icao.int/>
- Subscribe to the group APAC-SWIM.
- Following the guidance, input your profile information.

- Wait for approval.
- You will receive an email to notify you once processed.

2.51 SWIM awareness / educational videos are available from both ICAO at <https://youtu.be/wXI9ep98Z8E> and IATA at <https://youtu.be/QplD6sP--gg>

2.52 IATA also offers a two-day IATA SWIM Training classroom course and during COVID-19 has also developed a two-hour online SWIM introductory course, both of which participants can register for at <https://www.iata.org/en/training/>.

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 matters as appropriate.

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