

*International Civil Aviation Organization*



ICAO

**INFORMATION PAPER**

**Tenth Meeting of the Asia/Pacific Meteorological Requirements Working Group (MET/R WG/10)**

Virtual Meeting (Online), 24 – 28 May 2021

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**Agenda Item 5: Coordination between MET and ATM services**

**UPDATE ON SWIM REGIONAL COORDINATION**

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

**SUMMARY**

This paper provides 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 at <https://www.icao.int/APAC/Meetings/2020%20SWIM%20TF4/Final%20Report.pdf> to access content for broader discussions on SWIM research and development activities in the region.

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**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.

Common aeRONautical Virtual Private Network (CRV):

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

2.3 The meeting was reminded of the value of CRV implementation in the region and its role for SWIM implementation.

2.4 Fiji and PCCWG presented PCCW IWXXM Translation and Exchange Services, which can serve as an alternative solution for member States to fulfil the exchange of IWXXM messages as promulgated in Amendment 78 to ICAO Annex 3.

2.5 PCCW Global has been developing SWIM services on a private and scalable platform in partnership with FREQUENTIS. Additionally, PCCW Network Based IWXXM Translation and Exchange Services is one of the modules on PCCW SWIM (IWXXM, FIXM and AIXM) which is hosted in their private platform and controlled environment which connects to CRV network infrastructure. These services comply with ICAO and WMO standards and are designed to support the acquisition, management, processing and dissemination of meteorological data related to aviation.

2.6 PCCWG described functions supported by their SWIM Platform and service components, namely:

- Function 1 - Translation and aggregation service
- Function 2 - IWXXM Exchange Service
- Function 3 - IWXXM Services for ANSPs without AMHS, and
- Function 4 - ANSPs without AMHS input TAC on message terminal.

2.7 Regarding MPLS/IP Based Inter-Regional Connections - States that connect to the CRV should also connect to other regional networks such as REDDIG and New PENS to improve efficiency in the connection services such as SWIM and to reduce costs for states that connect to other regional networks.

Air Traffic Flow Management (ATFM):

2.8 The APAC FIXM 4.1 Extension, initiated by ATFM/SG, developed by the APAC SWIM Task Force (TF), and reviewed and approved by the FIXM Change Control Board (CCB) and APANPIRG/30 is published on the FIXM website at <https://fixm.aero> and on the ICAO APAC Regional Office eDocuments web-page for immediate use by APAC administrations, where capability to do so exists (<https://www.icao.int/APAC/Pages/eDocs.aspx>).

2.9 Currently, the development of conceptual model, logical model and physical model of FIXM extension has been completed, and the documentation of FIXM ATMB ATFM Extension version 0.1 is in progress. The validation and demonstration of developed FIXM Extension will be carried out at a later date, in one Regional Air Traffic Management Bureau as experimental unit.

SWIM Discovery Service (SDS):

2.10 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.

2.11 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.

2.12 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

2.13 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.

2.14 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.

2.15 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

2.16 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.

2.17 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.

2.18 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.

2.19 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:

2.20 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).

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2.21 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:

2.22 This meeting will primarily address and expand on the items in this section.

2.23 Recapping: MET/R WG/9 (May 2020) agreed to establish a new deliverable as follow-up to Decision MET SG/23/7 – *Development of APAC User Requirements for SWIM-based MET Information Services Supporting ATFM* and so the meeting reviewed a proposal on the development of APAC use-cases and user-requirements for SWIM-based MET information services.

2.24 That meeting established an ad-hoc group to work with other relevant bodies of APANPIRG (particularly the ATFM WG) to continue the work focused on SWIM-based MET information services specifically addressing the needs of ATFM in the APAC Region.

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

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

2.27 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.

2.28 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.

Airport Collaborative Decision Making (A-CDM):

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

2.30 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.

2.31 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.

Aeronautical Communications Services (ACS)

2.32 The Seventh Meeting of Aeronautical Communications Services (ACS) Implementation Co-ordination Group of APANPIRG (ACSICG/7) took place 21-23 July 2020.

2.33 Several States updated on readiness of AMHS and/or CRV to support SWIM exchanges, particularly the sharing of IWXXM messages.

2.34 Next ACSICG meeting is scheduled for 21-23 June 2021.

Collaboration in Sharing of Surveillance Data in SWIM

2.35 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.

2.36 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.

2.37 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.

2.38 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.

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

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

#### ENRI Forum on SWIM

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

2.42 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:

2.43 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.

2.44 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.

2.45 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.

2.46 SWIM awareness / educational videos are available from both ICAO at <https://youtu.be/wX19ep98Z8E> and IATA at <https://youtu.be/QplD6sP--gg>

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2.47 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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