International Civil Aviation Organization

The Fourth Meeting of System Wide Information Management Task Force (SWIM TF/4)

Web-conference, 3 – 6 November 2020

Agenda Item 3: Review actions taken by APANPIRG/30 on SWIM related matters

OUTCOME OF APANPIRG/30

(Presented by the Secretariat)

SUMMARY

This paper presents the SWIM related outcome of APANPIRG/30 for review by the meeting.

1. INTRODUCTION

1.1 APANPIRG/30 meeting was held from 4-6 November 2019 at ICAO APAC Office, Bangkok, Thailand. The meeting reviewed the outcomes of CNS SG/23 meeting held from 2 to 6 September 2019 and the Third Meeting of the System Wide Information Management Task Force (SWIM TF/3). The main outcome of CNS SG/23 meeting on SWIM was consolidated in the Report of APANPIRG/30 Meeting which is posted at:
https://www.icao.int/APAC/Meetings/Pages/2019-APANPIRG30.aspx

2. DISCUSSION

2.1 APANPIRG/30 reviewed the outcomes of the Twenty Third Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/23) of APANPIRG. The meeting noted with appreciation the work done and achievements by the SG and the contributory bodies reporting to APANPIRG through the SG. The meeting discussed CNS related matters and took following actions on the report of CNS SG/23 meeting and other papers presented under AI 3.4.

2.2 The meeting noted that CNS SG/23 meeting had adopted 9 Conclusions and 4 Decisions on technical and operational matters, the SWIM related ones are listed as below:

Conclusion CNS SG/23/4 *(SWIMTF/3/1)* - The philosophy and roadmap for APAC SWIM implementation

Conclusion CNS SG/23/5 *(SWIMTF/3/3)* - Interoperable Registry Model for SWIM Registry in APAC Region

Third Meeting of System Wide Information Management Task Force

2.3 The meeting noted the following outcomes of SWIMTF/3 meeting held in Bangkok from 7 to 10 May 2019:

- APAC SWIM Implementation Materials to be completed by SWIMTF/4 meeting;

- SWIMTF/3 developed a philosophy and roadmap for APAC SWIM implementation which was adopted by CNS SG/23 meeting through Conclusion CNS SG/23/4 (SWIMTF/3/1);

- Guidance for SWIM Service Identifiers (SSID) and SWIM Service Versioning was kept in the SWIM Respository of APAC SWIM Portal for refernce and furture consideration for endorsement;

- Interoperable Registry Model developed by the SWIMTF was adopted by CNS SG/23 meeting as APAC SWIM Registry through Conclusion CNS SG/23/5 (SWIMTF/3/3);

- Asia/Pacific FIXM version 4.1 Extension was endoresed by the SWIMTF/3 and CNS SG meetings;

- A test platform for SWIM based services and applications validation associated with Task 2-1-3 was carried out and led by Japan, China, and Republic of Korea in collaboration with technical supporters from Japan Electronic Navigation Research Institute (ENRI), China Air Traffic Management Bureau (ATMB), Korea Airports Corporation;

- The SWIM ASEAN Demonstration was scheduled for 12-15 November 2019 in Singapore and Thailand (one day in Bangkok and one day in Singapore);

- Seventeen (17) States/Administrations provided responses to the APAC SWIM Survey conducted during December 2018 to March 2019. Several recommendations and conclusions derived from the survey were reviewed and noted by the meeting;

- Through a launch ceremony of CRV for APAC Region, the meeting re-confirmed a conclusion of CRV OG/5 meeting that CRV will be used to support SWIM Implementation in APAC Region;

- Reconfirmed that “the concern on CRV bandwidth was not a technical issue but a decision of the CRV subscriber to opt for CRV bandwidth requirements to meet its operational needs”;

- SWIMTF/3 recommended that initial tests for SWIM applications over CRV could be conducted between those participating States of ASEAN SWIM Demonstration. Similar trials may also be conducted by States for validating the test bed (China, Japan and Republic of Korea);

- SWIMTF/3 endorsed the SWIM Education Video and Education Brochure for publication and distribution. ACSICG/6 meeting appreciated the SWIM Education Video. Further SWIM training package and training programme were developed by the SWIMTF in coordination with Global Aviation Training (GAT); and

- SWIMTF/4 meeting is scheduled for 18 to 21 May 2020 in conjunction with METP WG-MIE/7 meeting tentatively scheduled for 11-15 May 2020 in Thailand.

APAC SWIM Registry Approach

2.4 The meeting noted that the SWIM TF endorsed an interoperable registry model for APAC Region which consists of independent registries that exchange data with each other. The meeting also agreed to use the ICAO Information Management Panel (IMP) Controlled Vocabulary as a starting point for the APAC Controlled Vocabulary.

2.5 The service description document needs to provide detail information to consume a service and it should be directly provided, or link or attachment can be provided at a SWIM registry. Contents of the service description document have to offer minimum information set. An APAC SWIM registry needs to provide the basic functionalities, which are defined by the IMP, such as A) service registration, B) search, C) filtering, D) notification. In addition, an APAC SWIM registry also needs to support other functionalities like E) access control that allows a user to find information with an approved manner and F) information exchange (i.e., interoperability) that enables to share information between registries.

2.6 APAC SWIM registry should use a common Uniform Resource Identifier (URI) (i.e., http://registry.swim."civil aviation authority".aero) to easily identify each SWIM registry and improve the discoverability of a SWIM registry. It was clarified that the URI for civil aviation authority would be different and up to decision made by individual State for the concrete name to be used.

FIXM Model Extension to support ATFM Operations and ATFM/A-CDM Integration

2.7 FIXM Extension was developed to support the ATFM information exchange for cross-border ATFM operations and ATFM/A-CDM integration in the Asia/Pacific Region. With the finding that the Calculated Take-Off Time (CTOT) and Calculated Landing Time (CLDT) fields considered necessary to support the cross-border ATFM operations were not included in the FIXM version 4.0 Core, the FIXM version 4.0 Extension including CTOT and CLDT was therefore developed. A system-to-system interconnection test between Singapore and Thailand to validate the exchange of developed FIXM version 4.0 Extension was successfully conducted in August 2017 using the CTOT Distribution and CTOT Cancellation cases designed based on the Web Services (HTTP) messaging protocol. These required ATFM data attributes were still not found in FIXM Version 4.1 in December 2017. In the end of April 2018, the validation of developed FIXM version 4.1 Extension was completed.

2.8 Based on the operational scenarios developed for the SWIM in ASEAN Demonstration, additional data attributes required to be exchanged among stakeholders involving in A-CDM (Airport-Collaborative Decision Making) operation and to support the integration between ATFM and A-CDM were also identified. Considering that these data attributes are flight-specific, FIXM would be the appropriate information exchange model to support the aforementioned operations. Consequently, the FIXM version 4.1 Extension was further enhanced to include these data attributes. In view of the foregoing, the meeting adopted the following Conclusion:

Conclusion APANPIRG/30/12 (CNS SG/23/6-SWIM TF/3/4) - Asia/Pacific Regional FIXM Extension for ATFM	
What: That, noting: 1. the need for interoperable system-to-system information exchange to support the implementation and automation of cross-border ATFM in the Asia/Pacific Region; and 2. the data attributes included in the Asia/Pacific FIXM version 4.1 Extension were endorsed by ATFM/SG. The Asia/Pacific FIXM version 4.1 Extension described and provided in **Appendix A** to the Report on agenda item 3.4 be adopted and uploaded to the ICAO APAC Regional Office website for immediate	Expected impact: ☐ Political / Global ☒ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

use by Asia/Pacific Administrations, where the capability to do so exists, for cross-border ATFM information exchange.	
Why: To provide the information exchange model necessary to support cross-border ATFM in the Asia/Pacific Region, in order to support the implementation of the performance objectives of the Asia/Pacific Regional Framework for Collaborative ATFM.	Follow-up: ☒Required from States
When: 6-Nov-19	Status: adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other	

2.9 The meeting also noted that the FIXM Extension had been forwarded to the FIXM Change Control Board (CCB) for publication on the FIXM official website for use by other stakeholders. Member of CCB from Australia with support from USA facilitated the process for publication of the FIXM Extension.

Test platform related Activities

2.10 In order to support the implementation of FF-ICE/R1, the required services, applications and operational processes need to be validated through SWIM environment. A test platform is constructed for SWIM based services and applications validation. The task is carried out and led by Japan, China, and Republic of Korea in collaboration with technical supporters from Electronic Navigation Research Institute (ENRI), Air Traffic Management Bureau (ATMB), Korea Airports Corporation.

SWIM in ASEAN Demonstration

2.11 The meeting noted that the SWIM in ASEAN demonstration will be held from 12 to 15 November 2019 in both Singapore and Thailand (one day in Bangkok and one day in Singapore). More detailed information for the SWIM in ASEAN Demonstration including the purposes, goals, and scope of the demonstration as well as the high-level information on the technical infrastructure developed under the project was introduced by Thailand during APANPIRG/30 meeting. The meeting was informed that this project is conducted under the cooperation framework between ASEAN (Association of Southeast Asian Nations) and the USA. The meeting was briefed on the operational scenarios to be conducted during the demonstration to exhibit the operational benefits of SWIM. The meeting was also informed that these scenarios cover the operations based on not only current operational concept such as A-CDM and cross-border ATFM but also future operational concept like FF-ICE.

SWIM Project Team of EUR/NAT Region

2.12 The meeting noted that a SWIM Project Team (SWIM PT) was established to deal with SWIM implementation in the ICAO European Region. The first meeting of the SWIM PT was held in September 2018. APAC SWIM TF would keep close liaison and communication with other regional SWIM-related working groups in order to share experience gained and lessons learnt on SWIM implementation.

The Result of APAC SWIM Survey

2.13 The meeting noted a summary of results from the APAC Regional SWIM Survey conducted based on Conclusion CNS SG/22/6 during December 2018 to March 2019. Seventeen (17) States/Administrations had provided responses to the SWIM survey, including Australia, Bhutan, China, Fiji, Hong Kong China, Indonesia, Japan, Lao PDR, Macao China, Mongolia, Nepal, New

Zealand, Republic of Korea, Republic of the Philippines, Singapore, Thailand and United States. Many of them provided more than one responses from different group of stakeholder. The recommendations resulted from the survey were reviewed and considered by the SWIMTF/3 meeting.

2.14 Considering the SWIM survey result, the SWIMTF/3 meeting agreed that higher priority should be given to the SWIM implementation for cross-border ATFM and A-CDM operations and the associated required information services.

Launch ceremony of CRV for Asia and Pacific Regions

2.15 At a joint session of SWIMTF/3 and CRV OG/6, Ms. Jeri Groce, Chairperson of SWIM Task Force introduced the work programme of SWIMTF and Mr. Terence Palmer, co-chair of CRV OG introduced the work programme of CRV Operation Group to the joint meeting. The meeting reconfirmed that the CRV will be used to support SWIM implementation in the APAC Region.

SWIM-enabled MET Information Services and related Issues

2.16 The meeting noted that the Hong Kong Observatory (HKO) of Hong Kong China SWIM-enabled MET system supports MET information exchange services to filter, transform and distribute MET information for use in user's SWIM systems. One of two possible issues identified relevant to MET information in SWIM is the required bandwidth of CRV whether large enough to support SWIM enabled information services involving exchange of large volume data such as gridded data, image data and other binary MET data. Most of the APAC States plans to implement CRV with 10MB or below at the moment. Further coordination between IMP and MET/P may be required to define the bandwidth requirement of the SWIM network and work out the recommended solution. In this connection, the meeting recalled the outcome of discussions at CRV OG/5 meeting regarding the required bandwidth "the concern on bandwidth was not a technical issue but a decision of the CRV subscriber to opt for the CRV bandwidth requirements to meet its operational needs"

APAC SWIM Education Materials

2.17 In following up an Action Item of the SWIM TF, SWIM education video and SWIM Brochure had been developed by ICAO APAC Office in cooperation with member States and industry. The SWIMTF/3 meeting endorsed the video for distribution. The brochure had been forwarded to ICAO Headquarters for further review and action. The SWIM Educational video was presented to APANPIRG/30 meeting. It was informed that the video had been also presented to the DGCA Conf/56. The video is posted on the following ICAO APAC Webpage: https://www.icao.int/APAC/Pages/swim.aspx .

Transition to SWIM – Common Benefit to APAC Region

2.18 It is important for each State and/or region to decide what aim for by introducing SWIM. Japan presented following ideas on common value and benefits to promote transition to SWIM in APAC Region.

- One idea is to increase productivity with digital information such as digitalizing the flight plan for sharing with stakeholders related to ATFM and A-CDM using FIXM format; digitalizing NOTAM service using AIXM format and digitalizing weather information using IWXXM format; and
- Another idea to restructure ANS system by less dependency on legacy function which would make it possible to gradually abolish old communication functions while integrating AFTN / AMHS services into SWIM.

IWXXM Distribution over AMHS Coordination

2.19 USA stated that the Common AeRonautical Virtual Private Network (CRV), an underlying Internet Protocol (IP) based network does have enough bandwidth required by IWXXM traffic although IWXXM traffic load is expected to be ten folds over legacy Traditional Alphanumeric Code (TAC) format with compression applied. The respective MET authorities are expected to implement IWXXM version 3.0 prior to November 2020 and implement Extensible Markup Language (XML) gateway or equivalent.

2.20 A quick survey indicated that some MET facilities do not have capability to exchange XML format with other ANSPs over AMHS. In order to have a smooth transition, MET facilities need to implement the following:

a) XML exchange capability with respective AMHS or its XML gateway;
b) allow bi-directional exchange of IWXXM (publication/consuming);
c) underlying network to support the XML exchange;
d) XML schema validation capability;
e) mapping WMO ID to AFTN/AMHS address for transmission of IWXXM; and
f) compression capability

2.21 The IWXXM data currently includes MET data: METAR, SIGMET, TAF, and SPECI. The AMHS infrastructure can support this requirement. However, if the MET data in IWXXM format be expanded in the future to include Volcanic Ash Advisory, Tropical Cyclone Advisory, Space Wx, SIGWX, then further coordination between MET and COM would be required to avoid overloading the AFS network that may cause delay in distributing critical service such Air Traffic Inter-Facility Data Communication (AIDC). It was further clarified that versions of IWXXM should have no much impact on its exchange over AMHS. It should be transparent to AMHS as version 3 and version 2 should have no difference for their exchange over AMHS. However, it should be single attachment of FTBP with agreed max. size of the file. It was noted, the MET Workshop on IWXXM in June 2019 generally agreed that the single file size of FTBP should be less than 2 Mbytes.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

a) note the information contained in this Paper; and

b) identify any follow-up actions resulted from this paper.

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