



ICAO

International Civil Aviation Organization

The Sixth Meeting of System Wide Information Management Task Force (SWIM TF/6)

Video Teleconference (VTC), 17 – 20 May 2022

Agenda Item 4: Updates on the assigned tasks by task leads/contributors including progress report and issues

g) Coordination and Promotion

- Task 9: Monitoring of Panels' Work

IMP AND RELATED PANEL UPDATES

(Presented by Japan as Task 9: Monitoring of Panels' Work)

SUMMARY

This Working Paper contains the report of the Second Meeting of the Information Management Panel (IMP/2) held virtually from September 27 to October 1, 2021, and the status of the Air Traffic Management Requirements and Performance Panel (ATMRPP), which is developing SARPs and Guidance Materials to implement FF-ICE operations under the SWIM environment. Actions by the meeting are listed in Section 4.

1. INTRODUCTION

1.1 The second meeting of the Information Management Panel (IMP/2) was held in virtual format from September 27 to October 1, 2021. This Working Paper describes the meeting summary and raises the actions required of the SWIM TF.

1.2 Furthermore, this Working Paper describes the activities of the Air Traffic Management Requirements and Performance Panel (ATMRPP) which is studying the use of SWIM as a prerequisite for improving ATM operations.

2. SUMMARY OF THE MEETINGS

● IMP

2.1 PROCEDURES FOR AIR NAVIGATION SERVICES –INFORMATION MANAGEMENT (PANS-IM)

2.1.1 The comments from the IMP Secretariat and ATMRPP on the latest draft PANS-IM were reviewed one by one. Since most of the comments received on the latest

PANS-IM draft were editorial in nature, the modifications were accepted by the IMP without any deep discussion.

2.1.2 Most of the discussion about PANS-IM was about the Information Security Framework proposed by the ICAO Trust Framework Study Group (TFSG). The meeting started by discussing whether or not PANS-IM was the best location within ICAO documentation for the proposed information security provisions. It was highlighted that it was important to address information security within PANS-IM as this was a critical aspect of information management. It was also highlighted that as the goal of the proposed information security framework was to ensure information integrity, to have these provisions in PANS-IM would provide a more cohesive approach to information management.

2.1.3 After some discussion, the meeting agreed that it was important to address information security in PANS-IM and to manage the potential perceptions that could result from doing so by adding the following paragraph to the Foreword of PANS-IM as follow,

"Information security is a fundamental aspect of information management. The loss of confidentiality, integrity and availability of the information may impact the safety and continuity of flight operations. This first edition of Procedures for Air Navigation Services — Information Management (Doc XXXXX) also includes requirements for an information security framework to provide end-to-end information security through a layered approach. This framework is applicable to any exchange of information over IP and not only to those performed in a system-wide information management environment."

2.1.4 Another concern raised by the meeting was the applicability of the proposed information security framework. It was clarified that the information security framework shall be applied to any organization exchanging information that may have an impact on safety over an IPS-based network to ensure end-to end security of the information. In order to clarify the roles and responsibilities with regards to the information security provisions, without amending the definition of information service providers and consumers provided in Chapter 1, the following Note was proposed to be added to the start of Chapter 6:

Note – "Organizations" within this Chapter refer to organizations exchanging information that may have an impact on safety, over an IPS-based network.

2.1.5 The meeting agreed that the term "organization" would be used, when necessary, within Chapter 6 to clarify the roles and responsibilities concerning the proposed requirements. This Note was aligned with the approach taken in the proposed requirements with the International Organization for Standardization (ISO) and the National Institute of Standards and Technology (NIST) frameworks. This Note also clarified the scope proposed by the information security experts concerning the main goal of the requirements, to ensure safety, and its application only to information exchange over IP including the legacy ones. In this regard, it was clarified that the information security framework was defined to implement

information security by design and that the retrofit of legacy technologies in applying this framework would be very costly. Therefore, the information security experts decided to keep legacy technologies out of the scope of the information security framework.

- 2.1.6 The meeting then agreed to review the proposed provisions by TFSG with the goal of integrating them within PANS-IM and to not review the proposed requirements due to the lack of sufficiently comprehensive information security expertise within the panel.
- 2.1.7 Furthermore, regarding the maintenance of the information security provisions, the meeting requested that a proper maintenance process be defined, as it was felt that the panel did not have the resources or expertise to undertake nor properly comment on the details of information security provisions. The meeting was informed that the maintenance of provisions would follow the normal ICAO processes where provisions were maintained by the Secretariat with the help of groups of experts when necessary.
- 2.1.8 EUROCONTROL nominated member provided the following statement. “The nominated member by EUROCONTROL expressed concerns on the inclusion of provisions in PANS-IM related to the mandatory use of specific IPv6 addresses (aviation block) and domain names. The concerns expressed by the member were twofold, a concern related to the appropriateness of including mandatory IPS and DNS related provisions, if agreed, in the PANS-IM and not in the typical IPS-related provisions/documents such as Annex 10 — Aeronautical Telecommunications. The second concern expressed related to the inclusion of provisions at a stage where a dedicated aviation block of IPv6 addresses was not available. The member indicated that the need for the potential creation of such a block of addresses was from his perspective still subject of a wider, not per se technical discussion, on what the Secretariat’ detailed interpretation of a trust framework was, in accordance with the Thirteenth Air Navigation Conference (AN-Conf/13) and the 40th Session of the ICAO Assembly (A40) outcomes. The proposed provisions on IPv6 and DNS pre-empted these discussions at levels beyond what could be expected to be considered by a Panel. The Secretariat’ perspective to already seek endorsement for these initiatives on the basis of proposed PANS-IM provisions for dedicated IPv6 aviation block addresses and domain names was not supported by the expert.”

2.2 Guidance Material – MANUAL ON SWIM IMPLEMENTATION

- 2.2.1 The meeting reviewed SWIM Manual Volume II – Implementation Guidance which provided a summary of the main updates implemented in each chapter of the draft Manual on System-Wide Information Management Implementation (Doc XXXXX) since IMP-WG/10.
- 2.2.2 The meeting then reviewed every chapter in the Manual looking for major comments. No major comments were provided. The first edition of the Manual to

be submitted to the Secretariat for publication, together with and in support of PANS-IM.

2.3 ATM Information Reference Model (AIRM)

- 2.3.1 There is a need for translation of textual descriptions of common core concepts and operational procedures into system and data models to ensure semantic interoperability of related information exchanges. Although a series of exchange models like the Aeronautical Information Exchange Model (AIXM), ICAO Meteorological Information Exchange Model (IWXXM) and Flight Information Exchange Model (FIXM) had been developed over the last years to address this issue, these models were not harmonized, which led to the identification of the following issues:
- a) in some cases, key ATM data had different meanings across areas of ATM;
 - b) there was uncertainty of the data quality (accuracy, timeliness, resolution, integrity); and
 - c) there were inconsistent units of measurements, ranges of values, formatting (time and date, latitude/longitude ...), unique identifiers, etc.
- 2.3.2 In order to solve these issues, ANC requested the IMP to develop, in addition to provisions and guidance material, an ATM Information Reference Model (AIRM) to provide a structured, traceable, unified, harmonized, common, digital reference representation based on standard modelling notation. The AIRM scope would contain, at a minimum, the ATM data elements that require information interoperability.
- 2.3.3 The meeting reviewed Working Paper for ATM Information Reference Model (AIRM), which provided information on the AIRM Change Control Board (CCB) – Information Exchange Models (XM) coordination mechanism following Action Item in past IMP WG meeting. In this regard, the paper highlighted that, in accordance with the updated AIRM CCB - XM coordination process, reflected in the AIRM CCB Terms of Reference, the coordination was performed by a liaison with subject matter experts. The liaison was proposed by the AIRM CCB in collaboration and following acceptance of the concerned XM community of interest and was expected to be active in both. A state-of-play coordination summary with the different XMs, as well as the IMP, was provided in the paper. The paper also provided the AIRM work/release plan, which included an outlook of the upcoming changes, and requested the endorsement by the IMP of the release of the AIRM v1.0.0 under the umbrella of the AIRM CCB.
- 2.3.4 Based on the discussion, the IMP/2 meeting endorsed the release of the AIRM v1.0.0 and supported the AIRM work/release plan. The meeting also supported the attribution of the AIRM CCB – IMP liaison role to Mr. Sam Van der Stricht and encouraged IMP members and advisors to participate in the AIRM community in the following ways:
- a) become an AIRM CCB member;
 - b) access the AIRM Community Area as an observer (note: this includes access to AIRM CCB documents); and

c) submit a change request.

2.3.5 For more information on AIRM, please refer to the following link;
<https://airm.aero/>

2.4 Future work

2.4.1 Under this agenda item, the meeting reviewed the IMP approved Job Cards, proposed new Job Cards, provided input to the next update of the GANP based on the progress made in the Job Cards and reviewed the working arrangements and future meetings of the IMP.

2.4.2 The title of the new Job Cards are as follows and a target date was proposed by the IMP for the relevant SARPs to be applied by 2026.

- Information Services for Air/Ground SWIM
- Information Security Framework
- SWIM Governance enhancements
- SWIM Service Registry Interoperability
- Information Service Definition
- Information Management Vocabulary
- System-Wide Information Management implementation support

2.4.3 The meeting also reviewed and agreed with the following tentative meeting schedule as proposed by IMP Chair:

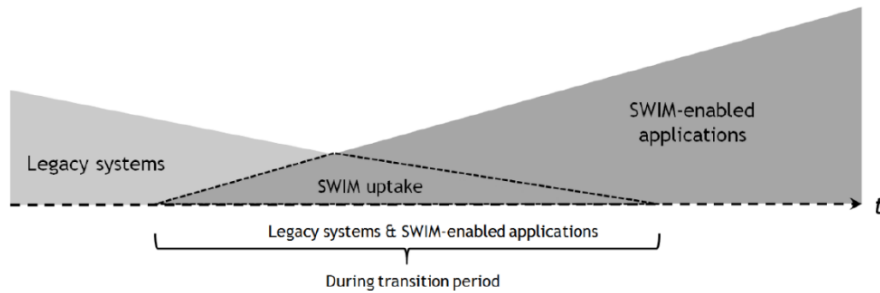
- a) IMP/3: September 2022, Montréal;
- b) IMP-WG/11: June 2023, TBD; and
- c) IMP/4: Q3 2024, Montréal.

● **ATMRPP**

2.5 ATMRPP/4

2.5.1 As informed in the WP18- IMP UPDATE of SWIM TF/5, the FF-ICE Release 1(FF-ICE/R1) related works by ATMRPP is synchronized with the SWIM related ones by IMP. Recall that the target for application of both provisions is November 2024.

2.5.2 It should also be noted that a strategy to sunset the 2012 FPL operation from the region in 2032 is being considered in the ATMRPP. It is easy to imagine that this would be a concrete use case of the “Transition to SWIM” mentioned in the Manual on SWIM Implementation.



(Figure 7-5 of Manual on SWIM Implementation: Transition to SWIM)

2.5.3 ATMRPP has completed most of the work on FF-ICE/R1 focused on pre-departure phase Trajectory Negotiation with ATMRPP/4, and the focus has shifted to post-departure phase, FF-ICE Release 2(FF-ICE/R2).

2.6 ATMRPP/WG/40 & WG/41

2.6.1 Post-departure Trajectory Negotiation does not require many extensions of information services due to operational changes, since the information services used for pre-departure Trajectory Negotiation are essentially reused. Therefore, it is expected that the working time in the ATMRPP will not require as much time as was spent on the FF-ICE/R1 works.

2.6.2 Therefore, it should be noted that plans to terminate the provisions on FF-ICE/R2 by 2028 are being considered in the ATMRPP.

3. DISCUSSION

3.1 Both SWIM and FF-ICE implementations incorporate a "Performance-based" approach at the global level, ensuring flexibility for ATM stakeholders, including Regulatory authorities, Air Navigation service providers, and Airspace Users.

3.2 While this approach allows for adaptation to the different operational environments that exist around the world, the lack of clear targets for implementation can trigger a long-lasting mix of traditional and new operations. This situation has a significant negative impact on all ATM stakeholders, and it is important to develop a strategy to eliminate this situation as soon as possible.

3.3 Therefore, the activity of implementing SWIM in the Asia-Pacific region must be as clear as possible for the region, noting that the mission of the SWIM TF goes beyond simply building a platform and spills over into considering information services and improving ATM operations through the use of information services.

3.4 The SWIM TF has a significant role to play, but it is not something that can be completed by the SWIM TF alone. As in the past, collaboration with other groups such as ATM and CNS is important, as well as with persons from the states who participate in those groups.

Draft Decision SWIM TF/06/XX - Establish a joint work group from the ATM SG and CNS SG for the FF-ICE.	
What: To create an FF-ICE implementation strategy that is consistent with the SWIM implementation in APAC region	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: FF-ICE is the first application developed to support in the SWIM environment, and the State-letter process is expected to proceed almost simultaneously with the SWIM provisions. Therefore, it is necessary to comprehensively consider the mixed operation of 2012 FPL and FF-ICE while ensuring consistency between FF-ICE and SWIM in the region to support ICAO Member States decision-making.	Follow-up: <input type="checkbox"/> Required from States
When: 20-May-22	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: ATM SG	

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) review the contents of this working paper;
- b) consider the contents as input into related activities to support implementation of APAC SWIM and ATM stakeholders’ Operational improvement.
- c) agree the draft decision in section 3.4 to establish a joint work group from the ATM SG and CNS SG for the introduction of FF-ICE, and
- d) discuss any relevant matter as appropriate.
