International Civil Aviation Organization

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Agenda Item 6: Regional ATFM Framework, A-CDM Plan and related Guidance Material

COMMON FLIGHT INFORMATION EXCHANGE MODEL (FIXM) VERSION FOR ASIA/PACIFIC CROSS-BORDER OPERATIONAL ATFM SYSTEM-TO-SYSTEM DATA EXCHANGE IN SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)

(Presented by Hong Kong China, Singapore and Thailand)

SUMMARY

This paper highlights the necessity to agree on the FIXM version for the implementation of operational ATFM system in Asia/Pacific region. It recommends the FIXM v4.3 to be an agreed version of information exchange model to support flight information exchanges between ATFM systems in SWIM environment. This paper also suggests a change process to be setup for proposing and managing the change of an agreed FIXM version for cross-border information exchange between the ATFM systems in Asia/Pacific.

1. INTRODUCTION

1.1 The Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC) has been ongoing since 2015, laying down the foundation for cross-border ATFM in the region under the concept of *Distributed Multi-Nodal ATFM Network*. The concept, upon which the Asia/Pacific Regional Framework for Collaborative ATFM was founded, is based on a network of *ATFM Nodes* responsible for demand-capacity balancing within their area of responsibility while being connected to the network's information exchange infrastructure. The ATFM operations in each node will be based on regionally agreed principles and high-level operating procedures, with local adaptations as necessary.

1.2 The focus for this collaboration has been on building the infrastructure for information exchange and developing the common operating procedure for ANSP members to use Ground Delay Program (GDP) to balance traffic demand against ATM capacity under distributed ATFM environment. Currently, the Aeronautical Fixed Telecommunication Network (AFTN) is primarily used for AMNAC cross-border ATFM system-to-system information exchanges. Key ATFM information such as Slot Allocation Message (SAM), Slot Revision Message (SRM) & Slot Cancellation Message (SLC) were exchanged when GDPs are required to be in place.

1.3 As technology advances and with the introduction of SWIM, the AMNAC Core Team had established the Technical Sub-Group to drive the development of SWIM-based communication infrastructure which would enable "ATFM-on-SWIM" operations in the region. The Technical Sub-Group has been supporting the work of ICAO Asia/Pacific SWIM Task Force (SWIM TF) in this area, with the most notable recent accomplishment being the development of an extension to the Flight Information Exchange Model v4.2 (FIXM v4.2 Extension) that would support cross-border ATFM, A-CDM, ATFM/A-CDM integration as well as the future concept of traffic synchronization and FF-ICE/TBO. An ATFM information exchange trial via SWIM technical infrastructure over the region's Common aeRonautical VPN (CRV) was done during Q4/2023 to illustrate how existing ATFM related

information that are sent via AFTN can be converted into FIXM format and exchanged via SWIM established on CRV.

1.4   At the same time, with the advancing of FIXM version, the AMNAC Core Team realized a need to formalize an agreed FIXM version for flight information exchange between operational ATFM systems to ease implementation complication. This paper targets to address to this formalization and to establish a proper change process.

2.   DISCUSSION

Current Situation

2.1   During the midst of preparing for the ATFM-on-SWIM trial using the FIXM version v4.1 with APAC extension, the FIXM version v4.2 with APAC extension was adopted by APANPIRG/34 in December 2023 after a nearly 1-year formal recommendation-and-adoption process. During this period, the FIXM Core v4.3.0 was also released by the FIXM Change Control Board to support the FF-ICE/R1 requirements identified by the ICAO ATM Requirements and Performance Panel (ATMRPP). With the changing of the version, AMNAC Technical Sub-Group, with support of ATCOs and ATFM experts, had been discussing and deciding which version should the trial be based on, considering especially that effort had been invested before the newer version was revised. On the other hand, for new members to join in the trial, it may not be ideal to work on an older version. On top of all these, backward compatibility may be an issue when trialing on the newer version.

2.2   With regard to the ATFM-on-SWIM trial, excluding the technical need to map the mandatory SAM/SRM/SLC data fields into the FIXM format, an issue to formalize an agreed FIXM version was revealed, emphasizing the benefit of conducting the trial which is to discover problems then resolve them. AMNAC Technical Sub-Group recognizes the need to establish a common FIXM version for cross-border information exchange between operational ATFM systems in the Asia/Pacific region. This is because system implementation is usually lengthy process and change to the version during the implementation would also increase the complexity.

2.3   While having an agreed version is essential, a change of the version will still be inevitable, e.g. the existing version can no longer support the operational requirements and/or more data fields are required to be exchanged. A version change process is hence necessary to be established to form a forum for ANSPs that are implementing the capability to discuss their concerns on the change.

Recommended FIXM Operating Version for Cross-Border ATFM

2.4   With the ongoing ATFM-on-SWIM trial, it is noticeable that many ANSPs are still working towards the implementation of the ATFM system to be SWIM capable. The ATFM data exchange in FIXM via SWIM has not been operationalized yet. In view of this, AMNAC Technical Sub-Group **recommends formalizing the FIXM v4.3 to be an agreed version for Cross-Border ATFM operations in Asia/Pacific from Q3/2026**. A major rationale to suggest FIXM v4.3 is that it is the version able to support the FF-ICE/R1 implementation as recognized by the ICAO ATMRPP. Moreover, based on the initial assessment with operational users, this version is considered sufficient to support the operational needs in at least a mid-term timeframe. Additionally, it is considered that the period of about 2 years from now would allow ANSPs an ample time for not only transitioning the ATFM-on-SWIM trial into operational environment but also for any first implementation .

Recommended FIXM Version for the ATFM-on-SWIM Trial

2.5   The FIXM v4.1 with APAC Extension has been set for the ATFM-on-SWIM trial since the onset of the trial discussion. Considering the amount of efforts in putting together the trial so far, AMNAC Technical Sub-Group **recommends the FIXM v4.1 with APAC Extension to be the version**

used for the ATFM-on-SWIM trial until Q2/2025. Acknowledging the need and benefits to adapt to newer version of the FIXM, AMNAC Technical Sub-Group **recommends revising the version used for the ATFM-on-SWIM trial from the FIXM v4.1 to the FIXM v4.3 from Q2/2025 and onward** to align with the version and timeline as suggested in paragraph 2.4.

<u>Recommended Change Process for the Cross-Border FIXM Operating Version</u>

2.6   As a good practice in system management, the AMNAC Technical Sub-Group recommends to establish a change process for the revision of the common FIXM version to support the information exchange among operational ATFM systems and the ATFM-on-SWIM trial. While a change process is required, it is considered that the process needs to be not too complex nor administrative intensive to avoid adding unnecessary steps for operational implementation. Moving forward, AMNAC Technical Sub-Group will be taking on developing this process, starting with the preliminary step as follows; and will submit, as a working paper, for ATFM/SG's further consideration and endorsement.

> 2.6.1.   States or Collaboration Bodies propose for the change, including
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> 2.6.1.1. the change(s) to be endorsed;
>
> 2.6.1.2. the reason(s) for the change(s); and
>
> 2.6.1.3. the time of the change to be effective.

2.7   Notably, AMNAC Technical Sub-Group does not recommend changes to be made due to newer version of FIXM format made available. Instead, the change must be on a need-be basis, considering the cost and time implication on ANSPs.

<u>Conclusion</u>

2.8   The ATFM-on-SWIM trial has been proved to be a useful tool to explore the possible issues in establishing the ATFM-on-SWIM operation. During the trial, the need for formalization of a common FIXM version to support the cross-border ATFM system-to-system data exchanges at an early stage was highlighted and identified. To ensure a good governance and practice in system management, the establishment of a change process is also required to address a change in a common FIXM version used for both the ATFM-on-SWIM trial and operation in the future.

2.9   It is recommended to formalize the FIXM v4.3 to be an agreed version to support information exchange between operational ATFM systems and to consider a change process as described in paragraph 2.4 and 2.6, respectively.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

a) Note the information contained in this paper;

b) Recognize and discuss on the need to formalize a common FIXM version to support information exchange between operational ATFM systems;

c) Acknowledge and discuss the recommendation on setting the FIXM v4.3 to be an agreed version for the cross-border ATFM-related information exchange;

d) Acknowledge and discuss the recommended change process to be established for revision of a commonly agreed FIXM version for the cross-border ATFM-related information exchange; and

e) Discuss any relevant matters as appropriate.

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