International Civil Aviation Organization

Tenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/10) of APANPIRG

Video Teleconference, 17 – 21 October 2022

Agenda Item 5: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)

PROPOSAL ON THE ESTABLISHMENT OF A STUDY GROUP TO PREPARE A SET OF HARMONISED OPERATIONAL REQUIREMENTS OF FLIGHT AND FLOW INFORMATION FOR A COLLABORATIVE ENVIRONMENT (FF-ICE) FOR ASIA/PACIFIC

(Presented by Japan, Singapore, Thailand and the USA)
(Co-sponsored by Lao PDR, Malaysia, Myanmar, the Philippines and Viet Nam)

SUMMARY

This paper proposes the establishment of a Study Group to prepare a set of harmonised operational requirements of Flight and Flow Information for a Collaborative Environment (FF-ICE) and recommend an approach to devise an FF-ICE implementation strategy for Asia/Pacific, aligned with the Asia/Pacific Seamless ANS objective.

1. INTRODUCTION

1.1 The Global Air Traffic Management Operational Concept (GATMOC), ICAO Doc 9854, presents the vision to achieve an interoperable global ATM (Air Traffic Management) system, for all users through all phases of flight, that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements.

1.2 To achieve this vision, it is essential to have global information utilisation, management, and interchange in a safe, secured and timely manner. The envisioned ATM system will have to accommodate manned and unmanned aircraft for all phases of flight, including the management of interactions among trajectories and hazards to achieve the optimum system outcome, with minimal deviation from the user requested flight trajectory, where possible. These provide the basis for Trajectory-Based Operations (TBO), in line with Seamless ANS Principles 12[1] and 29[2].

1.3 Central to the TBO concept is that all actors in the ATM system share, negotiate, and agree to a common trajectory for each flight. Flight trajectories are shared among stakeholders so that potential constraints can be detected early. With the use of trajectory as the common plan for the flight, traffic flow planning can be refined early by the ATM service providers (ASP) managing the trajectories, and the actual flow of traffic can be expected to be executed very close to the airspace users' (AU) preferred trajectory.

[1] Principles 12: The optimization of airspace structure through amalgamation and use of technology.
[2] Principles 29: The encouragement of appropriate technologies that support Trajectory-Based Operations.

2. DISCUSSION

Information Management

2.1 The Flight and Flow Information for a Collaborative Environment (FF-ICE) is an essential building block of TBO[1], and is included in an Information thread of the Aviation System Block Upgrade (ASBU) under the Global Aviation Navigation Plan (GANP) Sixth Edition. FF-ICE will transform the present-day flight plan and flight planning process. It allows more information exchange and interactions among ATM stakeholders, especially sharing of greater details of flight intent and trajectory throughout all phases of flight. It is a step change as ATM stakeholders gear up for the next lap towards the global ATM vision.

2.2 FF-ICE will enhance sharing of updated and more accurate flight trajectories among the stakeholders, enabling a more-effective collaborative decision-making environment where flight trajectories could be optimised taking into account AUs' business objectives and preferences as well as known restrictions and constraints in the ATM systems.

2.3 FF-ICE services and information exchanges provided through System Wide Information Management (SWIM) will create an information-rich ATM environment, where stakeholders will be able to access and promptly act on the timely, accurate and updated comprehensive flight information, thus enhancing ATM decision making.

FF-ICE Operational Processes and Procedures

2.4 FF-ICE will require changes in operational processes and flight planning procedures. New processes will be required to cater to a mixed mode environment where both current flight plan (FPL2012) and FF-ICE flight plan co-exist. The interaction of FF-ICE with other ATM initiatives such as Air Traffic Flow Management (ATFM) would also need to be studied.

2.5 To lay the foundation for Asia-Pacific towards FF-ICE, the Twenty Sixth Meeting of the CNS Sub-group (CNS SG/26), held from 5 - 9 September 2022, reviewed the proposal by the Sixth Meeting of the SWIM Task Force (SWIM TF/6[2]) on **"Draft Decision SWIM TF/06/05** – Establish a Joint Work Group between the ATM SG and CNS SG to create the FF-ICE Implementation Strategy" as the SWIM TF/6 considered FF-ICE implementation was not something that could be completed by the SWIM TF alone and collaboration with other groups such as ATM and CNS was important.

[1] See https://www.icao.int/airnavigation/tbo/Pages/Why-Global-TBO-Concept.aspx

[2] At the Sixth Meeting of the APAC SWIM Task Force (SWIM TF/6) held from 17 – 20 May 2022, Japan had in WP/18 (IMP and Related Panel Updates) reviewed the report of the Second Meeting of the Information Management Panel (IMP/2) , and the status of the Fourth Meeting of the Air Traffic Management Requirements and Performance Panel (ATMRPP/4) which is developing SARPs and Guidance Materials to implement FF-ICE operations under SWIM environment. SWIM TF/6 was informed that ATMRPP has completed most of the work on FF-ICE/R1 focusing on pre-departure phase Trajectory Negotiation and has shifted focus to FF-ICE/R2 (post-departure phase) with the plans of drafting the provisions on FF-ICE/R2 by 2028. It was also noted that a strategy to sunset 2012 FPL operation in 2032 was being considered in the ATMRPP as a concrete use case of the "Transition to SWIM" mentioned in the Manual of SWIM Implementation.

2.6 However, considering the existing different levels of understanding on FF-ICE among the APAC States/Administrations, CNS SG/26 suggested that the need to establish such work group should be further deliberated by relevant stakeholders such as through a seminar, proposed by the Third Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (ATMAS TF/3) held from 7 – 10 June 2022, to discuss the topics of interest identified by most member States including FF-ICE, SWIM, system interoperability, etc., and planned to be organized in 2023. CNS SG/26 requested the ICAO Secretariat to ensure that SWIM TF and Aeronautical Communication Services Implementation Coordination Group (ACSICG) experts are involved in the FF-ICE workshop/webinar/seminar to be held by ATMAS TF.

Proposal

2.7 With the establishment of SWIM TF since 2017 to prepare Asia/Pacific regional SWIM in line with GANP/ASBU and with ICAO provisions on FF-ICE/R1[1]including implementation guidance expected to be applicable in 2024 or 2025, it is timely to look into what FF-ICE can potentially offer the region in terms of operational improvements and benefits.

2.8 This paper proposes to establish an FF-ICE Study Group under the ATM/SG to prepare a set of harmonised operational requirements of FF-ICE for Asia/Pacific, in preparation for the said seminar in para 2.6 and to recommend an appropriate approach to devise an FF-ICE implementation strategy for the Asia Pacific region

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) agree to the draft decision; and

c) discuss any relevant matters as appropriate.

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Draft Decision ATM/SG/10-X: ESTABLISH FF-ICE OPERATIONAL REQUIREMENTS SMALL WORKING GROUP	
That, ATM/SG establishes the FF-ICE Operational Requirements Small Working Group, that will: a) study ICAO global TBO and FF-ICE provisions and the outcomes of relevant ICAO technical panels and regional technical groups; to b) prepare a set of draft harmonised regional operational requirements of FF-ICE/R1, and related operational processes and procedures; c) present related information to the FF-ICE seminar to be organised by ATMAS TF in 2023; d) recommend an appropriate approach to devise a FF-ICE implementation strategy for the APAC region; and e) recommend priority ASBU elements and develop draft regional performance objectives for consideration for inclusion in the Asia/Pacific Seamless ANS Plan version 4.0.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

[1] FFICE/R1 is the release 1 version which only consider the pre-departure phase of flight in FFICE services.

Why: FF-ICE will transform the present-day flight plan and flight planning process. Therefore, it is necessary to be ready and comprehensively consider the benefits, potential changes in operational processes and procedures to the Asia/Pacific region.	Follow-up: ☐Required from States
When: 21-Oct-22	Status: Draft to be adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:	