

REPORT OF WS2 OUTCOMES TO AAC/5

Work Stream 2

**“Accelerate the development and implementation of Seamless ANS,
collaborate on green initiative to enhance ANS sustainability”**

Leads : China, Hong Kong China, Singapore, Thailand, United States

Members: Cambodia, India, Malaysia, New Zealand, Republic of Korea, Viet Nam, ACI, CANSO



Agenda

1. TBO

- Asia-Pacific TBO Pathfinder Project

2. ATFM

- Information sharing on APAC ATFM groups
- Collaborative Operational Mechanism
- Next Generation ATFM

3. Performance Management

- Regional data sharing framework and gate-to-gate efficiency study
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Asia-Pacific TBO Pathfinder Project

Objective: Define, develop and demonstrate ConOps and requirements for TBO in APAC (2024-2028)

(Leads: China, Indonesia, New Zealand, Singapore, Thailand, United States)

Deliverable A – Program to facilitate understanding of ICAO global TBO concept

- **TBO Communications Material** (1st ed.) – Completed in July 2025
- **Executive Engagement** – VATM hosted the 1st high-level stakeholder exchange in Hanoi on 22 July with ATM stakeholders (ANSP, airlines, airport, regulator) on TBO and its building blocks

Deliverable B – Trials and Capabilities

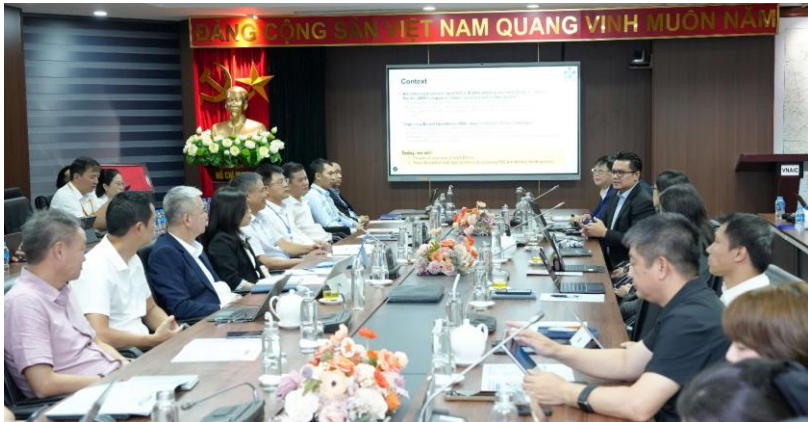
- **FF-ICE/R1 Lab Demo** – Conducted with 8 ANSPs* in Hanoi (22 – 24 July) on FF-ICE/R1 concept in APAC

Deliverable C – Roadmap and Benefit Analysis

- **TBO Roadmap** – TBO roadmap for APAC has been developed and agreed as Conclusion ATM/SG/13-6 at ICAO APAC ATM/SG (2025) for inclusion into APAC Seamless ANS Plan (next version)
- **Benefit Analysis Report** – Initial benefit analysis received feedback from Pathfinder members

Asia-Pacific TBO Pathfinder Project – Outcomes

DELIVERABLE A - AWARENESS OF ICAO GLOBAL TBO CONCEPT



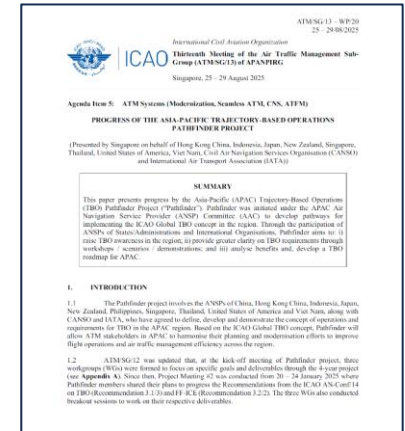
Exchange with ATM stakeholders at VATM (22 July 2025)

DELIVERABLE B - TRIALS AND CAPABILITIES



FF-ICE/R1 Lab Demonstration in Hanoi (22 to 24 July 2025)

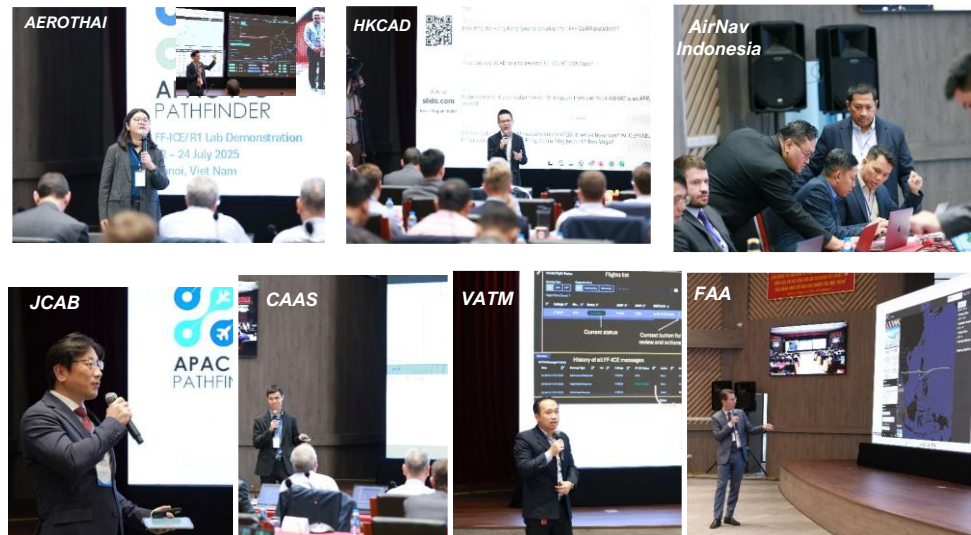
DELIVERABLE C - ROADMAP



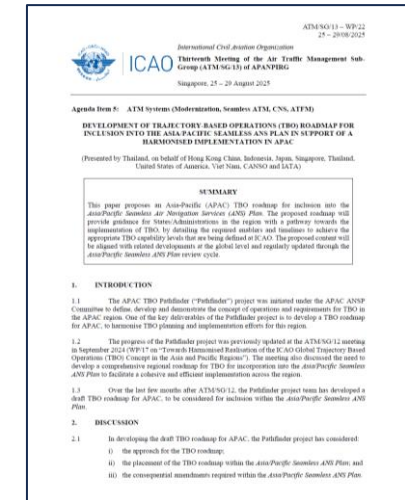
Report on Project Progress



Comms Booklet – TBO in the Asia Pacific Region (1st edition)



Collaborating on Operational Scenarios with use of FF-ICE/R1



TBO Roadmap for Asia Pacific Seamless ANS Plan

Information sharing on APAC ATFM groups

Asia-Pacific Multi-Nodal ATFM Collaboration (AMNAC)

- a. **Discussed challenges in managing multiple flow restrictions along M771**
 - Proposed to conduct operational trial through One-CTOT Solution (OCS) by ATMB involving affected ANSPs
- b. **Reviewed Network Post-Ops Analysis (POA) for ATFM Measures**
 - To develop standardised methodology to calculate CTOT compliance and other KPIs for ATFM POA
- c. **Reviewing content and procedure of the APAC bi-weekly web conference for relevance**
 - To trial new procedure starting Dec 2025

Northeast Asia Regional ATFM Harmonisation Group (NARAHG)

- a. **CTO-based ATFM operation trial between China and Republic of Korea (ROK), Aug 2025**
 - Involved 8 flights
 - Tolerance: 5 mins, 6 flights. Other 2 flights < 6 min
- b. **Real-time Operational Awareness**
 - Schedule & cross-border flights ADS-B data sharing (China/Japan/ROK)
 - 24-hour ETO sharing (China & Japan)
- c. **Typhoon Detour Procedure (TDP)**
 - Provide rerouting solutions for the flights between Northeast and Southeast Asia

There is a need to continue to enhance regional cooperative mechanism including interoperability of various ATFM groups in APAC

Collaborative Operational Mechanism

Objective: To provide a platform for enhanced information sharing and tactical consultations with ANSP partners, with a view to contribute with lessons learnt and improvements to regional ATFM measures implemented

(Members: China, Hong Kong China, Singapore)

Ongoing Activities Since 15 Sep 2025

Information shared

- a. **Weather forecast**
 - 7 days outlook – focused on airport and airspace
- b. **Traffic trend**
 - 7 days outlook
 - Historical – traffic movements and ATS route utilisation for selected city pairs and routes between China, Hong Kong, and Singapore FIRs
- c. **Expected ATFM measures**
 - ATS routes and airports
- d. **Post Operations Analysis**
 - CTOT compliance
 - Flight delays
 - On Time Performance
- e. **Others** – availability and status of ATM resources

Phased-approach

- **Phase 1 (3-month): Conduct of weekly ATFM call**
 - Commenced on 15 Sep 2025
- **Phase 2 (3-month): Conduct of weekly ATFM calls + trial of daily ATFM calls**
- **Trial of event-triggered call (TBD)**

Collaborative Operational Mechanism

Next Steps

- The meeting noted the joint development of standardised information-sharing template and KPI computation methodologies
- Conduct Daily Conference Call Trial from Feb 2026
 - Prior to commencement of trial, finalise trial details, including objectives, key performance indicators, and methods to evaluate efficacy of trial to identify areas of improvement
- Trial Event-Triggered Conference Call
 - Support required: Close coordination between ATFMU and corresponding ATC units affected by enroute restrictions
 - VATM's involvement essential for effective coordination
- Designate the ATFM Conference Call as **Traffic Flow Coordination Call (TFCC)**
- Invite ANSPs to participate in the regular ATFM Calls to expand the applicability of established process to other ATS routes in APAC, improving regional situational awareness and traffic flow efficiency

Regional Collaborative Operational Mechanism (RECOM)

- ATMB/CAAC shared with the meeting their proposal for the Regional Collaborative Operational Mechanism (RECOM) which aims to incorporate the following 3-step strategy:
 - Step 1: Timely communication
 - Step 2: Real-time visibility, including promote the cross-border common operational awareness
 - Step 3: Performance-based collaborative operations, including establishing common operational awareness and common operational objectives
- The meeting discussed the necessity of the signing of the MoC proposed as part of the RECOM to facilitate other ANSPs who are potentially considering to join
- Issues related to the benefits of sharing ACARS messages and the associated costs involved were raised during the meeting. In response, the meeting noted that these are further technical details to be discussed subsequently, and that the proposed data sharing elements are recommendations
- The meeting recognised the need to provide more information on benefits gained from RECOM apart from common situational awareness.

Next Generation ATFM

Objective: Establish the long-term ATFM landscape in APAC, and develop the principles and rules to enable optimisation of regional air traffic flow in a more congested and highly automated environment

(Members: China, Hong Kong China, Singapore)

Principles and Rules

- Develop principles and rules for cross-border ATFM taking into consideration the current situation and future growth of air traffic

Operational scenarios

- The principles and rules to be tested and refined against operational scenarios to ensure relevance to ANSPs and airspace users

Research

- Research institute(s) to analyse traffic demand and needs, develop options for future ATFM framework whereby rules will enable the optimization of traffic flows in a highly automated environment
- Status. Members are working to finalise the research requirements by end Dec 2025

Performance Management

Objective: Identify performance gaps and propose mitigating solutions for the region and properly define a good data management approach to help ANSPs build up data and analytics capabilities to support regional projects

(Members: All APAC ANSPs)

Project 1: Regional Data Management Framework

Purpose

- a. To establish a trusted and interoperable framework for secured data sharing across APAC
- b. To establish standardised data semantics and ensure data quality for effective cross-border collaboration
- c. To promote responsible use of historical data for analytics, performance benchmarking and CONOPS development, to improve operational efficiency

Status

Conducting a study with ANSPs to better understand current data sharing use cases, challenges faced and data management considerations when sharing historical data within APAC. The first draft of the RDMF has been shared with members for feedback.

Project 2: Gate-to-gate efficiency study

- To measure performance for every segment of identified city-pair flight routes, identify areas with performance gaps and propose mitigation measures to enhance regional performance



Thank you