

AAC/6 - WS2 Meeting

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

6 July 2026, 0800 – 1200h



Agenda

1. TBO

- Asia-Pacific TBO Pathfinder Project

2. ATFM

- Information sharing on ATFM & A-CDM/SG/16, APAC ATFM groups, Traffic Flow Coordination Call
- Initiative for strengthening Regional Collaboration in ATFM
- Next Generation AI-ATFM Research Proposal

3. Performance Management

- Regional data sharing framework and gate-to-gate efficiency study
- 

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 2025 with ATM stakeholders (ANSP, airlines, airport, regulator) on TBO and its building blocks. Completed 2nd high-level stakeholder engagement in Manila with CAAP ATM stakeholders on 22 June 2026.

Deliverable B – Trials and Capabilities

- **FF-ICE/R1 Lab Demo** – Conducted with 8 ANSPs* in Hanoi (22 – 24 July 2025) on FF-ICE/R1 concept in APAC
- **FF-ICE/R2 Lab Demo** – Conducted 2 Technical Interchange Meetings (January and June 2026) and 2 Table-Top Exercises (February and June 2026) in preparation of Lab Demo in March 2027

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

**Hong Kong China, Indonesia, Japan, New Zealand, Singapore, Thailand, United States, Viet Nam*

Asia-Pacific TBO Pathfinder Project – Outcomes

DELIVERABLE A - AWARENESS OF ICAO GLOBAL TBO CONCEPT



Exchange with ATM stakeholders at VATM (22 July 2025)



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



Exchange with ATM stakeholders at CAAP (22 June 2026)

DELIVERABLE B - TRIALS AND CAPABILITIES



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

FF-ICE/R2 TIM#1 hosted by AEROTHAI



FF-ICE/R2 TTX#1 hosted by JCAB

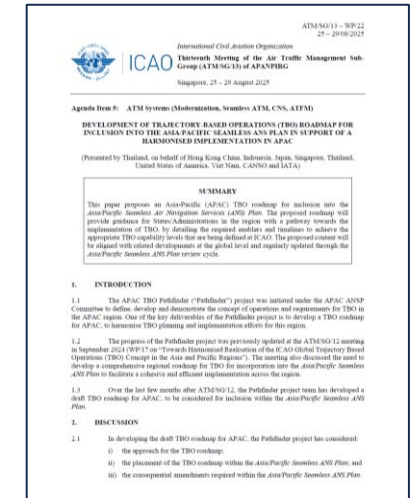


FF-ICE/R2 TTX#2 and TIM#1 hosted by CAAP



Collaborating on Operational Scenarios in preparation of FF-ICE/R2 Lab Demo

DELIVERABLE C - ROADMAP



TBO Roadmap for Asia Pacific Seamless ANS Plan

Conclusion ATM/SG/13-6: TBO RELATED REVISIONS FOR THE ASIA/PACIFIC SEAMLESS ANS PLAN

What: That, noting the need for harmonised implementation planning of Trajectory-based Operations (TBO) to guide States/Administrations in this region, that:	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
1) the TBO roadmap (as per ATM/SG/13 WP/22 Appendices A to E) be incorporated into the 2026 revision of the Asia/Pacific Seamless ANS Plan; and 2) a new Phase VI be included in the Asia/Pacific Seamless ANS Plan to enable reference to the TBO levels.	
Why: To ensure regional harmonisation of TBO and guide States/Administrations on implementation planning	Follow-up: ☐ Required from States
When: 29-Aug-25	Status: Adopted by Subgroup
Who:	☒ Sub groups ☒ APAC States ☒ ICAO APAC RO ☒ ICAO HQ ☐ Other:

Conclusion ATM/SG/13-6 (2025)

Asia-Pacific TBO Pathfinder Project – Outcomes

TBO Communications Material

- Raise awareness on Pathway to TBO in APAC region
- Support regional engagements
- Use as a reference resource for APAC ATM stakeholders

Proposed Actions by AAC/6 (For support by AAC Work Stream 2)

1. Agree that the TBO communications material “Trajectory-Based Operations in the Asia Pacific region, version 1.1 ” can be used as a reference material by AAC members to support engagements with ATM stakeholders, raising awareness on Pathway to TBO in the APAC region
2. Agree to share the TBO communications material on AAC website



See Annex A

ATFM & A-CDM/SG/16

Key Outcomes of the Sixteenth Meeting of the Asia/Pacific ATFM and Airport CDM Steering Group

Bangkok, Thailand | 6 – 10 April 2026 | Joint plenary with MET/R WG/15

134

participants

26

States / Administrations /
International Organizations

30

working, info papers &
flimsy

3

Conclusions & Draft
Conclusions

Draft Conclusions and Conclusions adopted by the Meeting

Draft Conclusion 16-1

1

Adoption of APAC Regional Guidance for Airport & Airspace Capacity Assessment

Guidance for conducting airport and airspace capacity assessment and to improve understanding of the processes by cataloging the best practices and models as adopted by APAC States/Administrations

Draft Conclusion 16-2 — Effective Q1/2027

2

Adoption of ATFM FIXM Message Data Attributes and Associated Message Templates Based on FIXM v4.3 as APAC Regional Standard

Support cross-border ATFM information exchange via SWIM.

Conclusion 16-3

3

Adoption of Revised ATFM Daily Plan (ADP) Exchange Procedure

Adopted as version 1.0, with a standalone APAC ADP Exchange Operational Contact List (uploaded to ICAO APAC Office eDocuments webpage). Common procedure for ADP exchange enables more effective distribution and processing of ADPs, and paves the way toward automated digital ADP exchange in the future.

Key Operational Developments

-  **ATFM elevated to a mandatory supporting air traffic service (ICAO global update)**
Proposed Annex 11 / PANS-ATM amendments require ATFM for all controlled airspace and designated aerodromes — ATFM units, FMPs, declared ATC capacity. ANC final review scheduled for June 2026.
-  **BOBCAT ATFM Operational Updates**
9,180 flights in 178 days since the 4 Sep 2025 resumption; ~3,350 t fuel and ~ 10,586 t CO₂ saved.
-  **“0-VOICE” cross-border coordination validated (NARAHG)**
China–Republic of Korea live trial (26 Feb 2026) on Cross Region ATFM Collaborative Platform (CRACP) used boundary-waypoint CTOs to remove ANSP-to-ANSP voice coordination; Phase 2 targets ±1-min tolerance via FMS-entered CTOs, supporting TBO.
-  **Regional CDM platforms consolidated into a unified APAC TFCC**
The Bi-Weekly ATFM Web Conference and Traffic Flow Coordination Call merge into one independent platform from 1 June 2026 — weekly strategic and daily tactical sessions, phased ANSP onboarding.

Looking Forward

Revised Regional ATFM ConOps

Concept Design Ad-Hoc Group (36 members, 11 States/Administration) entering Phase 2 concept development — addressing 2028 / 2032 / 2035 horizons. Work to be completed between Q4 2026 – Q1 2027

FF-ICE/R1 Implementation Plan

Updated draft APAC Plan (including eFPL validation checks, interpretation of Filing Status responses, feedback methods for restrictions and constraints) would be submitted to SWIM TF/11 for review, then CNS SG/30 and ATM SG/14 for approval; targeting APANPIRG/37 endorsement

SWIM-based ATFM exchange trial

AMNAC phased approach for ATFM Information Exchange Trial: offline messages verification and validation completed Mar 2026; target SWIM exchange trials in May 2026; target non-operational ATFM-to-ATFM system exchange in Sep 2026.

MET/ATM & performance workstreams

MET/ATM Seminar planned for 2027 and to be developed by a small joint task group with members from both MET/R WG and ATFM & A-CDM/SG.

Next meeting: ATFM & A-CDM/SG/17 — tentatively April / May 2027

Information sharing on APAC ATFM groups

Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)

- a. **Establishing initial CTOT compliance target of 80%**
 - May serve as foundation for future recommending region-wide CTOT compliance performance expectations in future
- b. **Improving Post-Ops Analysis (POA) for Cross-Border ATFM Measures**
 - To trial standardised KPIs and methodologies to enhance ATFM POA, and consider incorporating into the APAC ATFM POA Recommended Framework
- c. **Harmonised multiple Regional ATFM CDM Platforms**
 - Merged APAC Bi-Weekly ATFM Web Conference and Traffic Flow Coordination Call (TFCC) into APAC TFCC as the CDM platform for APAC region starting 1 June 2026

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. **0-VOICE Cross-border coordination trial by CRACP, Mar,2026**
 - Real-time CTO display
 - Automatic advise less of separation
- 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

Traffic Flow Coordination Call [1/2]

Objective: To provide a platform to optimise regional air traffic flow through enhanced information sharing and tactical consultations with ANSP partners, with a view to contribute with lessons learnt and improvements to regional ATFM; TFCC focuses on sharing operational situational awareness and collaborative coordination e.g. re-routing suggestions

(Participants: Cambodia, China, Hong Kong China, ROK, Singapore, Thailand, Viet Nam; Observers: CANSO, IATA)

Weekly TFCC (commenced on 15 Sep 2025)

Frequency

- Every Monday, at 0800UTC

Information shared

- **Post Operations Analysis**
 - CTOT compliance as facilitating ANSP
 - CTOT compliance as initiating ANSP
- **Weather forecast**
 - 7 days outlook – focused on airport and airspace
- **Significant event forecast**
 - 7 days outlook on planned events which may affect capacity
 - Expected ATFM measures
- **Others**
 - Other salient ATFM-related information

Daily TFCC (commenced 9 Feb 2026)

Frequency

- Daily, at 0200UTC

Information shared

- **Weather forecast**
 - For key Aerodromes and ATS Routes
- **Traffic demand forecast**
 - For key Aerodromes and/or ATS Routes
- **ATFM measures for the day**
 - On-going or planned
- **Others**
 - Other salient ATFM-related information
 - Discussions on previous day operations for quick resolutions

Traffic Flow Coordination Call [2/2]

Future Developments

APAC TFCC (commenced on 01 Jun 2026)

Modality

- Adopted much of previously TFCC's modality due to relevancy
- Frequency – Weekly & Daily TFCCs, with Event-triggered TFCC on need basis (Last Event-triggered TFCC was held on 30 Dec 2025)
- Agenda – same as previous TFCC, subjected to rescope with concurrence of the Administrative Team of the APAC TFCC (ATMB, CAAS, HKCAD) to accommodate expansion and maintain relevancy
- Platform – same as previous TFCC due to ease of transition

Initiative for strengthening Regional Collaboration in ATFM

Propose to consider a more efficient operational mechanism

1 Consolidate Existing Meetings of ATFM sub-groups

- Potentially consolidate or integrate existing meetings of AMNAC and NARAHG
- Optimize human & financial resources

2 Leverage APAC TFCC for Region-wide Situational Awareness

- Leverage APAC TFCC as an enabler (weekly/daily/event-triggered calls)
- Share real-time info on traffic demand, weather impacts, ATFM measures and rerouting proposals
- Establish common operational picture across Asia-Pacific region

3 Visualize information sharing via common situational pictures

- Promote standardized, visualized exchange of operational data
- Reduce information gap, support proactive operational management
- Enhance efficient cross-border collaborative decision-making

Planning a regional workshop in Sep 2026 for the initiative
**Build an open, inclusive and collaborative ATFM environment
for safe, efficient and sustainable Regional Air Traffic Management**

Next Generation AI-ATFM Research Proposal

Objective: Review current ATFM modalities in APAC; conduct gap analysis of existing operations considering the projected traffic growth for next 20 years in APAC and areas of potential congestion; capture operational constraints, priorities and coordination requirements across APAC ANSPs; and assess potential operational, efficiency, and sustainability gains from new ATFM ConOps leveraging on digital technology and AI.

(Members: China, Hong Kong China, Singapore)

Drivers of NG ATFM research

- Air traffic in APAC is projected to triple over the next 25 years. Current ATFM processes and arrangements are manual, locally focused, and fragmented. Leveraging on digital technology and artificial intelligence, NG ATFM is based on agreed principles and operating norms to support distributed decision making to deliver an efficient, fair, scalable and resilient regional ATFM while preserving ANSP autonomy.

Research

- **Assessment.** Review current ATFM modalities in APAC
- **Traffic analysis.** Conduct gap analysis of existing operations considering projected traffic growth to determine if current ATFM modalities will support the growth; and identify varying traffic densities within APAC region.
- **Comprehensive needs analysis.** Capture operational constraints, priorities, and coordination requirements across APAC ANSPs in order to address gaps in current ATFM practices and ensure States are prepared to meet the upcoming ATFM mandate.
- **Benefits evaluation.** Assess potential operational, efficiency, and sustainability gains from proposed NGATFM concept.

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 Guidance Document

Purpose

- The Regional Data Management Guidance Document was developed in response to identified gap and concerns in cross-border data sharing among APAC states (i.e. Absence of clearly defined data governance measures; Inconsistent data quality standards across states; and differing data formats which require substantial effort to harmonise).
- Considering the concerns and given that APAC states depend on one another for data especially when it comes to data sharing use cases on performance benchmarking and CONOPS development, a Regional Data Management Guidance Document is essential to facilitate safe and efficient data sharing by establishing a trusted and interoperable guide with data management best practices and recommend standardised data semantics, to guide APAC states to collectively work towards unlocking the value of historical data to drive impactful use cases.

Status

- Survey with ANSPs conducted to better understand current data sharing use cases, challenges faced and data management considerations when sharing historical data within APAC. The Regional Data Management Guidance Document incorporating the survey results has been shared with members during the DAG/8 Meeting in May 2026 and members' inputs have been incorporated.
- The finalised copy of the Guidance Document will be presented for publication and adoption at the ATM Sub-Group of APANPIRG in August 2026.
- Project 1 is considered as completed pending adoption of the guidance document at ATM/SG.

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 (status: work-in-progress)



Thank you