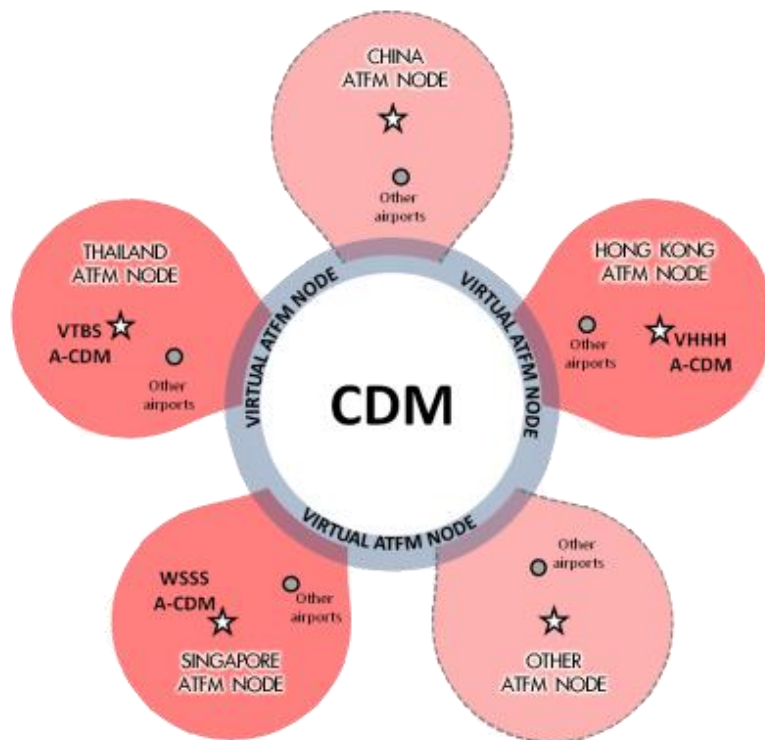


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COMMON OPERATING PROCEDURE **ASIA-PACIFIC CROSS-BORDER** **MULTI-NODAL ATFM COLLABORATION** **(AMNAC COP)**

This document provides an essential framework, details of procedure, rules, and requirements applicable for cross-border Air Traffic Flow Management (ATFM) operations under the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)

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Document Change Record

The following table records the complete history of the successive editions of the document.

Version Number	Effective Date	Reason for Change	Pages Affected
1.0	12 Jul 2016	Original release version	All
2.0	14 Oct 2016	Amendments arising from MN/11	All
3.0	1 May 2019	Amendments arising from recent developments and implementation activities, along with major formatting revision	All
4.0	1 May 2020	Revise criteria for issuing revised CTOT to ensure stakeholders have enough time to respond	21
4.1	10 Oct 2021	Administrative updates to match with the renaming of the project and to ensure up-to-date information	All
5.0	1 Jan 2024	<ul style="list-style-type: none"> - Update document administrator and list of reference materials - Revise definition of Facilitating ATFMU - Update Chapter 3 to reflect the current progress of AMNAC - Update procedures contained in Chapter 4 to align with the current practice - Update Annex A – Contact Information - Update Annex B – STT - Update Annex G – GDP Work Process (formatting) - Remove Annexes H, I 	All
5.1	10 Jan 2024	<ul style="list-style-type: none"> - Update Annex A – Contact Information <ul style="list-style-type: none"> - Correction of Republic of Korea’s ANSP & contact information* - Amendment of CAAM operational contact <p><i>*ATMO, the Republic of Korea’s ANSP, has been included into AMNAC as a new Level-3 member.</i></p>	Annex A
5.2	23 Jan 2024	<ul style="list-style-type: none"> - Update Annex A – Contact Information <ul style="list-style-type: none"> - Updated project POC for Airnav Indonesia - Updated project POC for CAAM - Updated participating aerodromes from Malaysia 	Annex A & B

		- Update Annex B – STT - Updated RKSS STT	
5.3	7 Feb 2024	- Update Annex A – Contact Information - Updated project POC for Airnav Indonesia	Annex A
5.4	13 Feb 2024	- Update Annex A – Contact Information - Updated project POC for ATMO	Annex A
5.5	01 May 2024	- Update Annex A – Contact Information - Updated project POC for DCAM - Updated operational AFTN address for Myanmar - Updated Operational AFTN Address for The Philippines - Updated project POC for AAI	Annex A
		- Edited para 3.10 with revised requirements for AMNAC members to upgrade to Level 3 Node	14
		- Replaced “an email” with “notification”	20
		- Updated APAC Bi-Weekly ATFM Web Conference links	21
6	01 Jan 2025	- Updated Annex A – Contact Information	Annex A
		- Updated Annex B – Standard Taxi-out Time (STT) for Participating Aerodromes	Annex B
		- Updated Annex C – Readines Checklist	Annex C
		- Updated Annex D – ATFM Daily Plan Template	Annex D
		- Updated Annex F – CTOT Distribution Channels by Level-3 ANSPs	Annex F

Document Administration

This document has been co-authored by core team members of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC). Comprising members from the participating Air Navigation Service Providers (ANSPs) and international organizations; this document provides a framework, details of procedures, rules, and requirements applicable for cross-border ATFM operations based on the Distributed Multi-Nodal ATFM Network concept. This document will continue to evolve as cross-border ATFM implementation and operations in Asia-Pacific matures.

The following Air Navigation Service Providers (ANSPs), with their points of contact, shall be jointly responsible for the administration and maintenance of this document. A review of this document should be conducted at least annually to ensure all procedures are always up-to-date.

ANSPs	Points of Contact Information
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Reference Materials

1. Annex 11 to the Chicago Convention (Air Traffic Services), 15th Ed., 2018
2. ICAO Doc 4444 – Procedures for Air Navigation Services: Air Traffic Management (PANS-ATM), 16th Ed., 2016
3. ICAO Doc 9971– Manual on Collaborative Air Traffic Flow Management, 3rd Ed., 2018
4. Asia/Pacific Regional Air Traffic Flow Management Concept of Operations, v1, 2015
5. Asia/Pacific Regional Framework for Collaborative Air Traffic Flow Management, v4.0, 2022
6. Asia/Pacific ATFM Daily Plan (ADP) Exchange Procedure – Working Draft, 2020
7. Asia/Pacific ATFM Post-Operations Analysis Recommended Framework, v1, 2020
8. Basic Phrases for Cross-Border ATFM Coordination – Working Draft, 2019

Asia/Pacific regional documents (#4 - #8) are available on the eDocument page of the ICAO Asia/Pacific Regional Office’s website (<https://www.icao.int/APAC/Pages/eDocs.aspx>).

Note on ATFMU Nomenclature

In the distributed ATFM environment, there is not a centralized ATFM unit responsible for the entire network. Rather, the ATFM unit responsible for the constrained / congested resource(s) will initiate ATFM measures such as Ground Delay Program (GDP) for other ATFM nodes to follow. To avoid confusion, the following ATFMU nomenclature is adopted for this Common Operating Procedure:

- (a) **Initiating ATFMU** denotes the ATFMU responsible for the ATM resources for which ATFM measures are required. The Initiating ATFMU is so named for the task of “initiating” the ATFM measure to manage traffic into the ATFM areas. Generally, this refers to the ATFMU located in the arrival FIR but is not necessarily so. An ATFMU managing intermediate airspace by implementing ATFM measure(s) for which the affected flights have to overfly will also be referred to as the Initiating ATFMU.
- (b) **Facilitating ATFMU** denotes the ATFMU responsible for the facilitation of traffic departing / flying in compliance to the ATFM measure issued by the Initiating ATFMU as well as coordinating with the Initiating ATFMU on matters related to ATFM measure management as required. The Facilitating ATFMU is so named for the task of “facilitating” compliance to the ATFM measure and associated coordination. Generally, this refers to the ATFMUs located in the departure FIR and the FIRs along which affected flights overfly.

Note: For an ANSP without an ATFMU established, this responsibility can be designated as a function of an ATS or another unit within the ANSP as appropriate.

Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC) Common Operating Procedure (COP)

1. Introduction

1.1 The Asia Pacific region has long been one of the fastest growing aviation markets in the world, with ever-increasing traffic demand comprising regional and trans-regional flights mixed with varying levels of domestic traffic. While ANSPs and Airport Operators are continuously exploring means to increase airspace and airport capacity to match the increasing demand, there is a need for systematic method to balance demand and capacity in order to allow a sustainable growth in traffic demand. An operational concept that would enable that demand-capacity balancing is *Air Traffic Flow Management (ATFM)*.

1.2 ***Air Traffic Flow Management (ATFM)*** is a service established to contribute to a safe, orderly, and expeditious flow of air traffic by ensuring that air traffic control capacity is optimized and utilized to the maximum extent possible, and that the traffic demand is compatible with the capacity available.

1.3 Managing air traffic flow through the application of ATFM measures such as Ground Delay Programs (GDP) is a known operational concept. This is typically carried out by a single entity within a region or independently applied within the domestic boundaries of an ANSP. However, there is an increasing need to apply ATFM measures to facilitate cross-border flight operations especially with the growth of international traffic movements. The concept of applying ATFM measures on cross-border traffic by different control authorities can be achieved through the *Distributed Multi-Nodal ATFM Network* concept.

1.4 Through a research collaboration led by Civil Aviation Authority of Singapore (CAAS) and Airbus ProSky, with participation from Aeronautical Radio of Thailand (AEROTHAI), Air Traffic Management Bureau of Civil Aviation Administration of China (CAAC ATMB), Department of Civil Aviation Malaysia (DCAM), and Hong Kong Civil Aviation Department (HKCAD) and other relevant stakeholders, the ***Distributed Multi-Nodal ATFM Network*** concept was conceived. ***The concept relies on independent ATFM Nodes connected via information sharing network and operating on the same principle.*** The concept was adopted by ICAO Asia/Pacific ATFM Steering Group (ATFM/SG) as the foundation for cross-border ATFM in the Asia-Pacific region, as outlined in the *Asia/Pacific Regional Framework for Collaborative ATFM*.

1.5 The concept has since undergone several rounds of validation through an extensive operational trial. The operational trial also included the development and refinement of processes and procedures to enable cross-border ATFM service based on a Ground Delay Program (GDP) with the provision of Calculated Take-Off Time (CTOT) for

efficient pre-flight operations. Over the years, as the trial matured and cross-border ATFM operations became more widespread in the region, more ANSPs signed on to participate in the process and the initiative was renamed the **Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)**.

1.6 This document outlines key principles and requirements for all stakeholders involved in cross-border ATFM operations as part of the AMNAC initiative. The document establishes the **Common Operating Procedures** for stakeholders to use as a reference and guidance when establishing their local procedures to participate in the ATFM network. The document also provides individual ANSPs the basis for publishing their respective AIP or AIP Supplement which should contain specific details and procedures for cross-border multi-nodal ATFM operations in their areas of responsibility. It is expected that the procedures established in this document will be used as a foundation to harmonize cross-border ATFM procedures for the Asia-Pacific region. It is recommended that this document be read in conjunction with *the ICAO Manual on Collaborative Air Traffic Flow Management (Doc 9971)*, *the Asia/Pacific Regional ATFM Concept of Operations*, and *the Asia/Pacific Regional Framework for Collaborative ATFM*.

2. Distributed Multi-Nodal ATFM Network Concept Overview

2.1 Asia-Pacific airspace is characterized by several FIRs and low transit times for flights. Independent local ATFM measures implemented in isolation within one FIR tend to have knock-on effect on downstream FIRs. Previously, existing ATFM frameworks operated fundamentally on centralized management of air traffic flow, which adequately addressed domestic ATFM needs. However, a distributed solution for cross-border ATFM was essential to meet the needs of Asia-Pacific. CAAS and Airbus ProSky, with inputs from other industry partners, developed a **Distributed Multi-Nodal ATFM Network** concept as an alternative solution to implement cross-border ATFM in this region.

2.2 **The concept involves each ANSP leading and operating an independent ATFM node supported by interconnected information sharing framework. The flow of air traffic will be managed based on a common set of agreed ATFM measures and principles among participating stakeholders.** In the case of a Ground Delay Program (GDP), an ATFM measure chosen as the primary means for cross-border ATFM in APAC, an ATFM Node comprising the ANSP and associated airports balances demand and capacity through adjustments in aircraft Calculated Landing Time (CLDT), Calculated Time Over (CTO), and Calculated Take-Off Time (CTOT). The ATFM time parameters, specifically CTOT, are then distributed to aircraft prior to departure. The calculation and distribution of CTOT will be based on agreed principles and information exchange platform and/or procedure. **Figure 1** illustrates this concept.

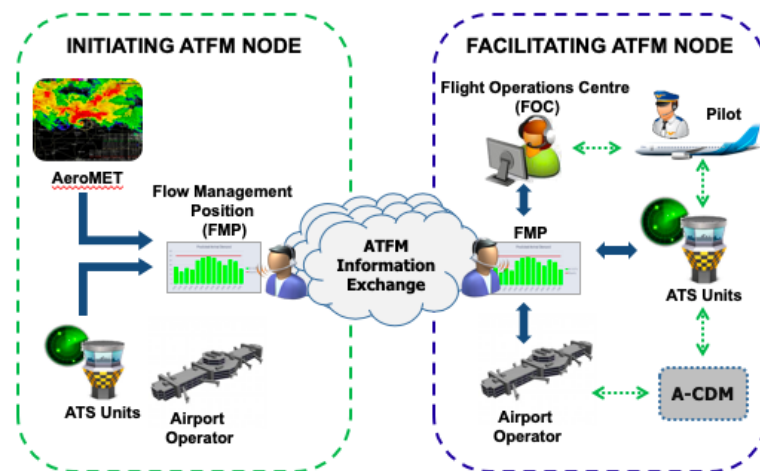


Figure 1 - Distributed Multi-Nodal ATFM Network Concept

2.3 The choice of GDP as a basis for ATFM in the region came from predictability issues that surfaced due to frequent use of Miles-in-Trail (MIT) and Minutes-in-Trail (MINIT) to manage traffic across several borders. Both MIT and MINIT, while effective for short-term management of traffic volume from immediate neighboring FIR, tend to get expanded as the restrictions traverse across several FIRs upstream. The result is unpredictable, and sometimes excessive, airborne holdings being imposed on flights as the ATS units try to ensure the required spacing between them. With collaborative use of GDP, flights will be given specific departure slots, allowing them to absorb the required ATFM delays on the ground – sometimes with engines shut off – in a more predictable manner. **Figure 2** illustrates the idea.

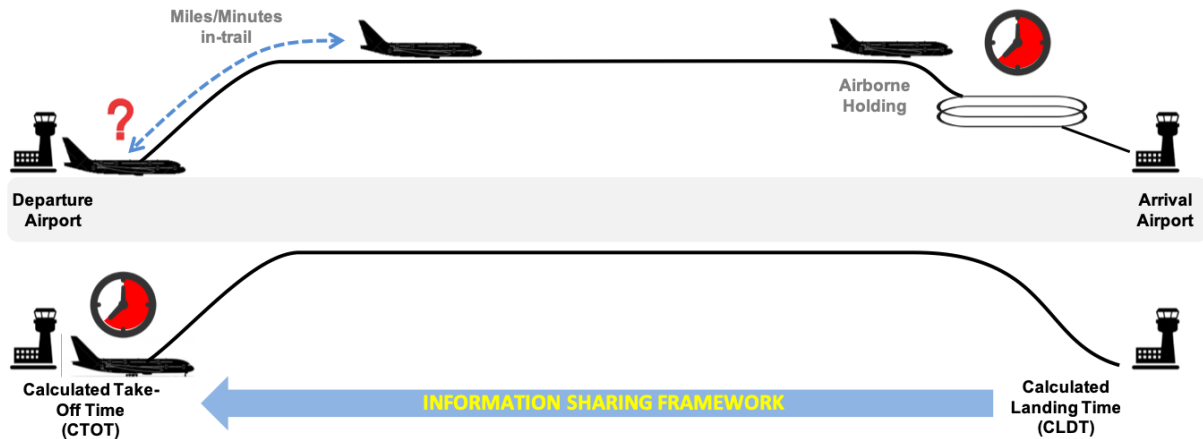


Figure 2 – GDP in a distributed ATFM environment

2.4 Airspace Users can play a fundamental role in **Collaborative Decision Making (CDM)** as part of this concept by providing additional information regarding the flights and indicating the ability to comply with CTOTs. Additionally, being involved in the ATFM operations, Airspace Users will be able to receive advance CTOT information, which will in turn allow for improved predictability and optimization of available resources.

2.5 Airport Operators contribute to CDM by providing accurate and updated airport infrastructure capacity and maximum allowable gate delay based on the airport's operational demand and capability to manage it. The maximum gate delay component could be considered in the appropriate issuance of CTOTs during GDP implementation.

2.6 *In summary, common core principle, efficient interconnected information sharing platform and procedure, and effective CDM with comprehensive stakeholder participation form the basis of the Distributed Multi-Nodal ATFM Network concept.* The concept in turn forms the most viable ATFM solution that can better manage the cross-border flow of traffic in the Asia-Pacific region.

3. Operational Trial and Implementation Process

3.1 To validate the Distributed Multi-Nodal ATFM Network concept and prepare for implementation, the core ANSP members began an Operational Trial project in 2014. To enable timely commencement and to provide room for continuous development and expansion, the Operational Trial first focused on addressing Demand-Capacity Balancing (DCB) at individual airports by regulating inbound flights with GDP through distribution of CTOTs. Subsequently the project focused on DCB for airspace volumes managed by participating ANSPs, still using GDP though possibly in combination with other ATFM measures.

3.2 The Operational Trial used a multi-stage, multi-phase approach as follows:

Phase 1 – Balancing Demand and Capacity at Arrival Airports		
Stage 1	Stage 2	Stage 3
<ul style="list-style-type: none"> • Communication Linkage and Protocols • Information Dissemination 	<ul style="list-style-type: none"> • Demand Prediction Validation • Local Table-Top Exercises • Cross-Border ATFM Procedure Development and Validation through Demonstration Flights 	<ul style="list-style-type: none"> • Limited-Scope Operational Service: Providing ATFM service for planned and ad-hoc events; introduction of Combined ATFM Measure
Phase 2 – Balancing Demand and Capacity in the Airspace		
Stage 1	Stage 2	Stage 3
Capability development for airspace demand prediction and capacity assessment	Procedure development and trial/implementation for single-constraint demand-capacity balancing	Procedure development and trial/implementation for multi-constraint demand-capacity balancing

Table 1 - Phased Approach to Operational Trial

3.3 The phased approach to the Operational Trial has enabled a methodical progress in the development of systems, infrastructures, and procedures for effective distributed ATFM operations. As the Trial matured, more ANSPs and stakeholders signed on to be involved and the project evolved from an Operational Trial to an Implementation Initiative. To commemorate the maturity of the project and to better delineate between the foundational concept and the implementation effort, the project was renamed **Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)** in the early 2020.

3.4 The AMNAC project is currently led by the **AMNAC Core Team** comprising Aeronautical Radio of Thailand, Ltd. (AEROTHAI), Civil Aviation Authority of Singapore (CAAS), Hong Kong Civil Aviation Department (HKCAD), Air Traffic Management Bureau of the Civil Aviation Administration of China (CAAC ATMB), CANSO, and IATA. The Core Team is responsible for project coordination, procedure development, trials and implementation leadership, and technical and operational support for AMNAC members. The Core Team is also responsible for driving technical infrastructure improvements such as supporting the development of infrastructure required for ATFM information exchange using System-Wide

Information Management (SWIM)-based technologies. The Core Team had established a Technical Subgroup for that purpose.

3.5 Within AMNAC, participating stakeholders form individual ATFM Nodes for each respective FIR. A node comprises the ANSP as the Node leader and local Airspace Users and Airport Operators as members. As an example, a typical Singapore ATFM Node would comprise CAAS as the Node Leader with Changi Airport Group (CAG) and local Airspace Users as members. This approach provides a coherent linkage among individual stakeholders within the same FIR and ensures harmonized capability development across the industry.

3.6 To encourage more participation from regional states, the project adopts a tiered participation level approach to provide the opportunity for stakeholders to participate based on their readiness and capability. The different participation levels also aim to provide an avenue for ATFM Nodes to upgrade to a higher level as members become more ready and capable. The participation levels and their associated capabilities are as follows:

Participation Level	Expected Capabilities
Level-3 ATFM Nodes	<ul style="list-style-type: none"> - Able to generate, deliver, and receive CTOTs. - Able to comply with CTOTs from all Level-3 ATFM Nodes.
Level-2 ATFM Nodes	<ul style="list-style-type: none"> - Able to comply with CTOTs from all Level-3 ATFM Nodes.
Level-1 ATFM Nodes	<ul style="list-style-type: none"> - Observe and participate in the project progress.

Table 2 - Tiered Participation to Operational Trial

3.7 Project membership in the 3 levels, along with their operational contact information, is included in [Annex A](#). Airports associated with Level-2 and Level-3 Nodes, along with Standard Taxi-out Times (STTs) for use in CTOT calculation, are listed in [Annex B](#).

3.8 The formulation of tiered level participation has been adopted as the basis for the ATFM Performance Improvement Plan stipulated in the *Asia/Pacific Regional Framework for Collaborative ATFM*. The Regional Framework has an expectation that *all Asia/Pacific States* ensure that local ATC procedures are established to facilitate compliance with received CTOTs, in line with the capability expectation of a Level-2 ATFM Node in **Table 2**. This will ensure cross-border ATFM measures in the region are complied with effectively when implemented.

3.9 For States/ANSPs handling or expecting to handle large volume of traffic, it is recommended that they endeavor to be at Level 3 to implement ATFM for constrained or congested resources when required.

3.10 Recognizing the importance of ATFM nodes making appropriate preparations to upgrade their participation level, a **Readiness Checklist** has been developed as a guideline for the required personnel, procedures, support system and stakeholder awareness, with the view that Node Leaders will ensure stakeholders readiness appropriately. The checklist can be found in [Annex C](#).

3.11 An upgrade to Level 3 participation by a member node will have impacts on other members (ANSPs and stakeholders) as ATFM measures will now be implemented and ATFM requirements, e.g. CTOTs, can be assigned. It is therefore important that members wishing to upgrade have established all necessary procedures and infrastructure to support the operations and have widely communicated their intention so other members are aware and able to prepare appropriately. To enable the AMNAC Core Team to support upgrading members in assuring the quality of their procedures and infrastructure, AMNAC members planning to upgrade from Level 2 to Level 3 participation are requested to follow this procedure:

- a. Ensure that local procedures and resources to fulfill Level 2 responsibilities as listed in Annex C have been implemented and ability to facilitate compliance with ATFM measures from other ATFM Nodes can be assured.
- b. Ensure that local procedures and resources to fulfill Level 3 responsibilities as listed in Annex C have been implemented and ready to be operationalized.
- c. Express intent to participate as Level 3 ANSP to AMNAC Core Team, with at least 2 months lead-time to date of intended upgrade
- d. Within the given lead-time, conduct ATFM operational trials focused on the use of Ground Delay Program (GDP) with all AMNAC Core Team members. Optionally, the member can invite other AMNAC members to participate in the trials as well. The trials will allow other AMNAC members to familiarize with the upgrading member's system and interface and allow the AMNAC Core Team to provide any feedback and suggestions for adjustment appropriately.

3.12 The GDP trials should be planned so that they include major workflows of an ATFM measure notification, activation, and management. Specifically, the trials should include:

- ATFM Daily Plan (ADP) dissemination,
- GDP activation with CTOT calculation and distribution,
- Management of CTOT including support for cross-border CDM actions, e.g. revisions based on airspace user requests as well as based on changes in the ATFM measure requirements.

3.13 Upon completion of the GDP trials, the AMNAC Core Team will debrief with the upgrading member about their readiness as a Level 3 node based on the following criteria:

- a. Level 2 Capabilities: Availability and effectiveness of process to facilitate compliance with ATFM measures from other Level 3 nodes,
- b. Notification of ATFM Measure: Appropriate process of ADP dissemination,

- c. ATFM Information Dissemination – Availability of at least 1 effective mode of CTOT dissemination,
- d. Cross-border CDM Support: Availability of cross-border collaboration platform to support CTOT management, and
- e. Any other pertinent aspects that would improve the upgrading member's operations.

4. Cross-Border ATFM Common Operating Procedures

General Procedure

General

4.1 To achieve effective DCB through cross-border ATFM measures, it is important that ATFM stakeholders adhere to the **Common Operating Procedures (COP)** during the ATFM operation. This will ensure a common understanding of process, procedures, and outcomes.

4.2 For the COP, “common” is intended to address the high-level process flow (e.g. demand prediction, slot allocation, slot dissemination, and slot management) and not details with respect to individual ANSP’s ATFM operational concepts (e.g. CTOT generation algorithms, slot substitution workflow). The autonomy of ANSPs to determine appropriate operational concepts within the common high-level process flow is understood and accepted under this COP.

4.3 In line with the provision of Annex 15, ANSP should publish AIP or AIP Supplement with regards to ATFM operations/activities in a timely manner. It is the responsibility of the Airspace Users and Airport Operators to keep current with the latest relevant AIP or AIP Supplements before conducting their operations. Additionally, the planning, coordination, and execution of ATFM measures by the stakeholders referred to in para. 4.4 shall comply with the ICAO provisions specified in the Annex 11.

4.4 This document describes the common requirements to optimize available ATM resource capacity of the ATFM Nodes for:

- (a) Airspace Users,
- (b) Airport Operators,
- (c) Air Traffic Service (ATS) Units,
- (d) ATFM Units and, where available, Flow Management Positions (FMPs),
- (e) Slot Coordinators of coordinated airports, and
- (f) All other organizations and individuals involved in ATFM operations.

ATFM Measure Principles

4.5 ATFM measures *should*:

- (a) Prevent excessive air traffic demand compared with operational capacity of ATM resources (airport, airspace sector, etc.),
- (b) Optimize ATM resource capacity to the maximum extent possible to maximize efficiency and minimize adverse effects on operators, and
- (c) Support the management of critical events, disruptions, and special circumstances.

4.6 ATFM measure *should not* be a substitute for effective capacity enhancement efforts by ANSPs. It should, on the contrary, be used to manage available capacity while enhancement efforts to cope for future growth are under way.

Stakeholders' Responsibilities

4.7 ANSPs play a key role as Node Leaders in the Distributed Multi-Nodal ATFM Network. Accurate traffic demand prediction and ATM resource outlook, effective issuance of ATFM measures, and coordination of CDM process are important elements provided by ATFM Units and ATS Units within each ANSP. The following tables outline ANSP's responsibilities at various participation levels.

Level 3 ANSPs	
Responsibilities	Descriptions
General ATFM Responsibilities	
Demand-Capacity Prediction and Monitoring	<ul style="list-style-type: none"> • Predict traffic demand at ATM resources within the node through a range of data sources including schedules, airport slots, flight plans (FPLs) and ATS messages or other forms of flight progress updates such as surveillance data. • Assess strategic and operational capacities at ATM resources within the node. • Assess demand-capacity imbalance. • Monitor the accuracy of demand and capacity predictions.
Local CDM Conference	<ul style="list-style-type: none"> • Host CDM conference with local stakeholders to prepare ATFM measures.
Cross-Border CDM Conference	<ul style="list-style-type: none"> • Host or participate in cross-border CDM conference with other node leaders.
ATFM Daily Plan (ADP)	<ul style="list-style-type: none"> • Generate ADP to outline ATM situation and ATFM plans.
ATFM Measure Execution	<ul style="list-style-type: none"> • Ensure the effective implementation / revision / cancellation of ATFM measures in collaboration with local FMP/ATS units. • Provide information on ATFM in a timely manner to relevant stakeholders in accordance with the cross-border procedures developed.
ATFM Measure Effectiveness Monitoring	<ul style="list-style-type: none"> • Monitor ATFM measure effectiveness and revise as appropriate to the developing situations.
ATFM Post-Operations Analysis	<ul style="list-style-type: none"> • Lead the collaborative effort to perform post-operations analysis after each round of ATFM program or on a regular basis.
Responsibilities Specific to GDP	
CTOT Distribution	<ul style="list-style-type: none"> • Generate CTOTs and distribute them via appropriate channels preferably no less than 90 minutes before Estimated Off-Block Time (EOBT) to support stakeholder's advance planning.

Level 3 ANSPs	
ATFM Slot Management	<ul style="list-style-type: none"> • Provide platform or protocol for ATFM slot management process (change, swap, remove, add).
CTOT Compliance Facilitation	<ul style="list-style-type: none"> • Manage departure traffic in compliance with CTOT, given the allowable CTOT compliance window.
	<ul style="list-style-type: none"> • Include CTOT information as part of the air traffic control clearance when a given flight is subject to CTOT <small>Ref: ICAO Doc 9971, 3rd Ed., Part II, Chapter 6</small>
	<ul style="list-style-type: none"> • Implement local ATC procedures and CDM processes to facilitate compliance with received CTOT.

Table 3 - Level-3 ANSP Responsibilities

Level 2 ANSPs	
Responsibilities	Descriptions
General ATFM Responsibilities	
Cross-Border CDM Conference	<ul style="list-style-type: none"> • Participate in cross-border CDM conference with other node leaders.
ATFM Post-Operations Analysis	<ul style="list-style-type: none"> • Participate in the collaborative effort to perform post-operations analysis by providing information from the departure side.
Responsibilities Specific to GDP	
CTOT Compliance Facilitation	<ul style="list-style-type: none"> • Manage departure traffic in compliance with CTOT, given the allowable CTOT compliance window.
	<ul style="list-style-type: none"> • Include CTOT information as part of the air traffic control clearance when a given flight is subject to CTOT <small>Ref: ICAO Doc 9971, 3rd Ed., Part II, Chapter 6</small>
	<ul style="list-style-type: none"> • Implement local ATC procedures and CDM processes to facilitate compliance with received CTOT.

Table 4 - Level-2 ANSP Responsibilities

Level 1 ANSPs	
Responsibilities	Descriptions
General ATFM Responsibilities	
Participation in Project Updates	<ul style="list-style-type: none"> • Participate in regular project meetings to keep up to date with latest developments.
ATFM Education	<ul style="list-style-type: none"> • Educate local stakeholders and personnel on ATFM in preparation for capability upgrade.

Level 1 ANSPs	
ATFM Information Distribution	<ul style="list-style-type: none"> • Distribute information about ATFM initiatives to local stakeholders, e.g., information about an active ATFM measure in the region, to ensure stakeholders are aware of the project progress and implementation elsewhere.
Planning for Capability Upgrade	<ul style="list-style-type: none"> • Study the Distributed Multi-Nodal ATFM Network employed by AMNAC • Assess the needs and plan for capability upgrade, especially if supplying traffic to FIRs serviced by Level-3 ANSPs.

Table 5 - Level-1 ANSP Responsibilities

4.8 Other stakeholders' participation is crucial to the success of the project and of an ATFM operation. Timely sharing of information, operational planning, and participation in the CDM process are all important elements provided by Airport Operators and Airspace Users. The following tables outline responsibilities on the part of these stakeholders.

Airport Operators	
Responsibilities	Descriptions
General ATFM Responsibilities	
Provision of Updated Flight Information	<ul style="list-style-type: none"> • Provide updated flight information to ATFMU for accurate demand prediction.
Provision of Airport Capacity Constraints Information	<ul style="list-style-type: none"> • Notify ATFMU of events that may impact capacity at airports.
Local CDM Conference	<ul style="list-style-type: none"> • Actively participate in local CDM conference to provide input on ATFM measures.
Receipt of ATFM Information	<ul style="list-style-type: none"> • Participate in ATFM communication flow and ensure capability to receive ATFM information in a timely manner.
ATFM Post-Operations Analysis	<ul style="list-style-type: none"> • Participate in the collaborative effort to perform post-operations analysis by providing information from the airport side
A-CDM Linkage	<ul style="list-style-type: none"> • If the A-CDM process is deployed or planned, ensure it is able to integrate or coordinate with the ATFM process, especially in terms of data/information exchange.

Table 6 - Airport Operator Responsibilities

Airspace Users	
Responsibilities	Descriptions
General ATFM Responsibilities	
Flight Schedule Information	<ul style="list-style-type: none"> Where possible, advise ATFMU of changes to schedules prior to submission of FPL.
Special Circumstance Information	<ul style="list-style-type: none"> Where applicable, advise ATFMU of special or extenuating circumstances that would impact the ability to comply with ATFM measures.
Flight Plan (FPL) Management	<ul style="list-style-type: none"> Ensure updated FPLs are filed at least 3 hours prior to EOBT.
DLA /CHG Message	<ul style="list-style-type: none"> Submit DLA or CHG messages via AFTN for delay of more than 15 minutes. <i>*Do not update EOBT as a result of an ATFM measure*</i>
Local / Cross-Border CDM Conference	<ul style="list-style-type: none"> Actively participate in CDM conference to provide input on ATFM measures.
Monitoring of ATFM Alerts and Receipt of ATFM Measure Information	<ul style="list-style-type: none"> Monitor ATFM Daily Plan (ADP) for ATFM alerts and receive ATFM information for operational planning.
Critical Operational Concerns	<ul style="list-style-type: none"> Highlight significant operational concerns during CDM conference.
Post-Ops Analysis	<ul style="list-style-type: none"> Provide feedback and information on ATFM operations in the Post-Ops Analysis effort.
Responsibilities Specific to GDP	
CTOT Compliance Management	<ul style="list-style-type: none"> Plan the affected flights such that they will be ready for start-up / pushback at appropriate time to comply with CTOT at the runway, considering taxi-out time.
Slot Revision / Substitution Management	<ul style="list-style-type: none"> Request or process revisions to CTOTs / ATFM slots when the flights are unable to comply with assigned CTOTs.

Table 7 - Airspace User Responsibilities

Information on ATFM Measures

4.9 Information on ATFM will be distributed by the node leaders. This information includes ADPs, alerts/notifications on ATFM measures, CDM web conference/help desk and CTOT dissemination.

(a) *ATFM Daily Plan (ADP)*

The ADP will provide a summary of planned ATFM measures for the 24 hours period. ADP is normally distributed one day before operations, with

a revised version issued on the day of operations when necessary. An ADP template can be found in [Annex D](#).

To enable automated ADP processing, ADP should be sent by the Initiating ATFMU as a PDF file attached to an E-Mail with the following specifications:

- ***Subject: ADP_[FIR Name]_[Effective Date, yyyyymmdd]_[Version number]***
- ***File Name: ADP_[FIR Name]_Effective Date, yyyyymmdd]_[Version number]***
- ***Example: ADP_VTBB_20181207_1***

Note that this ADP exchange procedure is the basis for the Asia/Pacific ATFM Daily Plan (ADP) Exchange Procedure (Working Draft, 2020).

(b) Alerts / Notifications on ATFM Measures

Alerts and notifications on ATFM measures will be disseminated through the various means of communications such as email, web portal, AFTN, direct line, etc. Examples of alerts/notifications of ATFM measures can be found in [Annex E](#).

(c) Collaborative Decision Making (CDM) Web Conferences

Collaborative Decision-Making (CDM) allows all members of the ATM community to participate in the ATM decision-making process. Node leaders will arrange and lead the CDM web conferences, where the ADP will be presented and discussed to provide further information on identified constraints. This platform will also provide opportunities for all stakeholders to participate in the decision-making process which may have a potential impact on their operations.

APAC Bi-Weekly ATFM Web Conferences

4.10 To enhance CDM and the sharing of information among ATS and ATFM units in the Asia-Pacific region, **Asia-Pacific Bi-Weekly ATFM Web Conferences** are conducted every 2 weeks **on Thursdays between 0800 – 0900 UTC**. At these conference calls, representatives from ANSPs share the status of their traffic demand, ATM resources, outlook of possible constraints, and ATFM measures for the upcoming 2 weeks. The calls should be participated by ANSP representatives, preferably the ATFM units and/or ATFM planning teams.

4.11 Currently, the hosting of these conference calls rotates between AEROTHAI, CAAS, and HKCAD. The host of each conference call will send **notifications** to inform participants of the access link for the conference.

4.12 To facilitate a structured sharing by participating units, representatives shall submit their organizations' updates prior to each call by filling the form at <https://bit.ly/apac-biweekly-msform>.

4.13 Consolidated updates can be accessed via a Shared **Microsoft Excel** Sheet at <https://bit.ly/apac-bi-weekly-report>, where users can search for the latest update from each organization.

4.14 To ensure the updates have been entered into the reporting form correctly, representatives are encouraged to review their latest update on the consolidated updates sheet (4.13) prior to each call. Should the latest update be incorrect, the representative should re-submit their update through the reporting form (4.12).

4.15 Note that the reporting form and the reporting sheet is an interim tool until a more suitable, flexible, and secure CDM platform or a network of CDM platforms for the region can be developed. This interim tool is hosted by **CAAS**.

Flight Plans and ATS Messages

4.16 To ensure that ATFM can balance demand and capacity effectively, up-to-date flight information is required to anticipate the traffic demand. Air traffic demand can be determined from sources such as airport flight schedules/slots, airline schedules, flight plans, ATS messages and various surveillance sources.

4.17 The submission of timely flight plans together with ATS messages such as DLA, CNL, CHG and DEP helps ensure accuracy in demand prediction. This also allows ATFM units to derive an effective ATFM measure when required. The transmission of DEP messages provides ATFM operations with accurate updates of the predicted demand and facilitates the verification of ATFM measure adherence for the Initiating ATFM unit, as well as allowing statistical analysis for post operations review.

4.18 In view of the above, Airspace Users should adhere to the following:

- (a) Except where necessary for operational or technical reasons, FPL should be submitted not less than 3 hours before EOBT,***
- (b) DLA message should be originated when the departure of an aircraft, for which basic flight plan data (FPL or RPL) has been sent, is delayed by 15 minutes or more after the EOBT contained in the basic flight plan,***
- (c) CHG and CNL messages are to be promptly originated in accordance with the provision of ICAO Doc 4444 Procedures for Air Navigation Services (PANS-ATM) 11.4.2.2, and***

(d) DEP messages are to be transmitted in accordance with the provision of ICAO Doc 4444 Procedures for Air Navigation Services (PANS-ATM) 11.4.2.2.

Exemption of Flights from ATFM Measure(s)

4.19 States/Administrations and their ATFMUs may choose to prioritize or exempt certain classes of flights from ATFM measures. Examples of such flights include, inter alia:

- (a) Flights experiencing an emergency, including aircraft subjected to unlawful interference,
- (b) Flights in search and rescue or firefighting missions,
- (c) Urgent medical evacuation flights specifically declared by medical authorities where flight delays would put the life of patients at risk,
- (d) Flights with “Head of State” status, and
- (e) Other flights specifically identified by appropriate authorities.

4.20 Additionally, considerations should be given to aircraft status and the feasibility of complying with the ATFM measure at the time it is initiated, with exemption granted appropriately. As an example, subjecting airborne aircraft or aircraft on taxi to a GDP is not feasible and thus should either be granted exemption from CTOT or given an alternative ATFM measure instead.

ATFM Performance Assessment

4.21 Level 3 ANSPs, with the activation of ATFM measure(s), shall ensure that post-operations analysis reports are produced indicating the quality of the ATFM program used. The report should include, inter alia, the following detail:

- (a) Cause(s) of the ATFM measure(s),
- (b) Impact of the ATFM measure(s),
- (c) Adherence to the ATFM measure(s), and
- (d) ATFM measure effectiveness.

4.22 Level 3 ANSPs may also consider using the *Asia/Pacific Recommended Framework for ATFM Post-Operations Analysis* available on the ICAO APAC eDocument website as a basis for ATFM post-operations analysis process. The recommended list of reporting topics in the previous paragraph is aligned with the Recommended Framework.

Failure of the ATFM System

4.23 In the event of an ATFM system failure during the active ATFM period, the ATFMU responsible for the ATFM measure shall advise relevant stakeholders of the cancellation of active ATFM program and of any alternative ATFM measures to be activated. If no other ATFM measures are activated, Airspace Users should be advised to operate based on their normal schedules.

Safety Management System for ATFM Implementation and Operations

4.24 The introduction of ATFM may introduce changes to existing procedures for stakeholders. ANSPs should evaluate the need to apply safety management system process when implementing ATFM in line with existing provisions in the PANS-ATM. SMS process includes identification of hazards during ATFM operations. Hazards identified by stakeholders during the ATFM operations should be raised to the ATFMU/ANSP concerned for follow up actions in accordance with the safety management policies of the respective ANSPs. It is generally accepted that an ATFM system and process is not safety critical and does not need to meet the level of safety requirements of an ATS process and an ATM automation system, but it is mission critical.

Ground Delay Program (GDP) Procedure

4.25 Currently the AMNAC project focuses mainly on the use of ***Ground Delay Program (GDP)*** at departure points to manage the flow of inbound traffic into constrained/congested resources (airports and airspace). This is done by allocating departure (ATFM) slots or Calculated Take-Off Times (CTOTs) to flights. The allocation of CTOTs should give priority to flights according to the order of their expected entries into the location at which the ATFM measure will apply.

4.26 The effectiveness of GDP to address demand-capacity imbalance relies on stakeholders fulfilling their roles and responsibilities in accordance with the agreed common procedures. When a GDP is in place, stakeholders shall adhere to the procedures described in this section.

ATFM Daily Plan (ADP) Publication and CDM Conference

4.27 The GDP process would be triggered by the ***Initiating ATFMU***. Having determined that a GDP needs to be put in place to regulate arriving traffic (into either airport or airspace volume), the Initiating ATFMU shall communicate the intention via ADP per specification in para. 4.9. When possible (e.g. with enough lead time to the program), a tactical CDM conference should be conducted to provide clarification and detailed information on the planned ATFM measures. The CDM conference will also provide the Initiating ATFMU with a better understanding of other constraints stakeholders may be experiencing.

4.28 The initiating ATFMU shall ensure that the ADP is distributed to all ATFM nodes in the network (refer to [Annex A](#) for contact information) to ensure all ATFM nodes are aware of the expected GDP and ATFM delays that may be placed on flights departing and transiting their FIRs. Each ATFM Node Leader should determine the requirement for local distribution of the received ADP as appropriate.

CTOT Dissemination and Publication

4.29 After the CDM conference is completed, the Initiating ATFMU **should publish CTOTs not less than 90 minutes before the flight's initial EOBT.**

4.30 When extenuating circumstances such as unforeseen weather disruptions or sudden infrastructure outages necessitate an activation of a GDP with shorter CTOT dissemination lead time, the Initiating ATFMU should seek an alternative ATFM measure such as Ground Stop (GSt) or Minutes-in-Trail (MINIT) as a "stopgap" measure while preparing for a GDP to take effect to minimize the instances of short CTOT lead time. However, when it is unavoidable and CTOTs are disseminated to some flights with shorter lead time, Facilitating ATFMU should attempt to facilitate compliance insofar as possible while not placing undue burden on the Airspace User. When conducting post operation analysis, the Initiating ATFMU should also take into consideration the CTOT dissemination lead time when assessing CTOT compliance against a Facilitating ATFMU.

4.31 To cater for the different ATFM support system and processing criteria, distribution of CTOT information can be done in batches according to arrival times or points of departure or be delivered singularly to individual flights. See [Annex G-1](#) for the diagram of the process.

4.32 Stakeholders, on receipt of CTOT, shall trigger follow-up actions accordingly:

- (a) **Arrival Airport Operator**, having noted that arriving flight(s) with CTOT would have different landing and in-block times from schedule, may make adjustments to gate allocation if necessary.
- (b) **Facilitating ATFMU** shall inform ATC at the departure airports (if located at the departure FIR) / affected sectors (if located at the intermediate FIR) of relevant CTOTs.
- (c) **Departure Airport Operator**, having noted the CTOTs, may adjust their gate planning, considering the possible delayed push-back due to CTOT compliance attempt.
- (d) **Airspace Users**, on receiving their CTOTs, should acknowledge the receipt and shall inform affected flight crews and relevant operational personnel of the ATFM delay required.

4.33 The Initiating ATFMU shall also notify the ATS units supporting arrival airports of the GDP in place. This would allow close coordination between the Initiating ATFMU and ATS units for the effective support of the GDP. See [Annex G-2](#) for details.

CTOT Information Delivery

4.34 In line with the distributed cross-border ATFM concept of operation, members can operate different ATFM systems and interfaces but collaborate and collectively share information necessary for the success of cross border ATFM operations. Members may select the desired/appropriate method of delivering CTOT information to other stakeholders, while keeping in mind the compatibility and capability at the receiver's end.

4.35 Currently, the following methods are used by Level-3 ANSPs to deliver CTOT information to stakeholders:

- Web portal
- E-Mail
- AFTN/AMHS Messages*
 - o Slot Allocation Message (SAM)
 - o Slot Revision Message (SRM)
 - o Slot Cancellation Message (SLC)

**AFTN message templates are based on the Asia/Pacific AFTN/AMHS-Based Interface Control Document for ATFM which has been adapted from the EUROCONTROL ATS Data Exchange Presentation (ADEXP). The ICD can be found on ICAO Asia/Pacific Regional Office's e-Document webpage ([here](#)).*

4.36 [Annex F](#) lists the CTOT delivery methods employed by each Level-3 ANSP.

4.37 To support enhanced integration between ATFM system and other ATM processes and systems such as the ATC automation, pre-departure sequencer (PDS) or departure manager (DMAN), and the airport collaborative decision making (A-CDM) process, Level-3 ANSPs are encouraged to distribute CTOT information using SAM/SRM/SLC messages over AFTN/AMHS based on the Asia/Pacific AFTN/AMHS-Based ICD mentioned above.

4.38 When delivering CTOT information using SAM/SRM/SLC messages over AFTN/AMHS, one of the fields available for use is REGCAUSE where codes representing the reason for the ATFM measure can be provided. The REGCAUSE codes, adapted from EUROCONTROL ADEXP, is provided in Annex XX as a guideline for harmonized use in the AMNAC network.

4.39 In the near future, it is anticipated that the best means of information exchange will be based on System-Wide Information Management (SWIM) technology which will allow for machine-readable system-to-system information exchange supporting high degree of automation as well as future evolution of ATFM operations in an FF-ICE/TBO environment. The Technical Subgroup of the AMNAC Core Team has been working toward this SWIM-based ATFM system-to-system information exchange, and updates will be regularly provided to the AMNAC members.

CTOT Management and Lead Time Requirements

4.40 With the GDP activated and CTOT distributed, the Initiating ATFMU shall maintain an open communication line to support enquiries and requests from stakeholders. The communication line can be phone, web/teleconference, or e-mails if equipped with appropriate alerting mechanism. The communication channels shall be announced to stakeholders, preferably in the distributed ADP, and shall be closely monitored while the GDP is active.

4.41 When the crew of a flight recognizes that they are unable to comply with CTOT, a series of coordination should be triggered to request a revised CTOT from the Initiating ATFMU:

- (a) **Flight Crew / Flight Operations / Ground Handler** should coordinate per airline-specific coordination procedure to lodge a request for a revised CTOT to the Facilitating ATFMU, who will then coordinate with the Initiating ATFMU to obtain a revised CTOT and deliver back. A revised CTOT will be delivered to both Facilitating ATFMU and the airline's Flight Operations. Flight Crew can obtain the revised CTOT from either their Flight Operations or Facilitating ATFMU (possibly via ATC).
- (b) **Facilitating ATFMU** shall acknowledge the request for change and coordinate with Initiating ATFMU on behalf of the airlines. Once the Initiating ATFMU has responded with the revised CTOT, the ATFMU shall acknowledge the change and inform ATCs and airport stakeholders of the change in departure time for the flight(s) concerned for their gate and resource planning. ATC shall facilitate departure of the flight(s) based on the revised CTOT.
- (c) **Initiating ATFMU** shall assess the latest development in demand prediction and best facilitate the slot substitution request coordinated by Facilitating ATFMU. They shall update all relevant stakeholders with the latest CTOT information after the substitution had been made. The Initiating ATFMU shall also inform their local stakeholders in the change of arrival timing for the flight(s) concerned for their gate and resource planning.

(See Annexes [G-4](#), [G-5](#), [G-6](#) and [G-7](#) for detail of the above procedure)

4.42 A revision of CTOT should also take into consideration the operational restrictions airspace users and airport operators are subjected to. To mitigate disruptions from insufficient reaction time for the processing of revised CTOT, stakeholders should lodge CTOT revision request as soon as practicable. In issuing a revised CTOT, the Initiating ATFMU should ensure that the revised CTOT is not too early as to render stakeholders unable to react to it. **Table 8** specifies conditions for the revised CTOT.

Changes Initiated by	Earliest Revised CTOT Allowable	
	Revised CTOT is EARLIER	Revised CTOT is LATER
<i>Airspace User</i>	Current time + [max STT* + Buffer] New CTOT > Current time + 30 minutes	N/A
<i>Initiating ATFMU</i>	Current time + [reaction time] New CTOT > Current time + 45 minutes	

Table 8 - Lead Time Requirement for CTOT Revision Processing

*Max STT refers to maximum standard taxi-out time used in CTOT calculation among the airports in the network. For current operations, the maximum STT is 20 minutes.

Revision and Cancellation of GDP

4.43 When the Initiating ATFMU determines that the current GDP is insufficient to balance demand and capacity or the projected capacity allows for a relaxation of the restriction at the ATM resource, the Initiating ATFMU shall issue a revision of the GDP if able. The Initiating ATFMU shall determine the revised operational capacity and GDP period. This information shall be disseminated, with the appropriate intention stated in the revised ADP to all stakeholders when possible. The Initiating ATFMU shall then publish/distribute the revised CTOTs and inform all stakeholders involved to note the revisions. On receipt of the revision notification, stakeholders trigger the follow up action accordingly as depicted in para 4.32.

4.44 The Initiating ATFMU shall also notify the ATS units supporting arrival airports of the revision to allow close coordination in the revised ATFM measure support. See [Annex G-8](#) and [Annex G-9](#) for detail.

4.45 Upon assessment that a GDP is no longer required for demand-capacity balancing, the Initiating ATFMU shall inform the Facilitating ATFMU and stakeholders of the cancellation of the program. Upon receipt of the cancellation confirmation:

- (a) **Facilitating ATFMU** shall acknowledge the cancellation and inform stakeholders on the departure side. Departure ATS units and airport stakeholders shall collaboratively facilitate based on normal operations, ensuring full utilization of ATC and departure airport capacity.
- (b) **Airspace Users** shall acknowledge the cancellation and inform the flights previously affected by the GDP. Flight crews shall then plan their departures based on normal operation and work in collaboration with Departure ATS units for their clearance.
- (c) **Initiating ATFMU** shall inform their local ATS units and stakeholders of the cancellation of GDP to allow reassessment and re-planning of resources.

Re-Time of Flights

4.46 When a flight is expected to deviate from its initial flight plan, Airspace Users shall disseminate appropriate information to the Initiating ATFMU immediately, as the accuracy of demand prediction is dependent on the timely submission of flight plans and ATS messages. The Initiating ATFMU, on receipt of the FPL and ATS messages (change, delay or cancel), shall monitor changes in the demand prediction and, if necessary, publish a revised ATFM measure that best regulate traffic flow while maximizing capacity. See [Annex G-12](#) for detail.

Multiple ATFM Measures

4.47 As far as practicable, individual aircraft should not be subjected to more than one tactical ATFM measure. This is to ensure that a flight is not subjected to potentially unreasonable cumulative delay. Insofar as possible, the Initiating ATFMU should attempt to conduct CDM conference prior to activation of every ATFM program to allow other ATFMUs to bring forward any potential issue and conflicting measure(s) for resolution prior to the publication of CTOTs.

4.48 Should a CDM conference not be possible, and a conflicting ATFM measure is detected by the Facilitating ATFMU, consideration should first be given to using CTOT compliance window in resolving the conflict. If utilizing the compliance window alone does not suffice and the conflict remains, the Facilitating ATFMU should coordinate with the Initiating ATFMU owning the least-restricting measure for an exemption.

- (a) **Facilitating ATFMU** should coordinate with the Initiating ATFMU owning the least-restricting ATFM measure for an exemption.
- (b) **Initiating ATFMU**, upon receipt of a legitimate exemption request, shall exclude the particular flight from the GDP and not subject the flight to a conflicting restriction. If the request is received after the publication of CTOT and re-modeling of the GDP with the particular exclusion is not efficient, Initiating ATFMU shall inform ATS units of the scenario and manage the flight at the tactical level.
- (c) **Facilitating ATFMU**, following successful coordination to resolve conflicting ATFM measures, shall inform Airspace Users of the exemption and facilitate departures accordingly.

(See [Annex G-10](#) and [Annex G-11](#) for detail of the above procedure)

4.49 As a general guideline, the comparison of ATFM measure severity should be based on the ATFM delay incurred. An ATFM measure with higher ATFM delay is generally associated with a more restrictive constraint. Conventionally, an ATFM measure to regulate flights into an arrival airport tends to be more restrictive and thus takes priority; however, variance from this can occur in different parts of the world. In Asia-Pacific, it is conceivable

that an airspace congestion / constraint may take precedence due to the geographical nature of the region (small FIRs). Collaboration during this process could result in a flight being included in the less “severe” ATFM measure as per agreement with stakeholders.

GDP Coordination Language Guidance

4.50 To assist in the communication between ATFMUs, airspace users, and airport operators for GDP coordination, a guideline on the language use and a sample list of basic phrases that can be used in most key actions relating to GDP facilitation can be found in *Asia/Pacific Basic Phrases for Cross-Border ATFM Coordination (Working Draft, 2020)* accessible from ICAO APAC e-Document webpage. The list of phrases in the guidance document is not exhaustive and cannot cover all possible nuances in the tactical management and negotiation of an ATFM measure but provides a harmonized guideline on which communication can be based.

Compliance Management

4.51 Flight’s compliance with CTOT is a shared responsibility between Airspace Users and departure ATS units. Airspace Users should plan their flights to be ready for take-off (conventionally at the RWY holding point) **at the assigned CTOT**. However, operational variance in airport ground conditions and ATC capabilities are allowed and accounted for in the **CTOT compliance window**.

4.52 For the current operations, CTOT compliance windows are defined as:

- (a) **-5 / +10 minutes** for CTOTs assigned in response to **constrained arrival airports**.
- (b) **-5 / +5 minutes** for CTOTs assigned in response to **constrained airspace volumes**.

The defined compliance windows are in accordance with the conclusion from ICAO Asia-Pacific ATM Sub-Group (*Conclusion ATM/SG/6-2: Recommended CTOT Compliance Window*) and are to be used for the time being. Compliance windows may be revisited as the regional implementation matures.

4.53 ANSPs are encouraged to develop and implement local procedures to facilitate and ensure compliance to CTOT at an airport of departure as described above.

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Annex A: AMNAC Participation and Operational Contact Information

Last Update: 01 November 2024

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
AEROTHAI <i>Thailand</i>	3 (Core Team)	All aerodromes	VTBBZDZX	H24 Operations: <ul style="list-style-type: none"> - Bangkok ATFMU – atfmu@bobcat.aero 	H24 Operations: +66 2287 8024 +66 8 1829 5256
				Project POC: <ul style="list-style-type: none"> - Piyawut T – piyawut.ta@aerothai.co.th - Dudsadee S – dudsadee.su@aerothai.co.th - Sugoon F – Sugoon.fu@aerothai.co.th 	
ATMB CAAC <i>China</i>	3 (Core Team)	ZGGG ZGSZ ZJHK ZJSY	ZJSYZQZX ZJHKZRZX	H24 Operations: <ul style="list-style-type: none"> - Sanya ATFMU – chinaatfmu@163.com 	
				Project POC: <ul style="list-style-type: none"> - Fu Yongqiang – hnsfyq@gmail.com - Jiang Huan – atmbint@gmail.com 	
CAAS <i>Singapore</i>	3 (Core Team)	WSSS	WSJCZQZX	H24 Operations: <ul style="list-style-type: none"> - Singapore ATFMU – caas_atfmu@caas.gov.sg 	H24 Operations: +65 6241 4142 +65 8733 8357

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
				Project POC: <ul style="list-style-type: none"> - He Jialing – he_jialing@caas.gov.sg - Zhang Huanbin – zhang_huanbin@caas.gov.sg - Chng Xue Li – chng_xue_li@caas.gov.sg 	
HKCAD <i>Hong Kong China</i>	3 (Core Team)	VHHH VMC	VHHKZDZX	H24 Operations: <ul style="list-style-type: none"> - Hong Kong ATFMU <ul style="list-style-type: none"> o hkatfmu@cad.gov.hk o atmdflm@cad.gov.hk 	H24 Operations: +852 29106275 +852 29106859
				Project POC: <ul style="list-style-type: none"> - Anfernee Poon – awhpoon@cad.gov.hk - Ella Sit – eymsit@cad.gov.hk - Wicko Fok – wctfok@cad.gov.hk 	Project POC: +852 29106289 +852 29108104 +852 29108117
CATS <i>Cambodia</i>	3	VDPP VDSA VDSV	VDPPZDZX	H24 Operations: <ul style="list-style-type: none"> - Phnom Penh ATFMU – pnhatfmu@cats.com.kh 	H24 Operations +855 16771130
				Project POC: <ul style="list-style-type: none"> - Vannak Khorn – vannakk@cats.com.kh - Vichheka Buntong – vichhekab@cats.com.kh - Damrong Ngel – damrongn@cats.com.kh - Seyma S – seymas@cats.com.kh - Saichon P – saichonp@cats.com.kh - Sivarak C – sivarakc@cats.com.kh 	

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
ATMO <i>Republic of Korea</i>	3	All Aerodromes	RKDAZAZS	H24 Operations: <ul style="list-style-type: none"> - ROK ATFMU <ul style="list-style-type: none"> o rokatfm@gmail.com o atcc@korea.kr 	H24 Operations +82 53 668 0453 +82 53 668 0454
				Project POC: <ul style="list-style-type: none"> - Sangwoo Han - sangwoohan@korea.kr - Woojin Kim - woozin@korea.kr 	
VATM <i>Viet Nam</i>	3	VVTS VVNB VVDN VVIC VVCR VVPQ VVVD VVVH VVPB VVCT VVDL	VVVVZDZX	H24 Operations: <ul style="list-style-type: none"> - Viet Nam ATFMU <ul style="list-style-type: none"> o atfm@vatm.vn o vatfmc@gmail.com 	H24 Operations +84 2432127893
				Project POC: <ul style="list-style-type: none"> - Mr. Chu Minh Duoc - chuduoc@vatm.vn - Mr. Pham Xuan Thanh - phamthanh.ats@gmail.com - Mr. Nguyen Dong Anh - nguyendonganhvatom@gmail.com - Mr Nguyen Ba Tuan - batuanatm@gmail.com 	Project POC: +84 978931669 +84 382100555 +84 983976966 +84 34599567

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
AirNav <i>Indonesia</i>	2	WIII WADD WARR		H24 Operations: <ul style="list-style-type: none"> - WIII - atfm.jatsc@airnavindonesia.co.id - WADD - atfm.dps@airnavindonesia.co.id - WARR - atfm.sub@airnavindonesia.co.id Project POC: <ul style="list-style-type: none"> - Hari Purwanto - hari.purwanto@airnavindonesia.co.id - Rachmat Widiyana - rachmat.widiyana@airnavindonesia.co.id - Faisal Riza - faisal.riza@airnavindonesia.co.id - Jiwitra Kurniasa - imade.jiwitra@airnavindonesia.co.id 	
CAAM <i>Malaysia</i>	2	WBGG WBKK WMKI WMKJ WMKL WMKP	WMKKZQZX WMKKZFZX	H24 Operations: <ul style="list-style-type: none"> - CAAM ATFMU <ul style="list-style-type: none"> o atfm@caam.gov.my - WMKK Team <ul style="list-style-type: none"> o KLIASPVR@caam.gov.my o acd.klia@gmail.com 	

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
		WMSA WMKK		Project POC: <ul style="list-style-type: none"> ○ Muhammad Firdaus Bin Ismail – firdaus.ismail@caam.gov.my ○ Nur Afiqah Binti Jusoh – nurafiqah@caam.gov.my ○ Mohd Norhidayat Bin Mohamad Khalid - hidayat.khalid@caam.gov.my ○ Mohd Husrozaqiha Bin Mohammad Hussin husrozaqiha@caam.gov.my 	
CAAP <i>The Philippines</i>	2	RPLL RPLC RPVM RPSP	RPHIZDZX	H24 Operations: <ul style="list-style-type: none"> - Manila ATFMU (2300 – 1100 UTC) <ul style="list-style-type: none"> ○ atfm@caap.gov.ph - Manila ACC (beyond ATFMU ops hours) <ul style="list-style-type: none"> ○ macc.supervisors@gmail.com 	
				Project POC: <ul style="list-style-type: none"> - Virgilio R. Cipriano – rv.atfmph@gmail.com - Tanya Lemuria T. Sullivan – ts.atfmph@gmail.com - Joseph Tyrone Arias – jtrakx06@gmail.com 	
DCA Myanmar <i>Myanmar</i>	2	VYYY VYMD VYNT	VYYFZQZX VYYYZTZX VYMDZTZX VYNTZTZX	H24 Operations: <ul style="list-style-type: none"> - Yangon ATC Tower - yiatower2023@gmail.com - Yangon ACC - yyyy.wso@gmail.com 	

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
				Project POC: <ul style="list-style-type: none"> - Aung Zaw Thein - aungzawtheinatm@gmail.com - Aung Myint Thein - aungmyintthein.dca@gmail.com - Tint Wai - dcatint@gmail.com 	
LANS <i>Lao PDR</i>	1			H24 Operations: <ul style="list-style-type: none"> - (N/A) 	
				Project POC: <ul style="list-style-type: none"> - Mr. Maity SYLITHAMMAVONG - maitymt1975@gmail.com - Mr. Xaygnasith XOUYMANIVONG - xaygnasith@gmail.com - Mr. Khamphanh VIENGMIXAY - viengmixaykhamphan@gmail.com 	
ASA <i>Australia</i>	ADP Exchange Trial			H24 Operations: <ul style="list-style-type: none"> - ASA ATFMU – atfmu@AirservicesAustralia.com - ASA National Capacity Coordinator, Duty Line Manager (2000 – 0900UTC) – asa_ncc_dlm@AirservicesAustralia.com 	H24 Operations +612 6268 4443 +612 6268 5662

ANSP Country	Participation Level	Participating Aerodromes	Operational AFTN Address	Contact E-Mail Address	Contact Number
				Project POC: - Mr. Simon Godsmark – Simon.Godsmark@AirservicesAustralia.com	
JANS <i>Japan</i>	EATMCG + GDP Trial				
AAI <i>India</i>	Observer + ADP Trial			H24 Operations: - Central Command Centre – ccc_catfm@aai.aero Project POC: - Mr. Shibu Robert – gm-atfm@aai.aero	

Annex B: Standard Taxi-out Time (STT) for Participating Aerodromes

Last Update: **01 November 2024**

ANSP Country	Airport	STT
AEROTHAI <i>Thailand</i> <i>*Int'l Aerodromes</i>	VTBD*	15
	VTBS*	20
	VTBU*	8
	VTCC*	10
	VTCT*	9
	VTSB*	6
	VTSG*	12
	VTSM*	8
	VTSP*	18
	VTSS*	10
	VTBK	5
	VTBL	5
	VTBO	5
	VTBP	10
	VTCH	8
	VTCL	5
	VTCL	5
	VTCP	6
	VTPB	9
	VTPH	12
	VTPI	10
	VTPM	7
	VTPN	5
	VTPO	5
	VTPP	5
	VTPT	5
	VTSC	6
	VTSE	8
	VTSE	8
	VTSF	8
	VTSH	5
	VTSH	5
	VTSK	15
	VTSN	5
VTSR	6	
VTST	8	
VTST	8	
VTUD	8	
VTUI	8	
VTUI	8	
VTUK	8	
VTUL	6	
VTUL	6	
VTUN	12	

ANSP Country	Airport	STT
	VTUO	10
	VTUQ	15
	VTUU	12
	VTUV	15
	VTUW	15
ATMB CAAC <i>China</i>	ZGGG	20
	ZGSZ	20
	ZJHK	15
	ZJSY	15
	ZSPD	20
	ZSSS	20
	ZBAA	20
	ZBAD	20
All other aerodromes	15	
CAAS <i>Singapore</i>	WSSS	20
HKCAD <i>Hong Kong China</i>	VHHH	20
	VMMC	15
CATS <i>Cambodia</i>	VDPP	10
	VDSA	10
	VTSV	5
ATMO <i>Republic of Korea</i>	RKSI, RKSS	25
	RKPC,RKTN,RKPK,RKNW	15
	Others	10
AirNav <i>Indonesia</i>	WIII	16
	WADD	15
	WARR	16
CAAM <i>Malaysia</i>	WBGG	10
	WBKK	12
	WMKI	10
	WMKJ	10
	WMKL	9
	WMKP	12
	WMSA	6
	WMKK	25
CAAP <i>The Philippines</i>	RPLL	12
	RPLC	12
	RPVM	10
	RPSP	10
DCA Myanmar <i>Myanmar</i>	VYYY	
	VYMD	

ANSP Country	Airport	STT
	VYNT	
VATM <i>Viet Nam</i>	VVTS	15
	VVNB	15
	VVDN	9
	VVCI	12
	VVCR	9
	VVPQ	6
	VVVD	15
	VVVH	10
	VVPB	10
	VVCT	10
	VVDL	6
JANS <i>Japan</i>		

Note: A default STT of 20 minutes shall be used for other airports in AMNAC member States not specified in this table.

Annex C: Readiness Checklist

C-1 Level 3 ANSP

Checklist Item	Rationale	Recommended Actions
Operations		
Capacity Assessment Procedure	To ensure that the ANSP can accurately assess airport and airspace capacity under various situations, and thus able to implement appropriate ATFM measures in support of the operational capacity	<ul style="list-style-type: none">○ Implement a process to assess and declare strategic capacity for ATM resources including<ul style="list-style-type: none">○ Airspace sectors○ Major aerodromes○ Implement a process to regularly review the strategic capacity at the ATM resources○ Implement a process for ATS units to assess and inform the ATFM unit of operational capacity for ATM resources, considering dynamic factors such as manpower, infrastructure, and meteorological situations

Checklist Item	Rationale	Recommended Actions
Communication Procedure	To ensure ADP, ATFM measures and CTOT information can be communicated in a timely manner among ATFMU and operational ATS units	<p>ADP Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to ensure the receipt of the ADPs published by other ATFM units ○ Establish a procedure to distribute the published ADPs to ATS units and other ATFM units as appropriate <p>External CTOT Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to receive CTOTs – or other ATFM restrictions/requirements – from other ATFM units, and communicate them to local ATS units and stakeholders for effective compliance facilitation ○ Implement a process to support CTOT management for local stakeholders, including receiving the management (e.g. CTOT revision) requests and coordinating with initiating ATFM units <p>CTOT Distribution and Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to distribute CTOTs – or other ATFM restrictions/requirements – to other ATFM units and external stakeholders in a timely manner ○ Implement a process to support CTOT management based on requests from other ATFM units as well as based on the changing of ATFM requirements

Checklist Item	Rationale	Recommended Actions
ATFMU Staffing	To ensure that the ATFMU is operational and staffed with appropriate personnel, and able to initiate ATFM measures when needed	<ul style="list-style-type: none"> ○ Establish an ATFM unit – or an ATFM position – to manage strategic, pre-tactical, and tactical ATFM operations within the area of responsibilities during the associated operating hours ○ Staff the ATFM unit/position with adequately trained personnel ○ Develop human resource management system/process to ensure the ATFM unit/position is adequately staffed for operations
Staff Training – ATCs	To ensure that ATCs understand the ATFM concept of operations and are able to facilitate departures for flights regulated by CTOTs. This also includes training on CTOT confirmation through clearance delivery.	<ul style="list-style-type: none"> ○ Develop and implement appropriate ATFM training for ATC officers – and other relevant operational staff – to ensure they can support ATFM processes effectively
Staff Training – ATFMU Managers and FMPs	To ensure ATFMU staff members are appropriately trained and capable of facilitating ATFM measures effectively. This includes demand-capacity balance assessment, initiation and administering of ATFM measure, and provision of assistance to stakeholders via various communication channels.	<ul style="list-style-type: none"> ○ Develop and implement in-depth ATFM training programs, covering required knowledge to carry out strategic, pre-tactical, and tactical ATFM operations effectively
System Support		
ATFM Support System	To ensure that the ATFM Support System that is able to (1) accurately predict demand against capacity, (2) generate and disseminate CTOT information, and (3) allow user to interact with CTOT by changing, adding, canceling, and swapping ATFM slots.	<ul style="list-style-type: none"> ○ Develop a Concept of Operations (ConOps) for ATFM operations, based on the concept employed within the AMNAC network ○ Develop or procure an ATFM system that can support strategic, pre-tactical, and tactical ATFM operations in alignment with the ConOps <ul style="list-style-type: none"> ○ Specific for AMNAC operations, the system should be able to support Ground Delay Program (GDP) including the generation, distribution, and management of CTOTs

Checklist Item	Rationale	Recommended Actions
Capacity Assessment Tool (if needed)	To aid ATFMU personnel in assessing resource (airport / airspace) capacity accurately.	<ul style="list-style-type: none"> ○ If necessary, develop or procure tool(s) to support strategic and operational capacity assessment for major ATM resources within the area of responsibility
CTOT Distribution Channels	To ensure ATFMU can disseminate CTOT information to relevant stakeholders in a timely manner through appropriate channels (Web Portal, E-Mail, AFTN)	<ul style="list-style-type: none"> ○ Ensure that the ATFM system is able to distribute CTOT information through channels specified in this COP
Web Conference and Help Desk Facility	To ensure ATFMU can host online web conference for the CDM process and also provide Help Desk for stakeholders to coordinate and/or request assistance during the ATFM measure	<ul style="list-style-type: none"> ○ Establish channels to conduct regular ATFM web or teleconference with other ATFM units, ATS units, and external stakeholders as appropriate ○ Establish channels to support ATFM restriction (e.g., CTOT) management for stakeholders especially during tactical ATFM operations
Awareness / Outreach		
Engagement with Local Stakeholders (Airlines and Airport Operators)	To exchange knowledge on ATFM concept of operations and procedures between ANSP and Aircraft Operators / Airport Operators and ensure understanding among all stakeholders	<ul style="list-style-type: none"> ○ Establish forum(s) to engage with local stakeholders on matters related to ATFM operations, preferably on a regular basis, to ensure feedback to the operations are received and issues resolved readily
Awareness Documents / AIP / AIP Supplement / NOTAM	To ensure information regarding the ATFM implementation gets distributed to relevant stakeholders and can affect changes in their operations to support the progress	<ul style="list-style-type: none"> ○ Conduct Operational Trials with the AMNAC Core Team in accordance with the procedure outlined in this COP, using the trials to communicate the implementation of Level 3 capabilities to other ANSPs appropriately ○ Publish required documents, e.g., AIP or AIP Supplement, as appropriate to national regulation to ensure stakeholders are aware of the implementation with appropriate lead time to affect changes within their organizations

Checklist Item	Rationale	Recommended Actions
Regulator Engagement	To ensure that regulator is up to date with the progress of the implementation, and can assist in any regulatory administration necessary	<ul style="list-style-type: none"> ○ Engage with national civil aviation regulator to establish an understanding of ATFM operations and determine appropriate regulatory framework governing the operations, including enactment of legislation support if required

C-2 Level 2 ANSP

Checklist Item	Rationale	Recommended Actions
Operations		
Internal Communication Procedure	To ensure ADP and CTOT information can be communicated in a timely manner among ATFM Point of Contact and operational ATS units	<p>ADP Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to ensure the receipt of the ADPs published by other ATFM units ○ Establish a procedure to distribute the published ADPs to ATS units and other ATFM units as appropriate <p>External CTOT Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to receive CTOTs – or other ATFM restrictions/requirements – from other ATFM units, and communicate them to local ATS units and stakeholders for effective compliance facilitation ○ Implement a process to support CTOT management for local stakeholders, including receiving the management (e.g. CTOT revision) requests and coordinating with initiating ATFM units

Checklist Item	Rationale	Recommended Actions
ATFM Point of Contact	To ensure that there is an established Point of Contact for ATFM operational information and that the Point of Contact can disseminate information to relevant units as appropriate	<ul style="list-style-type: none"> Establish Point(s) of Contact (POCs) for ATFM matters both at the strategic and operational levels, with strategic POC(s) being responsible for engagement with other AMNAC members at meetings/forums while operational POC(s) being responsible for day-to-day coordination relating to the facilitation of ATFM measure compliance
Staff Training – ATCs	To ensure that ATCs understand the ATFM concept of operations and are able to facilitate departures for flights regulated by CTOTs. This also includes training on CTOT confirmation through clearance delivery.	<ul style="list-style-type: none"> Develop and implement appropriate ATFM training for ATC officers – and other relevant operational staff – to ensure they can support ATFM processes effectively
System Support		
ATFM Communication Linkage	To ensure that there is an established communication linkage to receive ADP and CTOT information through appropriate channels (Web Portal, E-Mail, AFTN)	<ul style="list-style-type: none"> Develop or procure a system or implement a process to support the communication of ATFM information among relevant units (e.g. ATFM unit or position, ATS units) and local stakeholders (airspace users, airport operators) including: <ul style="list-style-type: none"> The receipt and distribution of ADPs The receipt and distribution of ATFM measure information including CTOTs
Awareness / Outreach		
Engagement with Local Stakeholders (Airlines and Airport Operators)	To exchange knowledge on ATFM concept of operations and procedures between ANSP and Airlines / Airport Operators and ensure understanding among all stakeholders	<ul style="list-style-type: none"> Establish forum(s) to engage with local stakeholders on matters related to ATFM operations, preferably on a regular basis, to ensure feedback to the operations are received and issues resolved readily

C-3 Level 1 ANSP

Checklist Item	Rationale	Recommended Actions
Project Participation		
Participation in Project Progress	To keep up to date with the project progress, through plenary meeting attendance and receipt of distributed information from the project core team	<ul style="list-style-type: none"> ○ Prepare Point(s) of Contact (POCs) on ATFM matters and resources for the POCs to participate in AMNAC meetings and other ATFM-related regional forums
ATFM Education	To educate local stakeholders and personnel on ATFM in preparation for capability upgrade	<ul style="list-style-type: none"> ○ Develop basic ATFM training for operational staff to enhance understanding of ATFM ○ Seek support from the AMNAC Core Team or other training organizations on the matter if required
Awareness / Outreach		
Engagement with Local Stakeholders (Airlines and Airport Operators)	To exchange knowledge on ATFM concept of operations with stakeholders in preparation for the capability upgrade	<ul style="list-style-type: none"> ○ Engage with local stakeholders about the needs for ATFM, and provide basic ATFM training as appropriate
ATFM Information Distribution	To support distribution of information on ATFM initiatives to local stakeholders and help raising awareness on ATFM	<ul style="list-style-type: none"> ○ Develop process to keep local stakeholders up to date on the progress of ATFM implementation in the region

C-4 *Airspace Users*

Checklist Item	Rationale	Recommended Actions
Operations		
Internal Communication Procedure	To ensure ADP and CTOT information can be communicated in a timely manner between Flight Dispatchers, Pilots, and other relevant operational units	<p>ADP Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to ensure the receipt of the ADPs published by ATFM units, and the distribution to relevant operational sections/personnel <p>CTOT Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to receive CTOTs – or other ATFM restrictions/requirements – from ATFM units, and to distribute them to relevant operational sections/personnel including flight crews operating flights subjected to the ATFM measures
ATFM Point of Contact	To ensure that there is an established Point of Contact for ATFM operational information and that the Point of Contact can disseminate information to relevant units as appropriate	<ul style="list-style-type: none"> ○ Establish Point(s) of Contact (POCs) for ATFM matters both at the strategic and operational levels, with strategic POC(s) being responsible for engaging in meetings/forums while operational POC(s) being responsible for day-to-day coordination relating to the ATFM operations
Staff Training – Pilots and Dispatchers	To ensure that Pilots and Flight Dispatchers understand the ATFM concept of operations and are able to appropriately plan departures for flights regulated by CTOTs or coordinate with ATFMU to manage CTOTs if needed	<ul style="list-style-type: none"> ○ Develop and implement appropriate ATFM training for pilots and dispatchers – and other relevant operational staff – to ensure they can interact with the ATFM process effectively
System Support		

Checklist Item	Rationale	Recommended Actions
ATFM Communication Linkage	To ensure that there is an established communication linkage to receive ADP and CTOT information through appropriate channels (Web Portal, E-Mail, AFTN)	<ul style="list-style-type: none"> ○ Develop or procure a system or implement a process to support the communication of ATFM information among relevant operational sections e.g., flight operations, flight dispatch, and flight crews, including: <ul style="list-style-type: none"> ○ The receipt and distribution of ADPs ○ The receipt and distribution of ATFM measure information including CTOTs
<u>Awareness / Outreach</u>		
Engagement with Ground Handlers	To exchange knowledge on ATFM concept of operations and procedures with relevant Ground Handlers and ensure understanding as Ground Handlers can sometimes be vital to aircraft turnaround process for flights regulated by CTOTs	<ul style="list-style-type: none"> ○ Engage with the ground handling agencies responsible for facilitating the turnaround of aircraft on ATFM process, to ensure common understanding on the process and fleet management under an ATFM environment

C-5 Airport Operators

Checklist Item	Rationale	Recommended Actions
<u>Operations</u>		
Internal Communication Procedure	To ensure ADP and CTOT information can be communicated in a timely manner between relevant units for operations	<p>ADP Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to ensure the receipt of the ADPs published by ATFM units, and the distribution to relevant operational sections/personnel <p>CTOT Management</p> <ul style="list-style-type: none"> ○ Establish a procedure to receive CTOTs – or other ATFM restrictions/requirements – from ATFM units, and to distribute them to relevant operational sections/personnel

Checklist Item	Rationale	Recommended Actions
ATFM Point of Contact	To ensure that there is an established Point of Contact for ATFM operational information and that the Point of Contact can disseminate information to relevant units as appropriate	<ul style="list-style-type: none"> ○ Establish Point(s) of Contact (POCs) for ATFM matters both at the strategic and operational levels, with strategic POC(s) being responsible for engaging in meetings/forums while operational POC(s) being responsible for day-to-day coordination relating to the ATFM operations
Staff Training – Airside Operations / Gate Planning	To ensure that Airside Operations / Gate Planning Personnel understand the ATFM concept of operations and are able to appropriately plan gate usage for flights regulated by CTOTs or coordinate with ATFMU to manage CTOTs if needed	<ul style="list-style-type: none"> ○ Develop and implement appropriate ATFM training for relevant operational staff to ensure they can interact with the ATFM process effectively
<u>System Support</u>		
ATFM Communication Linkage	To ensure that there is an established communication linkage to receive ADP and CTOT information through appropriate channels (Web Portal, E-Mail, AFTN)	<ul style="list-style-type: none"> ○ Develop or procure a system or implement a process to support the communication of ATFM information among relevant operational sections e.g., flight operations, flight dispatch, and flight crews, including: <ul style="list-style-type: none"> ○ The receipt and distribution of ADPs ○ The receipt and distribution of ATFM measure information including CTOTs

Annex D: ATFM Daily Plan (ADP) Template

E-MAIL SUBJECT & FILE NAME: **ADP_VTBB_20241015_1**

ORIGINATOR	ICAO 4 LETTER CODE [E.G. VTBB]
DATE / TIME OF ISSUANCE	DD MMM YYYY / HHMM UTC [E.G. 14 OCT 2024 / 0800 UTC]
VERSION	1

CONSTRAINTS AND IMPACT				
LOCATION	APPLICABLE PERIOD (UTC)		DESCRIPTION	CAPACITY IMPACT
	START	END		
AD or FIR ICAO 4 LETTER CODE	DD MMM YYYY HHMM	DD MMM YYYY HHMM	[FREE TEXT]	[FREE TEXT]
VTBS	14 OCT 2024 2300	15 OCT 2024 1100	TFC CONGESTION	AAR = 32
VTBB SECTOR 1S	15 OCT 2024 0200	15 OCT 2024 1100	TFC CONGESTION	(Nil)

ATFM MEASURE			
LOCATION	APPLICABLE PERIOD (UTC)		DESCRIPTION
	START	END	
AD or FIR ICAO 4 LETTER CODE	DD MMM YYYY HHMM	DD MMM YYYY HHMM	[FREE TEXT]
VTBS	14 OCT 2024 2300	15 OCT 2024 1100	GDP FOR FLT DEST VTBS
VTBB SECTOR 1S	15 OCT 2024 0200	15 OCT 2024 1100	GDP FOR FLT INTO 1S DEST VTBD, VTBS, VTBU DURING CONGESTION (FLOW RATE: MINIT = 4)

OTHER INFORMATION
Bangkok ATFMU Contact Information E-Mail: atfmu@bobcat.aero Phone: +66 2287 8024 / +66 2287 8025 CTOT View Page: https://atfm.aerothai.aero

ADP Field Description

Field	Format	Description
Header		
Originator	ICAO 4-letter FIR code	FIR code representing the originator of the ADP
Date/Time of Issuance	DD MMM YYYY / HH MM UTC	Date and time, in UTC, of the issuance of the ADP
Version	Integer	Version number of the ADP, starting from 1
Constraints and Impact		
Location	ICAO 4-letter FIR and sector/waypoint name or aerodrome code	Location of the constrained ATM resource, which could be an aerodrome, a waypoint or sector of an airspace, or an ATS route or route segment
Applicable Period	DD MMM YYYY HHMM	Date and time, in UTC, corresponding to the anticipated start and end of the constraint
Description	Free Text	Description of the constraint at the associated location and time period
Capacity Impact	Free Text	Anticipated impact to the capacity; this can be in the form of capacity number or flow rate or percent reduction. Note: this can be left blank if the issue is traffic congestion with no capacity shortfall
ATFM Measure		
Location	ICAO 4-letter FIR and sector/waypoint name or aerodrome code	Location of the ATM resource for which the ATFM measure is activated, which could be an aerodrome, a waypoint or sector of an airspace, or an ATS route or route segment
Applicable Period	DD MMM YYYY HHMM	Date and time, in UTC, corresponding to the anticipated start and end of the ATFM measure
Description	Free Text	Description of the ATFM measure to be implemented, with affected traffic flows specified
Other Information		
Other Information	Free Text	Any other pertinent information that will be helpful for readers of the ADP, e.g. contact information of the originating ATFMU/ANSP

Annex E: ATFM Alerts / Notification Message Templates

E-1 ADP Dissemination and CDM Web Conference

Subject: ADP_[\[FIR Name\]](#)_[\[Effective Date, yyyyymmdd\]](#)_[\[Version number\]](#)

Dear All,

Please refer to the attached for:

1. ADP - Information on the declared AAR and proposed ATFM Measure
2. Meteorological Information

Due to thunderstorm with rain expected from [\[start time\]](#) to [\[end time\]](#), there is a high potential for ATFM Measure to be initiated for arrivals into [\[ICAO designator for airport\]](#) on [\[date\]](#) from [\[start time\]](#) to [\[end time\]](#)

Action required:

- ATFMUs (Level 2 & 3) please join the CROSS BORDER web conference conducted by [\[Node\]](#) ATFMU at [\[time\]](#) UTC. URL : [\[web conference address\]](#)
- Airlines and Airport Operators participation in the cross border CDM web conference are **OPTIONAL**

No acknowledgement on the **receipt** of this email is required.

If you encounter any issues participating in the web conference, please email [\[Node\]](#) ATFMU at [\[Node's ATFMU email address\]](#)

E-2 CTOT Publication and Slot Management Web Conference

Subject: ATFM OPERATIONS – [Title of Operation] [Node] – CTOTs Publication and Slot Management Web Conference

Dear All,

ATFM Measure will be initiated for arrivals into [ICAO designator for airport] on [date] from [start time] UTC to [end time] UTC.

Calculated Take Off Time (CTOT) Information

Please refer to the following website: [ATFM CTOT information website] to view CTOT information.

Slot Management (If required)

1. Identify the flight(s) and slot you wish to swop. Example:
 - Slot Swop: Flight A and Flight B
 - Open Slot: Flight C and Slot “xx/xxxx”
2. Join the Slot management web conference conducted by [Node] ATFMU to request for slot change. URL :[Web conference address]

Action required:

- Login to web portal using User ID and Password which was provided to the key POCs in your organization (please check with your respective POCs)
- View CTOT information
- Acknowledge the receipt of this email through your ATFM Node leader
- If required, join Slot Management web conference

E-3 Slot Management

Subject: ATFM OPERATIONS – [Title of Operation] [Node] – Slot Management

Dear all,

Please note that the following request for Slot Management is successful.

Slot Swop

- Flight A: Updated CTOT XXXX UTC
- Flight B: Updated CTOT XXXX UTC

Open Slot

- Flight C: Updated CTOT XXXX UTC

Please refer to the following website: [ATFM CTOT information website] to view the updated Calculated Take Off Time (CTOT) information.

E-4 ADP Revision Dissemination

Subject: ADP_[FIR Name]_[Effective Date, yyyyymmdd]_[Version number]

Dear All,

ATFM Measure implemented for arrivals into [ICAO designator for airport] on [date] from [start time] UTC to [End Time] UTC will be **REVISED**.

Due to change in weather conditions, the duration of the ATFM Measure will be extended till [End Time] UTC. With a further reduced **AAR of xx between [start time] UTC to [End Time] UTC**. Please refer to the following website: [ATFM CTOT information website] to view the revised Calculated Take Off Time (CTOT) information.

Action required:

- Login to web portal using User ID and Password which was provided to the key POCs in your organization (please check with your respective POCs)
- View revised CTOT information

E-5 Revised GDP and Slot Management Web Conference

Subject: ATFM OPERATIONS – [Title of Operation] [Node] – CTOT Publication (Revision) + Slot Management Web Conference

Dear All,

ATFM Measure for arrivals into [ICAO designator for airport] on [date] has been **REVISED** from [start time] UTC to [End Time] UTC

Revised Calculated Take Off Time (CTOT) Information

Please refer to the following website: [\[ATFM CTOT information website\]](#) to view CTOT information.

Slot Management (If required)

3. Identify the flight(s) and slot you wish to swop. Example:
 - Slot Swop: Flight A and Flight B
 - Open Slot: Flight C and Slot “xx/xxxx”
4. Join the Slot management web conference conducted by [Node] ATFMU to request for slot change. URL : [\[Web conference address\]](#)

Action required:

- Login to web portal using User ID and Password which was provided to the key POCs in your organization (please check with your respective POCs)
- View **REVISED** CTOT information
- Acknowledge the receipt of this email through your ATFM Node leader
- If required, join Slot Management web conference

Annex F: CTOT Distribution Channels by Level-3 ANSPs

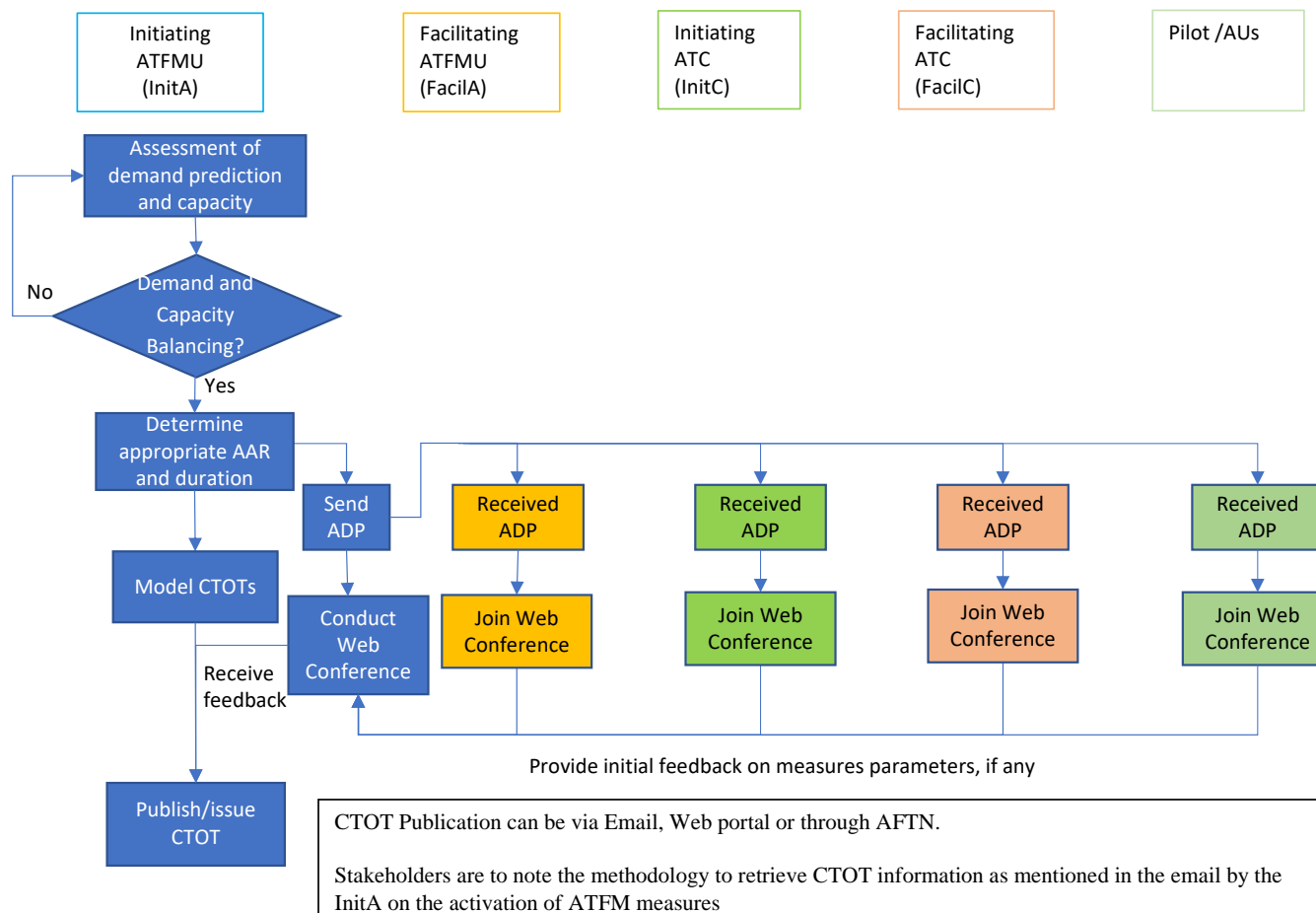
Last Update: 01 November 2024

The following table lists CTOT distribution channels employed by Level-3 ANSPs.

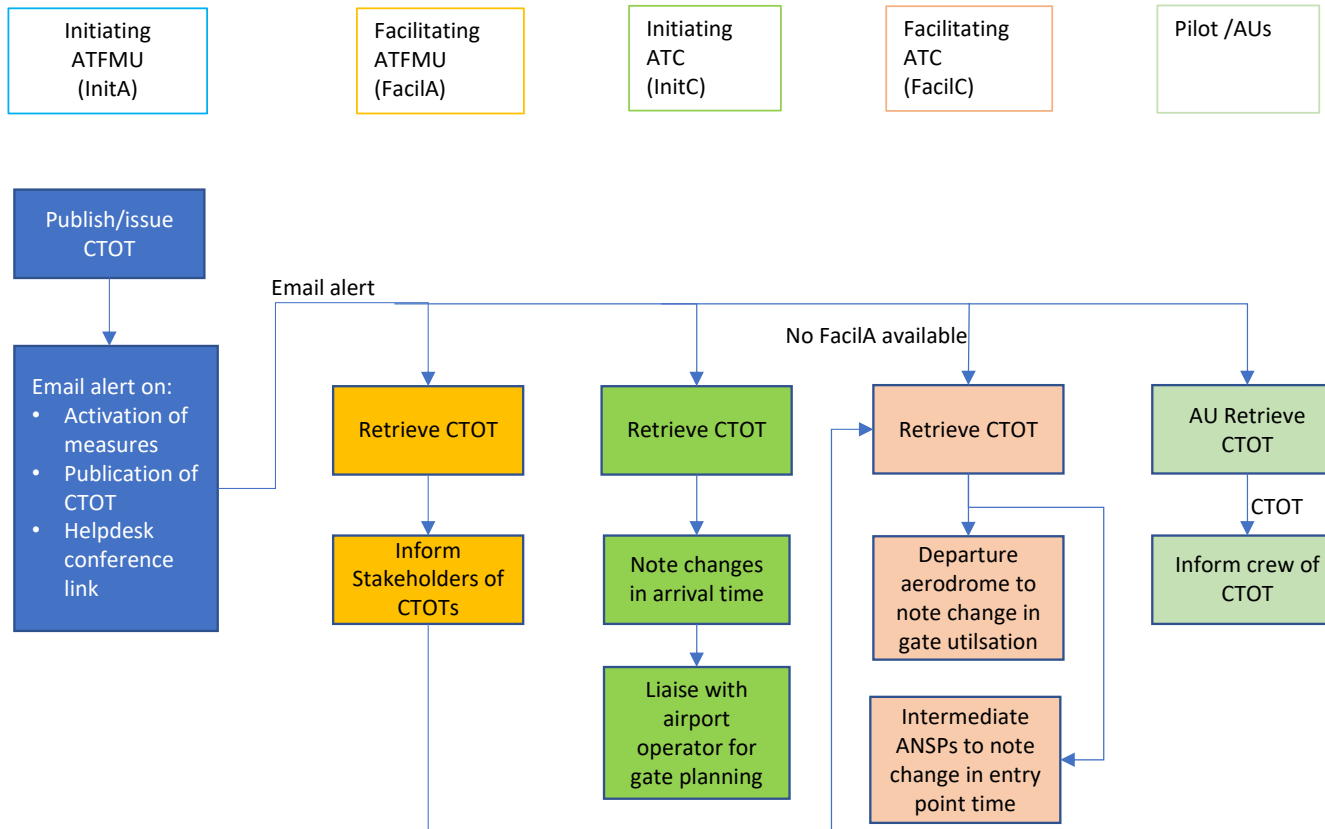
Distribution Channels	Web Portal (User Management and Help Desk)	Email (+ CTOT List)	AFTN (SAM, SRM, SLC)
AEROTHAI Thailand	✓	✓+	✓
ATMB China	✓	✓+	✓
CAAS Singapore	✓	✓	✓
CATS Cambodia	✓	✓+	✓
HKCAD Hong Kong	✓	✓+	✓
MOLIT Republic of Korea	✓	✓+	
VATM Viet Nam	✓	✓+	✓

Annex G: GDP Work Process

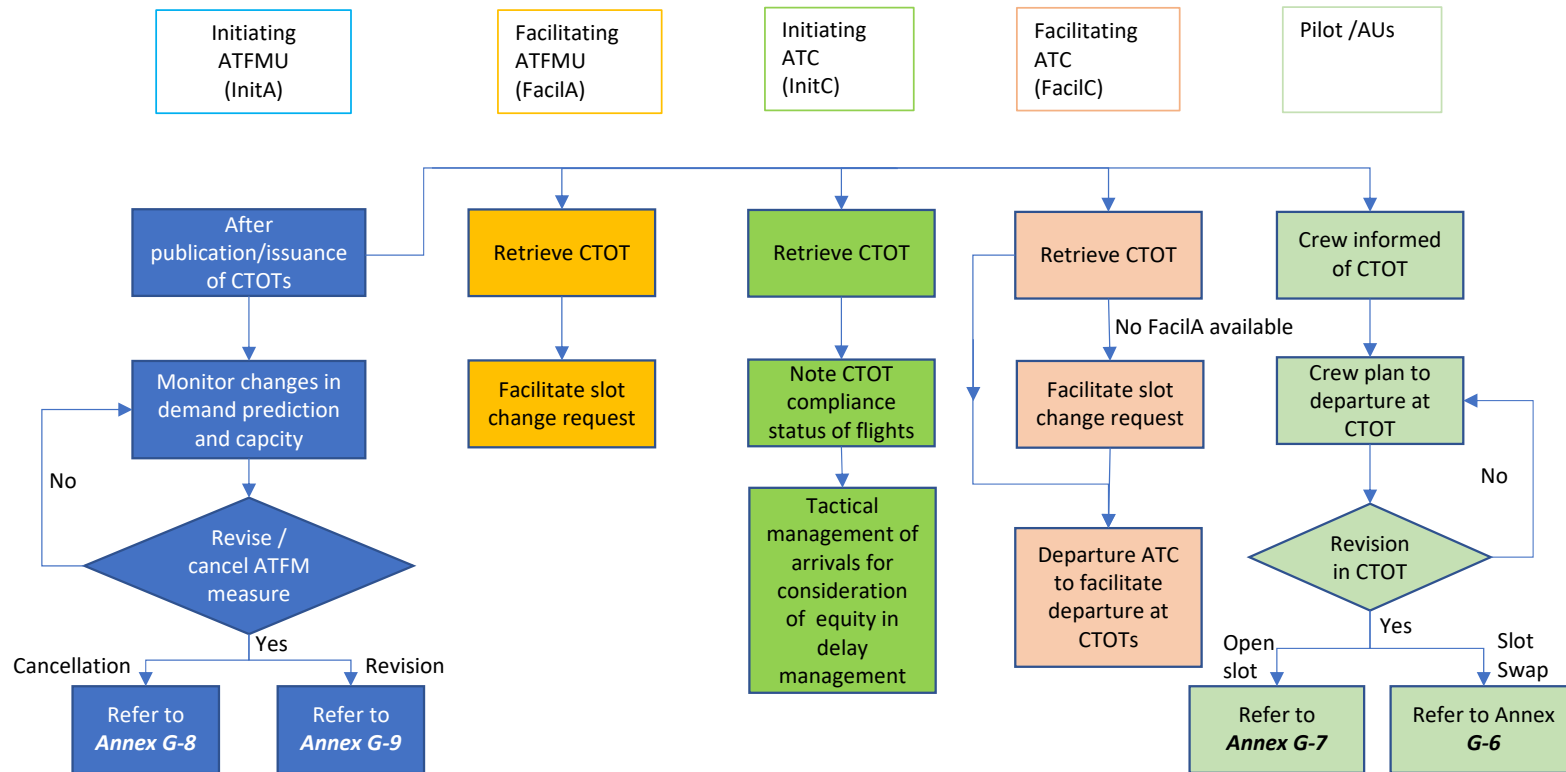
G-1 CTOT Publication & Distribution (1/2)



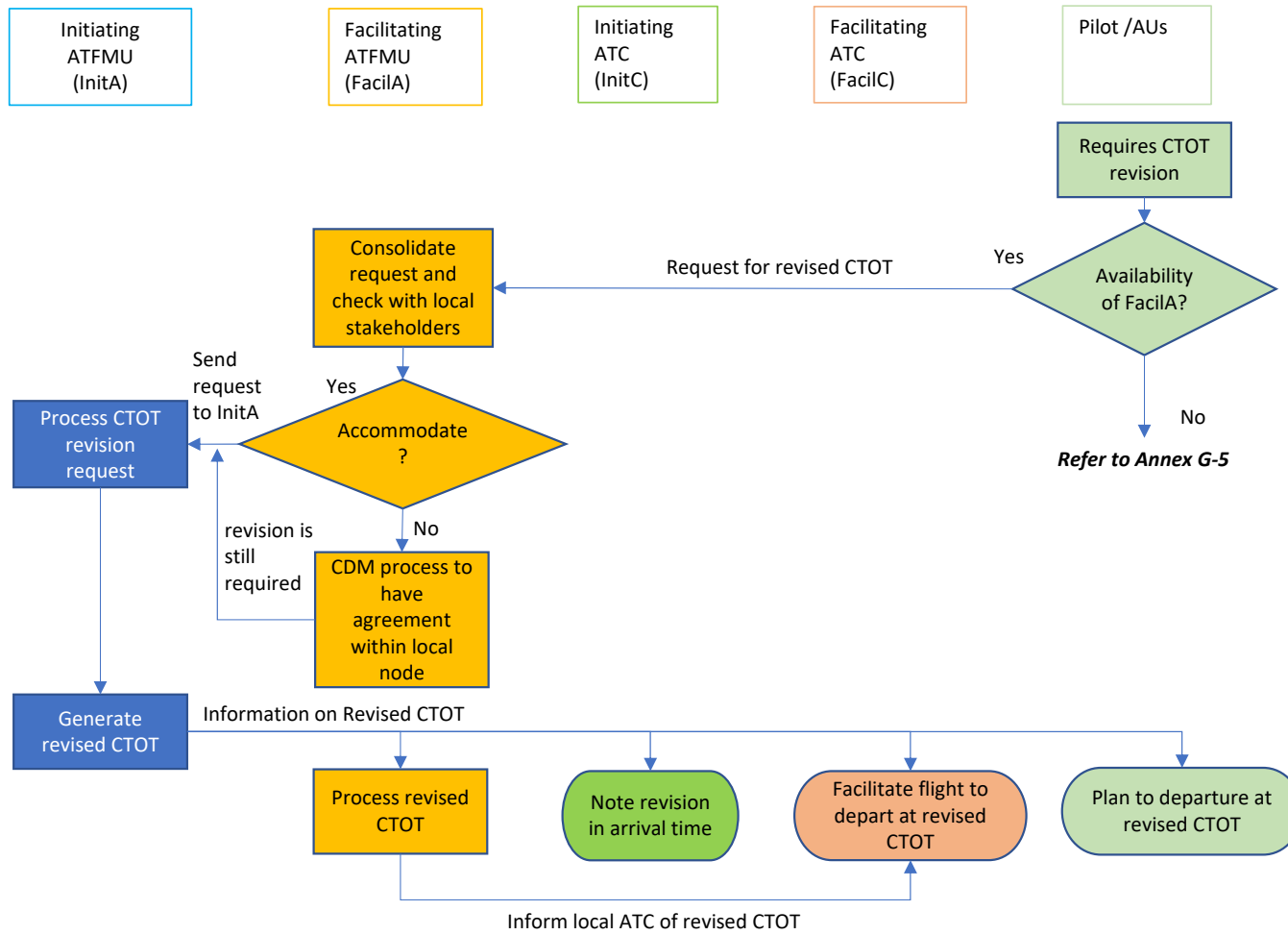
G-2 CTOT Publication & Distribution (2/2)



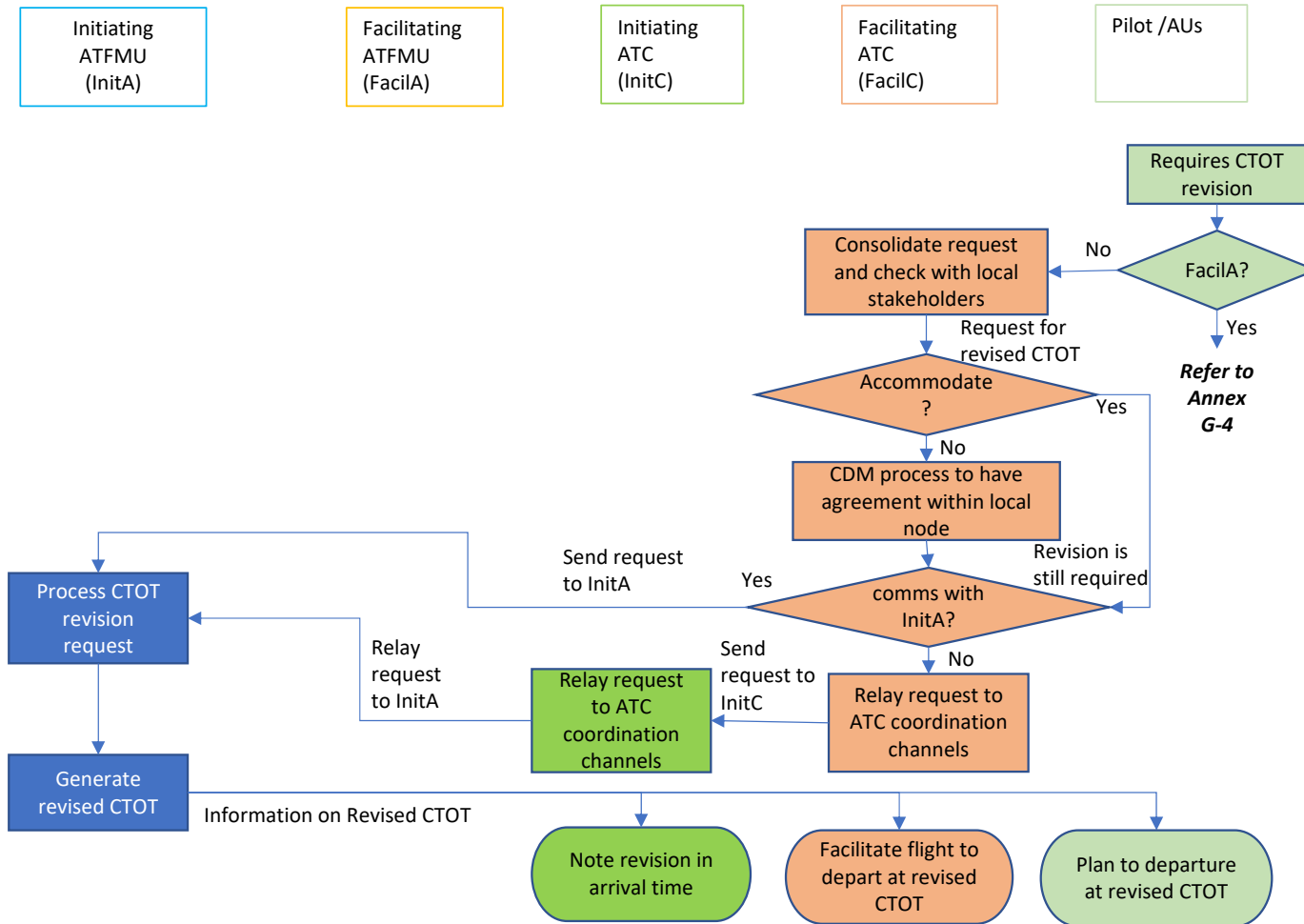
G-3 CTOT Compliance Management



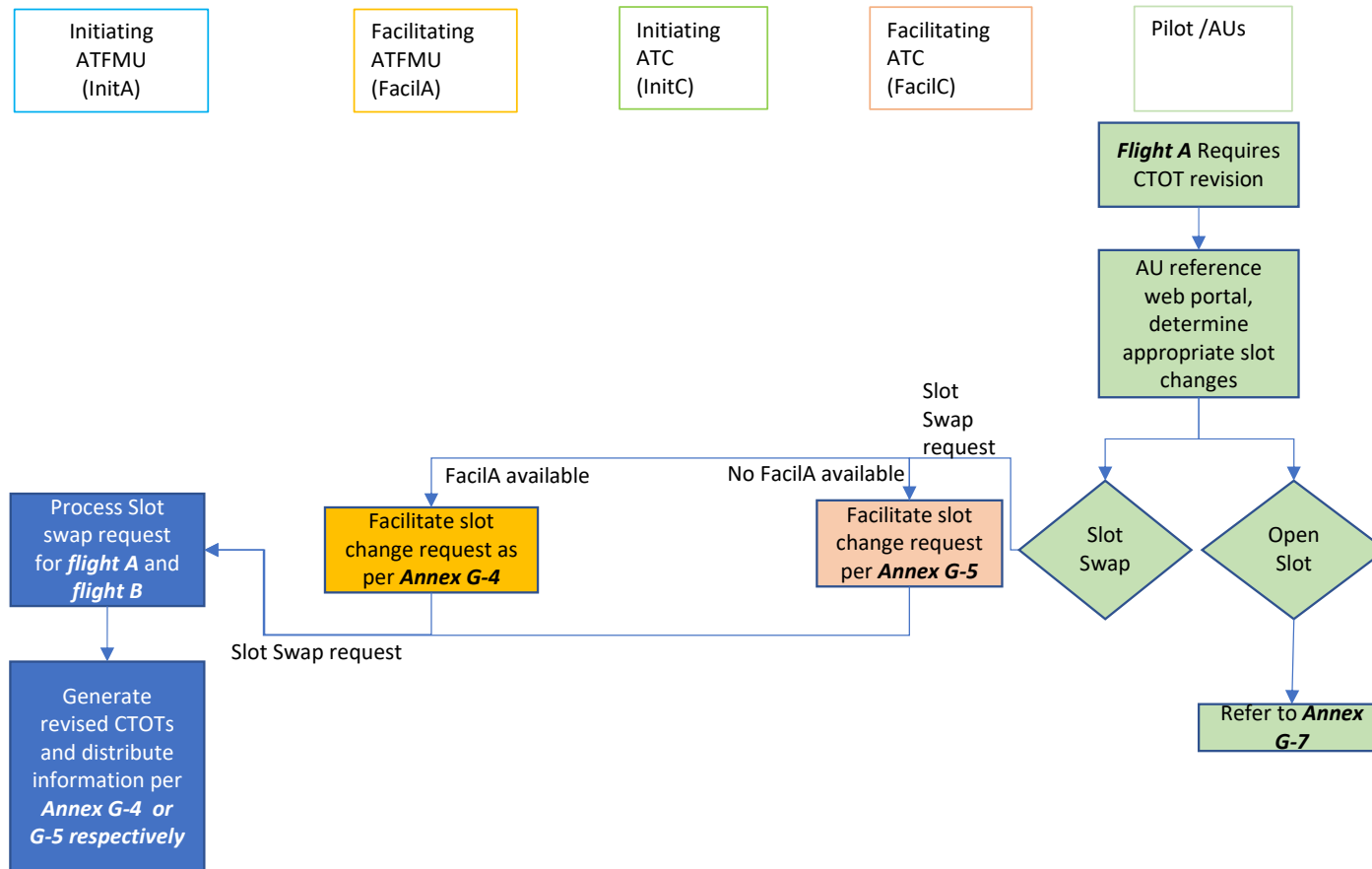
G-4 CTOT Revision – with Facilitating ATFMU



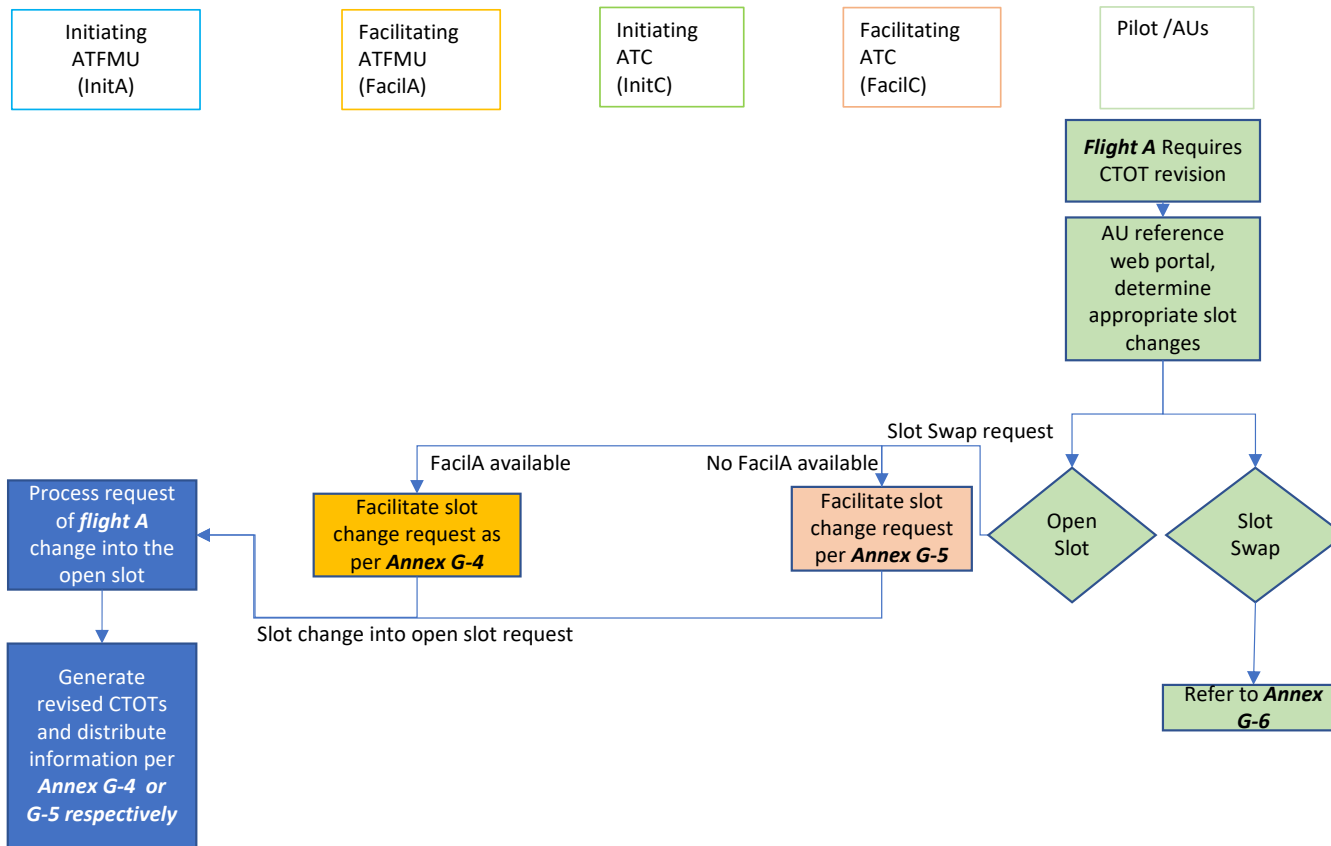
G-5 CTOT Revision – No Facilitating ATFMU



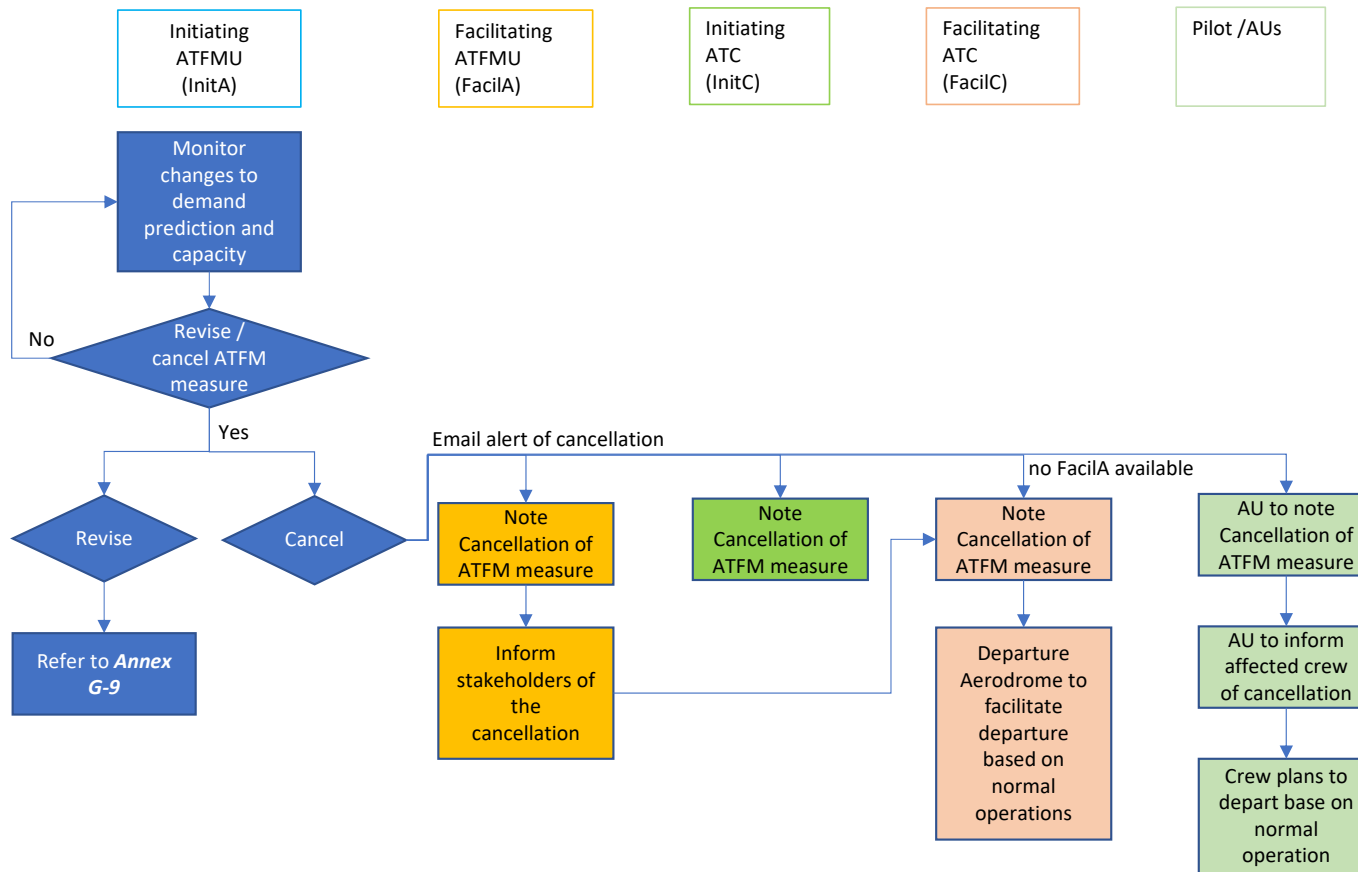
G-6 Slot Swapping



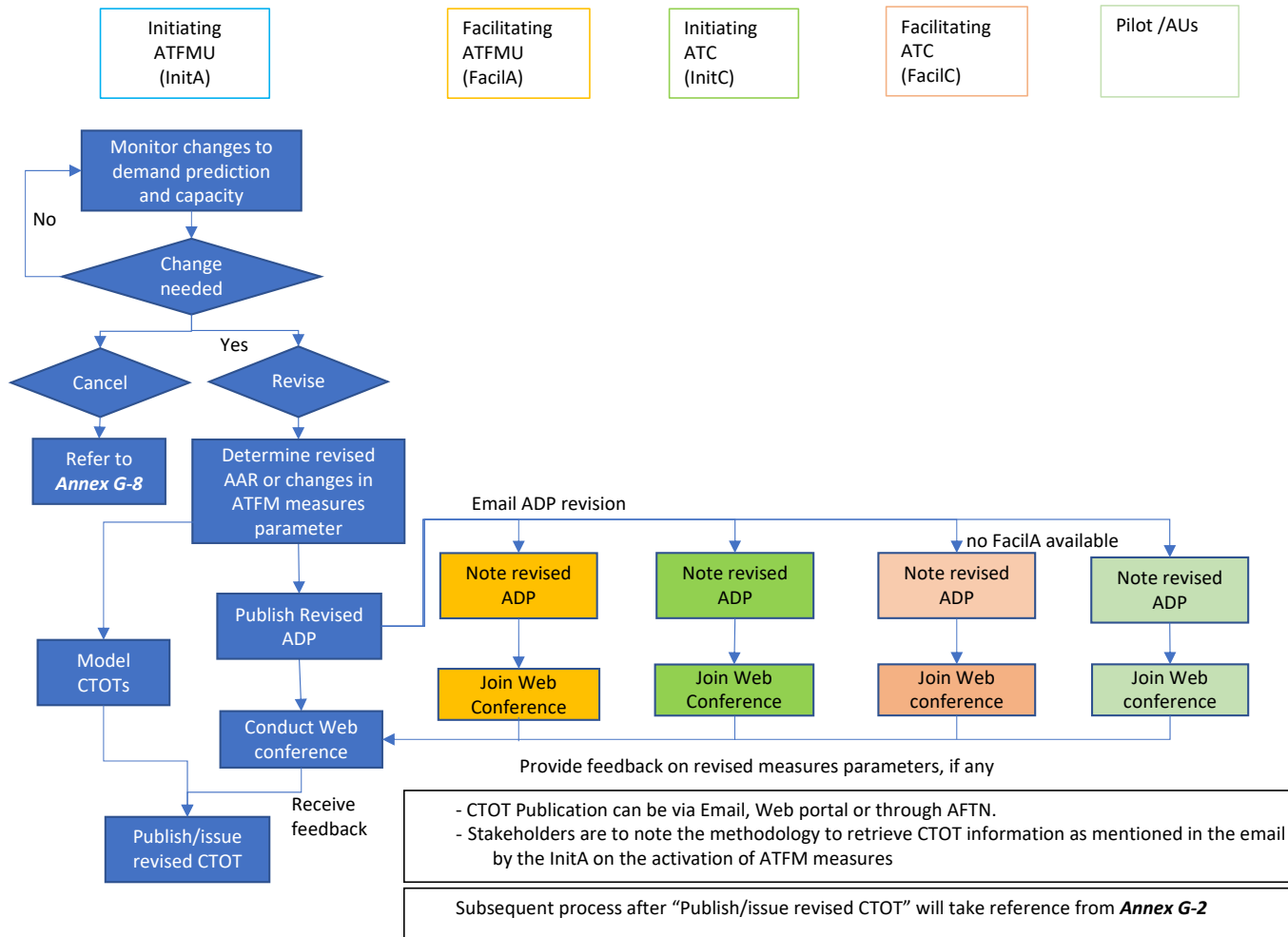
G-7 Slot Change (into empty slot)



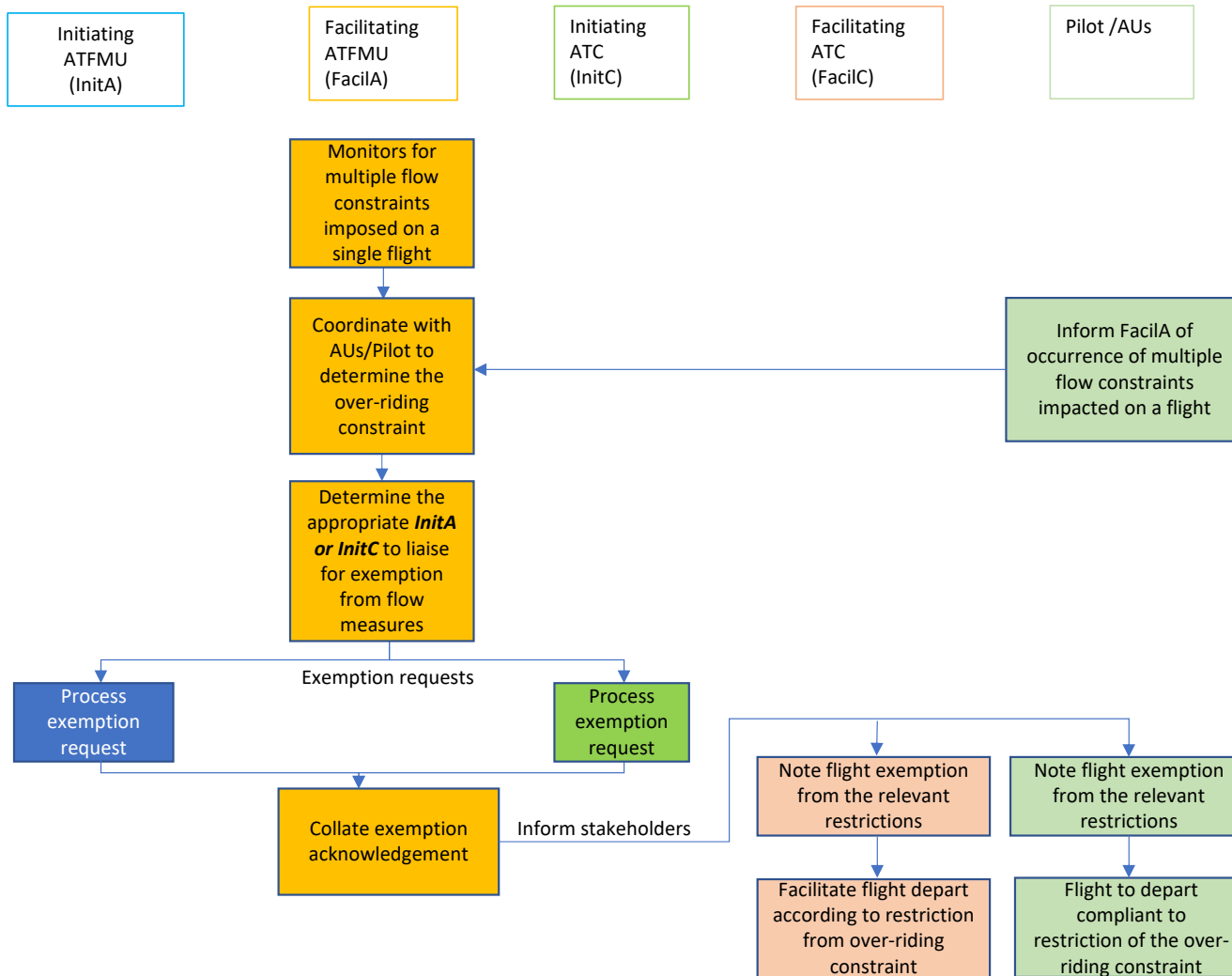
G-8 Cancellation of ATFM Measure



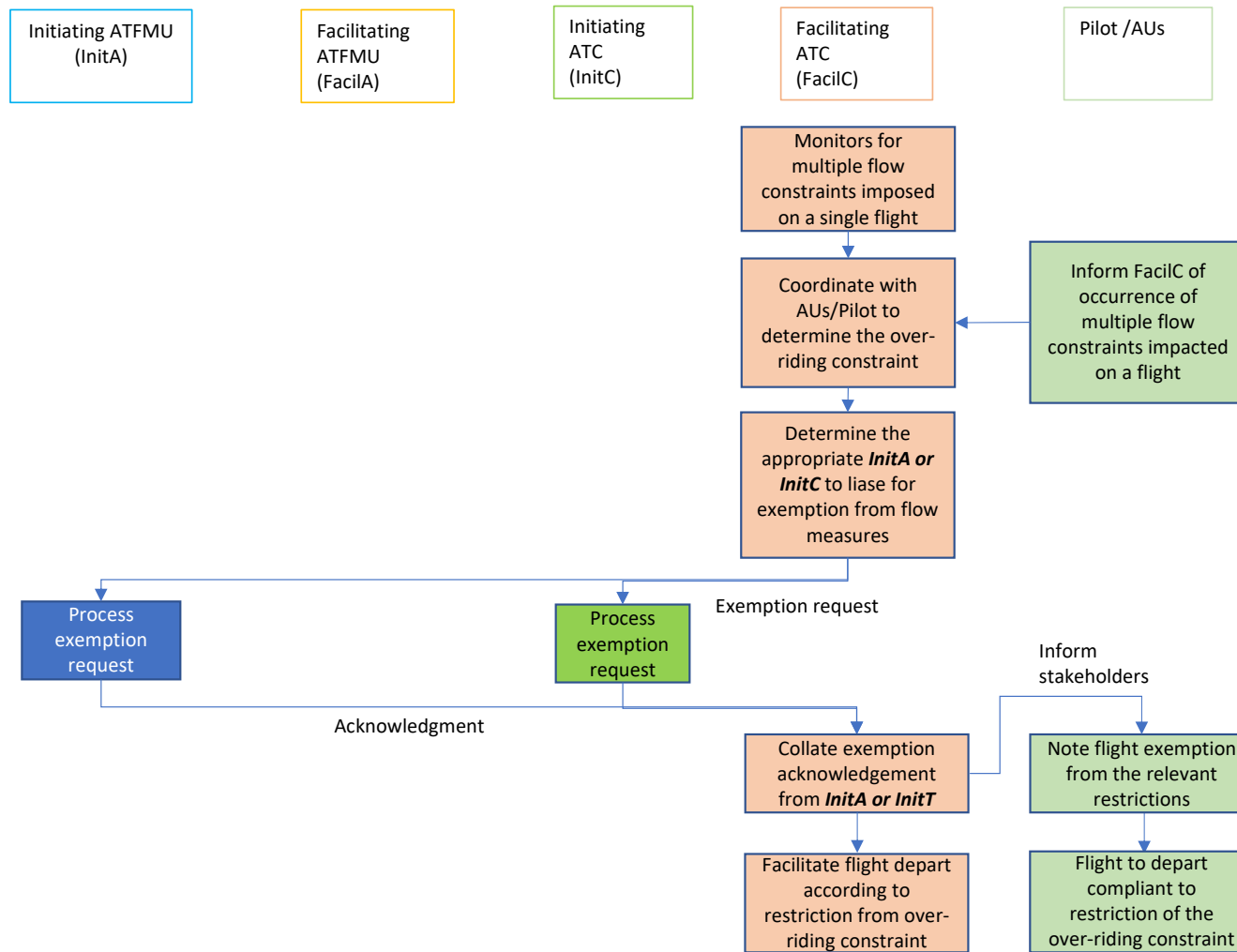
G-9 Revision of ATFM Measure



G-10 Multiple ATFM Measures – with Facilitating ATFMU



G-11 Multiple ATFM Measures – without Facilitating ATFMU



G-12 Re-timing of flights into/out of GDP period

