



International Civil Aviation Organization

The Fifth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/5)

Bangkok, Thailand, 30 March – 3 April 2015

Agenda Item 5: Development of Regional ATFM Framework

FRAMEWORK – PERFORMANCE IMPROVEMENT PLAN

(Presented by the Secretariat)

SUMMARY

This paper presents the Performance Improvement Plan section of the Draft Regional Framework for Collaborative ATFM, for review by the meeting.

1. INTRODUCTION

1.1 The Performance Improvement Plan includes performance objectives aligned with those of the Asia/Pacific Seamless ATM Plan, providing objectives for ATFM implementation up to and including November 2018.

2. DISCUSSION

2.1 **Attachment A** provides the proposed ATFM performance objectives.

2.2 It is proposed that the attachment forms the Performance Improvement Plan section of the Framework.

2.3

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) agree to the inclusion of the Performance Improvement Plan in the Regional Framework for Collaborative ATFM; and
- c) discuss any relevant matters as appropriate.

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PERFORMANCE IMPROVEMENT PLAN

Note: prior to implementation, ATFM systems and procedures should be verified by safety assessment under State Safety Management Systems.

Structure of the Performance Improvement Plan

7.1 Regional collaborative ATFM performance objectives are arranged in *Regional ATFM Capability* phases aligned, where practicable, with Phases I and II of the Seamless ATM Plan's Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ATM Service Levels (PASL):

- PARS/PASL Phase I – expected implementation by 12 November 2015; and
- PARS/PASL Phase II – expected implementation by 08 November 2018.

7.2 Recognizing the short lead time between the finalization of the Framework and PARS/PASL Phase I, Regional ATFM Capability Phase I is divided into sub-phases A and B, with expected implementation 12 November 2015 and 08 November 2016 respectively.

7.3 Performance objectives are presented under the following general structure for each Regional ATFM Capability Phase, where relevant:

- ATFM Regulation
- ATFM Systems
- (Strategic ATFM, Pre-Tactical ATFM or Tactical ATFM)
 - Capacity and Demand Monitoring and Analysis
 - Capacity Improvement
 - ATFM Execution
 - ATFM Measures
 - Post-Operations Analysis

ATFM Program Airports

7.4 *ATFM Program Airports*, referenced in the performance objectives, are:

- The busiest Asia/Pacific Region aerodromes as defined in the Asia/Pacific Region Seamless ATM Plan;
- Airports where strategic slot allocation is implemented under these performance objectives; and
- All other airports designated by the relevant authority as requiring or potentially requiring ATFM implementation.

Note: prior to implementation, ATFM systems and procedures should be verified by safety assessment under State Safety Management Systems.

Regional ATFM Capability Phase I A

Expected implementation by 12 November 2015

ATFM Regulation

7.5 All States where air traffic demand at times exceeds, or is expected to exceed declared capacity, should enact regulations for the implementation of ATFM.

Annex 11 to the Convention on Civil Aviation section 3.7.5 refers.

Strategic Capacity and Demand Monitoring and Analysis

7.6 A regular program of bi-annual strategic airport and airspace capacity and demand analysis should be implemented for all international airports and associated terminal area airspace, and for all en-route ATC sectors supporting the busiest Asia/Pacific city pairs¹ (**Figure X**), including consideration of:

- CNS systems;
- ATC resources and capability;
- ATC separation standards and techniques;
- runway occupancy times;
- seasonal schedules; and
- historical traffic data and traffic growth forecasts

¹ The Asia/Pacific Seamless ATM Plan lists the busiest Asia/Pacific aerodromes:

- Australia (Sydney, Melbourne);
- China (Beijing, Shanghai Pudong and Hong Jiao, Guangzhou, Hong Kong, Xi'an, Shenzhen, Chengdu, Kunming);
- India (New Delhi, Mumbai);
- Indonesia (Jakarta);
- Japan (Haneda, Narita);
- Malaysia (Kuala Lumpur);
- Philippines (Manila);
- Republic of Korea (Incheon);
- Singapore (Changi); and
- Thailand (Suvarnabhumi).

7.7 Where strategic analysis indicates that demand does not yet exceed capacity, preparation for the implementation of ATFM capability should be based on careful analysis of current traffic and expected growth in the next 5 years;

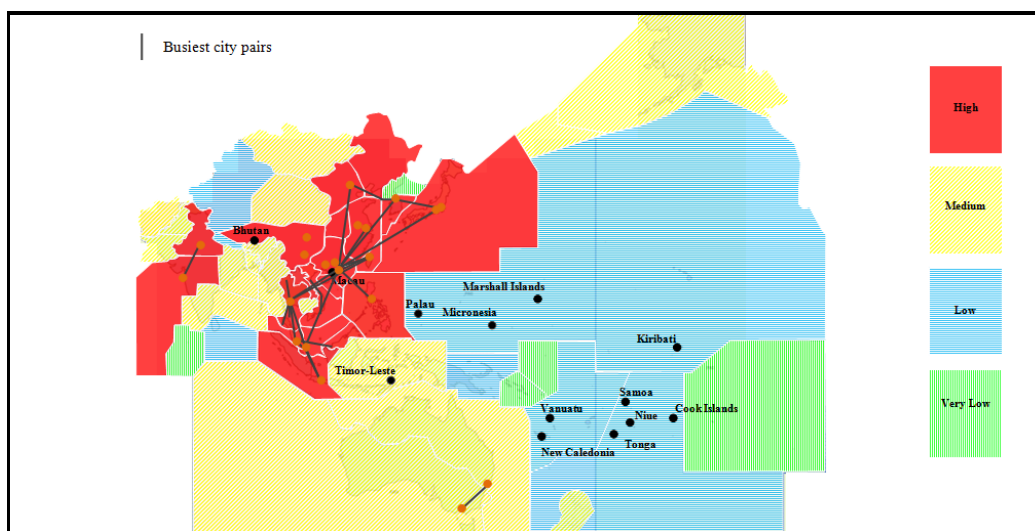


Figure X: Asia/Pacific High Density FIRs, showing Busiest City Pairs
(Source: Asia/Pacific Seamless ATM Plan)

Pre-Tactical Capacity and Demand Monitoring and Analysis

7.8 Daily pre-tactical airport and airspace capacity and demand analysis should be conducted for all ATFM Program Airports and associated terminal area airspace, and for all en-route ATC sectors supporting the busiest Asia/Pacific city pairs, including consideration of:

- i. expected runway and airspace configurations;
- ii. forecast meteorological phenomena;
- iii. ATC resources, facilities and equipment;
- iv. other known or expected capacity constraints; and
- v. updated flight schedule and flight plan information.

Pre-Tactical ATFM Execution

7.9 ATFM Daily Plan (ADP) for all ATFM Program Airports and associated terminal area airspace, including airport and airspace capacity declarations and related background information, should be prepared and distributed to all relevant stakeholders.

ADP should be distributed to stakeholders by either:

- i. *Web-based ATFM network; or*
- ii. *Web-pages hosted by each participating ANSP; or*
- iii. *Email distribution; or*
- iv. *AFS, using ADEXP version 3.1 message format*

Relevant stakeholders include:

- v. *Neighbouring ATFMUs or, where not provided, ATSU*
- vi. *ATSUs supported by the originating ATFMU;*
- vii. *Relevant airport operators; and*
- viii. *Participating aircraft operators.*

7.10 ADP should be coordinated by the responsible ATFMU or ATSU and agreed with all relevant stakeholders, through the chairing and/or participation in scheduled and, where necessitated by changes in airport or airspace capacity or other events, ad-hoc ATFM conferences for pre-tactical ATFM planning.

Post-Operations Analysis

7.11 The accuracy and effectiveness of capacity and demand analyses and ADP preparation and distribution, including supporting information listed in paragraph 7.7, should be verified through comparison with operational outcomes observed, and rectification of discrepancies included in planning for system and process improvements.

Regional ATFM Capability Phase IB

Expected implementation by 10 November 2016

ATFM Systems

7.12 Operational FPL and ATS message distribution systems and processes should be analysed and, where necessary, modified to ensure that FPL, CHG, DEP, DLA and CNL messages are originated, distributed and processed in accordance with the requirements specified in ICAO Doc. 4444 PANS-ATM.

7.13 Requirements should be published in all relevant State AIP for FPL for flights operating to ATFM Program airports to be submitted not less than 3 hours prior to EOBT.

7.14 Procedures should be promulgated to ensure flights with assigned COBT more than XXX later than FPL EOBT should refile by either DLA or CNL and new FPL submission.

7.15 ATFM, AMAN/DMAN and A-CDM systems should be integrated through the use of common fixes, terminology and communications protocols to ensure complementary operations.

FIXM version 3.0 or later, extended where necessary is the agreed format for exchange of ATFM information in the Asia/Pacific Region.

Where full ATFM network communications capability is not yet established, ATFM messages conforming to ADEXP version 3.1 may be used for distribution of ATFM measures.

Strategic Capacity Improvement

7.16 Airport and terminal airspace capacity should be increased through optimized ATC separation standards and techniques and reduced runway occupancy at all ATFM Program Airports and in associated terminal area airspace.

7.17 Where necessitated by demand, and using a performance-based approach, terminal area ATS route structure improvements including 4-gatepost STAR design, and CCO/CDO should be implemented to reduce ATC and pilot workload and enable better use of aircraft capability to meet ATFM measures.

(Discuss whether these meet the definition of Strategic Capacity Improvements)

Strategic ATFM Execution

7.18 Implement strategic airport slot allocation² at all international airports, for periods where demand significantly exceeds the airport's capacity (IATA Level 3).

(Do we need to define *strategic airport capacity*, and *significantly exceeds*?)

Pre-Tactical Capacity and Demand Monitoring and Analysis

7.19 Automated pre-tactical modelling of expected airport and airspace configuration and traffic demand, and the effect of ATFM measures, should be implemented for all ATFM Program Airports and associated terminal area airspace.

Pre-Tactical ATFM Execution

7.20 Web-based CDM capability should be implemented, enabling the sharing of all relevant information with all stakeholders, providing continuous availability of information and common reference material for daily and ad-hoc ATFM conferences.

Tactical Capacity and Demand Monitoring and Analysis

7.21 Tactical meteorological services for the terminal area (MSTA) should be implemented, including near-term or *now-casting* forecasts of convective weather activity at or affecting ATFM Program Airports and associated instrument approach procedures, terminal area ATS routes and holding points and other significant locations.

7.22 Dynamic update of airport and airspace capacity constraints, capacity calculation, demand information using schedule, flight plan and ATS messaging, and ATM system information and modelling of tactical ATFM programs should be implemented.

Tactical ATFM Measures

7.23 Implement tactical ATFM at ATFM Program Airports using:

- i. Ground Delay Programs (CTOT) at domestic and **selected international**³ departure airports during periods where demand exceeds capacity at the destination ATFM Program Airport; and

² The *IATA Worldwide Slot Guidelines* (WSG) provides globally standardized guidance on strategic airport capacity analysis and slot allocation processes.

³ Definition of which international airports are to be included is needed. **Time/distance based?**
Agreement based?

- ii. Minutes in trail (MINIT) or Miles in trail (MIT) for aircraft operation in constrained airspace sectors, only during periods affected by the constraint.

7.24 CTOT for individual aircraft should be initiated and amended where necessary by Slot Allocation, Slot Revision, Slot Cancellation and Slot Suspension.

Post-Operations Analysis

7.25 Procedures and agreements should be developed to ensure post-operational analysis of ATFM programs, including the canvassing and consideration of feedback from airspace users, airports operators, ATS and other ATFM units. Daily post-operations analysis conferences should be held, supplemented where necessary by ad-hoc conferences called to assess the outcomes of programs of ATFM measures responding to non-normal situations.

7.26 The results of post-operations analyses should be used for planning ATFM, airspace and ATS route improvements.

ICAO Doc 9971 – Manual on Collaborative ATFM Part II-4-8 provides guidance on post-operations analysis

Regional ATFM Capability Phase II

Expected implementation by 08 November 2018

ATFM Systems

7.27 Distributed multi-nodal ATFM information distribution capability utilizing FIXM version 3.0 (or later) should be implemented, including:

- i. Sharing of ADP and dynamically updated demand and capacity data for all ATFM program airports, and for en-route airspace supporting the busiest city pairs and high density major traffic flows;
- ii. Slot allocation information for all flights subject to ATFM programs, including as a minimum CTOT, CTO and CLDT information;
- iii. Authorized user functions for slot amendment, cancellation or suspension (ATFMU), and slot-swapping (aircraft operator and ATFMU); and
- iv. Automated slot compliance monitoring and reporting, supplemented where necessary by authorized inputs by ATFMU, ATSU or airspace operator.

7.28 Full interoperability of ATFM, A-CDM, AMAN, DMAN, ATM automation and airspace user systems should be implemented, utilizing FIXM 3.0, to provide seamless gate-to-gate collaborative ATFM operations.

Pre-Tactical Capacity and Demand Monitoring and Analysis

7.29 Automated modelling of expected airport and airspace configuration and traffic demand, and the effect of ATFM measures, should be implemented for all ATFM Program Airports and associated terminal area airspace and, where possible, en-route airspace supporting the busiest Asia/Pacific Region city pairs and high density major traffic flows.

Tactical Capacity and Demand Monitoring and Analysis

7.30 Meteorological services for the terminal area (MSTA) should be implemented, including near-term or *now-casting* forecasts of convective weather activity at or affecting ATFM Program Airports and associated instrument approach procedures, terminal area ATS routes and holding points and other significant locations.

Tactical ATFM Measures

7.31 ATFM measures including MIT, MINIT and, where necessary, CTO at AFIX or RFIX, should be applied to flights through constrained airspace.

7.32 Ground Delay Program (CTOT), should be implemented at all domestic and international departure airports servicing:

- i. departure flights bound for and within X hours flight time of ATFM Program airports for which tactical ATFM measures (CLDT) are in place ; and
- ii. departure flights planned to operate through constrained airspace where tactical ATFM measure CTO at RFIX or AFIX is in place.

7.33 Airborne ATFM delay for flights departing ports more than X hours' flight time from ATFM Program Airports should be implemented by applying CTO at RFIX or AFIX to achieve CLDT with the following maximum delay:

Total EET (FPL Item 16)	Maximum ATFM Delay
9 hours or less	20 minutes
more than 9 hours	10 minutes

7.34 Xxx