



International Civil Aviation Organization

The Fourth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/4)

Bangkok, Thailand, 1 – 5 December 2014

Agenda Item 2: Review Outcomes of Related Meetings

ATFM CAPABILITY AND PERFORMANCE IMPROVEMENT PLAN

(Presented by the Secretariat)

SUMMARY

This paper presents a proposal for the definition of airports and airspace where ATFM services should be implemented, and a regionally agreed set of ATFM measures.

1. INTRODUCTION

1.1 ATFM/SG discussed at its second and third meetings the suite of ATFM capability elements that should be defined in the Regional Framework for Collaborative ATFM, and the categorization of airports and airspace for ATFM purposes

1.2 When considering the ATFM capability and the airports or airspace to which any specific capability should be applied, the expected implementation timing should also be taken into account. This paper proposes an updated suite of items to be included in regional ATFM capability, and a refined categorization of applicable airports and airspace based on the Asia/Pacific Seamless ATM Plan. The ATFM capability, airspace and airport categorization and implementation timing is included in a proposed performance improvement plan.

2. DISCUSSION

ATFM Capability, Airports and Airspace

2.1 The initial proposal to ATFM/SG/2 included a range of ATFM capability elements, selections of which would be applied at airports or in airspace dependent on their categorization. 7 categories of airspace were proposed, ranging from terminal or enroute airspace with surveillance based ATC services servicing major international and high density domestic airports, down to Regional non-surveillance tower airspace. It was also proposed that ATFM should be applied at airports with > 100,000 movements per annum, in alignment with the Seamless ATM Plan definition of high density airports.

2.2 ATFM/SG/3 considered that in States with experience in the field ATFM was an organization-wide function, rather than being compartmented. The meeting also suggested that while a rigid airspace categorization may not be desirable, a refinement of the concept could assist other States to define and prioritize their implementation of ATFM services.

2.3 It was also considered that the definition of high density airports (airports with > 100,000 movements per annum) was not sufficiently detailed, and a better measurement would be movements per hour.

2.4 It is proposed that ATFM should as a minimum be implemented to provide services to flights expected to operate to or in the following airport and airspace categories, in alignment with the Seamless ATM Plan:

- Airports:
 - Busiest Asia/Pacific Aerodromes identified in the Seamless ATM Plan¹;
 - Airports where hourly arrival demand is greater than a (yet to be specified) percentage of airport capacity are experienced;
- Airspace:
 - Terminal areas supporting the busiest Asia/Pacific Aerodromes; and
 - En-route sectors supporting the busiest Asia/Pacific city pairs or major traffic flows (Figure 1):

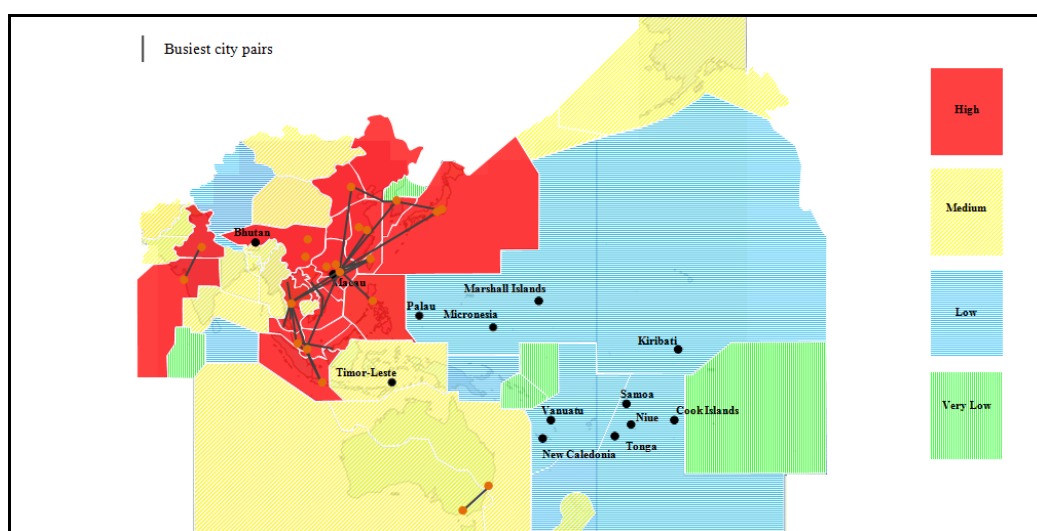


Figure 1: High Density FIRs and Busiest City Pairs²

¹ The Seamless ATM Plan identifies the busiest Asia/Pacific aerodromes (2012 data):

- 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).

² Source: Asia/Pacific Seamless ATM Plan

2.5 The performance objectives of the Seamless ATM Plan are expected to be implemented in accordance with the following phases:

- Expected implementation by 12 November 2015:
 - Preferred Aerodrome/Airspace and Route Specifications (PARS) Phase I;
 - Preferred ATM Service Levels (PASL) Phase 1.
- Expected implementation by 08 November 2018:
 - PARS Phase II;
 - PASL Phase II

2.6 A number of the proposed performance objectives of the Regional Framework for Collaborative ATFM may reasonably be expected to be implemented in alignment with the Seamless Plan's PARS/PASL Phase I. Other near-term objectives may require further time for State planning and implementation. More complex or demanding ATFM objectives should be aligned with Seamless Plan PARS/PASL Phase II. It is therefore proposed that ATFM performance objectives for the Region are implemented in phases:

- Expected implementation by 12 November 2015:
 - Regional ATFM Capability Phase 1A
- Expected implementation by 10 November 2016
 - Regional ATFM Capability Phase 1B
- Expected implementation by 08 November 2018
 - Regional ATFM Capability Phase 2

2.7 The above dates are aligned with aeronautical information regulation and control (AIRAC) effective dates.

2.8 **Attachment A** lists the proposed performance objectives, in draft form, for each of the three phases of implementation. ATFM-related performance objectives of the Seamless ATM Plan are included for reference. The performance objectives will be subject to further amendment by ATFM/SG, taking into account the agreed outcomes from the IATA ATFM Study.

2.9 All Asia/Pacific Region FIRs and ATC-towered airports should be expected to support regional ATFM implementation, regardless of whether ATFM is required for their airspace or airport, by facilitating the ATFM measures issued by regional, sub-regional or neighbouring domestic ATFM systems. Exceptions may be cases where the airport or airspace concerned does not have the communications capability or the capacity to manage ground or airborne delay, e.g. apron and taxiway capacity limitations, airspace limitations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss, amend where necessary and agree upon:
 - i) the airport and airspace definition for ATFM implementation;
 - ii) the implementation phases 1A, 1B and 2;
 - iii) the Regional ATFM performance objectives; and
- c) discuss any relevant matters as appropriate.

.....

Regional ATFM Capability Phase 1A – 12 November 2015		
ATFM Phase	ATFM Capability	Performance Objective
Strategic	Strategic Capacity and Demand Analysis	Implement a regular program of Strategic Airport and Airspace Capacity and Demand Analysis including consideration of CNS systems, ATC resources and capability, ATC separation standards and techniques and runway occupancy times, Seasonal Schedules (Official Airline Guide – OAG), historical traffic data and traffic growth forecasts.
		<i>All high density aerodromes should provide meteorological forecasts, aerodrome warnings and alerts that support efficient terminal operation.</i>
	Strategic Capacity Improvement	<i>Seamless ATM Plan: Regular airport capacity analysis including a detailed assessment of passenger, airport gate, apron, taxiway and runway capacity</i>
		<i>Seamless ATM Plan: apron management service to regulate entry of aircraft into and coordinate exit of aircraft from the apron</i>
		<i>Seamless ATM Plan : High Density Aerodromes operate an A-CDM system serving MTF and busiest city pairs, with priority implementation for the busiest Asia/Pacific Aerodromes</i>
		<i>Seamless ATM Plan : CCO and CDO operations should be considered for implementation at all high density international aerodromes after analysis, based on a performance-based approach.</i>
		<i>Seamless ATM Plan : All international high density aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR.</i>
		<i>Seamless ATM Plan : All high density aerodromes should have AMAN/DMAN facilities</i>
		<i>Seamless ATM Plan : High density FIRs supporting the busiest Asia/Pacific traffic flows and high density aerodromes should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements.</i>

Regional ATFM Capability Phase 1A – 12 November 2015		
ATFM Phase	ATFM Capability	Performance Objective
Pre-Tactical	Pre-Tactical Capacity and Demand Analysis	Commence daily pre-tactical airport and airspace capacity and demand analysis including expected airspace configurations, ATC resources, facilities and equipment, known or expected capacity constraints, updated flight schedule and flight plan information.
	Pre-Tactical ATFM Execution	Commence daily preparation and distribution to relevant stakeholders of ATFM daily plan, including airport and airspace capacity declarations and related background information on
		Coordination of ATFM daily plan with all stakeholders including scheduling, chairing and participation in ATFM daily and ad-hoc conferences for pre-tactical ATFM planning.
Tactical	Tactical ATFM Measures	Implement ATFM for arrivals during periods of airport capacity constraint through Ground Delay Program (CTOT), and for aircraft operation in constrained airspace through minutes in trail (MINIT) or miles in trail (MIT)

Regional ATFM Capability Phase 1B – 10 November 2016		
ATFM Phase	ATFM Capability	Performance Objective
Strategic	Strategic Capacity Improvement	Increase airport and terminal airspace capacity through improved separation standards and ATC techniques, optimized ATS route structure including 4-gatepost STAR design and CCO/CDO to reduce ATC and pilot workload and enable better use of aircraft capability to meet ATFM measures.
	Strategic ATFM Execution	Implement strategic airport slot allocation using the guidance provided in the <i>IATA Worldwide Slot Guidelines</i> .
Pre-Tactical	Pre-Tactical Capacity and Demand Analysis	Automated pre-tactical modelling of expected airport and airspace configuration and traffic demand, and the effect of ATFM measures.
	Pre-Tactical ATFM Execution	Common web-based CDM network capability enabling the sharing of all relevant information with all stakeholders, providing continuous information availability and common reference material for daily and ad-hoc ATFM conferences.
Tactical	Tactical Capacity and Demand Monitoring and Analysis	Tactical meteorological forecasting for airports and terminal areas including observations and near-term forecasts of convective weather activity at or affecting airports, arrival gates and other significant locations (now-casting/MSTA)
		Dynamic update of airport and airspace capacity constraints, capacity recalculation, and updating of demand information using schedule, flight plan and ATS messaging, and ATM system information.

Regional ATFM Capability Phase 1B – 10 November 2016		
ATFM Phase	ATFM Capability	Performance Objective
Tactical	Tactical ATFM Measures	Implement airborne delay capability (CTO at AFIX) to provide additional ATFM capability for airport arrival demand and capacity balancing
		Integration of ATFM, AMAN/DMAN and A-CDM system information using common fixes, terminology and communications protocols.

Regional ATFM Capability Phase 1B – 8 November 2018		
ATFM Phase	ATFM Capability	Performance Objective
Strategic	Strategic Capacity Analysis	<i>Seamless Plan: All high density aerodromes should have a declared airport terminal and runway capacity based on a capacity and efficiency analysis, to ensure the maximum possible efficiency of aircraft and passenger movement</i>
		<i>Seamless Plan: All terminal ATC sectors should have a nominal aircraft capacity figure based on a scientific capacity study and safety assessment to ensure safe and efficient aircraft operations.</i>
		<i>Seamless Plan: to ensure the safety and efficiency of aircraft operations a nominal aircraft capacity figure based on a scientific capacity study and safety assessment should be available for all en-route ATC sectors.</i>
	Strategic Airport and Airspace Capacity Improvement	Improve airspace capacity by implementing PBN-based route structures including Collaborative Trajectory Options Program (CTOP) route structures for the avoidance of known constrained airspace (traffic congestion) and management of large scale weather deviations (LSWD)
		<i>Seamless Plan: ATM system design should be planned and implemented to support optimal aerodrome capacity expectations for the runway(s) concerned.</i>
		<i>Seamless Plan: All AMAN systems should take into account airport gates for runway selection and other aircraft departures from adjacent gates that may affect arriving aircraft.</i>
		<i>Seamless Plan: ALL FIRs supporting MTF should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements</i>

Regional ATFM Capability Phase 1B – 8 November 2018			
ATFM Phase	ATFM Capability		Performance Objective
Tactical	Tactical ATFM Execution	Tactical ATFM Measures - Airport arrivals	Implement Ground Delay Program (CTOT), airborne delay program (CTO at RFIX or AFIX, and Collaborative Trajectory Options Program (CTOP) to balance en-route airspace.
	Tactical ATFM Execution	Tactical ATFM Measures - Airspace	Implement flexible ATFM through user delay-absorption intent. Ground Delay Program (CTOT)