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UNITING AVIATION

Development of the Asia/Pacific Regional Framework for Collaborative ATFM

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ICAO Asia and Pacific Regional Office

29 October 2014



ICAO Regional Structure

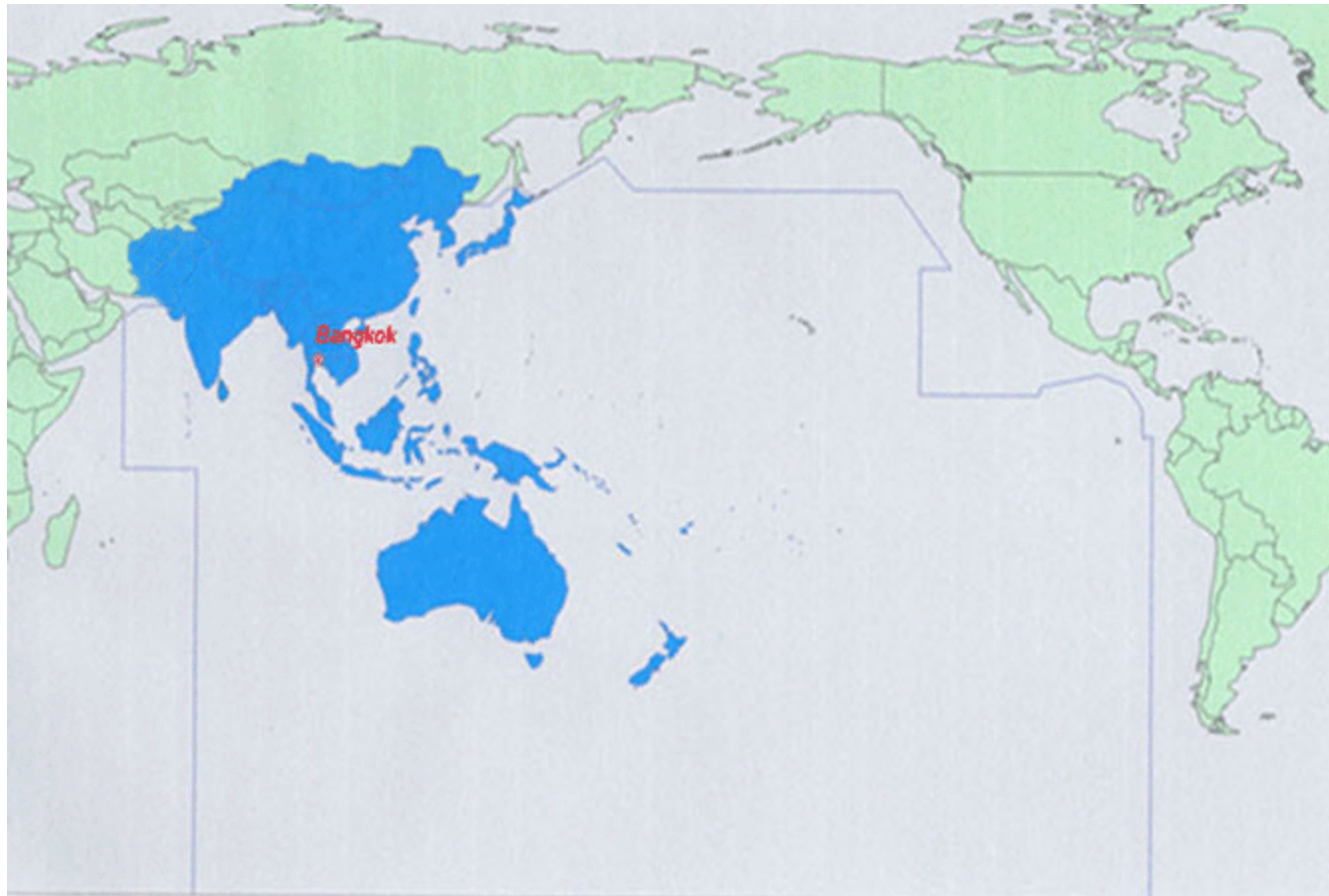


ICAO Regional Structure

- The ICAO Asia/Pacific Region
 - 38 States
 - 2 Special Administrative Regions of China
 - 2 States accredited to other Regional Offices
 - USA (Oakland Oceanic FIR)
 - France (French Polynesia)
 - 50 FIRS
- World's largest ICAO Region
 - Geographically
 - Passengers
 - Traffic movements?



ICAO Regional Structure





ICAO Regional Structure

- APANPIRG
 - Asia/Pacific Regional Air Navigation Planning and Implementation Regional Group
 - (Every ICAO Region has a PIRG)
 - Includes Asia/Pacific Region ICAO Contracting States that:
 - Are service providers in the air navigation region; and
 - Are part of the region's Air Navigation Plan (ICAO Doc 9673)



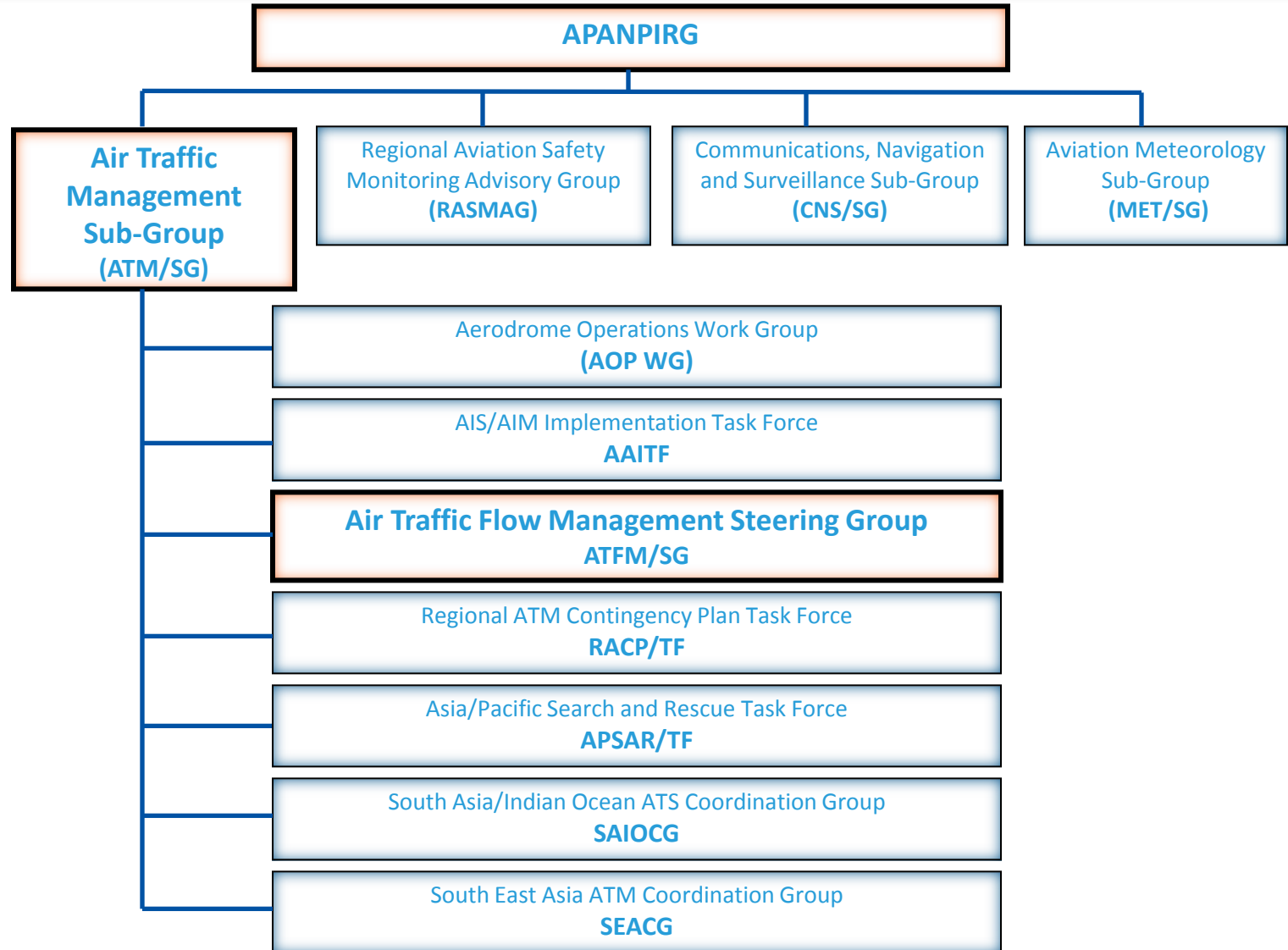
ICAO Regional Structure

- APANPIRG
 - Established by the ICAO Council in 1991
 - *Guiding and coordinating organ for all activities conducted within ICAO concerning the Air Navigation System for the Asia and Pacific Regions.*
(APANPIRG Terms of Reference)
 - More information:
 - ICAO Asia/Pacific Regional Office website
 - <http://www.icao.int/APAC/Pages/APANPIRG-docs.aspx>



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ATFM Steering Group

Air Traffic Flow Management Steering Group

(ATFM/SG)

A little history...

ATFM Steering Group

- APANPIRG/18
(September 2007)



- Regional ATFM recently added to list of Key Priorities
- Conclusion 18/7 – Conduct Regional ATFM Seminar
 - ICAO Regional Office included a workshop in the program (allows recommendations to come forward)

ATFM Steering Group

- APANPIRG/19
(September 2008)
- Tasked Seminar/Workshop to identify and recommend regional objectives :
- ATFM Concept of Operations
- Enhancement of draft ATFM Communications Manual
- Mechanisms for data gathering, collating, sharing



ATFM Steering Group

- APANPIRG/20
(September 2009)
- Considered outcomes and recommendations from Seminar/Workshop relating to *inter alia*:
 - ATFM Concept of Operations (CONOPS)
 - High level Steering Group for ATFM
 - A web-based “virtual” ATFM unit



Twentieth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20)
Bangkok, Thailand, 7-11 September 2009



ATFM Steering Group

- APANPIRG/20
(September 2009)
- Considered outcomes and recommendations from Seminar/Workshop relating to *inter alia*:
 - Regional ATFM guidance material
 - Preference for airspace capacity increases over ATFM
 - Benefits of access to and use of ATFM knowledge and experience



Twentieth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20)
Bangkok, Thailand, 7-11 September 2009



ATFM Steering Group

- APANPIRG/20
(September 2009)
- In response, agreed to ATFM related conclusions:



Twentieth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20)
Bangkok, Thailand, 7-11 September 2009



- **Conclusion 20/11** – forming ATFM Steering group (ATFM/SG) to prepare a Regional ATFM CONOPS
- **Conclusion 20/12** – adopting the ATFM Communications Handbook

ATFM Steering Group

- APANPIRG/20
(September 2009)
- In response, agreed to ATFM related conclusions:



Twentieth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20)
Bangkok, Thailand, 7-11 September 2009



- **Conclusion 20/13** – conducting a survey to benchmark the status of ATFM activities in the Region.

ATFM Steering Group

- **ATFM/SG/1** (December 2010)
 - Discussed current status of Regional ATFM initiatives
 - Considered that each Major Traffic Flow (MTF) should have ATFM planning regardless of traffic density
 - Cater for contingency operations
 - Sub-regional strategy focused on MTF
 - Developed Asia/Pacific Regional ATFM CONOPS
 - Reviewed ATFM Communications Handbook



ATFM Steering Group

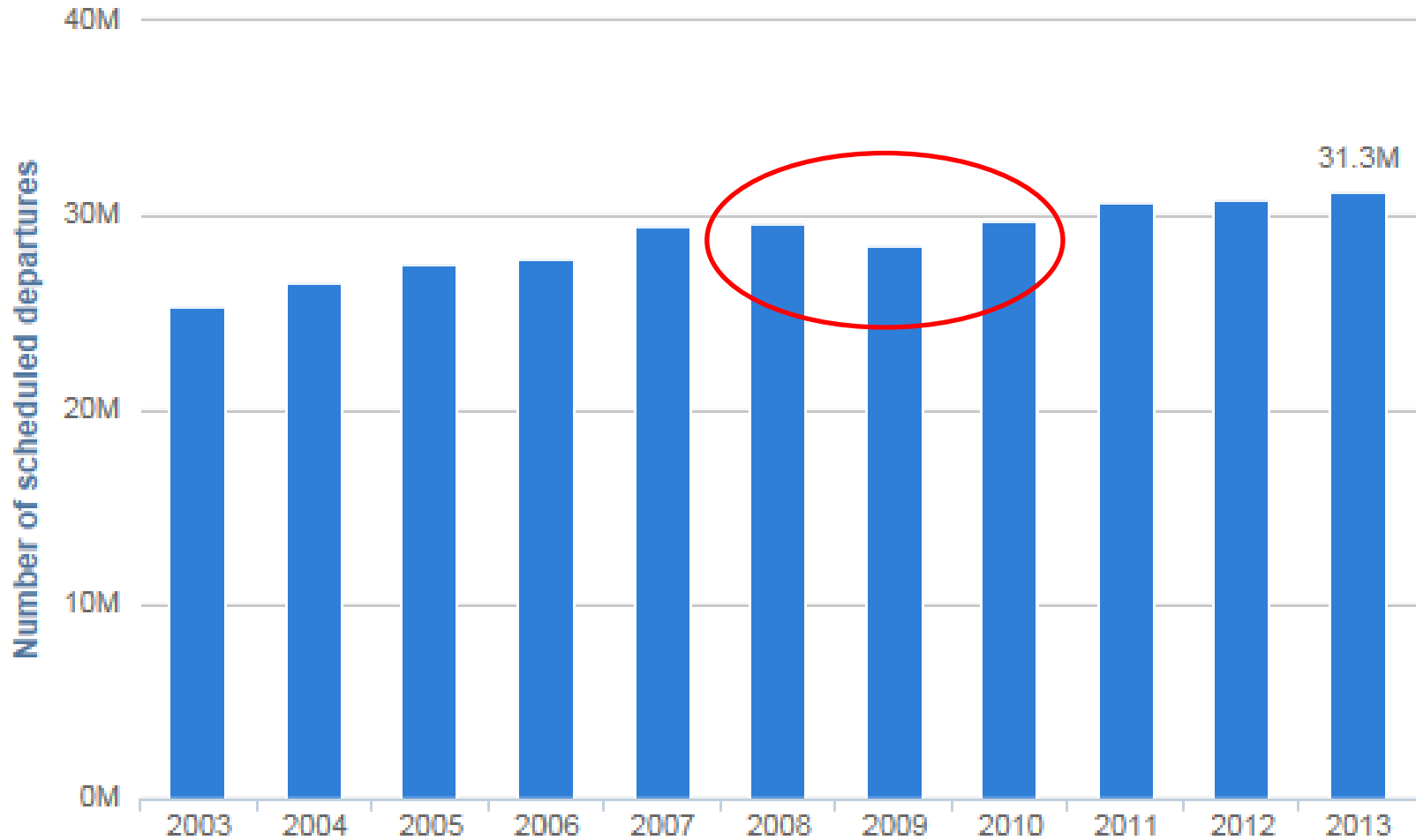
- **ATFM/SG/1** (December 2010)
 - Developed its own Terms of Reference (TOR)
 - Normally pre-determined by APANPIRG or Sub-Group
 - Included
 - development and maintenance of CONOPS and Communications Handbook
 - Encouragement and development of ATM data gathering, collation and sharing
 - Support for development of integrated sub-regional ATFM systems and CDM processes



ATFM Steering Group

- **ATFM/SG/1** (December 2010)
 - Meeting closed with no outstanding tasks
 - No further meetings planned.

ATFM Steering Group



2013 Traffic Data for World

ATFM Steering Group

- APANPIRG/24
(June 2013)



**Twenty Fourth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/24)
ICAO Regional Office, Bangkok, Thailand, 24-26 June 2013**



- Adopted the Asia/Pacific Seamless ATM Plan



ATFM Steering Group

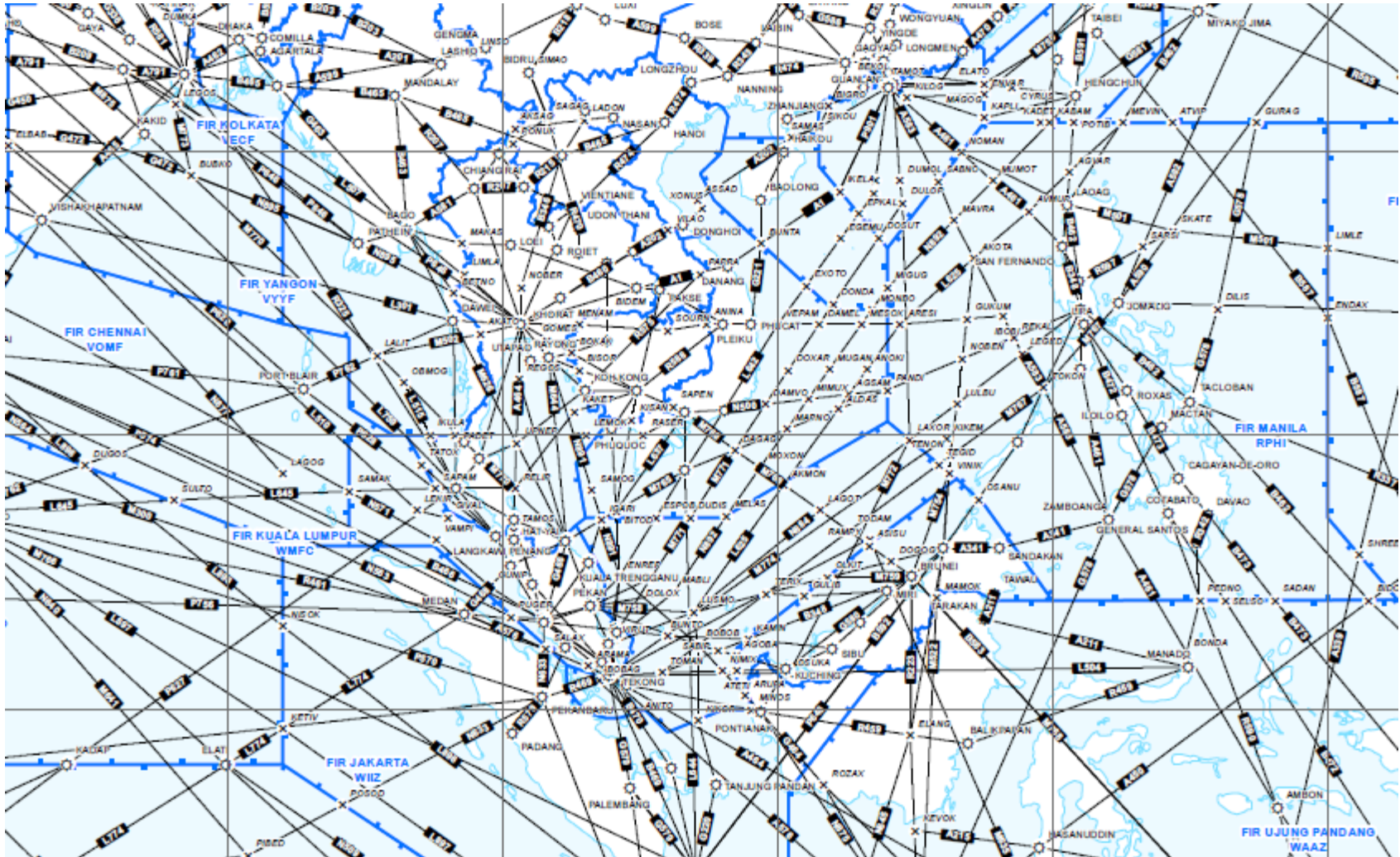
- APANPIRG/24 (June 2013)

Also....

- Considered ATFM needs in APAC Region
 - Communicated through Combined SAIOCG/3&SEACG/20 (February 2013)
 - Relatively small S.E. Asia FIRS, low flight transit times
 - Flow management based on local actions restricting traffic volumes
 - Network-based ATFM as a key element of ASBU Block 0
 - *ASBU Priority 1 - Critical upgrade* element of the Seamless ATM Plan



Note: Some FIR depictions may be out-of-date



Note: Some FIR and ATS route depictions may be out-of-date

ATFM Steering Group

- APANPIRG/24 (June 2013)
 - Considered ATFM needs in APAC Region
 - Noted the impracticability of a centralized ATFM approach for APAC
 - More pragmatic to support sub-regional multi-State programs
 - Adopted several ATFM related conclusions

ATFM Steering Group

- APANPIRG/24 (June 2013)
 - **Conclusion 24/13: Air Traffic Flow Management Capacity Assessments**
 - (urging States to establish capacity assessment and adjustment mechanisms and report to Regional Office by 1 May 2014)
 - **Conclusion 24/14: Air Traffic Flow Management Information Sharing**
 - (urging States to share capacity assessments and factors affecting capacity, traffic demand information, and ATFM Daily Plan)

ATFM Steering Group

- APANPIRG/24 (June 2013)
 - **Conclusion 24/15:** Asia/Pacific ATFM Steering Group
*That, States participate in, and support the Asia/Pacific ATFM Steering Group to **develop a common Regional ATFM framework**, which addresses ATFM implementation and ATFM operational issues in the Asia/Pacific region*

ATFM Steering Group

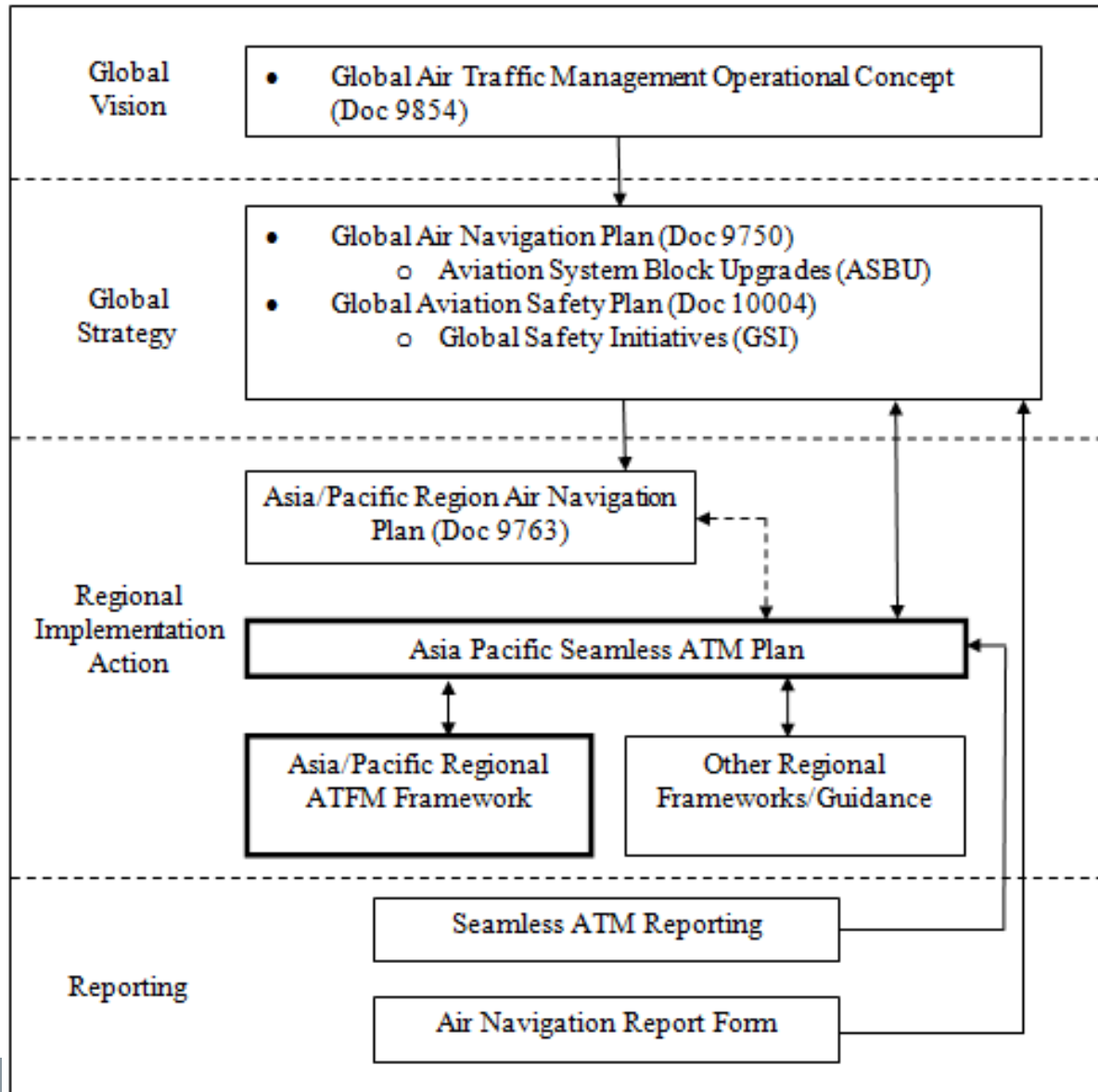
- ATFM/SG Schedule of Meetings and Work Plan
 - Target Completion of Framework for endorsement by APANPIRG/26 (September 2015)
 - ATFM/SG/2 – October 2013
 - ATFM/SG/3 – March 2014
 - ATFM/SG/4 – ~~September~~ December 2014 and
 - ATFM/SG/5 – March/April 2015



Draft Regional Framework for Collaborative ATFM

Regional ATFM Framework

- Hierarchy of Planning Documents
 - Clarifying where the Regional Framework for Collaborative ATFM “fits in” among ICAO global and regional planning documents:
 - Global Air Traffic Management Operational Concept
 - Global Air Navigation Plan
 - Global Aviation Safety Plan
 - Asia/Pacific Region Air Navigation Plan
 - Asia/Pacific Seamless ATM Plan
 - Other Regional Frameworks/Guidance



Regional ATFM Framework

- Asia/Pacific Seamless ATM Plan

INTERNATIONAL CIVIL AVIATION ORGANIZATION



ASIA/PACIFIC SEAMLESS ATM PLAN

Version 1.0, June 2013

This Plan was developed by the Asia/Pacific Seamless ATM Planning Group (APSAPG)

Approved by APANPIRG/24 and published by the ICAO Asia and Pacific Office, Bangkok

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - Seamless ATM Plan
 - sets the overarching requirements for ATFM in the Asia/Pacific Region
 - Regional Framework based on Seamless ATM Plan
 - Structure
 - Objectives
 - Principles
 - Implementation timelines

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Seamless ATM Principles**
 - (ATM Coordination)
 - Sub-regional ATFM based on system-wide CDM serving the busiest terminal airspace and MTF.
 - Cross-border/FIR cooperation for use of aeronautical facilities and airspace, collaborative data sharing, airspace safety assessment and ATM Contingency planning.

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Seamless ATM Principles**
 - (ATM Systems and Safety Nets)
 - Collaborative development of CDM, ATFM, A/MAN and D/MAN support tools.
 - Encourage sharing of air traffic data between military ATM systems and civil ATM systems.

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM- related references in Seamless Plan
 - **Background Information**
 - (Global and Regional Elements)
 - Aerodrome Capacity Analysis..... requirements to maximize runway capacity. need to determine capacity and related constraints for runways, taxiways and gates.... Aircraft gate movement predictability affecting ATFM

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Background Information**
 - (Civil/Military Cooperation)
 - Data sharing arrangements (including aircraft surveillance), are a key part of civil/military cooperation for tactical operational responses.....Data sharing between the civil and military could facilitate CDM, a vital component of ATFM.... civil/military cooperation and system interoperability.....

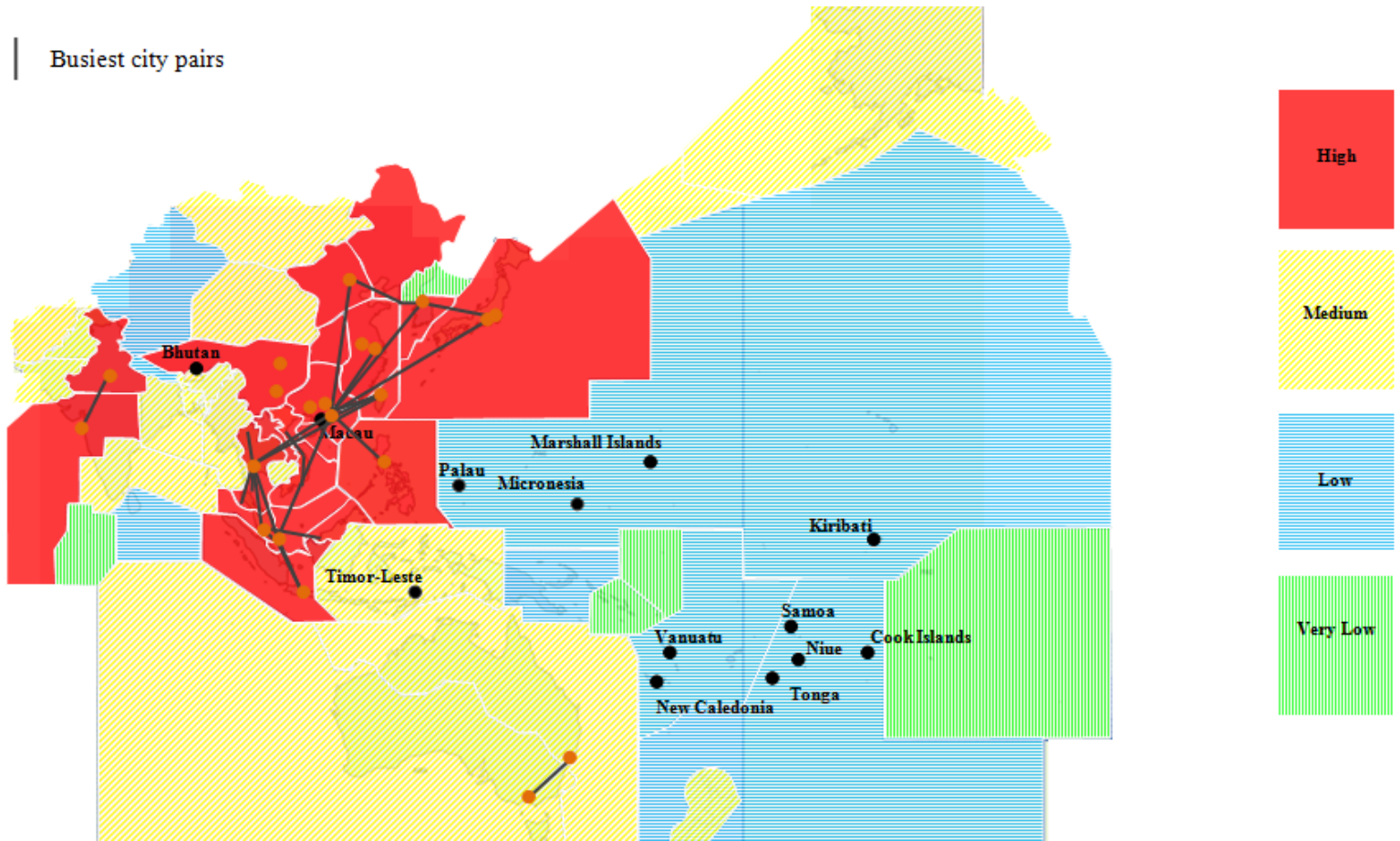
Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Preferred ATM Service Levels (PASL) Phase I (Expected implementation by November 2015)**
 - Aerodrome Operations
 - All high density aerodromes should have AMAN/DMAN facilities.
 - Terminal Operations
 - All high density aerodromes should provide meteorological forecasts, aerodrome warnings and alerts that support efficient terminal operations .

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Preferred ATM Service Levels (PASL) Phase I (Expected implementation by November 2015)**
 - En-route Operations
 - 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.

Busiest city pairs



Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Preferred ATM Service Levels (PASL) Phase II (Expected Implementation by November 2018)**
 - Aerodrome Operations
 - ATM system design (including ATS surveillance, ATS communication systems, ATC separation minimum, aircraft speed control and ATC training) should be planned and implemented to support optimal aerodrome capacity expectations for the runway(s) concerned.

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Preferred ATM Service Levels (PASL) Phase II (Expected Implementation by November 2018)**
 - Terminal Operations
 - 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.
 - All AMAN systems should take into account airport gates for runway selection and other aircraft departures from adjacent gates that may affect arriving aircraft.

Regional ATFM Framework

- Alignment of ATFM Framework and Seamless ATM Plan
 - ATFM-related references in Seamless Plan
 - **Preferred ATM Service Levels (PASL) Phase II (Expected Implementation by November 2018)**
 - En-route Operations
 - All FIRs supporting MTF should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements.

Regional ATFM Framework

- Regional Priorities and Targets - APANPIRG/25

By November 2015	
PRIORITY	Mapped to ASBU
PBN	B0-APTA Optimization Of Approach Procedures Including Vertical Guidance
** Network Operations **	B0-NOPS Improved Flow Performance Through Planning Based On A Network-Wide View
Aeronautical Information Management	B0-DATM Service Improvement through Digital Aeronautical Information Management
** Flight and Flow Information for a Collaborative Environment (FF-ICE) **	B0-FICE Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration
** Civil Military **	B0-FRTO Improved Operations through Enhanced Enroute Trajectories

** ATFM-related, or impacting upon ATFM**

Regional ATFM Framework

- Regional Priorities and Targets - APANPIRG/25

By November 2015	
PRIORITY	MAPPED to ASBU
** Civil/Military **	Tactical Civil-Military coordination (Regional priority)
** Civil/Military **	Strategic Civil-Military coordination (Regional priority)
Ground Surveillance	B0-ASUR Initial Capability For Ground Surveillance (ADS-B Implementation)
** Ground Surveillance **	B0-ASUR Initial Capability For Ground Surveillance (Surveillance Coverage)
** Trajectory-based Operations – Data-Link En-Route **	B0-TBO - Improved Safety and Efficiency through the initial application of Data Link En-Route

**** ATFM-related, or impacting upon ATFM ****

Regional ATFM Framework

- ATFM Framework Document Structure
 - Regional Framework for Collaborative ATFM
 - Scope
 - Objectives
 - Executive Summary
 - Abbreviations and Acronyms
 - Background Information (Principles, Elements)

Regional ATFM Framework

- ATFM Framework Document Structure
 - Regional Framework for Collaborative ATFM
 - Current Situation
 - Performance Improvement Plan
 - Research, Development and Future Possibilities
 - Milestones, Timelines, Priorities, Actions
 - Appendices

Regional ATFM Framework

- Draft Principles: Examples
 - Increased capacity is the primary and central method for management of increasing demand.
 - Regional model of inter-connected sub-regional ATFM networks based on system-wide CDM, serving the busiest terminal airspace and major sub-Regional traffic flows.

Regional ATFM Framework

- Draft Principles: Examples
 - Development of manual processes and skills to promote practical knowledge and understanding of ATFM before implementing technology based solutions, and as a contingency response capability.
 - The prioritization of integrated AIDC systems for timely ATM and ATFM system updates of trajectory data, including preferred implementation of advanced AIDC messaging and configuration of systems for early delivery of AIDC messages.

Regional ATFM Framework

- Draft Principles: Examples
 - Optimization of ATFM facilities through automated, networked, central flow management centres and units or equivalent virtual platforms.
 - Encouragement of the use of dual-redundant automated ATFM processing and communications systems, supported by agreed contingency procedures and facilities including ATN/AMHS and public telephone systems.

Regional ATFM Framework

- Draft Principles: Examples
 - Encourage real-time sharing of dynamic air traffic data relating to flights operating or intending to operate in civil-controlled airspace, between military ATM systems and civil ATM/ATFM systems.
 - Inter-regional and sub-regional cooperation for the research, development and implementation of ATFM projects.

Regional ATFM Framework

- Current Situation
 - Subject to IATA ATFM study analysis
 - **ATFM/SG Decision 2/2: Asia/Pacific Region ATFM Study**
 - IATA-funded study of current and planned ATFM initiatives
 - Establish baseline view of ATFM capability/interoperability
 - Develop recommended implementation strategies
 - Report to ATFM/SG/4 December 2014

Regional ATFM Framework

- Performance Improvement Plan
 - Inclusions under consideration/drafted
 - Concepts
 - ATFM Sub-Regional or Regional Network
 - Concept - Not all ANSPs require all ATFM capability
 - ATFM Capability Elements
 - ATFM Service Categories
 - Airspace and Airport Capacity Measurement
 - Airspace and Airport Capacity Improvement
 - Airport CDM



Regional ATFM Framework

- Performance Improvement Plan
 - Inclusions under consideration/drafted
 - ATFM Terminologies and Messages
 - ATFM Communications Capability
 - ATFM Qualifications and Competencies – ATC
 - ATFM Qualifications and Competencies – ATFM Staff
 - ATFM Compliance
 - Meteorological products supporting ATFM
 - Implementation Timelines – alignment with Seamless ATM Plan
 - ATFM Performance Review and Improvement

Regional ATFM Framework

- ATFM Capability Elements
 - Based on Doc 9971 *Manual on Collaborative ATFM*
 - Defining minimum ATFM service capability applicable to particular types of airspace
 - Tailored selection of capability elements selected from a suite of tools, procedures and practices (measures)

Regional ATFM Framework

- ATFM Capability Elements: Examples
 - ATFM Unit, Centre or Virtual ATFM Centre Structure
 - Strategic Management Unit
 - Tactical Management Unit
 - Capacity Unit
 - Flow Management Positions

Regional ATFM Framework

- ATFM Capability Elements: Examples
 - Planning Tools
 - Airspace design and ATS route planning
 - Capacity analysis and workload modelling

Regional ATFM Framework

- ATFM Capability Elements: Examples
 - Prediction and Monitoring Tools
 - Demand and workload prediction
 - Weather prediction
 - Monitoring tools

Regional ATFM Framework

- ATFM Capability Elements: Examples
 - Tactical ATFM Capability
 - Agreed acceptance rates
 - Agreed flow “gates”
 - Prioritization of flights
 - Industry notification of delays



Regional ATFM Framework

- ATFM Capability Elements: Examples
 - ATFM Execution Tools
 - Slot Allocation
 - Route and Fix Balancing

Regional ATFM Framework

- ATFM Capability Elements: Examples
 - ATFM Measures
 - Miles in Trail
 - Minutes in Trail
 - Fix Balancing
 - Re-routing (strategic and tactical)
 - Slot swapping

Regional ATFM Framework

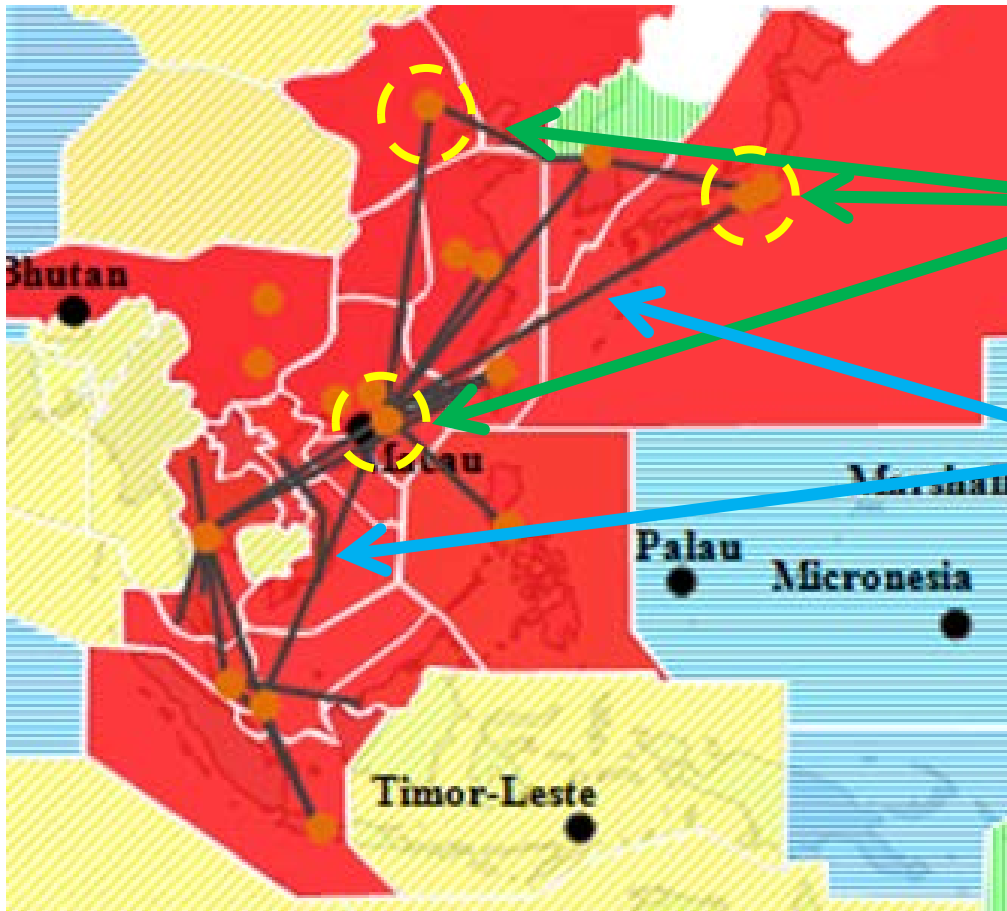
- ATFM Service Categories
 - Defined categories of airspace sector within which a minimum set of service capability elements should be provided
 - Determined by traffic density, airspace complexity (inc. traffic mix, airspace constraints, environmental and meteorological factors)

Regional ATFM Framework

- ATFM Service Category Examples
 - Terminal Areas (radar or ADS-B Surveillance) servicing major international and high density domestic airports
 - Enroute ATC sectors (radar or ADS-B Surveillance) overlying or servicing major ATS routes between the major international and high density domestic airports

Regional ATFM Framework

- ATFM Service Category Examples
 - Terminal areas (radar or ADS-B surveillance) servicing regional domestic or low-density international airports
- and so on....



Terminal Areas serving high density airports

High density enroute sectors

Regional ATFM Framework

- ATFM Service Category Examples



- *Individual State needs will vary*
- *Network requirements for States will vary*
- *E.g. Vientiane FIR*

Regional ATFM Framework

- ATFM Service Category Examples



- *Approx 900 total movements per day*
- *No current need for ATFM*
- *But..*

Regional ATFM Framework

- ATFM Service Category Examples



- Provides ATS on MTF between high density airports
- Departing aircraft subsequently operate in constrained airspace or arrive at constrained airports

Regional ATFM Framework

- ATFM Service Category Examples



- *May be required to execute ATFM measures*
- *CTOT?*
- *MIT?*
- *MINIT?*

Regional ATFM Framework

- ATFM Service Category Examples



– *Should have a minimum set of ATFM functions specified.*

Example ATFM Service Category

	Airspace Design/ATS Route Planning	Capacity Analysis and Modelling	Demand and Workload Prediction	Weather Prediction	Monitoring	Information Exchange	Collaboration	Electronic User Helpdesk	Crisis Management	Segregated SIDS and STARS	Agreed Acceptance Rates		Agreed Flow Gates at Uniform Distances	Prioritization of Landing Aircraft	Notification of Additional Fuel for Delays	Slot Allocation	Route and Fix Balancing	Flight Level Balancing	Miles in Trail	Minutes in Trail	Fix Balancing	Rerouting	Mandatory Rerouting
TMA - Major International Airport	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x		x		x		
Enroute - Major ATS Routes/City Pairs - Radar	x	x	x	x	x	x	x	x	x		x		x				x	x				x	x
Enroute - Major ATS Routes/City Pairs - Non-Radar	x	x	x	x	x	x	x	x	x		x							x	x	x		x	x
TWR/TMA - Regional - Radar	x	x	x	x		x	x			x							x		x		x		
TWR/TMA - Regional Non-Radar	x	x	x	x		x	x													x			

Regional ATFM Framework

- ATFM Service Category Examples
 - *characteristics and naming are subject to further development*
 - *The need for Service Category definition remains under discussion – may be dropped*

Regional ATFM Framework

- Implementation Timelines
 - Final Draft Framework expected to be presented to APANPIRG/26 (September 2015) for endorsement
 - Implementation timelines aligned where practicable with Seamless ATM Plan



Regional ATFM Framework

- Key Issues
- Harmonization and Interoperability
 - Harmonized practices and procedures
 - Interoperable systems
 - ATFM terminologies
 - ATFM information exchange
 - Contingency Operations
 - ATFM system degradation, maintenance or upgrades

Regional ATFM Framework

- Key Issues
- Harmonization and Interoperability
 - Interoperable Systems
 - Flight Information Exchange Model.....FIXM
 -a data interchange format for sharing information about flights throughout their lifecycle.

Regional ATFM Framework

- Flight Information Exchange Model.....FIXM
- Part of a suite of aeronautical data exchange models
- Gaining acceptance as the global standard
- Becoming referenced in ICAO publications
- Becoming included in new ATM system specifications

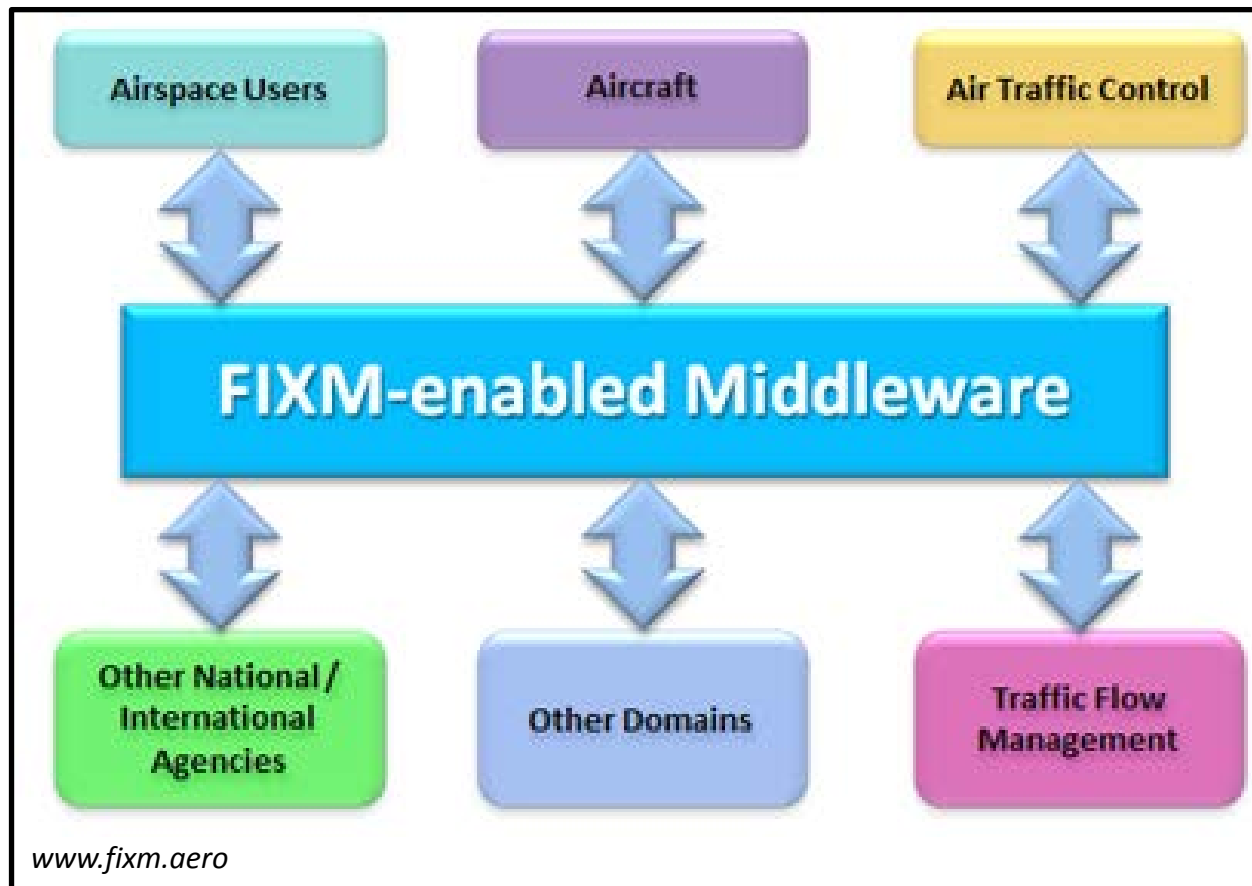


Regional ATFM Framework

- Flight Information Exchange Model.....FIXM
 - Collaborative development EUROCONTROL, FAA, other stakeholders (and now ICAO)
 - Current Core version v3.0
 - Has “extensions”, e.g:
 - USA Extension v3.0 (Core v3.0 plus USA specific Extensions)
 - EUROCONTROL A-CDM Extension v1.0 (Core v2.0 ++)

Regional ATFM Framework

- Flight Information Exchange Model.....FIXM



Regional ATFM Framework

- Flight Information Exchange Model.....FIXM
 - Being considered by ATFM/SG as the Regional standard for ATFM information exchange
 - May require “Asia/Pacific” Extensions
 - Terminologies under development by ATFM/SG

Regional ATFM Framework

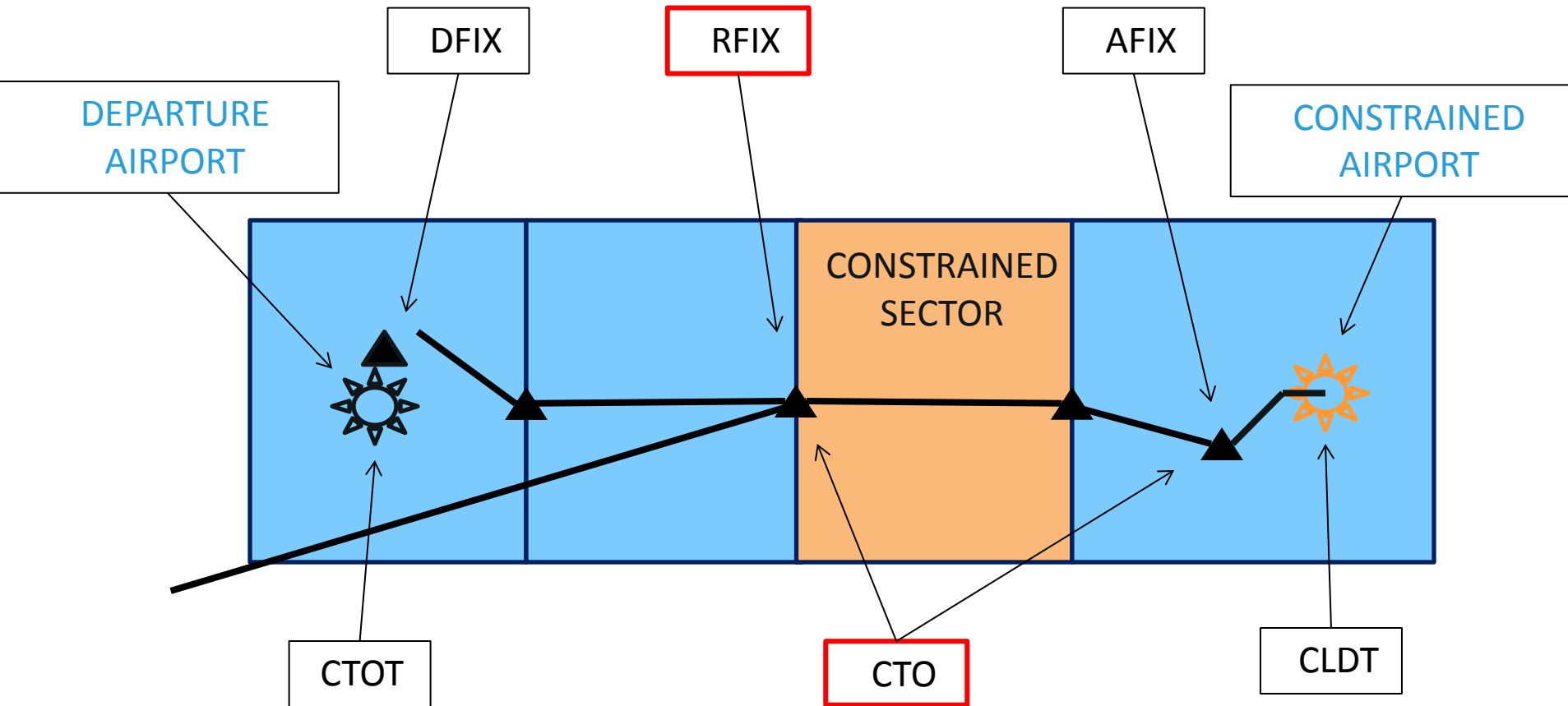
- ATFM Terminologies
 - Developing Regional terminologies from multiple sources
 - Using FIXM as a baseline

General

<u>Proposed APAC Acronym</u>	<u>Description</u>	<u>Source / History</u>
ADR	Airport Departure Rate	North America, South Africa, Australia
ASD	Aircraft Situation Display	South Africa, Australia, EUROCONTROL
AFIX	Arrival Fix	North America, South Africa, Australia, EUROCONTROL, Japan
CDR	Conditional Route	EUROCONTROL ASM Handbook
DFIX	Departure Fix	North America, South Africa, Australia, EUROCONTROL, Japan, FIXM 2.0
FCA	Flow Constrained Area	North America, South Africa, FIXM 2.0
RFIX	Enroute Fix	ATFM/SG
SEVWX	Severe Weather	ICAO Doc ? North America ? Japan?

<u>Phase of Flight</u>		
<u>Proposed APAC Acronym</u>	<u>Description</u>	<u>Source / History</u>
SOBT	Scheduled off block time	EUROCONTROL Airport CDM, FIXM 2.0
TOBT	Target Off - Block Time	EUROCONTROL Airport CDM, FIXM 2.0
TSAT	Target Start Up Approval Time	EUROCONTROL Airport CDM, FIXM 2.0
COBT	Calculated Off Block Time	ATFM/SG, based on CTOT
AOBT	Actual Off Block Time	EUROCONTROL Airport CDM
STOT	Scheduled Take Off Time	Based on Airport CDM TTOT
PTOT	Planned Take Off Time	South Africa, Australia
TTOT	Target Take Off Time	EUROCONTROL Airport CDM
CTOT	Calculated Take off Time	EUROCONTROL Airport CDM, FIXM 2.0
ETOT	Estimated Take Off Time	EUROCONTROL Airport CDM, FIXM 2.0

Regional ATFM Framework



Regional ATFM Framework

- Other Issues
- Coordination of Programs
 - Multiple ATFM programs
 - ICAO Regional Framework
 - AATIP
 - South East Asia multi-partite project
 - APEC ATM Emissions Reduction Project
 - Indonesia-Australia-Philippines CDM/ATFM Joint Task Force
 - Philippines Domestic
 - Others??

Regional ATFM Framework

- Other Issues
- Coordination of Programs
 - Considerable benefits in close coordination
 - Avoidance of duplication of effort
 - More efficient use of resources
 - Ensures maximum future interoperability and harmonization
 - Sub-Regional
 - Regional
 - Inter-Regional

Regional ATFM Framework

- Other Issues
 - Safety
 - (discussion points)
 - Particularly in the application of Tactical ATFM measures.
 - Separation always has priority
 - Implement better separation standards and procedures
 - Effectively increases available airspace
 - Increases capacity
 - Improves ATC workload and flexibility

Regional ATFM Framework

- Further information
 - ICAO Asia/Pacific Regional Office Website
 - <http://www.icao.int/APAC/Meetings/>
or contact
 - ssumner@icao.int
 - ATFM/SG/4, Bangkok, 1 – 5 December 2014



Regional ATFM Framework

Questions?



ICAO

UNITING AVIATION



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THANK YOU