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# SWIM in Asia/Pacific Regional Planning

- Air Traffic Management
- Aeronautical Information Management

ICAO Workshop on System Wide Information Management (SWIM)

Bangkok, Thailand

16 – 18 May 2016

Shane Sumner

Regional Officer ATM/AIM

ICAO Asia and Pacific Regional Office





## Topics

- Regional Expectations/Performance Objectives
  - Asia/Pacific Seamless ATM Plan
- Aeronautical Information Management
- Collaborative Air Traffic Flow Management



# Regional Expectations

# Asia/Pacific Seamless ATM Plan



## ASIA/PACIFIC SEAMLESS ATM PLAN

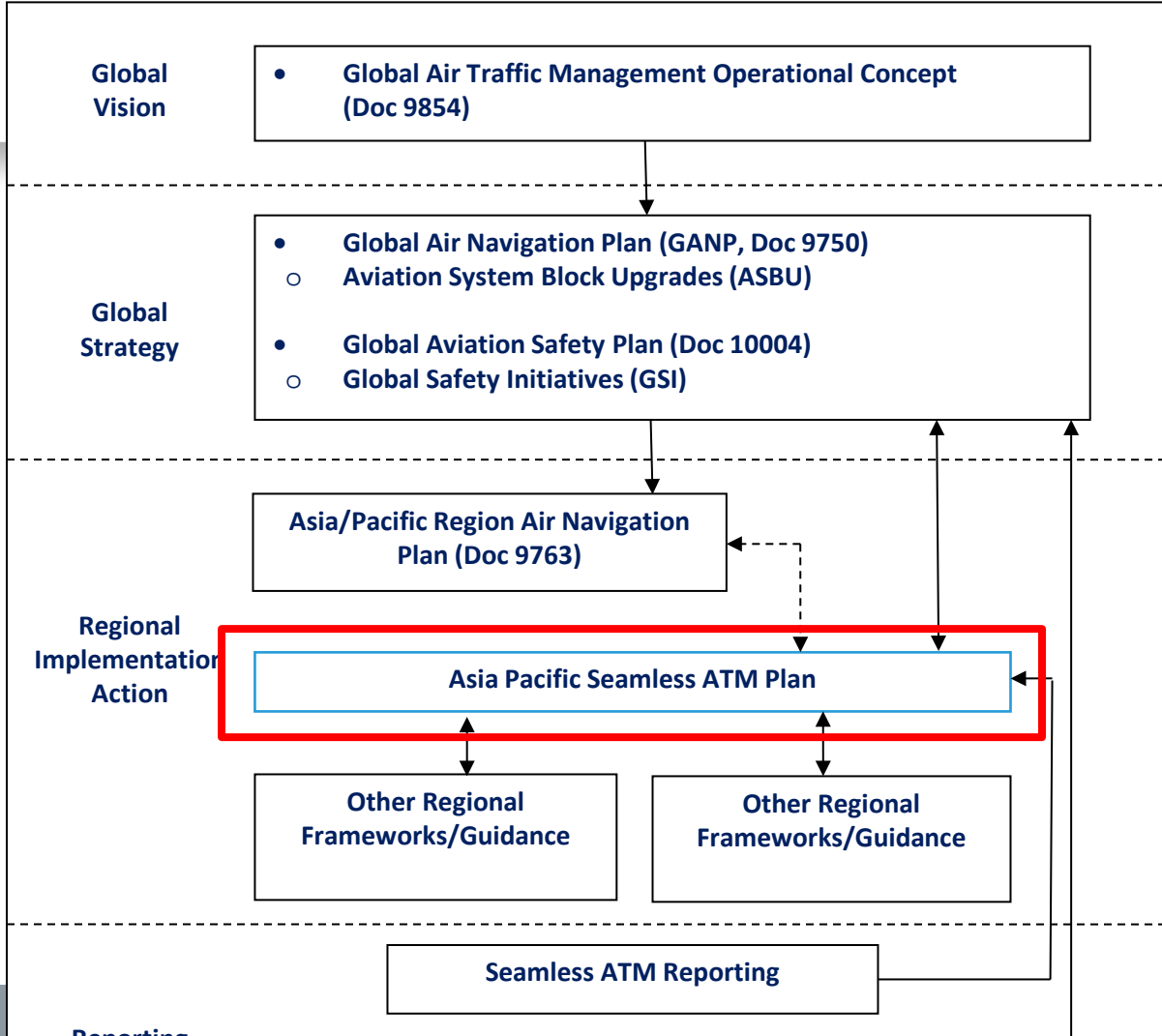
Version 1.0, June 2013

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



# Regional Expectations

# Asia/Pacific Seamless ATM Plan





- Seamless ATM Plan
  - Performance Improvement Plan
  - 2 Performance Objectives arranged in 2 implementation phases
  - *Preferred Aerodrome/Airspace and Route Specifications (PARS)* Phases I and II
  - *Preferred ATM Service Level (PASL)* Phases I and II
  - Phase I November 2015
  - Phase II November ~~2018~~ 2019 (Plan update during 2016)
    - Aligned with ASBU Block 0 timeline
  - 42 performance expectations



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# Aeronautical Information Management



- Seamless ATM Plan – **AIM Expectations**  
(Update 2016)
  - 10 Regional Priorities Including **B0-DATM**
  - Seamless ATM Plan Target – by **November 2015** (Phase I)
  - *ATM systems should be supported by digitally-based AIM systems through implementation of Phase 1 and 2 of the AIS-AIM Roadmap in adherence with ICAO and regional AIM planning and guidance material*
  - Metric – % of Phase 1 and Phase 2 elements completed



- Seamless ATM Plan – **AIM Expectations**  
(Update 2016)
  - 10 Regional Priorities Including **B0-DATM**
  - Seamless ATM Plan Target – by **November 2019** (Phase II)
  - *ATM systems should be supported by complete implementation of AIM Phase 3 using, at a minimum, **AIXM version 5.1***
  - Metric – % of AIM transition steps completed





# Regional Expectations

## Progress?

	Phase 1 Consolidation (Am. 36 November 2010)				Phase 2 Going Digital (Amendment 37 November 2013)							Phase 3 Information Management (Amendment 38 November 2016)											
	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	P-11 e-AP Digital		P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21	
Afghanistan																							
Australia	√	√	√	√	80%	√	√	√	60%	Link		√	75%				10%	60%			90%	5%	
Bangladesh	√	√	60%	√	√	√	70%	√		Part			60%			20%				20%			
Bhutan																							
Brunei Darussalam																							
Cambodia	√	√	√	10%						Part					70%			40%					
China	√	√	√	√					40%	Link								√	√		√		
Hong Kong, China	√	√	√	√	√	√				Link		√	√					40%	√				
Macao, China	√	√	√	√						Link								√	√				
Cook Islands																		√					
DPR Korea			√																				
Fiji	√	√	√	√	√		√	√	√	Link			√			√	√	√					
India	√	√	√	√	√	√	√	√	√	√			√										
Indonesia	√	√	√	65%	50%	50%	50%	20%	20%	Link		30%	30%	10%		80%		60%	20%	10%	20%		
Japan	√	√	√	√	√	√	√	√	√	Link		80%	50%		80%	20%	60%	√	√		20%	20%	
Kiribati																							
Lao PDR	√	√	25%																				
Malaysia	√	√	√	√	√	√	√	√	√	Link		50%	50%	50%	√	√	√	√			50%		
Maldives			√							Link													
Marshall Islands																							
Micronesia																							
Mongolia	√	√	√	√	√	√	√	80%	√	Link	√	65%	28%	5%	20%	10%	√	90%	√		√		
Myanmar	√	√	√	√	√	√	20%	20%	20%	Link		√	√	20%	20%	50%	50%	80%	80%	80%	80%	20%	
Nauru																							
Nepal	√	√	√										30%	30%									
New Caledonia	√	√	√	√	√	√		√		Link													
New Zealand	√	√	√	√	√	√	√	√	75%	Link		√	80%	15%	80%								
Pakistan	√	√	√										√			√	√	√		√		√	
Palau										part													
Papua New Guinea	√	√	√	90%				√									10%						
Polynesie Française	√	√	√	√	√	√		√		Link													
Philippines	√	√	60%	50%	√	50%	√	√	√	50%													
Republic of Korea	√	√	√	√	√				√	√								√	√		40%	90%	
Samoa																							
Singapore	√	√	√	√	√	√	50%	√	√	Link	√	60%	60%	25%	√	√	√	√	√		√		
Solomon Islands			√																				
Sri Lanka	√	√	√	95%			25%			Link						25%	25%	20%	25%				
Thailand	√	√	80%	40%	40%	30%				Link		25%	25%		10%	5%							
Timor Leste			√																				
Tonga		√	√	√																			
Vanuatu																							
Viet Nam	70%	75%	√	25%	50%	50%	50%	80%	50%	50%		20%	20%			20%	30%	20%	30%				
USA†	√	√	20%	√	√	√	25%	√	50%	part		√	√	√	√	√		70%	√	25%	√	√	



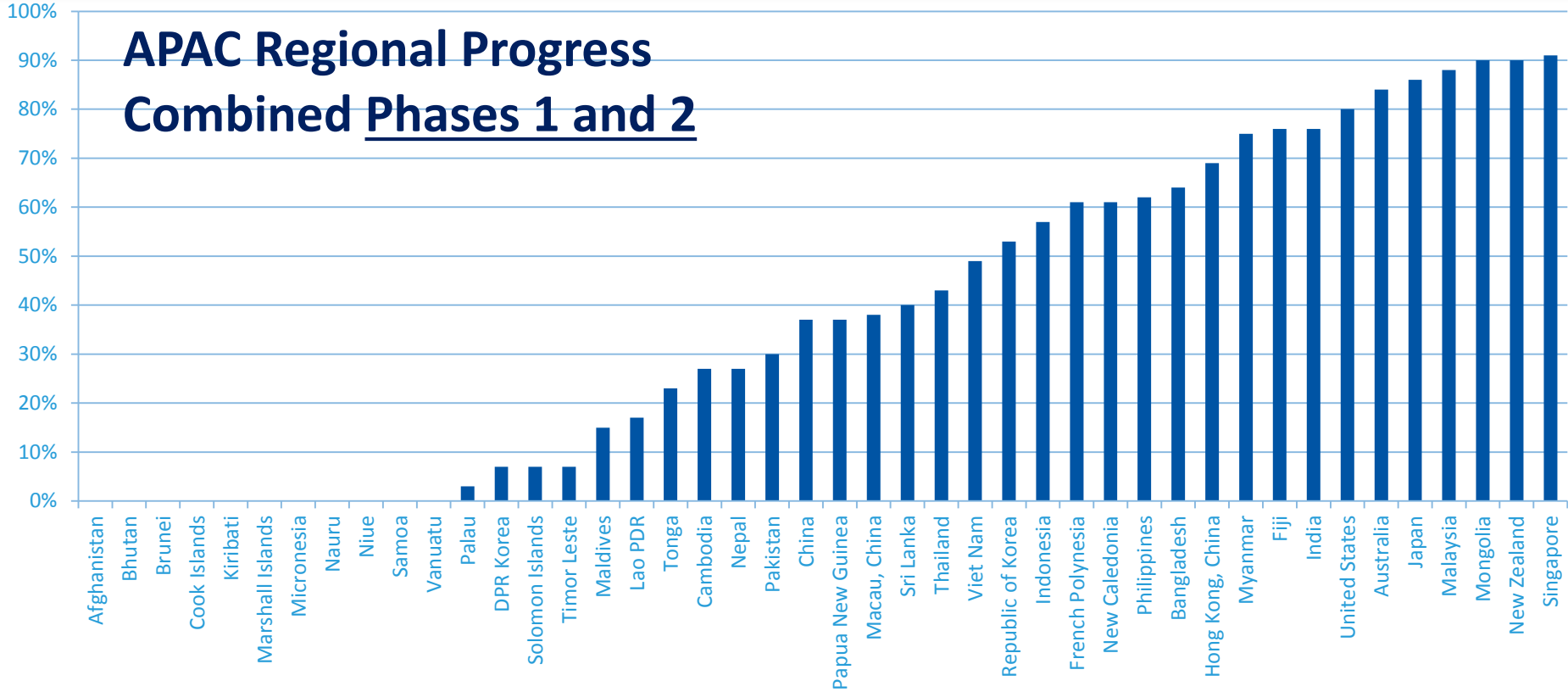
# Regional Expectations

## APAC AIM Transition Table

### AIM Transition Roadmap Phases 1 and 2

### Phase 3

	P-03	P-04	P-05	P-06	P-07	P-08	P-09	P-10	P-11	P-12	P-13	P-14	P-15	P-16	P-17	P-18	P-19	P-20	P-21		
Afghanistan																					
Australia	✓	✓	✓	✓	80%	✓	✓	✓	60%	Link	✓	75%						90%	5%		
Bangladesh	✓	✓	60%	✓	✓	✓	70%	✓		Part		60%		20%			20%				
Bhutan																					
Brunei Darussalam																					
Cambodia	✓	✓	✓	10%						Part				70%	40%						
China	✓	✓	✓						40%	Link					✓	✓		✓			
Hong Kong, China	✓	✓	✓	✓	✓	✓				Link	✓	✓			40%	✓					
Macao, China	✓	✓	✓	✓						Link					✓	✓					
Cook Islands															✓						
DPR Korea																					
Fiji	✓	✓	✓	✓	✓	✓	✓	✓	✓	Link		✓			✓	✓	✓				
India	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓									
Indonesia	✓	✓	✓	65%	50%	50%	50%	20%	20%	Link		30%	30%	10%		80%	60%	20%	10%	20%	
Japan	✓	✓	✓	✓	✓	✓	✓	✓	✓	Link		80%	50%		80%	20%	60%	✓	✓	20%	20%
Kiribati																					
Lao PDR	✓	✓	25%																		
Malaysia	✓	✓	✓	✓	✓	✓	✓	✓	✓	Link		50%	50%	50%	✓	✓	✓	✓		50%	
Maldives			✓							Link											
Marshall Islands																					
Micronesia																					
Mongolia	✓	✓	✓	✓	✓	✓	✓	80%	✓	Link	✓	65%	28%	5%	20%	10%	✓	90%	✓	✓	
Myanmar	✓	✓	✓	✓	✓	✓	20%	20%	20%	Link		✓	✓	20%	20%	50%	50%	80%	80%	80%	20%
Nauru																					
Nepal	✓	✓	✓	✓								30%	30%								
New Caledonia	✓	✓	✓	✓	✓	✓	✓	✓		Link											
New Zealand	✓	✓	✓	✓	✓	✓	✓	75%		Link	✓	80%	15%	80%							
Pakistan	✓	✓	✓									✓			✓	✓	✓		✓	✓	
Palau										part											
Papua New Guinea	✓	✓	✓	90%				✓								10%					
Polynesie Française	✓	✓	✓	✓	✓	✓	✓	✓		Link											
Philippines	✓	✓	60%	50%	✓	50%	✓	✓	✓	50%											
Republic of Korea	✓	✓	✓	✓	✓				✓	✓					✓	✓			40%	90%	
Samoa																					
Singapore	✓	✓	✓	✓	✓	✓	50%	✓	✓	Link	✓	60%	60%	25%	✓	✓	✓	✓	✓	✓	
Solomon Islands			✓																		
Sri Lanka	✓	✓	✓	95%			25%			Link					25%	25%	20%	25%			
Thailand	✓	✓	80%	40%	40%	30%				Link		25%	25%	10%	5%						
Timor Leste			✓																		
Tonga		✓	✓	✓																	
Vanuatu																					
Viet Nam	70%	75%	✓	25%	50%	50%	50%	80%	50%	50%		20%	20%		20%	30%	20%	30%			
USA*	✓	✓	20%	✓	✓	✓	25%	✓	50%	part		✓	✓	✓	✓	✓	✓	70%	✓	25%	✓





## Top 10....

- 1. Singapore**
- 2. New Zealand**
- 3. Mongolia**
- 4. Malaysia**
- 5. Japan**
- 6. Australia**
- 7. United States**
- 8. India**
- 9. Fiji**
- 10. Myanmar**



## Top 10.... But are they SWIM/AIXM ready?

1. Singapore
2. New Zealand
3. Mongolia
4. Malaysia
5. Japan
6. Australia
7. United States
8. India
9. Fiji
10. Myanmar



# Regional Expectations

## APAC AIM Transition Table

	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	e-AP	Digital	P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21	
Afghanistan																							
Australia	√	√	√	√	80%	√	√	√	60%	Link		√	75%				10%	60%			90%	5%	
Bangladesh	√	√	60%	√	√	√	70%	√		Part			60%		20%					20%			
Bhutan																							
Brunei Darussalam																							
Cambodia	√	√	√	10%						Part					70%			40%					
China	√	√	√						40%	Link								√	√			√	
Hong Kong, China	√	√	√	√						Link		√	√					40%	√				
Macao, China	√	√	√	√						Link								√	√				
Cook Islands																		√					
DPR Korea																							
Fiji	√	√	√	√	√		√	√	√	Link			√			√	√	√					
India	√	√	√	√	√		√	√	√				√										
Indonesia				65%	50%	50%	50%	20%	20%	Link		30%	30%	10%		80%		60%	20%	10%	20%		
Japan	√	√	√	√	√	√	√	√	√	Link		80%	50%		80%	20%	60%	√	√			20%	20%
Kiribati																							
Lao PDR	√	√	25%																				
Malaysia	√	√	√	√	√	√	√	√	√	Link		50%	50%	50%	√	√	√	√				50%	
Maldives			√							Link													
Marshall Islands																							
Micronesia																							
Mongolia	√	√	√	√	√	√	√	80%	√	Link	√	65%	28%	5%	20%	10%	√	90%	√		√		
Myanmar	√	√	√	√	√	√	20%	20%	20%	Link		√	√	20%	20%	50%	50%	80%	80%	80%	80%	80%	20%
Nauru																							
Nepal	√	√	√	√									30%	30%									
New Caledonia	√	√	√	√	√	√		√		Link													
New Zealand	√	√	√	√	√	√	√	√	75%	Link		√	80%	15%	80%								
Pakistan	√	√	√										√		√	√	√		√				√
Palau										part													
Papua New Guinea	√	√	√	90%				√									10%						
Polynesie Francaise	√	√	√	√	√	√		√		Link													
Philippines	√	√	60%	50%	√	50%	√	√	√	50%													
Republic of Korea	√	√	√	√	√				√									√	√			40%	90%
Samoa																							
Singapore	√	√	√	√	√	√	50%	√	√	Link	√	60%	60%	25%	√	√	√	√	√			√	
Solomon Islands			√																				
Sri Lanka	√	√	√	95%			25%			Link						25%	25%	20%	25%				
Thailand	√	√	80%	40%	40%	30%				Link		25%	25%		10%	5%							
Timor Leste			√																				
Tonga			√	√																			
Vanuatu																							
Viet Nam	70%	75%	√	25%	50%	50%	50%	80%	50%	50%		20%	20%			20%	30%	20%	30%				
USA*	√	√	√	20%	√	√	√	25%	√	50%	part	√	√	√	√	√	√	70%	√	25%	√	√	



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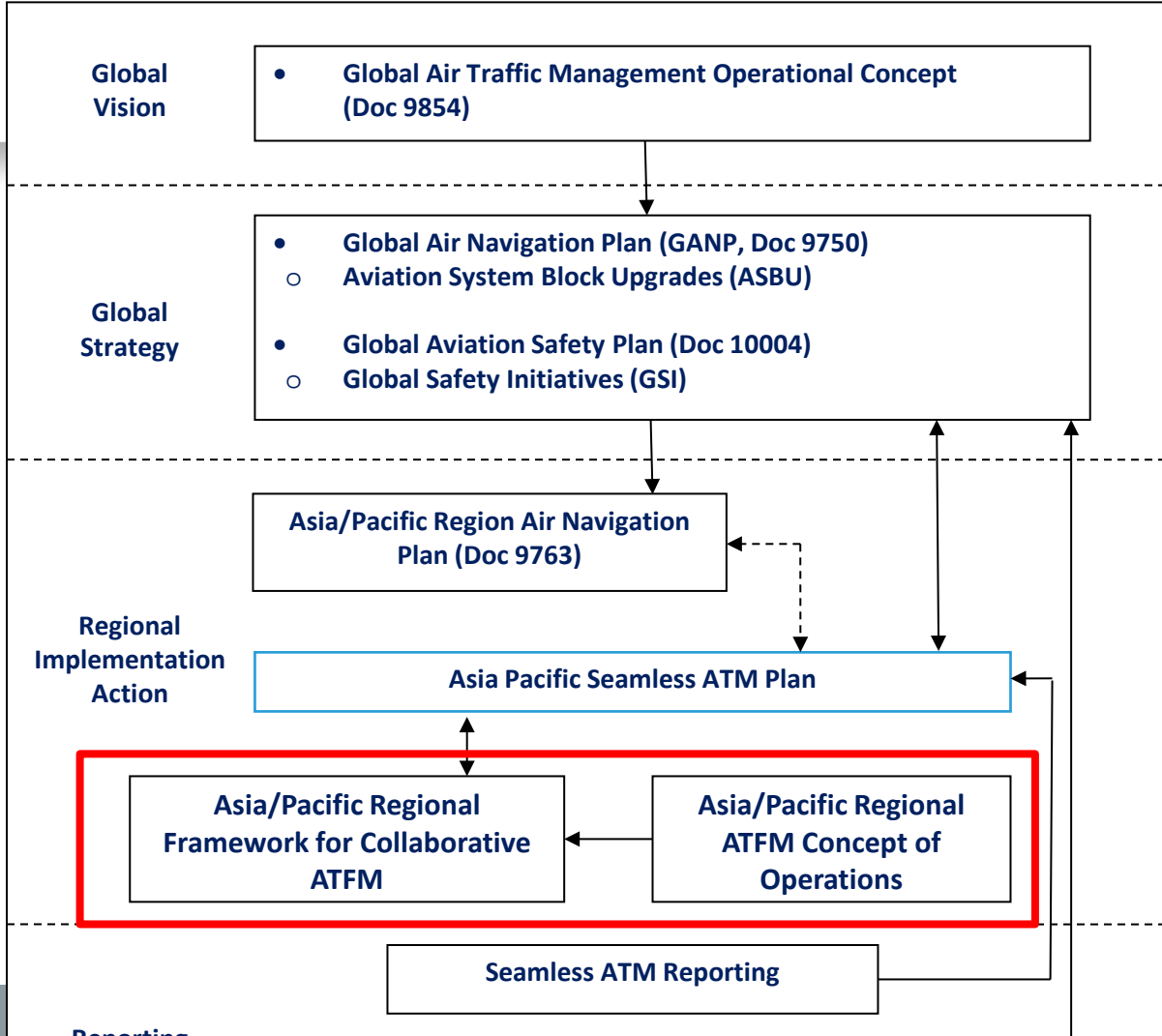
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# Collaborative Air Traffic Flow Management



- Seamless ATM Plan
  - Seamless ATM Plan performance expectations for
    - **Air Traffic Flow Management (ATFM)**
  - Expanded and more detailed in:
    - **APAC Regional Framework for Collaborative ATFM**
  - Supported by the
    - **APAC Regional ATFM Concept of Operations**







# Concept

- Regional ATFM Concept of Operations
  - Collaborative development
  - CAA Singapore/Industry Partners
  - Adapted by ATFM/SG
  - Adopted by APANPIRG/26
    - September 2015



ASIA/PACIFIC REGIONAL  
AIR TRAFFIC FLOW MANAGEMENT  
CONCEPT OF OPERATIONS

Version 1.0 September 2015

This document was developed by the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG)

Approved by APANPIRG/26 and published by the  
ICAO Asia and Pacific Office, Bangkok



# Concept

- Key concepts
  - No overarching network capability
  - Distributed multi-nodal ATFM network



ASIA/PACIFIC REGIONAL  
AIR TRAFFIC FLOW MANAGEMENT  
CONCEPT OF OPERATIONS

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# Framework

- Asia/Pacific Framework for Collaborative ATFM
- Key inclusions.....



**ASIA/PACIFIC FRAMEWORK  
FOR  
COLLABORATIVE AIR TRAFFIC FLOW MANAGEMENT**

Version 1.0 September, 2015

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# Framework

- Asia/Pacific Framework for Collaborative ATFM
  - References the ATFM Concept document
  - Distributed multi-nodal ATFM network



**ASIA/PACIFIC FRAMEWORK  
FOR  
COLLABORATIVE AIR TRAFFIC FLOW MANAGEMENT**

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# Framework

- Asia/Pacific Framework for Collaborative ATFM
  - Agreed model for ATFM information exchange



**ASIA/PACIFIC FRAMEWORK  
FOR  
COLLABORATIVE AIR TRAFFIC FLOW MANAGEMENT**

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# Framework

- Core concept is Distributed Multi-Nodal ATFM Network
  - Referenced to Regional ATFM Concept of Operations
- Virtual ATFM Platform of interconnected States and/or sub-Regional groups operating cross-border ATFM network
- No need for any central, physical facility providing 'network management'



# Framework

- Includes regionally agreed position on *inter alia*:
- ATFM Terminology
- ATFM System Communication
- ATFM Information Distribution





# Framework

- **Characteristics of Cross-Border ATFM:**
  - **Inclusive process**
    - Participation by States and other Stakeholders is the key
  - **Transparent process**
    - Simple business rules to ensure compliance and build trust



# Framework

- Characteristics of Cross-Border ATFM:
  - Allow sharing of information among all partners through common network to improve efficiency and operational decision making
  - Achieve common situational awareness for all partners, taking into account the data sharing capability of stakeholders



# ATFM Information Distribution

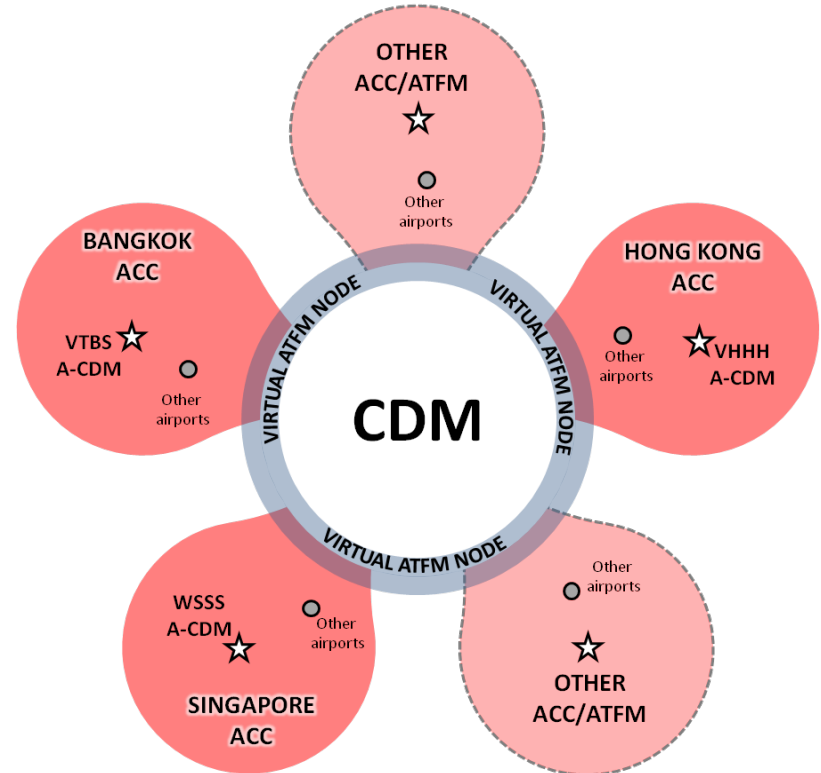
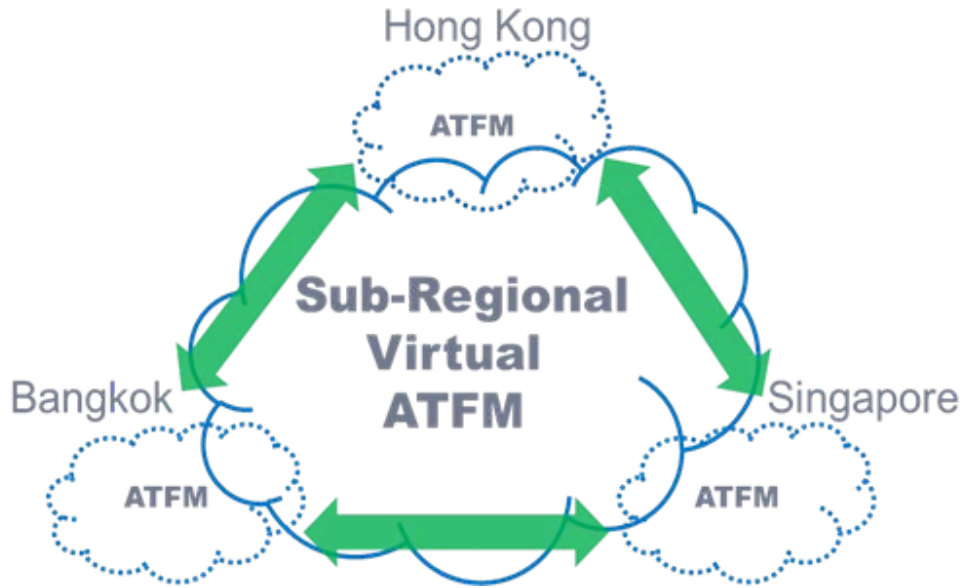
- Voice Coordination
- Email distribution (eg ATFM Daily Plan)
- Networked, web-based interface
  - ATFM Unit, ATS Unit, airspace user and other stakeholder locations, each forming a node of a distributed multi-nodal ATFM platform



## ATFM Information Distribution

- Web-based interface
  - ATFM Units, ATS Units, airspace user and other stakeholder locations, providing access directly to ATFM information provided by ATFM Unit responsible for initiation of ATFM measures for destination airport or constrained airspace
- AFTN messages distributed to individual ATS Units (ATFM measures)

# Distributed Multi-Nodal ATFM Network



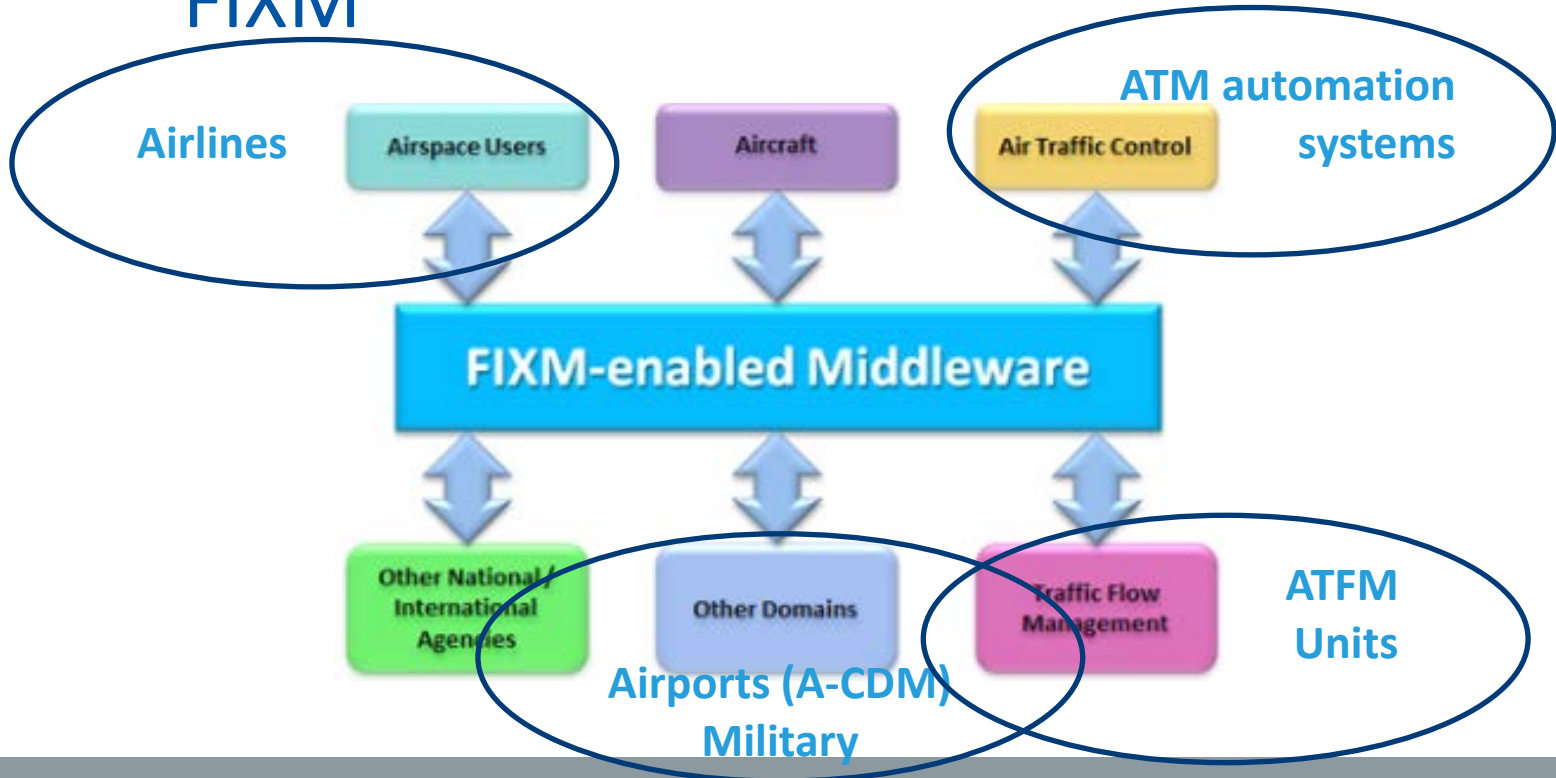


## Framework

- *Regional and Global interoperability of communications is critical to the implementation of effective, network-based cross-border ATFM.*
- Flight Information Exchange Model (FIXM)

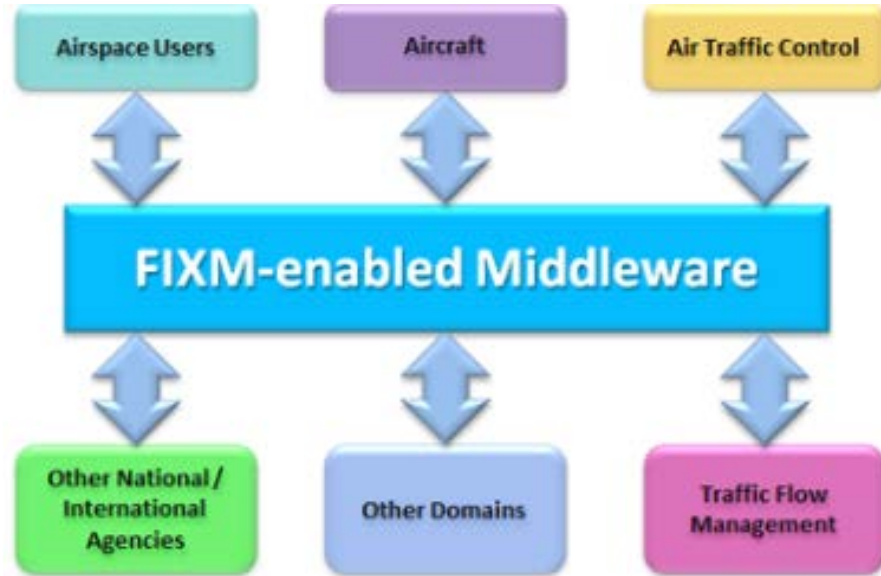


# FIXM



# Framework

- interoperability
- Integration of all ATM information
  - FIXM AIXM WXXM
- Coming global standard







## Framework

*5.50 FIXM version 3.0 (or later), extended where necessary to accommodate additional regional requirements, is the agreed ATFM information exchange model for exchanging ATFM data between ATFM systems in the Asia/Pacific Region.*



# Framework – Performance Expectations

Regional ATFM Capability Phase I B (May 2017)

## ATFM Systems

7.17 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 3.0 or later.....*)



# Framework – Performance Expectations

Regional ATFM Capability Phase II (November 2018)

## ATFM Systems

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

.



## Framework – Performance Expectations

### 7.28 ...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;



## Framework – Performance Expectations

### 7.28 ...(...including.....)

- 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.



## Conclusion:

Asia/Pacific Regional planning and performance expectations for:

- Aeronautical Information Management; and
- Collaborative Air Traffic Flow Management

are dependent upon interoperable information exchange capability



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(MID) Office  
Cairo

Eastern and  
Southern African  
(ESAF) Office  
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Asia and Pacific  
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Beijing

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(APAC) Office  
Bangkok



THANK YOU