



International Civil Aviation Organization

**EIGHTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION
AND SURVEILLANCE SUB-GROUP (CNS SG/18) OF APANPIRG**

Asia and Pacific Regional Sub-Office, Beijing, China
(21 – 25 July 2014)

Agenda Item 6: Navigation

6.1) Updates on national PBN implementation plan and PBN
implementation issues

**PBN AND ATFM/CDM IMPLEMENTATION SUPPORTS BY
ICAO APAC REGIONAL SUB-OFFICE**

(Presented by Secretariat)

SUMMARY

This Information Paper presents information on the activities and progress of the ICAO Asia and Pacific Regional Sub-Office (RSO) in supporting PBN and ATFM/CDM Implementation. The paper also presents the activities of ICAO APAC FPP in 2013 and 2014.

1. INTRODUCTION

1.1 The APAC region represents one of the fastest growing aviation markets. ICAO forecast predicts that the international revenue passenger kilometers (RPKs) in the APAC Region will almost double that of North America within a decade. IATA estimates that the demand for commercial air travel in the APAC Region will continue to grow at a combined annual growth rate (CAGR) of 8.8% for international passenger market and 11.3% for freight market by 2014. ACI reports that the number of airport passengers in the APAC region was up by 11.3% in 2010.

1.2 The ICAO APAC RSO was established in June 2013 aiming to provide implementation support assistances to States in ATM enhancement activities including PBN implementation, Airspace optimization and management and Air Traffic Flow Management and Collaborative Decision Making (ATFM/CDM).

1.3 The APAC FPP is established in 2009 with a goal of developing States' capabilities in the instrument flight procedure domain, focusing in the area of procedure design. The APAC FPP is now under a regular supervision by ICAO APAC RSO and is co-located with the Sub-Office.

2. DISCUSSION

2.1 ICAO Asia and Pacific Regional Sub-Office (RSO)

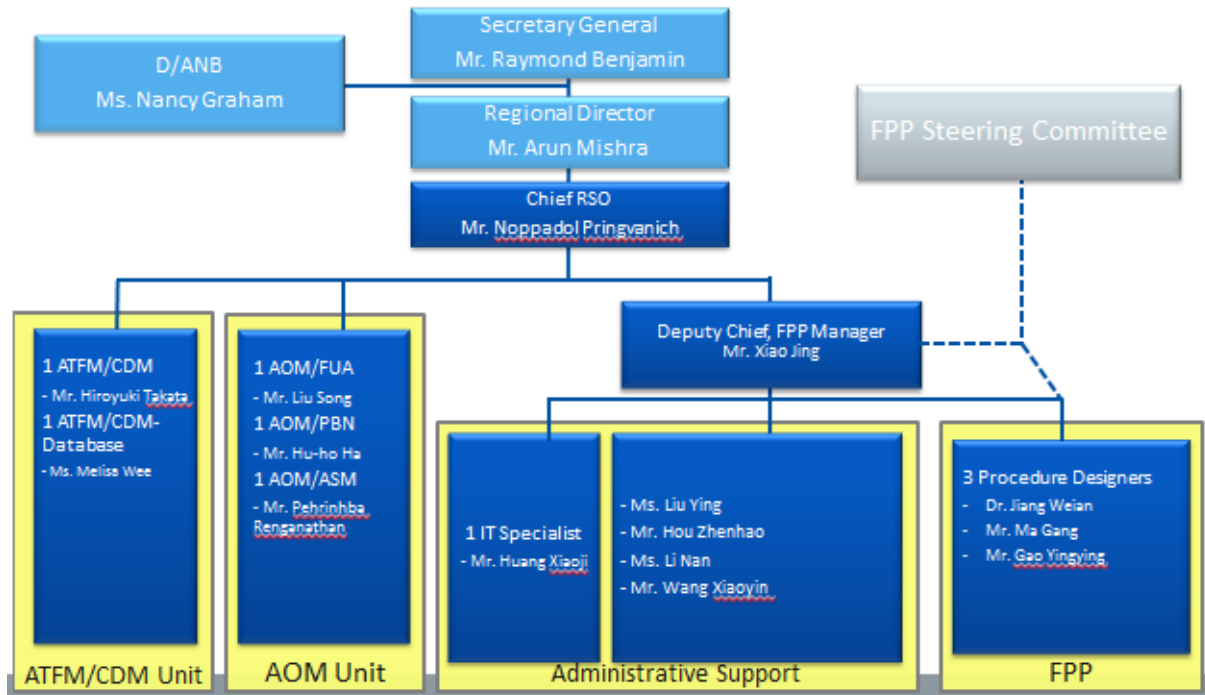
2.1.1 The ICAO Council, at the sixth meeting of its 194th Session held on 14 November 2011, agreed to establish a Regional Sub-office (RSO) of the Asia and Pacific (APAC) Office, aiming to enhance support to States in the APAC Region. Following the selection process, the People's Republic of China was approved as the host State of APAC RSO by the Council at its 197th Session held on 5th November 2012.

2.1.2 The RSO engages in project-oriented activities aiming to support States in their air traffic management enhancement projects. The project areas which are in scope of the RSO activities include but not limited to Airspace organization and management (AOM), Collaborative decision making (CDM), Air traffic flow management (ATFM), Flexible Use of Airspace (FUA) and Performance-Based Navigation (PBN).

2.1.3 The ICAO APAC RSO Strategic Framework consists of four strategies, namely

- A. Improve **Safety and Efficiency of Flight Operations** through Innovative Procedures;
- B. Enhance **Airspace Capacity and Efficiency** to Accommodate Asian Aviation Growth;
- C. Optimize **ATM Operations** via Collaborative Management of Traffic Flow; and
- D. Ensure **Continuous Improvement of Organizational Performances** by Proper Managements of Quality, Work Plans, Resources and Developments of Team-members' Capacity

2.1.4 The RSO organization consists of four units; namely Airspace Organization and Management Unit (AOM), Air Traffic Flow Management and Collaborative Decision Making Unit (ATFM/CDM) Unit, Administrative Unit and Flight Procedure Programme (FPP). Its organization structure is shown in the figure below.



The RSO is led by a Chief of Regional Sub-Office (P-5 position) recruited by ICAO. Chief, Regional Sub-Office reports directly to the ICAO Regional Director of the APAC Office in Bangkok, and works closely with the Air Navigation Bureau at ICAO HQ, particularly on issues relevant to Aviation System Block Upgrades (ASBUs) and ATM.

2.1.5 The works of the RSO will not duplicate the role of the existing APAC Office in Bangkok. While the APAC Office will continue its activities as the center of Regional Planning, the RSO, in cooperation with industry partners, will focus its efforts in supporting member States on their implementations of ATM enhancement projects.

2.1.6 Since June 2013, the ICAO APAC RSO has provided the following ATM implementation supports to States:

Performance-based Navigation (PBN) and Airspace Organization and Management (AOM)

- Assisted Bangladesh, Cambodia, Fiji, Laos PDR, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand, and Timor Leste in effective implementations and validations of PBN procedures;
- In cooperation with IATA, conducted trainings in PBN Operational Approval for regulators, airlines and ANSPs;
- Supported ICAO/IATA/CANSO PBN Global Go-Team visits and PBN Airspace Design Workshops in Thailand and China;

- Schedule a PBN Implementation and Planning Workshop for Pacific Island States in 2014 in Fiji to assist with PBN State Planning; and
- Entrusted by ICAO IFPP to develop PBN Procedure Construction Manual
Air Traffic Flow Management and Collaborative Decision Making (ATFM/CDM)
- Conducted a project assessment for ATFM/CDM implementation project in Shanghai in coordination with CAA China;
- Assisted China, Japan and ROK on the establishment of North-Asia Regional ATFM Harmonization Group (NARAHG);
- Coordinated with ASEAN States on their on-going ATFM activities; and
- Conducted a briefing to China to gain better understanding of China's plan for planning and implementation of ASBU, ATFM and CDM.

2.2 APAC Flight Procedures Programme Office (APAC FPP)

2.2.1 ICAO Asia-Pacific Flight Procedure Programme (APAC FPP) was established in October 2009. Recognizing the need for a regional center of excellence in the field of flight procedure design and to support ICAO Assembly Resolutions on Performance Based Navigation (PBN) implementation, ICAO Asia-Pacific PBN Task Force recommended ICAO APANPIRG to establish the FPP. In September 2009, APANPIRG during its twentieth meeting endorsed the concept. Starting in June 2013, the APAC FPP is co-located with ICAO APAC RSO, near Terminal 3 of Beijing International Airport.

2.2.2 The FPP objective is to assist States/Administrations to develop sustainable capability in the instrument flight procedure (IFP) domain. The APAC FPP aims to support APAC States/Administrations in their continuing efforts to meet their PBN commitments under ICAO Assembly Resolutions and their obligations for the quality of their flight procedures. This will be accomplished through training, assistance with quality assurance and procedure design process and access to IFP-related automation solutions.

2.2.3 The FPP will foster implementation of flight procedures, which are developed with the appropriate quality systems, especially PBN and vertically guided instrument approach procedures by:

- a) Assisting those States with sufficient density of procedures to establish a sustainable internal procedure design capability capable of meeting the requirements of ICAO PANS-OPS and States' responsibility for the quality of their procedures;
- b) Providing the appropriate level of technical expertise necessary to enable States that do not have the density of procedures necessary to sustain an internal procedure design capability; and
- c) Providing a vehicle to improve quality in the States' procedure design process through access to procedure design automation solutions and associated data storage.

2.2.4 *FPP Phase 2.* Following a Steering Committee decision endorsing Phase 2 of the FPP which will cover the period of 2013 – 2017, the FPP has developed the “Strategy Forward: Towards FPP Phase 2” - a set of organizational strategies and initiatives which will ensure the continuation of organizational excellences. The Strategy consists of three (3) important areas, which are 1) Enhance Internal Process, 2) Expand Value Creation, and 3) Increase Public Visibility. During the 49th DGCA Conference, Asia and Pacific Regions, the Conference noted with appreciation significant accomplishments of the FPP in 2012 and urged States/Administrations to continue their supports of the FPP into Phase 2 (2013-2017) of the Programme and to endorse its Strategy Forward.

2.2.5 *FPP Activities in 2013* - As shown in the following table, in 2013 the APAC FPP in co-operation with its partner organizations has conducted a total of nine (9) courses and workshops with 178 students from fifteen (15) States/Administrations in the Asia-Pacific Region. These trainings and workshops were conducted in accordance with ICAO policies, documents and manuals, and the efforts were focused in supporting States/Administrations in the areas of procedure design, quality assurance and PBN implementation.

Date	Trainings	Location	Participants
18-21 Feb	ICAO/IATA PBN Airspace Design Workshop	Karachi, Pakistan	29
25 Feb - 1 Mar	PD Instructor Course	Beijing, China	3
4 - 29 Mar	PANS-OPS Initial Course	Beijing, China	19
3 - 20 Sep	PBN Procedure Design Course	Beijing, China	23
23 Sep-11 Oct	Procedure Design OJT for Fiji	Beijing, China	2
7 - 18 Oct	Procedure Design OJT for Malaysia	Beijing, China	2
18 – 29 Nov	ICAO/IATA PBN Airspace Design Workshop	Bangkok, Thailand	59
25-29 Nov	ICAO/IATA PBN Ops Approval Course	Bangkok, Thailand	25
9 - 13 Dec	FPP Procedure Design Refresher Course	Beijing, China	16

2.2.6 *FPP Activities in 2014* - The following trainings are planned by APAC FPP in 2014. Details and confirmations on all trainings will be provided in due course through ICAO State Letters.

Date	Activities	Location	Participants
20-30 Jan	Procedure Design OJT - completed	RSO Beijing	Sri Lanka
11 Feb - 7 Mar	Pans-Ops PD Initial Course – completed	RSO Beijing	FPP States
TBD	Procedure Design OJT	RSO Beijing	DPRK
7-23 May	PBN PD Course – completed	RSO Beijing	FPP States
14 July – 8 Aug	Pans-Ops PD Initial Course	RSO Beijing	FPP States
2-19 Sep	PBN PD Course	RSO Beijing	FPP States
Oct (TBC)	PD Quality Assurance Course	RSO Beijing	FPP States
10-14 Nov (TBC)	RNP AR Course	RSO Beijing	FPP States
24-26 Nov (TBC)	FPP SC 6	RSO Beijing	FPP States
8-12 Dec (TBC)	PD Refresher Course	RSO Beijing	FPP States

2.2.7 Following the success of the APAC FPP and through cooperation among ICAO Air Navigation Bureau, ICAO APAC RSO, and ICAO ESAF and WACAF Regional Offices and ICAO Member States in AFI Regions, ICAO has recently established a similar FPP in Africa in May 2014. Beyond its main objective to enhance aviation safety in the Africa Region through PBN implementations, this establishment of Africa FPP will provide strategic opportunities for partnerships and cooperation among the FPPs in the future.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information in this IP; and
- b) note that States/Administrations are encouraged to request supports from ICAO APAC RSO during their planning and implementation of PBN and ATFM/CDM.



PBN AND ATFM/CDM IMPLEMENTATION SUPPORTS BY ICAO APAC REGIONAL SUB-OFFICE

presented by the Secretariat

**EIGHTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION AND
SURVEILLANCE SUG-GROUP (CNS SG/18) OF APANPIRG**

ICAO APAC Regional Sub Office

- ICAO Council agreed to establish a Regional Sub-Office (RSO) of the Asia Pacific (APAC) Office on 14 November 2011.
- RSO was inaugurated in Beijing, China on 27 June 2013.





RSO - Responsibilities

- To improve airspace organization and maximize ATM performance and capability in Asia and Pacific.
- Entrusted by ICAO Council to support States for **implementation** of efficient management of airspace and air traffic flow in the APAC Region through Airspace Organization and Management (AOM), Collaborative Decision Making (CDM), Air Traffic Flow Management (ATFM), Flexible Use of Airspace (FUA) and Performance-Based Navigation (PBN) aimed at meeting traffic growth.



Strategic Framework for the Regional Sub-Office (RSO)

A. Improve **Safety and Efficiency of Flight Operations** through Innovative Procedures.

B. Enhance **Airspace Capacity and Efficiency** to Accommodate Asian Aviation Growth

C. Optimize **ATM Operations** via Collaborative Management of Traffic Flow



In coordination with ANB and APAC Regional Office

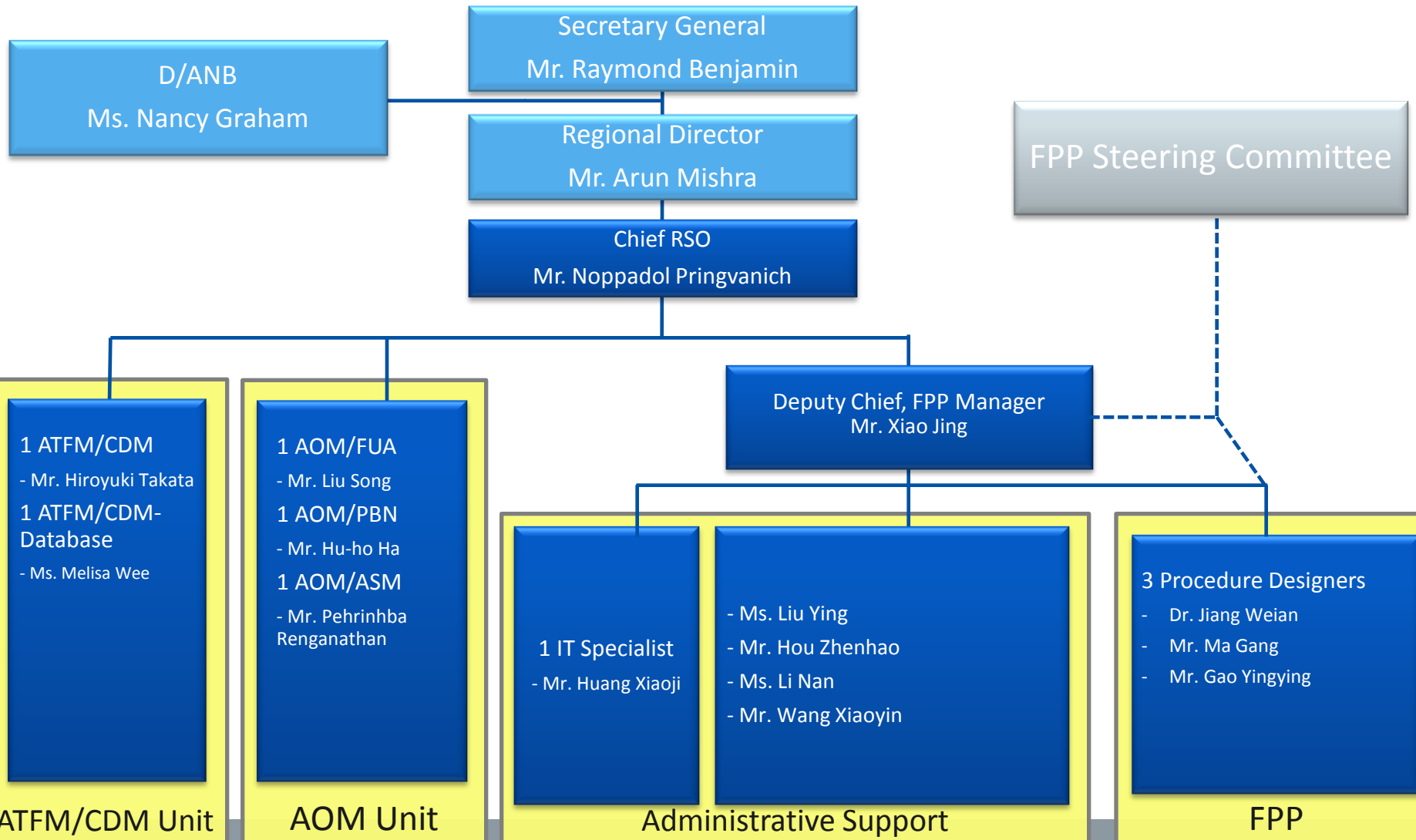
D. Ensure **Continuous Improvement of Organizational Performances** by Proper Managements of Quality, Work Plans, Resources and Developments of Team-members' Capacity



Consistent with ICAO culture and practices



Current Work Structure and Team Members of the RSO

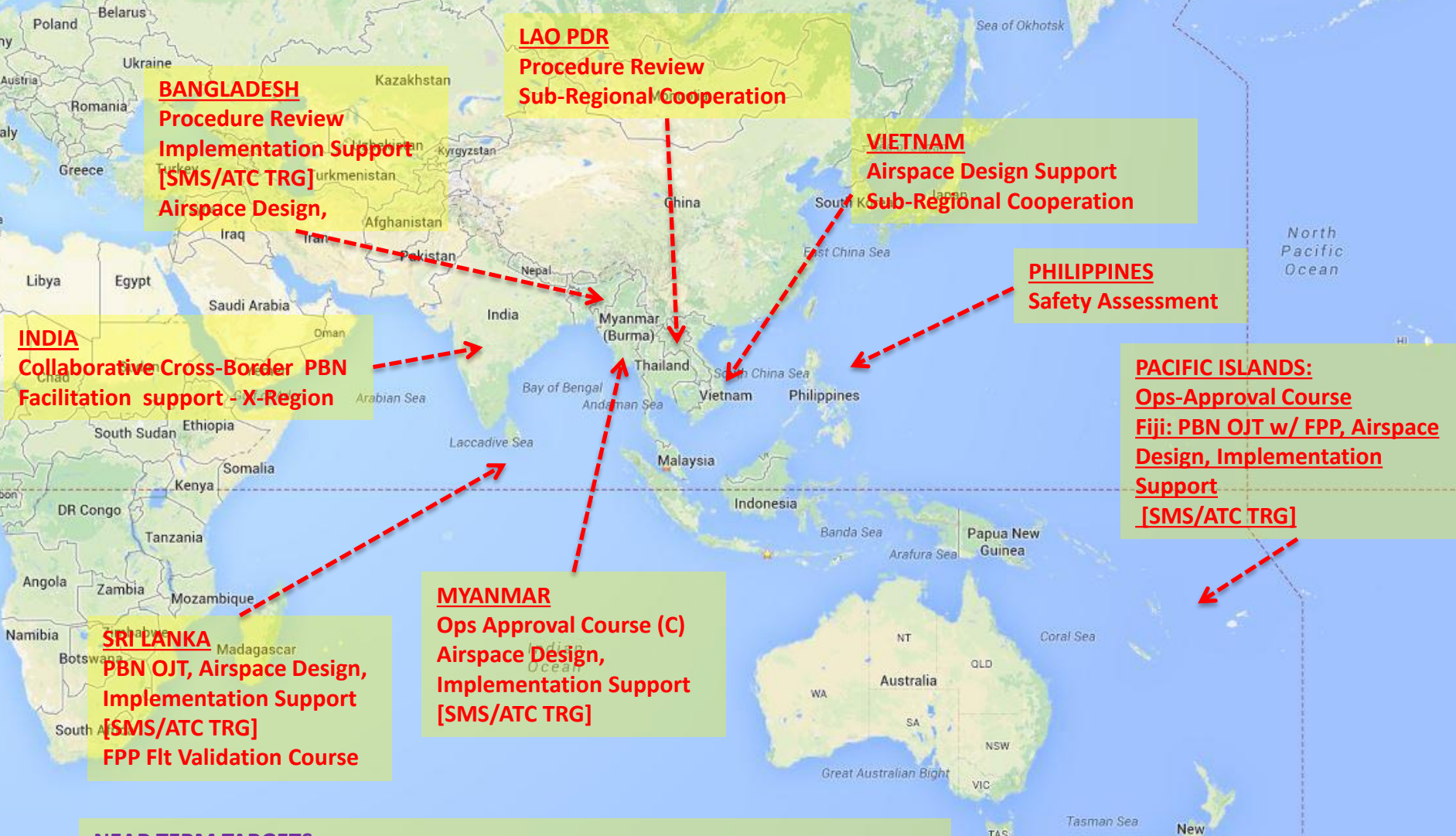




RSO Activities - 2013/2014

- Performance Based Navigation
 - Assisted **Bangladesh, Cambodia, Fiji, Laos PDR, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand, and Timor Leste** in effective implementations and validations of PBN procedures in coordination with APAC FPP
 - In cooperation with IATA, conducted trainings in PBN Operational Approval for regulators, airlines and ANSPs
 - Supported ICAO/IATA/CANSO PBN Global Go-Team visits and PBN Airspace Design Workshops in Thailand and China
 - Schedule a PBN Implementation and Planning Workshop for Pacific Island States in 2014 in Fiji to assist with PBN State Planning
 - Identified additional PBN support projects for implementing PBN procedures in DPRK, Macao, Mongolia, the Philippines, Tonga, and Vietnam
 - Entrusted by ICAO IFPP to develop PBN Procedure Construction Manual

Ongoing PBN Projects



NEAR TERM TARGETS:

Mongolia / Macau / DPRK / Lao PDR / Vietnam / Philippines /Bhutan/Cambodia



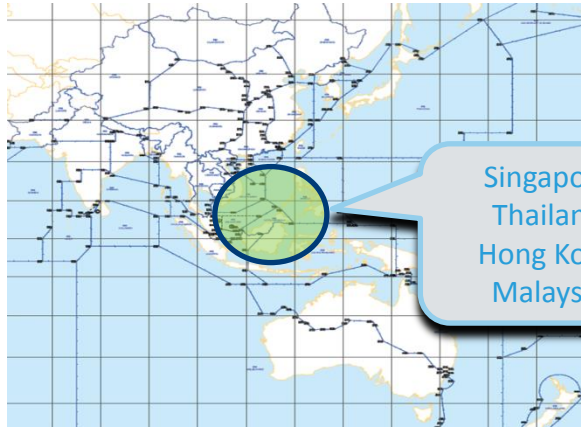
RSO Activities - 2013/2014

- **Airspace Design and Optimization**
 - Assisted **Fiji, Malaysia, Myanmar and Sri Lanka** in effective implementation of airspace design for terminal airspace.
 - In cooperation with IATA and COSCAPS, conducted trainings to support implementation of PBN airspace design including CDO and CCO
 - Schedule CMAC and FUA workshop for APAC States in 2014
 - In coordination with IATA, identified future projects for India, Laos PDR, Mongolia, Myanmar and Vietnam in enhancing en-route structure and airspace



RSO Activities - 2013/2014

- ATFM/CDM
 - Conducted a **project assessment for ATFM/CDM implementation project in Shanghai** in coordination with CAA China.
 - Assisted China, Japan and ROK on **the establishment of North-Asia Regional ATFM Harmonization Group (NARAHG)**
 - Coordinated with ASEAN States on their on-going ATFM activities
 - Conducted a briefing to China to gain better understanding of China's plan for planning and implementation of ASBU, ATFM and CDM.
 - Conducted a trial course on Introduction to ATFM/CDM to IATA and its airline members
 - Conduct comparative study on A-CDM implementations at several international airports in APAC
 - Schedule **ATFM Workshop – Asia Pacific in October 2014** in preparation for with the Fourth APAC ATFM Steering Group Meeting



Singapore
Thailand
Hong Kong
Malaysia

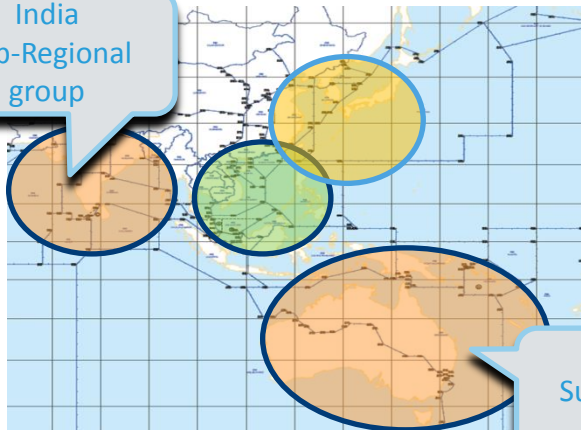
2013



Singapore
Thailand
Hong Kong
Malaysia
+
Vietnam
Sanya, China

North East Asia
(China, ROK, Japan)

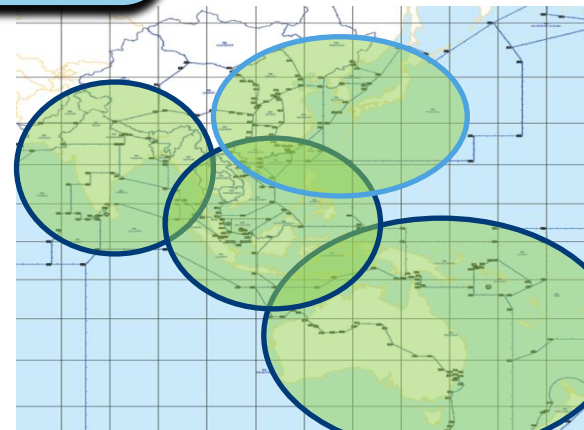
2014



India
Sub-Regional
group

Australia
Sub-Regional
group

Sub-Regional ATFM

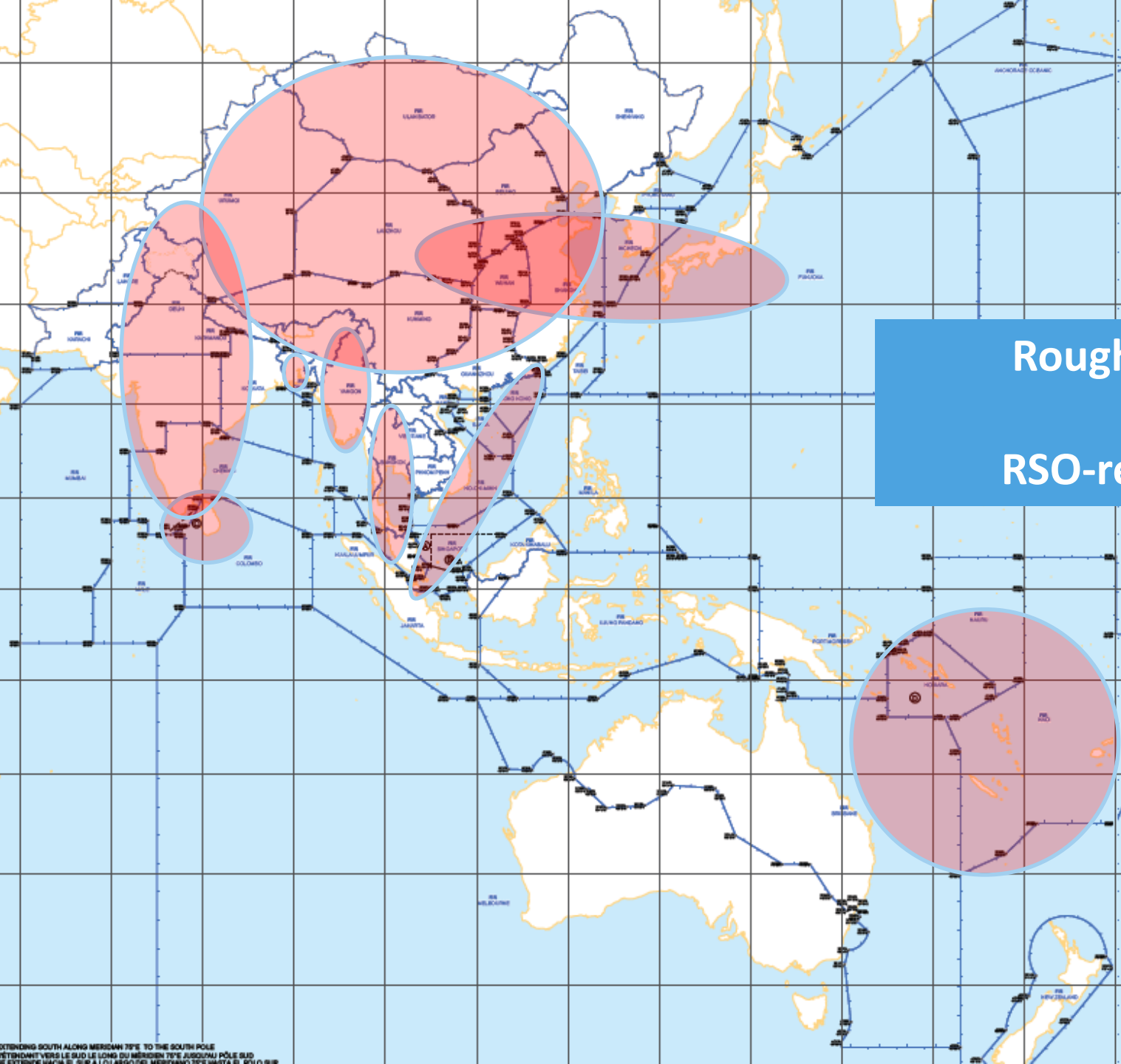


Harmonized Regional ATFM



RSO Activities - 2013/2014

- Others
 - Hosted SEA/BOB ADS-B WG/9, ROBEX WG/12 and MET/H TF/4 meetings
 - To host APAC CNS SG and MET SG meetings in 2014
 - Supported ATB mission during 2014 International Forum on Immigration Inspection
 - Participate in international events such Civil Avionics International Forum, China Air Navigation New Technology Forum and ATC Global 2014 Beijing



Rough Geographical Coverage of RSO-related Projects

EXTENDING SOUTH ALONG MERIDIAN 79°E TO THE SOUTH POLE
ÉTENDANT VERS LE SUD LE LONG DU MÉRIDIEN 79°E JUSQU'AU PÔLE SUD
SE EXTIENDE HACIA EL SUR A LO LARGO DEL MERIDIANO 79°E HASTA EL POLO SUR

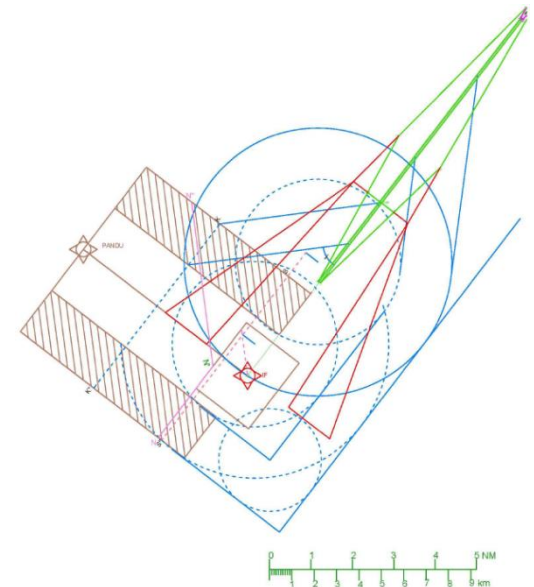


RSO/APAC FPP Co-location

- **ICAO APAC Flight Procedure Programme (FPP) since 2009**
 - Established in 2009
 - Support ICAO Assembly Resolution A36-23 and A37-11
 - develops sustainable capability in instrument flight procedures for PBN implementation
 - Assist States in implementations/validations of flight procedures and conducts capacity building programmes through courses/workshops
 - Funded by 11 APAC Active Participating States
 - Phase 2 covers 2013-2017
- **Benefits of Co-location**
 - Strategic Alignment
 - Sharing of Professional Expertise
 - Sharing of Training and Office Facilities

FPP Activities - 2013/2014

- APAC Flight Procedure Programme
 - In 2013, conducted **9 trainings/OJTs/courses** for 178 participants;
 - **Trainings/OJTs/courses scheduled for 2014** include PANS-OPS, PBN PD Design, RNP AR Design, and Flight Validation and Quality Assurances;
 - Assist the establishment of a sister FPP for African Regions





APAC FPP Activities - 2013

Date	Trainings	Location	Participants
18-21 Feb	ICAO/IATA PBN Airspace Design Workshop	Karachi, Pakistan	29
25 Feb - 1 Mar	PD Instructor Course	Beijing, China	3
4 - 29 Mar	PANS-OPS Initial Course	Beijing, China	19
3 - 20 Sep	PBN Procedure Design Course	Beijing, China	23
23 Sep-11 Oct	Procedure Design OJT for Fiji	Beijing, China	2
7 - 18 Oct	Procedure Design OJT for Malaysia	Beijing, China	2
18 – 29 Nov	ICAO/IATA PBN Airspace Design Workshop	Bangkok, Thailand	59
25-29 Nov	ICAO/IATA PBN Ops Approval Course	Bangkok, Thailand	25
9 - 13 Dec	FPP Procedure Design Refresher Course	Beijing, China	16



APAC FPP Activities - 2014

Date	Activities	Location	Participants
20-30 Jan	Procedure Design OJT - completed	RSO Beijing	Sri Lanka
11 Feb - 7 Mar	Pans-Ops PD Initial Course – completed	RSO Beijing	FPP States
7-23 May	PBN PD Course – completed	RSO Beijing	FPP States
14 July – 8 Aug	Pans-Ops PD Initial Course	RSO Beijing	FPP States
2-19 Sep	PBN PD Course	RSO Beijing	FPP States
Oct	RNP AR Course	RSO Beijing	APAC States
Nov	FPP SC 6	Australia	FPP States
Nov-Dec	Flight Validation for Pilot Course	Sri Lanka	FPP States
Dec (TBC)	PD Quality Assurance Course	RSO Beijing	FPP States
TBD	Procedure Design OJT	RSO Beijing	DPRK



North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarter
Montreal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Office
Bangkok

Asia and Pacific
Regional Sub-Office
Beijing (APAC RSO)

Thank You