ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 1*

AIRSPACE SAFETY MONITORING TO ACHIEVE REGIONAL TLS

Benefits	
Safety	• Improved safety management, • Compliance with regional Target Level of Safety (TLS)

Strategy
Short term/medium term (2009-2015)

ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organization and Management)*	• Facilitate cooperative arrangements between States to undertake airspace safety assessments • Review airspace safety monitoring that supports reduction in vertical and horizontal aircraft separation standards	2009-2015	RASMAG	In progress
	• Assist States to achieve established regional Target Levels of Safety (TLS) • Provide advice to States to establish aspects of ATS safety management systems that support compliance with the regional TLS	2009-2015	RASMAG SEA RR/TF BOB RHS/TF PBN/TF	In progress
GPIs	GPI/2 Reduced vertical separation minima, GPI/5 Performance based navigation, GPI/7 Dynamic and Flexible ATS route management			
References	• *Asia/Pacific Guidance Material for ADS/CPDLC/AIDC Ground Systems Procurement and Implementation;* • *Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region* • *Asia/Pacific En-route Monitoring Agency (EMA) Handbook* • *Regional Monitoring Agency (RMA) Manual* • *Global Operational Data Link Document (GOLD).*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 2*

OPTIMISE TRAFFIC FLOWS

Benefits	
Environment	• reductions in fuel consumption
Efficiency	• reduction in weather and traffic induced holding • improved and smoother traffic flows • improved predictability • optimized demand and capacity balancing through the efficient exchange of information

Strategy
Short term (2009-2010)
Medium term (2011–2015)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
DCB *(Demand and capacity management)*	**Bay of Bengal** • Enhance and facilitate the orderly flow of traffic across the Bay of Bengal and south Asia	2009-2010	Air Traffic Flow Management Task Force (ATFM/TF)	Implemented and reviewed regularly by the Bay of Bengal ATFM/TF ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
DCB *(Demand and capacity management)*	**South China Sea** • Enhance and facilitate the orderly flow of traffic in the South China Sea area	2011-2015	SEACG	ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
DCB *(Demand and capacity management)*	**Northeast Asia/Southeast Asia** • Enhance and facilitate the orderly flow between Northeast Asia and Southeast Asia, as well as within and between the North and the South Pacific regions	2009/2015	IPACG, ISPACG, EATMCG SEA RR/TF (ATS routes)	ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
GPIs	GPI/6 air traffic flow management, GPI/7 Dynamic and Flexible ATS route management, GPI/8 Collaborative airspace design and development, GPI/16 Decision support and alerting system			
References	• *Draft Air Traffic Flow Management Communications Handbook for the Asia/Pacific Region* *APANPIRG Conclusions 20/10, 20/11, 20/12 and 20/13*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 3* **OPTIMISE ROUTE STRUCTURE IN ENROUTE AIRSPACE**				
Benefits				
Environment	• reductions in fuel consumption			
Efficiency	• increase airspace capacity • ability of aircraft to conduct flights more closely to preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information			
Safety	• enhance safety by use of modern capabilities onboard aircraft			
Strategy **Short term (2010)** **Medium term (2011 - 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organization and Management)*	• Implement ATS route enhancements in the Asia Pacific Region, in collaboration with stakeholders, based on new technologies and procedures and in accordance with APANPIRG PBN Regional Plan, to improve en-route airspace efficiency. • Identify ATS and aeronautical communications problems in the Asia Pacific Region including Indian Ocean and the Arabian Sea, and prepare coordinated plans for actions for their resolution.	2009 -2015	**Bay of Bengal and Arabian Sea** BBACG, FIT-BOB, Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF) (Informal Arabian Sea/Indian Ocean ATS Coordination Group - ASIOACG)	Target for 50 NM longitudinal separation in Bay of Bengal is 2010
		2009-2015	**Southeast Asia AR9 Flow** SEACG, FIT-SEA Southeast Asia Route Review Task Force (SEA RR/TF)	ATM/AIS/SAR/SG/19 (2009) established the SEA Route Review Task Force (SEA RR/TF)

		2009-2015	**<u>Pacific Area</u>** No APANPIRG regional working group established (Informal • South Pacific ATS Coordination Group – ISPACG, • Pacific ATS Coordinating Group – IPACG, and • East Asia ATM Coordination Group EATMG)	50 NM longitudinal implemented North Pacific in 2008 30/30 NM (RNP4) implemented Honiara, Nauru, Brisbane, Nadia Auckland Oceanic FIRs in January 2005 30/30 NM Operational trial Oakland FIR commenced 2007, Fukuoka FIR from August 2008, Anchorage FIR estimated 2011
AOM *(Airspace Organization and Management*	**Cross-Polar routes** • Improve alignment and use of cross polar routes at their south (Asian) ends.	2010-2015	Special ATS coordination meeting – China, Mongolia, Russian Federation, IATA (CMRI) Informal Cross Polar Working Group (CPWG)	In progress
GPIs	GPI/5 Performance based navigation, GPI/8 Collaborative airspace design and management			
References	• *Asia/Pacific Regional Performance Based Navigation Implementation Plan* • *ICAO Performance Based Navigation Manual (Doc 9613)* • *Terms of Reference of the ATM Coordination Groups and Task Forces implementing PBN based route structures and reduced horizontal separation minima.*			

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 4* **OPTIMISE ROUTE STRUCTURE IN TERMINAL AIRSPACE**				
Benefits				
Environment	• reductions in fuel consumption			
Efficiency	• increase airspace capacity • ability of aircraft to conduct flights more closely to preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information			
Safety	• enhance safety by use of modern capabilities onboard aircraft			
Strategy **Short term (2010)** **Medium term (2011 - 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organization and Management)* **AUO** *(Airspace Users Operations)*	Implement ICAO Performance Based Navigation (PBN) provisions for terminal area operations in collaboration with stakeholders based on the Regional PBN Implementation Plan agreed by APANPIRG, to improve terminal area efficiency by use of advanced navigation specifications for SIDs, STARs and instrument approach procedures.	In accordance with PBN Regional Plan	Performance Based Navigation Task Force (PBN/TF)	PBN/TF prepared Regional PBN Plan adopted by APANPIRG/19
GPIs	GPI/5 Performance based navigation, GPI/8 Collaborative airspace design and management. GPI/10 Terminal area design and management, GPI/11 GPI-11 RNP and RNAV Standard Instrument Departures (SIDs) and Standard Terminal Arrivals (STARs), GPI-12 Flight Management System (FMS) – based arrival procedures			
References	• *Asia/Pacific Regional Performance Based Navigation Implementation Plan* • *ICAO Performance Based Navigation Manual (Doc 9613)*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE*: APAC Objective 5* **IMPLEMENTATION OF NEW ICAO FLIGHT PLAN PROVISIONS**	
Benefits	
Environment	• reductions in fuel consumption and gaseous emissions as a result of efficiency gains.
Safety	• enhance safety by use of modern capabilities onboard aircraft
Continuity	• maintains continuity of aviation operations across the region
Efficiency	• ability of air navigation service providers to make maximum use of aircraft capabilities, • ability of aircraft to conduct flights more closely to their preferred trajectories, • facilitate utilization of advanced technologies thereby increasing efficiency, and • optimized demand and capacity balancing through the efficient exchange of information.

Strategy
Short/Medium Term (2009-2012)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
SDM *(ATM Service Delivery Management)*	• Implement the provisions of Amendment 1 to the Fifteenth Edition of the PANS ATM (Doc 4444), comprising amended PANS ATM Chapter 4, Chapter 11, Appendix 2 and Appendix 3 provisions relating to the ICAO Flight Plan and associated ATS Message formats, with applicability date 15 November 2012.	2009-2012	ICAO Flight Plan and ATS Messages Task Force (FPL&AM/TF)	APANPIRG/20 adopted the *Interim Strategy for the Implementation of New ICAO Flight Plan Format and supporting ATS Messages* 1
GPIs	GPI/5: Performance based navigation, GPI/9: Situational awareness, GPI/11: RNP and RNAV SIDs & STARs, GPI/17: Implementation of data link applications and GPI/18: Aeronautical Information			
References	• *Amendment 1 to 15th Edition of PANS-ATM (Doc 4444, ICAO State Letter Ref: AN13/2.1-08/50, dated 25 June 2008)* • *ICAO Guidance Material for Implementation (ICAO State Letter Ref: AN 13/2/1-09/9, dated 6 February 2009)* • *Asia/Pacific Region – Interim strategy for the implementation of new ICAO flight plan format and supporting ATS messages* • *APANPIRG Decision 19/6, Conclusions 20/7 and 20/8*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 6* **ENHANCED PROVISION OF AIS/AIM**				
Benefits				
Efficiency	• enhanced collaboration between flight crew and the ATM system, • improved collaborative decision making, • improved predictability, and • reduction of workload for aircrew and ATC.			
Strategy **Short to Medium term (2009 – 2012)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
SDM *(ATM Service Delivery Management)*	• Implement the enhanced provisions for AIM becoming available through the work of the Aeronautical Information Services-Aeronautical Information Management Study Group (AIS-AIMSG); • Monitor implementation progress	2009-2016	AAITF	In progress
GPIs	GPI/18: Aeronautical Information			
References	• *Annex 4 – Aeronautical Charts* • *Annex 15 – Aeronautical Information Services* • *AIS Manual (Doc 8126)* • *Aeronautical Chart Manual (Doc 8697)* • *EUROCONTROL Operating Procedures for AIS Dynamic Data (OPADD)* • *APANPIRG Conclusion 20/16*			

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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 7* **ENHANCED SEARCH AND RESCUE CAPABILITY**				
Benefits				
Safety & Efficiency	• cost-efficient use of RCC accommodation and equipment on a shared basis, • development of a pool of experienced SAR mission coordinators skilled across both aviation and maritime domains thus reducing coordination and fragmentation, • proficient services provided near and within States with limited resources, • harmonization of aviation / maritime procedures, and • inter-operability of life-saving equipment			
Strategy **Short to Medium term (2009 – 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
IM *(Information Management)*	Implementation of Annex 12 Standards and Recommended Practices and related APANPIRG Conclusions to ensure appropriate SAR capabilities for the Asia/Pacific regions.			
	• Periodic review of SAR facilities, services and procedures in the region;	2009-2015	States, ATM/AIS/SAR Sub Group	In progress
	• Encourage States to delegate or negotiate SAR services in accordance with Annex 12 provisions;	2009-2015	States, ATM/AIS/SAR Sub Group	In progress
	• APANPIRG Asia/Pacific "SAR Capability Matrix" and "Register of SAR Agreements" be kept up to date and distributed to States for information and action;	2009 - 2015	States, ATM/AIS/SAR Sub Group	In progress
	• States designate an agency for registering ELT Beacons, coded with the country code of the State and unique code of that beacon in a database as required by Annex 10.	2010	States	In progress
GPIs	None applicable			
References	• *Annex 12 – Search and Rescue* • *International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual, Doc 9731)* • *APANPIRG Conclusions 18/19, 18/20, 20/17 and 20/18*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 8*

IMPLEMENTATION OF AERONAUTICAL TELECOMMUNICATION NETWORK (ATN) FOR GROUND – GROUND COMMUNICATION NETWORK

Benefits	
Safety	• Will provide reliable means of communication for Air Navigation Services, with the provision of automatic switching capability, in the event of failure of current media
Efficiency	• Routers will have the capability of choosing between different media based on defined criteria. • Multiplicity of protocols used for different communication requirements will be avoided; • Provision for low case characters and graphic message included;

Strategy
Short term (2009-2012)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AOM *(Airspace Organisation and Management)*	Improved communications interoperability - Facilitate implementation of Ground to Ground Aeronautical Telecommunication Network (ATN) in the Asia and Pacific Regions			
	• Review the ATN Implementation Strategy , revise it when necessary taking into account the current developments.	2009	ATNICG.	The strategy to be reviewed and updated by ATNICG/4 Meeting was held from 4 to 8 May 2009
	• Review the Status of implementation of ATN at the Backbone Boundary Intermediate System hubs	2009	ATNICG	ATNICG to review the progress of ATN Implementation in its Fourth Meeting
	• States hosting Backbone Boundary Intermediate Stations to organize Testing of their system on bilateral basis	2010	States hosting Backbone Boundary Intermediate Systems	Letter dated 2 February 2009 sent to the States hosting BBIS hubs urging them to organize testing of their systems on bilateral basis and report the outcomes to ATNICG

	• Implementation of AMHS Directory Service. Availability of AMC Software considered essential for the efficient management of AMHS Addresses. ICAO HQ requested to facilitate transfer of AMC Software from Eurocontrol to meet the requirements of Asia and Pacific Region.	2010	ICAO Asia/Pacific Office, ICAO HQ and Aerothai.	Being coordinated between ICAO Asia/Pacific Office, ICAO HQ and Aerothai
	• States hosting Backbone Boundary Intermediate System hubs to implement dual stack ATN (ATN over OSI and ATN over IPS). APANPIRG, through Conclusion 19/20 urges States to complete the implementation of dual stack ATN by 2011	2011	Asia and Pacific Region States hosting Backbone Boundary Intermediate Systems	States hosting BBIS hubs have been reminded of APANPIRG Conclusion 19/20 and urged to complete the installation by 2011
	• Completion of Networking with the BIS States	2012	Asia and Pacific Regions States	Some States started implementation and conducted operational trials
	• Review if implementation objectives have been met.	2009 – 2012	ATNICG	ATNICG to periodically review the status and direction in which the implementation is progressing and to ensure that the implementation efforts are leading towards the defined objectives
GPIs	GPI/17: Data link applications; GPI/22: Communication infrastructure			
References	• *Annex 10, Aeronautical Telecommunications, Volume III (Part I – Digital Data Communication Systems)* • *Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO/OSI (Doc 9880)* • *ICAO Aeronautical Telecommunication Network (ATN) Manual for ATN using IPS Standards and Protocols (Doc 9896)* • *Manual on Required Communication Performance (Doc 9869)* • *Comprehensive Aeronautical Telecommunication Network (ATN) Manual (Doc 9739)* • *Manual of Technical Provisions for the Aeronautical Telecommunication Network (Doc 9705)* • *Regional Implementation guidance materials adopted by APANPIRG*			

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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 9* **ENHANCED COMMUNICATIONS AND SURVEILLANCE CAPABILITY IN OCEANIC AREAS**				
Benefits				
Environment	• reductions in fuel consumption and gaseous emissions as a result of efficiency gains;			
Safety	• improved monitoring of airspace will result in safety enhancement			
Efficiency	• facilitate utilization of advanced technologies (e.g, area navigation, UPRs, DARPs) and ATC decision support tools (e.g., vertical and lateral adherence monitors, short and medium term conflict detection), thereby enhancing safety and increasing efficiency. • enable aircraft to conduct flight more closely to preferred trajectories; • increase airspace capacity by enabling implementation of RHSM using data link;			
Strategy **Short term (2009-2010)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organisation and Management)* **CM** *(Conflict Management)* **AUO** *(Airspace Users Operations)*	Improve provision of satellite based communications and surveillance capabilities to enable FANS 1/A data link (ADS-C, CPDLC) to RNP 4 and RCP 240 specifications.			
	• codify/quantify existing anecdotal information and combine with available end-to-end system performance data. to summarise current satellite data link performance;	2009	Regional ANSPS, operators, FITS, CRAs. Communications Service providers (CSP)	Report to Satellite Operational Continuity Meeting (SOCM), Bangkok, Thailand, August 2009
	• identify non conformities in current satellite data link performance against; o specifications in Global Operations Data Link Document (GOLD); o specifications in RCP Manual (Doc 9869); and o specifications in Oceanic SPR)	2009	Regional ANSPS, operators, FITS, CRAs.	review status and identify issues at Satellite Operational Continuity Meeting (SOCM), August 2009

	• provide summary information on non conformities in current satellite data link performance to all affected parties in the end-to-end communications chain.	2009	Satellite Operational Continuity Meeting (SOCM) April 2009 to summarize and circulate information to affected parties, including CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	
	• develop a regional strategy and work programme to identify/design suitable long term mitigations and solutions to non conformities that will enable continuous operational compliance with specifications for RNP4 and RCP 240.	2010	Regional ANSPs, operators, FITS, CRAs, CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	Consider convening SOCM/2 to progress this work
	• Develop a sample service level agreement for possible use by ANSPs	2010	Regional ANSPs, operators, FITS, CRAs, CSP	
	• Implement mitigations and solutions in accordance with timelines in regional strategy	2010	Regional ANSPS, operators, FITS, CRAs, CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	
	• monitor implementation progress	2010	Regional FITS, CRAs provide feedback to all affected parties	Consider convening SOCM/3 to finalize this work
GPIs	GPI/5: RNAV and RNP, GPI/7: dynamic and flexible ATS route management, GPI/17: data link applications and GPI/22: Communication Infrastructure;			
References	• *Manual on Required Communication Performance (Doc 9869)* • *RTCA DO-306/EUROCAE ED-122, Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (the "Oceanic SPR')* • *FANS-1/A Operations Manual (FOM)* • *Global Operational Data Link Document (GOLD)* • *Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region* • *CEANS Report(2008) on ANS Infrastructure* • *APANPIRG Conclusion 19/24, 20/31, 20/32/20/33, 20/34 and 20/73*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 10*

IMPROVED SITUATIONAL AWARENESS AND SURFACE SURVEILLANCE-IMPLEMENTATION OF THE ADS-B TO GROUND SURVEILLANCE

Benefits	
Environment	• Reductions in fuel consumption and subsequent lower gas emissions
Efficiency	• Increased flexibility and flow of traffic operations • Ultimately, when performing *radar-like* control, potential redesign of airspace taking into account the application of reduced separation minima, integrate use of aircraft navigation and surveillance capability
Safety	• Introduction of surveillance in a non-radar environment • Support to search and rescue operations

Strategy
Medium Term (2011-2015)
Short term (2010)

ATM OC COMPONENTS	**TASKS**	**TIME FRAME STARTED**	**RESPONSIBILITY**	**STATUS**	**REMARKS**
AOM *(Airspace Organisation and Management)* **CM** *(Conflict Management)* **AUO** *(Airspace Users Operations)*	Implementation of ADS-B based surveillance service in the sub-regions.				
ATM SDM (ATM *Service Delivery Management)*	• Compare current technologies with respect to concept of operations, relative costing, technical and operational performance and maturity of alternative technology/solutions (primary, secondary radar including Mode-S, ADS-B, multilateration, ADS-C)	2009	ADS-B Study and Implementation Task Force (ADS-B SITF)	In progress	Regional Guidance material on comparison of technologies issued

	• Develop an implementation plan for near term ADS-B applications in the Asia Pacific Region including implementation target dates taking into account: o available equipment standards; readiness of airspace users and ATS providers; o identifying sub-regional areas (FIRs) where there is a positive cost/benefit outcome expected for near-term implementation of ADS-B OUT; o developing a standardized and systematic task-list approach to ADS-B OUT implementation; and o holding educational seminars and provide guidance material to educate States and airspace users on what is required to implement ADS-B OUT	2009-10	ADS-B Study and Implementation Task Force	In progress	The FASID Table CNS 4A and 4B – surveillance and ATM automation being updated; ADS-B Seminar conducted annually; potential sub-regions for using ADS-B identified; Requirement for avionics specification for the near term application are being developed based on AMC2024 and Australian CASA document.

	• Develop Guidance Material to support harmonized regulation of ADS-B systems required on board the aircraft.	2010	ADS-B Study and Implementation Task Force	To be started	Forty Fifth DGCA Conference, through its Action Item 45/3 invited ICAO APANPIRG ADS-B Study and Implementation Task Force (ADS-B SITF) to develop the guidance material.
	• Study and identify applicable multilateration applications in the Asia and Pacific Region considering: - Concept of use/operations; - Required site and network architecture; - Expected surveillance coverage; Cost of system; Recommended separation minimas; and - If multilateration can be successfully integrated into an ADS-B OUT system for air traffic control	2011	ADS-B Study and Implementation Task Force	In progress	Concept of using multlateration has been developed; Some states have plan in place to introduce multilateration in particular & integrate it with A-SMGCS and Terminal area and en-route surveillance application

	• Coordinate ADS-B implementation plan and concept of operations with other ICAO regions where ADS-B implementation is going on and with relevant external bodies such as EUROCONTROL, EUROCARE, RTCA and Industry.	2013	ADS-B Study and Implementation Task Force	In progress	Updated information on ADS-B in Europe and North American Regions is provided to Task Force Meeting annually; Some Industry representatives provide input at ADS-B Seminar and meetings
	• Develop **Terms of Co-operation** for SEA which will include: • Establishing model documents for possible use by States when - Agreeing to share ADS-B data and DCPC (such as VHF radio voice communication) capability between adjoining States for various ADS-B applications (including a sample letter of agreement); or - Establishing ADS-B avionics fitment mandates • Identifying optimum coverage for ADS-B ground stations and associated VHF radio voice communication in the sub-regional FIR boundary areas.	2011	South East Asia (SEA) Sub-Regional ADS-B Implementation Working Group	In progress	Terms of co-operation developed; sample agreement of data sharing developed; Some location for ADS-B ground stations identified. CBA for SEA project being progressed; Implementation plan being developed.

	Develop an **implementation plan** for near term ADS-B application in SEA which will deliver efficient airspace and increased safety on a regional basis that includes: • Schedule and priority dates to bring into effect ADS-B based services taking into account: - Timing of any equipage mandates; - Timing of any ATC automation upgrades to support ADS-B; - Timing of commissioning of any ADS-B data sharing and associated VHF radio voice communication facilities • Consideration of major traffic flows:				Major traffic flow from Australia to Singapore through Indonesia and L642 and M771 in SEA being considered
linkage to GPIs	GSI-12 Use of Technology to Enhance Safety; GPI/9 Situational Awareness; GPI/5: RNAV and RNP, GPI/7: dynamic and flexible ATS route management, GPI/17: data link applications and GPI/22: Communication Infrastructure;				
References	• *Report of AN CONF/11;* • *Global ATM Operational Concept (Doc9854);* • *Global Air Navigation Plan (Doc9750);* • *Technical Provisions for Mode S Services and Extended Squitter (Deco9871)* • *APANPIRG/16/17/19/20 report on ADS-B* • *ADS-B related regional guidance materials adopted by APANPIRG*				

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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 11* **IMPLEMENTATION OF ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IN ASIA/PACIFIC REGION**				
Benefits				
Safety	• Will provide efficient and more reliable means of communication between ACCs in adjacent FIRs for the exchange of traffic coordination related operational messages. • Significantly reduce the coordination errors observed in controller to controller verbal communication across FIR boundaries thus enhance flight safety			
Efficiency	• Increased efficiency for air traffic handover between ATS units • Will improve ATS direct communication between ATS units along the major traffic • Will improve the speed and capacity ; • Will facilitate inter-automation systems communication.			
Strategy **Short term (2009-2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organisation and Management)* **CM** (Conflict management) **SDM** (ATM service delivery management)	Facilitate implementation of ATS Inter-facility Data Communication in the Asia and Pacific Regions			
	• Review the Status of Implementation	2009	ATNICG. ADS-B SITF	The status to be reviewed and updated by ATNICG/4 and ADS-B SITF Meetings scheduled in May 2009
	○ Review the Options available for the implementation of AIDC in the region. Discuss options adopted by different states.	2009	ATNICG AEROTHAI	ATNICG to review the options available for implementin g in its Fourth Meeting

	• Review implementation issues related to ATS automation systems and recommend methods of mitigating those issues	2009	ADS-B SITF CNS/MET SG	The automation issues to be discussed in the ADS-B SIFT/8
	• AIDC Seminar: A Seminar to be conducted to discuss various implementation issues and promote implementation	2009	ICAO Asia/Pacific Office	Seminar to be conducted
	• Develop implementation strategy to decide whether to continue pursuing AFTN AIDC or to choose ATN AIDC over OSI or IPS	2010	APANPIRG	ATN AIDC is currently not in use.
	• Trials to be conducted. Monitoring mechanism to be developed	2011	APANPIRG	State Letter be issued urging the States to expedite implementation and status to be monitored.
	• Review to ensure implementation objectives are met.	2009 - 2015	APANPIRG	APANPIRG to periodically review the status and direction in which the implementation is progressing and to ensure that the implementation efforts are leading towards the defined objectives
GPIs	GPI/17: Data link applications, GPI/22: Communication infrastructure			
References	• *Air Traffic Management* (Doc 4444) • *Manual of Air Traffic Services Data Link Applications* (Doc 9694) • *Manual of Technical Provisions for the Aeronautical Telecommunication Network (Doc 9705)* • *Asia/Pacific Regional Interface Control Document (ICD) for ATS Interfacility Data Communication (AIDC)*			

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 12*

IMPLEMENT INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW), INTERNATIONAL TROPICAL CYCLONE WATCH (ITCW) AND SIGMETS

Benefits	
Safety **Efficiency**	• Improve in-flight safety by providing information on volcanic ash, tropical cyclone or other hazardous weather • Improve pre-flight planning by optimizing flight routes with respect to volcanic ash and hazardous weather phenomena

Strategy
Short term/Medium term (2011 - 2015)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
MET	• Monitor and provide assistance in the regional implementation of volcanic ash and tropical cyclone advisories and SIGMET	2009 - 2015	VA/TC/I TF	In progress
	• Conduct periodic tests for SIGMET on volcanic ash and tropical cyclones in view of assessing improvements in their implementation	2009 – 2015	VA/TC/I TF & OPMET/M TF	In progress
	• Conduct periodic tests for SIGMET for hazardous weather phenomena other than volcanic ash and tropical cyclone in view of assessing improvements in their implementation	2009 – 2015	RODB & OPMET/M TF	In progress
	• Update the Regional SIGMET Guide to keep it consistent with Annex 3	2010, 2013	VA/TC/I TF & OPMET/M TF & RO	In progress
Linkage to GPIs	GPI/19 – Meteorological Systems			
References	• *Annex 3* • *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691)* • *Handbook on the International Airways Volcano Watch (IAVW) Operational Procedures and Contact List (Doc 9766)* • *Asia/Pacific Regional SIGMET Guide*			

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 13* **IMPLEMENT WAFS AND ASSOCIATED DEVELOPMENTS**				
Benefits				
Safety **Efficiency**	• Improve the regional implementation of weather forecasts (upper-level winds, turbulence, icing, cumulonimbus) used by airlines and ATM needed to optimize flight routes which will provide an increase in efficiency and reduced carbon emissions			
Strategy **Short term/Medium term (2011 - 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
MET	• Assist the regional implementation of new gridded products for turbulence, icing and cumulonimbus forecasts	2009-2011	WAFS/I TF	In progress
	• Facilitate in organizing regional training of new gridded products for turbulence, icing and cumulonimbus forecasts	2010-2011	WMO & ICAO	In progress
	• Monitor the migration to ISCS G3	2012	WAFS/I TF	In progress
Linkage to GPIs	GPI/19 – Meteorological Systems			
References	• *Annex 3* • *http://www.icao.int/anb/wafsopsg/* • *http://www.icao.int/anb/sadisopsg/* • *Asia/Pac WAFS Implementation Plan and Procedures*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 14* **DEVELOP REGIONAL MET REQUIREMENTS TO SUPPORT ATM**				
Benefits				
Safety Efficiency	• Improve efficiency of ATM and airlines by providing tailored regional MET products needed to optimize flight routes in all weather conditions			
Strategy **Short term/Medium term (2011 - 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
MET	• Conduct MET ATM meeting in 2009 to determine actions needed to obtain regional MET requirements to support ATM	2009	MET ATM	In progress
	• Conduct survey on regional ATM requirements for MET information	2009 - 2011	MET ATM	To commence after MET ATM meeting
	• Conduct MET seminar in 2010 to further develop list of possible regional MET requirements to support ATM	2010	MET ATM	future
	• Facilitate implementation of new terminal forecast (under development by WMO)	2010-2016	MET ATM	future
Linkage to GPIs	GPI/19 – Meteorological Systems			
References	• *Manual on co-ordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377)*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 15* **IMPROVE OPMET EXCHANGE EFFICIENCY**				
Benefits				
Safety **Efficiency**	• Increase OPMET availability and reliability needed for flight planning (efficiency) and in-flight re-planning (safety)			
Strategy **Short term/Medium term (2011 - 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
MET	• Improve the availability of OPMET data at the Regional OPMET Data Banks (RODB)	2009 - 2015	OPMET/M TF	In progress
	• Improve the inter-regional OPMET exchange	2009 - 2015	OPMET/M TF	In progress
	• Improve the availability of OPMET data in the Pacific	2009 - 2015	OPMET/M TF &TCB & PASO & States	In progress
	• Review and update regional ROBEX tables and guidance material	2009 - 2015	OPMET/M TF & RO	In progress
	• *Facilitate and monitor the migration to AIM and new MET codes (e.g. XML) for METAR/SPECI, TAF and SIGMET*	*TBD*	*OPMET/M TF & RO*	*TBD*
Linkage to GPIs	GPI/19 – Meteorological Systems (Note: if sufficient assessment information is available at the OPMET/M TF/7 meeting, use as baseline and provide a target level of improvement in the first 3 bullets)			
References	• *SADIS User Guide* • *ROBEX Handbook* • *Asia/Pacific OPMET Data Banks Interface Control Document*			

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PERFORMANCE FRAMEWORK FORM
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(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 16* **ENHANCE SAFETY AND EFFICIENCY OF AERODROME OPERATIONS**				
Benefits				
Safety	• Ensure continued safety, regularity and efficiency of aircraft operations at aerodromes • Ensure the aerodromes are in compliance with the relevant ICAO SARPS and Civil Aviation Regulations. • Prevention of accidents • Reduction/elimination of deficiencies • Uniform conditions for aircraft of all other contracting states			
Efficiency	• improved aerodrome capacity			
Strategy **Short term (2009-2012)/medium term (2009-2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AO (Aerodrome operations)**,** **CM** (conflict management)**,** **TS** (Traffic synchronization)**,** **AUO** (Airspace user operations)	<u>AERODROME CERTIFICATION</u> • Facilitate the implementation of Aerodrome Certification by conduct of courses and seminars. • Establish a regulatory framework specifying the criteria for the certification of aerodromes. • Establish a regulatory authority [CAA] • Develop and approve aerodrome certification regulations and standards • Develop, issue and maintain guidance material and Advisory circulars on aerodrome certification for service providers. • Establish an entity within CAA responsible for aerodrome safety oversight and staffing requirements. Develop Manual of	 2009 , 2010, 2011 & 2012 2009-2011 2009-2012 2009-2012 2009-2012 2009-2012	 ICAO APAC Office State State State State State	 Aerodrome certification course conducted from 29 June to 2 July 2009. Aerodrome seminar is planned in November 2009 Based on the results of the survey conducted in the region during 2006-2008, 30 States have confirmed the existence of a basic aviation law that provides for the establishment of the civil aviation authority, a key

	Aerodrome oversight procedures and Aerodrome Inspector Handbook SMS AT CERTIFIED AERODROMES • Facilitate the implementation of SMS by the conduct of courses • Develop SMS regulations & guidance material for the implementation of SMS, staff training, enforcement policy and communication means; • Develop and establish the action plan on safety targets, hazard reporting, staff training, safety oversight, guidance material and accepted level of safety WILDLIFE HAZARD CONTROL AND REDUCTION • Survey to collect information on state's practices with respect to airport wildlife control • Establishment of a national procedure for recording and reporting wildlife strikes to aircraft; • Establishment of a national bird control committee • Conduct wildlife assessments and Implement wildlife control programmes. Airports develop and professionally implement management plan to reduce the risk of strikes. • Land use management inside and in the vicinity of airport • States collect wildlife strike reports and forward to ICAO for inclusion in the ICAO IBIS (data base). • Seminar on wildlife assessment /reduction	2010, 2013 2009-2014 2009-2015 2010 2010 -2012 2009-2012 2009-2012 2010 - 2015 2009-2012 2011	ICAO State State ICAO APAC Office State State State State State ICAO APAC Office	requirement for undertaking the process of aerodrome certification. Aerodrome certification regulations have been promulgated in 28 States, including 1 Territory (French Polynesia) and one Administration (Hong Kong). 100 out of 193 international airports listed in Air Navigation Plan have been stated to be certified. SMS regulations have been promulgated in 16 States, including one Territory and one Administration. 57 airports have stated that an SMS is in place at the certified aerodrome. APANPIRG to urge states who have not yet implemented the ANNEX 14 requirements on Aerodrome certification to allocate high priority and resources in the implementation The ICAO Regional office initiated a survey on establishment of national bird

	• Wildlife hazard management training for airport personnel	Continuous basis	State	control committee in 2008. The survey reveals that: 15 States including one Administration have informed that a National Bird control committee has been established with defined terms of reference and 2 States have mentioned that the process of establishing a National Bird control Committee is ongoing. Next Survey planned in 2010.
	<u>AERODROME SAFETY MEASURES</u>			
	• Monitoring the height of buildings or structures within the boundaries of OLS;	2009-2015	State	
	• Measurement and reporting of friction characteristics of wet paved runways	2011	State	
	▪ procurement of a friction measuring device	2011	State	
	▪ establishment of maintenance friction level below which corrective action should be initiated; and	2011	State	
	▪ establishment of minimum friction level below which information that a runway may be slippery when wet is made available.	2011	State	
	• Provision of runway end safety area;	2014	State	
	• Provision of enhanced visual aids and markings to help prevent runway incursions	2014	State	
	• Seminar on runway surface friction measurement	2011	ICAO	
Linkage to GPIs	GPI/13 Aerodrome Design and Management and GPI/14 Runway operations			
References	• *Annex 14, Volume I* • *Doc 9774 – Manual on certification of Aerodromes* • *Doc 9859 – Safety Management Manual* • *Doc 7300 – convention on International civil Aviation* • *Doc 9137 – Airport Services Manual, Part 3, bird control and reduction;* • *Doc 9332 – Manual on the ICAO Bird Strike information System(IBIS)* • *Doc 9184 – Airport Planning Manual Part 2, Land Use and Environmental Control.* • *Doc 9157 – Aerodrome Design Manual, Part 1, Runways* • *Doc 9157 – Aerodrome Design Manual, Part 3, Pavements* • *Doc 9157 – Aerodrome Design Manual, Part 4, Visual Aids* • *Doc 9137 – Airport Services Manual, Part 2, Pavement surface Conditions* • *Doc 9137 – Airport Services Manual, Part 6, Control of Obstacles* • *Doc 9137 – Airport Services Manual, Part 8, Airport Operational Services* • *Doc 9137 – Airport Services Manual, Part 9, Airport Maintenance Practices*			

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 17*

IMPROVE CONTINGENCY MEASURES FOR AERODROME OPERATIONS

Benefits	
Safety	• Ensures better coordination between the different airport agencies and of those agencies in the surrounding community • Minimizes the effects of an emergency particularly in respect of saving lives and maintaining aircraft operations. • Safe continuation of aircraft operations
Efficiency	• Prompt response by RFF, police/security, medical services and other agencies

Strategy
Short term (2009 - 2012)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AO (Aerodrome operations)**, CM** (conflict management)**, TS** (Traffic synchronization)**,** **AUO** (Airspace user operations)	AERODROME EMERGENCY PLANNING • Initiate a survey to assess the level of implementation on aerodrome emergency planning	2012	ICAO APAC Office	ICAO Regional Office initiated a survey in 2008 and the results presented to APANPIRG/19. Next survey is planned for 2012
	• Establish aerodrome emergency plan document	2009-2011	State	24 States have established aerodrome emergency plans at international airports under their administration.
	• Conduct full scale aerodrome emergency exercise at intervals not exceeding two years; and	2009- 2012	State	
	• Partial emergency exercises in the intervening year to ensure that any deficiencies found during the full scale aerodrome emergency exercise have been corrected	2009- 2012	State	23 States have mentioned that they have tested the AEP by conducting full scale exercises and that full scale exercises are held once in two years.
	• Establish procedure for emergencies in difficult environments at those airports located close to water and/or swampy areas or difficult terrain.	2009-2011	State	16 states have included emergencies in difficult environment and tested the AEP for this event.
	• Conduct seminar on AEP	2011	ICAO	

Linkage to GPIs	GPI/13 Aerodrome Design and Management and GPI/14 Runway operations
References	• *Annex 14, Volume I* • *Doc 9137 – Airport Services Manual, Airport emergency Planning, Part 7*

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(amended 11 September 2009)

REGIONAL PERFORMANCE OBJECTIVE: *APAC Objective 18* **IMPLEMENTATION OF ICAO PERFORMANCE BASED NAVIGATION PROVISIONS FOR TERMINAL AREA OPERATIONS**	
Implement ICAO Performance Based Navigation (PBN) provisions for terminal area operations in collaboration with stakeholders based on the Regional PBN Implementation Plan agreed by APANPIRG, to improve terminal area safety and efficiency by use of advanced navigation specifications for SIDs, STARs and instrument approach procedures.	
Benefits	
Environment	• reduction in fuel consumption and resulting emissions
Safety	• enhance safety by use of modern capabilities onboard aircraft; • implementation of more precise approach, departure, and arrival paths that will reduce dispersion and will foster smoother traffic flows; • increased airspace safety through the implementation of continuous and stabilized descent procedure using vertical guidance; • improved airport and airspace arrival paths in all weather conditions; and • decrease ATC and pilot workload by utilizing RNAV/RNP procedures and airborne capability and reduce the need for ATC-pilot communication and radar vectoring
Efficiency	• allows for more efficient use of airspace and increase airspace capacity through reduction of lateral and longitudinal separation between aircraft; • increase of predictability of the flight path; • reduced delays in high density airspace and airports through the implementation of additional parallel routes and additional arrival and departure points in terminal areas; • ability of air navigation service providers to make maximum use of aircraft capabilities; • ability of aircraft to conduct flights more closely to their preferred trajectories; • Reduced aircraft flight time due to the implementation of optimal flight paths; • facilitate utilization of advanced technologies thereby increasing efficiency; • optimized demand and capacity balancing through the efficient exchange of information; • reduces the need to maintain sensor-specific route and procedures, and their associated costs; • avoids the need for developing sensor-specific operations with each new evolution of navigation system, which would be cost prohibitive; • clarifies how RNAV systems are used; and • facilitate the operational approval process for operators by providing a limited set of navigation specifications intended for global use.

SAFETY COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
APANPIRG Conclusion 18/52	**Establishment of a Regional Performance Based Navigation Task Force (PBN/TF)** An Asia/Pacific PBN Task Force, with terms of reference as outlined in Appendix A to the APANPIRG/18 Report on Agenda Item 3.5, be established to develop a PBN implementation plan for the Asia/Pacific Region and address related regional PBN implementation issues.	**PBN TF –** As soon as practicable	APANPIRG	Regional Performance Based Navigation Task Force (PBN/TF) established
		Regional PBN Implementation Plan – by 2008 (Before APANPIRG-19)	PBN Task Force	Meetings of PBN T/F held as per following schedule 1st 9–11 Jan 2008 2nd 1 – 3 April 2008 3rd 14-17 July 2008 4th 4-6 March 2009 5th 15-17 July 2009 APANPIRG/19 approved the Regional PBN Implementation Plan Interim Edition RASMAG reviewed the Plan in Dec 2008 suggested some changes PBN/TF 4 reviewed RASMAG proposals and incorporated comments in the **Version 0.2 of the Plan** Plan was further reviewed by: ATM/AIS/SAR/SG/19 ; and CNS/MET/SG /13 Version 0.3 of the Plan being put up to APANPIRG/20

APANPIRG Conclusion 18/53	**Development of State PBN Implementation Plans** The Regional Office should encourage States to begin development of their State PBN implementation plans in harmony with the development of the Asia/Pacific Regional PBN implementation plan being coordinated by the Asia/Pacific PBN Task Force for submission to APANPIRG/19 (2008).	**State PBN Implementation Plan -** 2009	STATES PBN TF APAC Office	Under development
APANPIRG Conclusion 18/55	**Designation of Contact Person for PBN Implementation** States designate a focal contact person responsible for performance based navigation implementation and provide details of the contact person to ICAO Asia/Pacific Regional Office accordingly.	31 December 2007	STATES APAC Office	26 States and 3 Int'l Organizations have nominated Focal Points Reminders being regularly sent to States to nominate Focal Points
PBN/TF Report	**Develop detailed Status (database) regarding current and planned implementation of PBN terminal instrument procedures (SIDs and STARs) and Approaches** **Data Collection – Runway ends /International Aerodromes** **Data Collection – Runway ends /Domestic Aerodromes**	 30 June 2008 31 December 2008	 STATE Focal Point STATE Focal Point	ONLY 8 States have provided information Reminders are being sent regularly
PBN Report	**Template developed by PBN TF for reporting progress:** **- Common Template will help in harmonizing the reporting process;** **- States requested to submit PBN Implementation Progress Report by 15 August 2009 for submission to APANPIRG 20.**	15 August 2009 and prior to each future PBN/TF Meeting	STATE	7 States have submitted PBN Implementation Progress on the new Template.

Strategy **Short term (2008 – 2012)**				
• **TMA– Arrival**	1. RNAV 1 in radar environment and with adequate navigation infrastructure. 2. Basic-RNP 1 in non-radar environment	RNAV 1 STAR for 50% of international airports by 2010 and 75% by 2012. Priority should be given to airports with RNP Approach	STATES APANPIRG PBN TF	
• **TMA-Departure**	1. RNAV 1 in radar environment and with adequate navigation infrastructure. 2. Basic-RNP 1 in non-radar environment	RNAV 1 SID for 50% of international airports by 2010 and 75% by 2012. Priority should be given to airports with RNP Approach	STATES APANPIRG PBN TF	
• **Approach**	1. RNP APCH with Baro-VNAV in most possible airports 2. RNP AR APCH in airport where there are obvious operational benefits.	RNP APCH (with Baro-VNAV) in 30% of instrument runways by 2010 and 50% by 2012. Priority should be given to airports with operational benefits	STATES APANPIRG PBN TF	

Strategy **Medium Term (2013 – 2016)**				
SAFETY COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
• **TMA– Arrival**	1. Expand RNAV 1 or RNP 1 Application 2. Mandate RNAV 1 or RNP 1 approval for aircraft operating in higher air traffic density TMAs	RNAV 1 or RNP 1 STAR for 100% of international airports by 2016 RNAV 1 or RNP 1 STAR for 70% of busy domestic airports where there are operational benefits	STATES PBN TF APANPIRG	
• **TMA-Departure**	1. Expand RNAV 1 or RNP 1 Application 2. Mandate RNAV 1 or RNP 1 approval for aircraft operating in higher air traffic density TMAs	RNAV 1 or RNP 1 SID for 100% of international airports by 2016 RNAV 1 or RNP 1 SID for 70% of busy domestic airports where there are operational benefits	STATES PBN TF APANPIRG	
• **Approach**	1. Expansion of RNP APCH (with Baro-VNAV) and APV 2. Expansion of RNP AR APCH where there are operational benefits 3. Introduction of landing capability using GNSS and its augmentations	RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016	STATES APANPIRG PBN TF	

Strategy **Long Term (2016 and beyond)**	
In this phase, GNSS is expected to be a primary navigation infrastructure for PBN implementation. States should work co-operatively on a multinational basis to implement GNSS in order to facilitate seamless and inter-operable systems and undertake coordinated research and development programmes on GNSS implementation and operation. During this phase, States are encouraged to consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance. With the expectation that precision approach capability using GNSS and its augmentation systems will become available, States are encouraged to explore the use of such capability where there are operational and financial benefits.	
GPIs	GPI/5: Performance based navigation, GPI/9: Situational awareness, GPI/11: RNP and RNAV SIDs & STARs,
References	• *ICAO Asia Pacific Regional Performance-Based navigation Implementation Plan - Version 2* • *APANPIRG 18 Decision - ; APANPIRG 19 Decision -* • *ICAO Guidance Material – Performance-Based Navigation Manual Doc 9613 AN/937 Third Edition – 2008* • *Assembly Resolution 36-23*