International Civil Aviation Organization

THE THIRTIETH MEETING OF THE COMMUNICATIONS / NAVIGATION AND SURVEILLANCE SUB-GROUP (CNS SG/30) OF APANPIRG

Bangkok, Thailand, 06 - 10 July 2026

Agenda Item 10.3. CNS elements in Seamless ANS Plan/ ICAO APAC e-ANP

UPDATE OF APAC ANP VOLUME III

(Presented by Secretariat)

SUMMARY

This paper presents the draft Asia Pacific Air Navigation Plan (APAC ANP) Volume III for consideration of the meeting. The draft APAC ANP Volume III has incorporated the APAC Seamless ANS Plan (APSAP) performance improvement expectations, related ASBU threads and elements and priorities. The ASBU threads and elements have been reviewed and updated inline with the ASBU elements nomenclature of the 8th edition of Global Air Navigation Plan (GANP).

1. INTRODUCTION

1.1 On 18 June 2014, the Council approved the new Air Navigation Plan (ANP) template for Volumes I, II, and III, developed by the eANP Working Group, along with the associated amendment procedures. It also endorsed an action plan for ICAO, States, and PIRGs to develop and adopt the new regional ANPs in these volumes.

1.2 Following this, APANPIRG/25 (September 2014) agreed to develop the APAC ANP based on the Council-approved template and action plan, for presentation and endorsement at APANPIRG/26 [*Decision APANPIRG 25/1 – Development of the new APAC eANP* refers]. In September 2015, APANPIRG/26 adopted the inaugural APAC ANP Volume III, and endorsed amendments to Volumes I and II, in line with the approved template [*Conclusion APANPIRG/26/2 — Adoption of the ASIA/PAC eANP* refers].

1.3 The ANPs provide for the planning and implementation of air navigation systems within a specified region(s), in accordance with the agreed global and regional planning framework.

1.4 They are developed to meet those needs of specific areas not covered in the worldwide provisions. The development and maintenance of the ANPs is undertaken by ICAO PIRGs with the assistance of the ICAO Secretariat.

1.5 The ANP addresses regional and subregional performance and operational needs, constraints and opportunities and other initiatives aligned with the global strategic and technical levels of the Global Air Navigation Plan (GANP). The ANP Volume III is intended to incorporate regional planning objectives, priorities and targets, implementation monitoring and reporting, and other regional guidance material.

1.6 The structure of the ANP Volume III consists of:

a) Part 0 – Introduction;
b) Part I – General Planning Aspects (GEN); and
c) Part II – Air Navigation System Implementation.

1.7 The management and amendment of ANP Volume III would be under the responsibility of PIRGs. Nevertheless, the amendment of Parts 0 and I of Volume III should go through an inter-regional coordination mechanism and Part II would require approval by regional agreement which includes the PIRG.

2. DISCUSSION

Amendment of the APAC ANP Vol III Part II

2.1 In 2012, ICAO APAC Region developed Asia/Pacific Seamless ANS Plan (previously known as the Asia/Pacific Seamless ATM Plan) and Version 1.0 was published on June 2013, to facilitate and promote Seamless ATM in APAC Region. The Seamless ANS Plan included regional priorities agreed by APANPIRG, from the Aviation System Block Upgrades (ASBU) Block 0 and 1 element from the GANP 4th Edition.

2.2 The APAC ANP Volume III Part II was developed to include the regional priorities elements from the Asia/Pacific Seamless ANS Plan. Since 2017, Asia/Pacific Seamless ANS Plan has been updated to reflect the updates in GANP. The most recent Asia/Pacific Seamless ANS Plan Version 4.0 was endorsed by APANPIRG/35 (in 2024).

2.3 It should be noted that though most parts of the Asia/Pacific Seamless ANS Plan and APAC ANP Volume III complement each other, the Asia/Pacific Seamless ANS Plan contains two performance improvement indicators: Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ANS Service Levels (PASL), which were not incorporated in APAC ANP Volume III. The key reason for this was that the Asia/Pacific Seamless ANS Plan was developed by the APAC region in 2012, when GANP 4th Edition was still in draft and the ASBU methodology was just introduced for discussion.

2.4 Nonetheless, GANP is now a mature and globally adopted strategic document. Therefore, the need to maintain and update two regional documents within the APAC region is under review. It is worth noting that updating regional strategic documents requires significant efforts and resources that should be minimized to efficiently utilize limited resources. Considering all these factors, the Asia/Pacific Seamless ANS Plan has been merged with APAC ANP Volume III, which will lead to the discontinuation of the Asia/Pacific Seamless ANS Plan.

2.5 It is to be highlighted that further to the endorsement of the ANP new Template (in 3 Volumes) by the Council in 2014, the GANP has gone through many amendments and additional recommendations were formulated by the 13th and 14th Air Navigation Conference and the 39th, 40th 41st and 42nd Assembly of ICAO endorsed a number of Assembly Resolutions, which have a direct impact on regional planning and specifically on the ANP Volume III.

2.6 Currently, ICAO is developing a new, globally harmonized template for ANP Volume III. It is anticipated that the new template would serve as the foundation to reflect the performance management process and harmonize the ANP Volume III in all ICAO Regions and would, eventually, be proposed to the ICAO Council for approval, with a potential roadmap for the transition of the different Regions to the new template.

2.7 While the development of the global template of ANP Volume III is in progress, the ICAO Regional Offices have undertaken actions to update the APAC ANP Volume III to incorporate the most recent regional priorities.

2.8 The APAC ICAO Secretariat, after extensive internal consultations, prepared a draft of APAC ANP Volume III. With the approval of GANP 8th Edition regional priorities have been reviewed and revised accordingly.

2.9 The following table shows the changes in the ASBU elements as compared to APAC Seamless ANS Plan (V4.0) due to the updates in GANP 8th edition. This update of the threads includes additional new elements in Block 3. It also includes the delay of some elements to a later Block and changes to the maturity level of some elements. Consequently, some of the Block 2 ASBU elements which were considered in the APAC Seamless ANS Plan and which now have been moved to Block 3 or Block 4 have not been considered for implementation planning in the updated APAC ANP Volume III.

ASBU Thread	**APAC Seamless ANS Plan V4.0**	**GANP 8th Edition**	**Priority in APAC Seamless ANS Plan**
ACDM	ACDM- B1/1 to B1/2	ACDM- B2/1 to B2/3	2
APTA	APTA – B1/1, B1/2, B1/4, B1/5	APTA – B2/5, B2/6, B2/7, B2/8	3
	APTA-B2/2	Removed	3
	APTA-B2/4	APTA-B3/3	3
CSEP	CSEP-B2/1 to B2/3	CSEP- B3/3, B3/4, B3/5	3
FRTO	FRTO-B1/6	FRTO-B2/5	2
	FRTO-B1/7	**Removed**	2
	FRTO-B2/1, B2/2	FRTO-B3/1, B3/2	3
NOPS	NOPS-B2/1, B2/2	NOPS-B3/4, B3/5	3
	NOPS-B2/4, B2/5	NOPS-B3/6, B3/7	3
	NOPS-B2/7, B2/8	NOPS-B4/1, B4/2	3
SURF	SURF-B1/5	SURF-B4/1	2
TBO	TBO-B0/1, B1/1, B2/2-B2/2	**Removed**	2
DAIM	DAIM-B1/2 to B1/5	DAIM-B2/6- B2/9	1
	DAIM- B1/6	DAIM- B3/1	1
	DAIM-B1/7	DAIM-B2/10	2
	DAIM-B2/2	DAIM- B3/2	3
	DAIM-B2/3	DAIM-B4/1	3
	DAIM-B2/4	DAIM-B3/3	3
	DAIM-B2/5	DAIM-B3/4	3
ASUR	ASUR-B2/2	ASUR-B3/2, ASUR-B3/3	3
COMI	COMI-B1/3	COMI-B3/5	2
	COMI-B2/1	COMI-B4/1	3
	COMI-B2/2	COMI-B3/6	3
COMS	COMS-B1/3	COMS-B3/3	2
NAVS	NAVS-B2/1	NAVS-B4/1	3

Table 1: Updated ASBU Elements in APAC ANP Volume III based on GANP 8th Edition

2.10 The CNS Related ASBU Elements are as shown in Table 2. The CNS SG may review the CNS related ASBU elements and their priorities from time to time and when necessary, process the amendments in accordance with established procedures.

Functional Category	**ASBU Element in APSAP V4.0**	**Description**	**ASBU Element in GANP 8th Edition**	**Priority**
Information	FICE-B0/1:	Automated basic AIDC	FICE-B0/1:	1
	FICE-B2/2	Filing Service	FICE-B2/2	2
	FICE-B2/4	Flight data request service	FICE-B2/4	2
	SWIM- B2/1 -2	SWIM-B2/1- Information service provision SWIM-B2/2- Information service consumption	SWIM- B2/1 -2	2
Operational	APTA-B0/1 – 2:	Basic PBN SID and STAR procedures, PBN non-precision approaches	APTA-B0/1 – 2:	1
	APTA-B0/3 and 6	SBAS/GBAS CAT I precision approach procedures, and PBN Helicopter PinS Operations	APTA-B0/3 and 6	3
	APTA-B0/4 – 5, 7 – 8:	CDO (Basic) and CCO (Basic), and performance-based aerodrome operating minima for advanced/basic aircraft	APTA-B0/4 – 5, 7 – 8:	2
	APTA-B1/1, B1/2, B1/4 and B1/5:	advanced capability PBN approaches, PBN SID and STAR procedures and performance-based aerodrome operating minima for advanced aircraft with SVGS, CDO and CCO (Advanced)	APTA – B2/5, B2/6, B2/7, B2/8	3
	APTA-B2/1	GBAS CAT II/III precision approach procedures	APTA-B2/1	3
	APTA-B2/2	Simultaneous operations to parallel runways	Removed	3
	APTA-B2/3	PBN Helicopter Steep Approach Operations	APTA-B2/3	3
	APTA-B2/4	Performance based aerodrome operating minima – Advanced aircraft with SVGS	APTA-B3/3	3
	DATS-B1/1	Digital Aerodrome Air Traffic Services	DATS-B1/1	3
	RSEQ-B0/3	Point merge	RSEQ-B0/3	3
	SNET-B0/1 – 4	STCA, MSAW, APW, APM	SNET-B0/1 – 4	1
	SNET-B1/1 – 2:	Enhanced STCA with aircraft parameters and in complex TMAs	SNET-B1/1 – 2:	2
	SURF-B0/1 – 3:	Basic ATC surface operations tools, comprehensive situational awareness, situational awareness, alerting service	SURF-B0/1 – 3:	2
	SURF-B1/1 – 5:	Advanced surface traffic management visual aids, pilot comprehensive awareness and runway alerting, enhanced ATC alerting, routing service to support ATC and EVS for taxiing	SURF-B1/1 – 4: SURF-B4/1	2
	SURF-B2/1 - B2/3	Enhanced surface guidance for pilots and vehicle drivers; Conflict alerting for pilots for runway operations	SURF-B2/1 - B2/3	3

	TBO-B0/1:	Introduction of time-based management within a flow centric approach	**Removed**	2
	TBO-B1/1	Initial Integration of time-based decision-making processes	**Removed**	2
	TBO-B2/1-B2/2	Pre departure Trajectory synchronization; extended Time based management across multiple FIRs.	**Removed**	3
Technology	ASUR-B0/1 – 3:	ADS-B, MLAT, SSR-DAPS	ASUR-B0/1 – 3:	1
	ASUR-B1/1	Reception of aircraft ADS-B signals from space (SB ADS-B)	ASUR-B1/1	2
	ASUR-B2/1	Evolution of ADS-B and Mode S	ASUR-B2/1	3
	ASUR-B2/2	Community based surveillance system for airborne aircraft (low and higher airspace)	ASUR-B3/2, ASUR-B3/3	3
	COMI-B0/1 – 2, 4 – 6	ACARS, ATN/OSI, VDL Mode 2 Basic, SATCOM Class C Data, HFDL	COMI-B0/1 – 2, 4 – 6	2
	COMI-B0/3, 7	VDL Mode O/A, AMHS	COMI-B0/3, 7	1
	COMI-B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	COMI-B1/1	**1**
	COMI-B1/2 COMI-B1/3 COMI-B1/4	VDL Mode 2 Multi-Frequency, SATCOM Class B (SB-S) Voice and Data, ATN/IPS and AeroMACS Ground-Ground	COMI-B1/2, COMI-B3/5 COMI-B1/4	2
	COMI-B2/1	Air Ground ATN/IPS	COMI-B4/1	3
	COMI-B2/2	Aeronautical Mobile Airport Communication System (AeroMACS) aircraft mobile connection	COMI-B3/6	3
	COMI-B2/3	Links meeting requirements for non-safety critical communication	COMI-B2/3	3
	COMS-B0/1 – 2	CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace and ADS-C (FANS 1/A) for procedural airspace	COMS-B0/1 – 2	2
	COMS-B1/1 COMS-B1/2 COMS-B1/3	PBCS approved CPDLC (FANS 1/A+), ADS-C and SATVOICE for domestic and procedural airspace	COMS-B1/1 COMS-B1/2 COMS-B3/3	2
	COMS-B2/1-3	PBCS approved CPDLC, ADS-C, SATVOICE	COMS-B2/1-3	3
	NAVS-B0/1 – 2	SBAS, GBAS,	NAVS-B0/1 – 2	**2**
	NAVS-B0/3 – 4	ABAS, MON	NAVS-B0/3 – 4	**1**
	NAVS-B1/1	Extended GBAS	NAVS-B1/1	3
	NAVS- B2/1 NAVS-B2/2 NAVS-B2/3	DFMC- GBAS, SBAS, ABAS	NAVS-B4/1 NAVS-B2/2-NAVS-B2/3	3

Table 2- CNS Related ASBU Elements in APAC Seamless ANS Plan and GANP 8th Edition

2.11 The ICAO Secretariat circulated the draft ANP Volume III to APAC States and Administrations for their review and feedback in May 2026. ICAO has received comments so far from -Australia, China, Japan, Sri Lanka, Hong Kong China.

2.12 The comments and feedback have been incorporated as appropriate in the draft ANP Volume III in **Appendix A**.

2.13 The Meeting is requested to review the draft ANP Volume III and provide feedback to ICAO Secretariat latest by 31st August 2026. The feedback and comments will be included as appropriate by the Secretariat in preparing final draft for consideration of APANPIRG in November 2026.

2.14 The APAC ANP Volume III, endorsed by APANPIRG, would be uploaded on the ICAO website.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;
b) review **Appendix A** and provide feedback to the Secretariat; and
c) discuss any other matter as relevant.

– – – – – – – – – – – – – – –

APPENDIX A

INTERNATIONAL CIVIL AVIATION ORGANIZATION

DRAFT

ASIA PACIFIC AIR NAVIGATION PLAN

VOLUME III

ASIA PACIFIC AIR NAVIGATION PLAN

VOLUME III

TABLE OF CONTENTS

_____

ASIA PACIFIC ANP, VOLUME III

PART 0 – INTRODUCTION

1. INTRODUCTION

1.1 The background to the publication of Air Navigation Plans (ANPs) in three volumes is explained in the Introduction in Volume I. The procedure for amendment of ANP Volume III is also described in Volume I.

1.2 ANP Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the *Global Air Navigation Plan (GANP)*. GANP is an important planning tool for setting global priorities to drive the evolution of the global air navigation system and ensure that the vision of an integrated, harmonized, globally interoperable and seamless system becomes a reality.

1.3 Collaborative decision-making is key for a cost-effective modernization of the air navigation system and ensures that all concerned aviation stakeholders are involved and given the opportunity to influence decisions to reach defined performance objectives. Volume III guides the aviation community in the application of performance management process and identification of relevant and timely operational improvements to a given region's air navigation system including some within the ASBU framework.

1.4 The information contained in Volume III is related mainly to:

- Planning: objectives set, priorities and targets planned at regional or sub-regional levels;
- Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or
- Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.5 The management of Volume III is the responsibility of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).

1.6 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements, using the tables/databases and/or references to online monitoring tools, as endorsed by APANPIRG. The status of implementation is updated on a regular basis as endorsed by APANPIRG.

1.7 The GANP aims for a seamless and high-quality provision of air navigation services worldwide through the establishment of regional and national performance objectives aligned with global performance ambitions. To achieve this, States and regions must assess their operational environments and select the most appropriate modernization options based on operational requirements and expected performance gains. This ensures the efficient use of resources while addressing the needs of the aviation community.

1.8 Whereas ICAO addresses the planning strategy at the global and regional levels, planning at the national level is the responsibility of States. A national planning framework should be developed by each State based on its needs and in collaboration with regional and global partners. This will ensure to the greatest extent possible that solutions are internationally harmonized and integrated. States are encouraged to develop and implement policies and procedures specifying the interval and methodologies for updating their national air navigation plans (NANPs).

1.9 NANPs, as well as other national plans dealing with other aspects of aviation such as safety, security and facilitation, should all be linked together in a broader national aviation plan to ensure an integrated strategic approach at the State level. This broader plan can be considered as a Civil Aviation Master Plan (CAMP) addressing all aspects of air transport at the State level. The objective is to provide a clear and comprehensive planning and implementation strategy for the future development of the entire civil aviation sector in terms of policies, legislation, objectives, facilities, equipment, organization and capacity-building.

1.10 The CAMP should also emphasize the importance of air transport for the economic development of the State. As such, the CAMP should be linked to the State's overarching national development plan, where applicable, to mobilize public and private resources and partnerships for the implementation of the plan and to strengthen the civil aviation sector.

1.11 A clearly defined relationship between NANPs aligned with the GANP and APAC ANP, CAMP and States' national development plans will enable the prioritization and optimum allocation of resources for all planned projects within States and across all sectors of activity.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUs), ELEMENTS AND ROAD MAPS

2.1. GANP represents a rolling, long term strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. GANP's ASBU methodology is a programmatic and flexible global system's engineering approach that allows all Member States to develop their Air Navigation capacities based on their specific operational requirements. The Block Upgrades will enable aviation to realize global harmonization, increased capacity, and improved environmental efficiency that modern air traffic growth now demands in every region around the world.

2.2. Derived from the global strategic level, the global technical level of the Global Air Navigation Plan (GANP) is designed to support technical managers in planning the implementation of basic services and new operational improvements in a scalable and cost-effective manner and according to specific operational and performance needs, while ensuring interoperability of systems and harmonization of procedures. The GANP establishes, under the "Global Technical layer" three (3) technical frameworks to guide States in modernizing their air navigation systems:

- the Basic Building Blocks (BBBs), which define the essential air navigation services required by all States;
- the Aviation System Block Upgrades (ASBUs) framework, which offers modular, scalable improvements based on operational needs; and
- the Performance Framework (PF), which encompasses the key performance areas (KPAs), and key performance indicators (KPIs).

2.3. The BBB framework outlines the foundation of a robust air navigation system. It identifies basic services to be provided for international civil aviation in accordance with ICAO Standards. These basic services are defined in the areas of aerodromes, air traffic management, search and rescue, meteorology and information management. The BBB framework also identifies the end users of these services as well as the assets (CNS infrastructure) that are necessary to provide them.

2.4. The ASBU and Performance Frameworks offer modular, scalable improvements based on operational needs; and define key performance areas (KPAs), indicators (KPIs), and planning targets.

2.5. This resultant framework is intended primarily to ensure that the aviation system will be maintained and enhanced, that ATM improvement programmes are effectively harmonised, and that barriers to future aviation efficiency and environmental gains can be removed at a reasonable cost. In this sense, the adoption of the ASBU methodology significantly clarifies how the ANSP and airspace users should plan for future equipage.

2.6. The ANP Volume III leverages these frameworks to support the planning, implementation, and performance monitoring of air navigation systems at the regional and national levels, ensuring alignment with the GANP's global ambitions.

2.7. Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Elements are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Elements contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists, or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Elements depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO APAC regional, sub-regional and State planning should identify Elements which best provide the needed operational improvements.

ASIA PACIFIC ANP, VOLUME III

PART I - GENERAL PLANNING ASPECTS (GEN)

1. PLANNING METHODOLOGY

1.1 Guided by GANP, the regional planning process starts by identifying the homogeneous ANS areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Elements from the ASBUs are evaluated to identify which of those elements best provide the needed operational improvements. Depending on the complexity of the element, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of elements by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 APANPIRG is responsible for the regional level of the GANP. Based on regional performance and operational needs, differences, constraints and opportunities, APANPIRG is responsible for defining regional planning and implementation priorities, aligned with the GANP, through Volumes I, II and III of APAC ANP. They are also responsible for the identification of air navigation deficiencies considering the air navigation plans.

1.3 In APAC ANP Volume III, APANPIRG identify dynamic/flexible planning elements for modernizing the regional air navigation system, following a performance-based approach. As part of this approach, APANPIRG define regional priorities and performance objectives, linked to the Key Performance Areas (KPAs) and Key Performance Indicators (KPIs) of the GANP, to achieve the global performance ambitions as well as to the operational improvements within the ASBU framework that could be implemented by States, based on identified needs at local and national level.

1.4 Performance objectives should be specific, measurable, achievable, relevant and time-bound (SMART). The current/past performance (Performance Baseline) expected future performance, as well as actual progress in achieving performance objectives, should be expressed by means of KPIs. In the GANP performance framework, a list of KPIs is linked to relevant objectives and is used to set targets through objective quantification. Performance measurement is therefore done through the collection of data for the supporting metrics. Data collection should be as detailed as possible, as the availability of granular data greatly enhances the effectiveness of the PBA.

1.5 ICAO APAC office coordinates the review and updating of APAC ANP. ICAO APAC Office also coordinates the activities of APANPIRG to ensure their alignment with the GANP and ensures close coordination between APANPIRG and Asia Pacific Regional Aviation Safety Groups (RASG-APAC)). To verify the effectiveness and rate of operational improvements implementation, ICAO provides data and tools to support performance and implementation monitoring and facilitates the sharing of relevant information and best practices across regions.

1.6 States should consider operational improvements (ASBU elements) within the ASBU framework as potential solutions to improve performance relative to selected objectives and KPIs within the operational environment under analysis.

1.7 As part of the process to assess the achievements, States should calculate/estimate the benefits accrued from the implementation of the selected solutions/projects.

1.8 Considering the global objectives defined in the GANP and those identified by States, within the KPAs as prioritized above, APANPIRG may set common objectives to be pursued by the States within the Region and to be monitored at regional level.

2. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

2.1. The progress and effectiveness against the priorities set out in the APAC ANP should be annually reported, using a consistent reporting format, to ICAO APAC Office.

2.2. Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional performance metrics are fundamental to the success of performance-based approaches.

2.3. The technical sub-groups of APANPIRG, viz., Aerodrome Operations and Planning Sub-group (AOP/SG), Air Traffic Management Sub-group (ATM SG), Communications, Navigation and Surveillance Sub-group (CNS SG) and Meteorology Sub-group (MET SG) review the APAC ANP Volume III as part of their regular work programme and consult, as necessary, with States and International organizations on proposed amendments. The proposed amendment(s) should be presented to other technical sub-groups for approval when required and subsequently submitted to APANPIRG for adoption by Member States.

3. REPORTING AND MONITORING RESULTS

3.1 Reporting and monitoring results will be analyzed by the APANPIRG, to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders to develop the annual Global Air Navigation Report. The report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO regions in the establishment of air navigation infrastructure and performance-based procedures.

3.2 The reports will also provide the ICAO Council with detailed annual results based on which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Elements.

3.3 Table GEN III-1 contains ASBU Block 0, Block 1 and Block 2 elements and selected regional elements categorized according to APAC regional priorities aligned with GANP and supporting the global performance ambitions.

TABLE GEN III-1 – ASBU and Regional Elements in APAC Region

ASBU Elements			
Area	**Priority 1**	**Priority 2**	**Priority 3**
Airport	ACDM-B0/1	ACDM B0/2	ACDM B2/1 to B2/3
Airport, TMA, En-route	AMET- B0/1 to B0/4	AMET-B1/1 to B1/4	AMET B2/1 to B2/4
Information	DAIM B1/1, DAIM B2/6 to DAIM-B2/9	DAIM-B2/10	DAIM-B2/1
Information	FICE B0/1	FICE B2/2 , FICE B2/4	
Information Technology		SWIM-B2/1, SWIM-B2/2	
Airspace – TMA and En-route	APTA-B0/1, APTA B0/2	APTA-B0/4, APTA-B0/5, APTA-B0/7, APTA-B0/8	APTA-B0/3, APTA-B0/6, APTA-B2/1, APTA-B2/3, APTA-B2/5, APTA-B2/6, APTA-B2/7, APTA- B2/8
Airspace (En-route)		CSEP B1/1 to B1/4	
Airport			DATS B1/1
Airspace- (En-route)	FRTO-B0/1 to B0/4	FRTO-B1/1 to B1/5	FRTO-B2/3 to B2/5
Airspace- (En-route)	NOPS-B0/1 to B0/5	NOPS-B1/1 to B1/10	NOPS-B2/3 NOPS-B2/4, NOPS-B2/6
Airspace- (En-route)			OPFL-B0/1, OPFL-B2/1
Airspace (TMA)	RSEQ-B0/1, RSEQ-B0/2	RSEQ-B1/1	RSEQ-B0/3, RSEQ-B2/1
Technology	SNET-B0/1 to B0/4	SNET-B1/1 to B1/2	
Airport – Ground Surveillance		SURF-B0/1 to B0/3, SURF-B1/1 to B1/4	SURF B2/1 to B2/3
Surveillance	ASUR-B0/1 to B0/3	ASUR-B1/1	ASUR-B2/1
Communication	COMI-B0/3, COMI-B0/7, COMI-B1/1	COMI-B0/1, B0/2, B0/4, B0/5, B0/6, COMI-B1/2, COMI-B1/4	COMI-B2/3
Surveillance		COMS-B0/1 to COMS-B0/2, COMS-B1/1 to COMS-B1/2	COMS-B2/1 to COMS-B2/2
Navigation	NAVS B0/3 to B0/4	NAVS B0/1 to B0/2	NAVS-B1/1, NAVS- B2/2 to NAVS-B2/3

Regional Elements			
Area	**Priority 1**	**Priority 2**	**Priority 3**
Civil Military Cooperation	Civil-Military Special Use Airspace (SUA) management	Civil-Military common procedures and training	
Search and rescue	Enhanced SAR systems		
Human Performance	ANSP human and simulator performance		
Civil Military Cooperation	Civil-Military strategic and tactical coordination	Civil-Military integrated systems and facilities	
Airspace - Coordination	Space objects launch and re-entry management		
Airport		Aerodrome management and coordination	Optimization of runway capacity facilities
Airspace		ADS-B, SSR Mode S and PBN Airspace	
Airspace – Level allocation		Flight Level Orientation Scheme (FLOS)	
Airspace – New Entrants		Unmanned Aircraft Systems	
Airspace- Coordination		Adjacent ATS sector coordination	
Airspace Classification		Airspace classification	
Airspace- separation		ATC horizontal (longitudinal and lateral) separation	
Airspace- level allocation		Flight Level Allocation Schemes (FLAS)	
Airspace - Capacity		ATC sector capacity	
ATC Systems		Electronic Flight Progress Strips	
Coordination		ATS surveillance data sharing	
Information		Data-Link Departure Clearance (DCL)	

PART II – AIR NAVIGATION SYSTEM IMPLEMENTATION

1. INTRODUCTION

1.1 The planning and implementation of the ASBUs should be undertaken within the framework of the APANPIRG with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Blocks and Elements adopted by the APAC Region should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. The APANPIRG should determine the ASBU Elements, which best provides the operational improvements in the ICAO APAC Region.

2. ICAO ASIA PACIFIC AIR NAVIGATION OBJECTIVES, PRIORITIES AND TARGETS

2.1 In accordance with Recommendation 6/1 of the Twelfth Air Navigation Conference (AN-Conf/12), all PIRGs were requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 In 2012, ICAO APAC Region developed Asia/Pacific Seamless ANS Plan (APSAP) (previously known as the Asia/Pacific Seamless ATM Plan) and Version 1.0 was published on June 2013, to facilitate and promote Seamless ATM in APAC Region. The Seamless ANS Plan included regional priorities agreed by APANPIRG, from the Aviation System Block Upgrades (ASBU) Block 0 and Block 1 elements from the GANP 4th Edition. APSAP is intended to provide a framework for a transition to a Seamless ATM environment, to meet future performance requirements.

2.3 Subsequently, APANPIRG approved APAC ANP Volume III in 2015 which included the APAC regional priorities as noted in the APSAP.

2.4 In establishing and updating the APAC ANP, the APANPIRG gives due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and APAC Region safety strategy.

2.5 Since 2017, APSAP has been regularly updated to reflect the updates in GANP. The most recent Asia/Pacific Seamless ANS Plan Version 4.0 was endorsed by APANPIRG/35 (in 2024). With the release of GANP 8th edition, the regional priorities as reflected in APSAP V4.0 have been updated and incorporated into this APAC ANP Volume III.

2.6 The APSAP categorises operational improvements in a priority implementation within the Asia Pacific region and allocates priority based on its importance in promoting Seamless ANS as:

a) **Priority 1** – critical upgrade assignment based on whether the implementation of an element could bring most benefit to the region or regional upgrade by States and is essential to achieve the service level required globally;

b) **Priority 2** – recommended upgrade assignment for those elements which would bring benefits to the region and generally to be implemented from 2022, but States are encouraged to implement earlier if beneficial; and

c) **Priority 3** – assigned to those elements which may not be universally implemented in the Asia/Pacific Region.

2.7 The objectives, priorities and targets for each element, corresponding to Priority 1, Priority 2 and Priority 3, are documented in the APAC Main Planning Tables in **Appendix A, Appendix B**, and **Appendix C,** respectively.

2.8 States in the APAC Region should establish their own air navigation objectives, priorities and targets to meet their individual needs and circumstances in line with the GANP and APAC ANP objectives, priorities and targets.

APAC Subsidiary Air Navigation Planning

2.9 The *Asia/Pacific Regional Collaborative Air Traffic Flow Management (ATFM) Framework, Asia/Pacific Plan for Collaborative Aeronautical Information Management (AIM), Asia/Pacific Region ATM Contingency Framework, Asia/Pacific Search and Rescue (SAR) Plan and Asia/Pacific Airport Collaborative Decision Making (A-CDM) Implementation Plan* form part of the regional planning and guidance material connected to the APAC ANP Volume III.

2.10 States shall report their implementation progress and status of the applicable regional planning and guidance material at least once annually, by 28 February.

*Note: a 'robust' status plan that is not subject to consideration as an APANPIRG Air Navigation Deficiency is one that is evaluated as achieving **90%** or more implementation of the planning elements.*

2.11 APAC States and Administrations should carry out analysis of each ASBU element and Regional operational requirement applicability for implementation in their area of responsibility.

2.12 The analysis should be reported as follows:

- Applicable or Not – The State has analysed this ASBU element, and decided it is applicable or not applicable
- The implementation progress is reported as indicated below:
    - 100% = YES / Completed / Operational
    - 80% = Final stage of implementation
    - 60% = Intermediate stage of implementation
    - 40% = Early stage of implementation
    - 20% = Planning / Feasibility Study stage
    - 0% = NO / Related work not commenced

ATC Separation Minima

2.13 Pursuant to ICAO Fourteenth Air Navigation Conference (AN-Conf/14) Recommendation 3.1/1, APANPIRG, by Decision APANPIRG/36/7 approved the establishment of the APAC Project 30/10 Task Force to develop a regional roadmap for the optimized implementation of longitudinal separations of 55.5 km (30 NM) or less in oceanic and remote airspace, and 19 km (10 NM) or less elsewhere, in APAC Region.

2.14 Implementation initiatives should be regionally coordinated to ensure a seamless and harmonized implementation. APAC States unable to complete implementation by 2028 will be subjected to APANPIRG Air Navigation Deficiency.

2.15 It is to note that the APAC ANP Volume III categorizes airspace by reference to its CNS capability as:

a) Category R: remote en-route airspace with Air Traffic Services (ATS) HF or CPDLC communications and outside the coverage of ground-based surveillance coverage; or

b) Category S: serviced (or potentially serviced) en-route airspace – by both direct [not dependent on a Communication Service Provider (CSP)] ATS communications and surveillance; or

c) Category T: terminal operations serviced by both direct ATS communications and surveillance.

_____

3. MONITORING OF ASBU ELEMENTS IMPLEMENTATION

3.1 The monitoring of individual ASBU Blocks Upgrade Elements and Regional Elements is assigned to the relevant APANPIRG sub-groups.

3.2 To encourage States to implement Priority 1 elements of the ASBU Blocks Upgrade Elements and Regional Elements, the APANPIRG sub-groups may monitor compliance through direct engagement with States, and where necessary, through the APANPIRG Air Navigation Deficiency process.

3.3 APAC States/Administrations are required to report on their implementation progress at least once a year (by 28th February of each year) through the Seamless ANS Reporting Tool https://oaci.sharepoint.com/sites/ATM_reporting/Lists/ANS%20Reporting%20Priority/NewForm.aspx.

3.4 Information regarding the Seamless ANS Reporting Tool can be accessed at:

Asia Pacific Seamless ANS Plan

3.5 Access to the Seamless ANS Reporting Tool requires prior registration by ICAO APAC Regional Office using a Microsoft account. Guideline to register is available at:

icao.int/sites/default/files/inline-files/Registration of Microsoft Account.pdf

3.6 User Guide for Seamless ANS Reporting Tool can be accessed at:. ICAO-ANS-Reporting-User-Guide-V2.0.pdf

Appendix A

APAC Main Planning Tables -Objectives and Targets for Priority 1 elements

Objectives		Target		Remarks
Purpose	**ASBU Element/** **Regional Planning Element**	**Definition of Target**	**Definition of Indicator as Progress**	**TimeLine** Immediate Medium Term (2028) Long Term (2031)
To generate common situational awareness by sharing relevant surface operations data among the local stakeholders involved in aerodrome operations.	ACDM-B0/1	All high-density international aerodromes should operate an A-CDM system for ACIS integrated with the ATM network function consistent with ACDM-B0/1	% of high-density international aerodromes with operational A-CDM system which fulfil the criteria	Immediate
Provides Meteorological observations in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	AMET-B0/1	Aeronautical meteorological observations products, consistent with AMET-B0/1, should be disseminated in compliance with AMET-B0/4, and in accordance with global and regional guidance material. An agreement between the MET authority and the appropriate ATS authority should be established to ensure the appropriate exchange of meteorological information obtained from aircraft (Priority 1)	% of availability of MET observation information to ATC Units • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
Provides Meteorological forecasts, advisories and warnings in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	AMET-B0/2	Aeronautical meteorological observations products, consistent with AMET-B0/2, should be disseminated in compliance with AMET-B0/4, and in accordance with global and regional guidance material. An agreement between the MET authority and the appropriate ATS authority should be	% of availability of MET forecast information to ATC Units • 100% = YES / Completed / Operational • 80% = Final stage of implementation	Immediate

		established to ensure the appropriate exchange of meteorological information obtained from aircraft (Priority 1)	• 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
Climatological products in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations	AMET-B0/3	Climatological and historical meteorological products (such as aerodrome meteorological forecasts and reports, aerodrome warnings and wind shear warnings) consistent with AMET-4B0/3, should be disseminated in compliance with AMET-B0/4, and in accordance with global and regional guidance material. An agreement between the MET authority and the appropriate ATS authority should be established to ensure the appropriate exchange of meteorological information obtained from aircraft (Priority 1)	% of availability of Climatological and historical MET information to ATC Units • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	AMET-B0/4		% of dissemination of MET information to ATC Units using AFTN/AMHS and/or WFS/SAFIS • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage	Immediate

			• 0% = NO / Related work not commenced	
This element represents the use of PBN in design of approach procedures to provide more flexibility to airspace planners to manage the use of airspace, and to facilitate access to airports. It includes the provision of instrument approach procedures with vertical guidance in support of stabilized approaches.	APTA-B0/1	Where practicable, all instrument runways serving aeroplanes should have the following approach procedures consistent with APTA-B0/1 (Priority 1) and APTA-B0/2: a) SBAS/GBAS CAT1 precision approaches; or ILS CAT1 approaches (with APV approach as a backup); or b) Approaches with Vertical Guidance (APV); RNP APCH with LNAV-VNAV or LPV Minima; or c) if an APV is not practical, straight-in RNP APCH with Lateral Navigation (LNAV) or SBAS based LPV Minima	% of instrument runways which are provided with the approach procedures [(a) or (b) or (c)] as described	Immediate
Use of PBN capabilities allows more flexible placement of arrival and departure routing without the need for Ground-based infrastructure to support these routes	APTA-B0/2	Where practicable, all aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR procedures consistent with APTA-B0/2 (Priority 1).	% of aerodromes having at least one runway end provided with RNAV 1 or RNP1 SID/STAR procedures	Immediate
To support the provision of Air Traffic Services and operational applications at reduced cost and increased surveillance coverage.	ASUR-B0/1	ADS-B (using 1090ES) or radar surveillance systems should be used to provide coverage of all Category T airspace supporting high-density international aerodromes consistent with ASUR-B0/1. Data from ATS surveillance systems should be integrated into operational ATC aircraft situation displays (standalone displays of ATS surveillance data should not be used operationally).	% of Category T airspace supporting international aerodromes designated as non-exclusive or exclusive ADS-B airspace	Immediate
	ASUR-B0/1	ADS-B (using 1090ES) or radar surveillance systems should be used to provide coverage of all Category S airspace as far as practicable consistent with ASUR-B0/1. Data from ATS	% of Category S airspace provided with radar or/and ADS-B surveillance system and	Immediate

		surveillance systems should be integrated into operational ATC aircraft situation displays (standalone displays of ATS surveillance data should not be used operationally).	integrated with ATC aircraft situation displays	
To provide an alternative to radar surveillance by using available aircraft transponders	ASUR-B0/2	MLAT or radar surveillance systems should be used to provide coverage of all Category T airspace supporting high-density international aerodromes consistent with ASUR-B0/2. Data from ATS surveillance systems should be integrated into operational ATC aircraft situation displays (standalone displays of ATS surveillance data should not be used operationally).	% of Category T airspace surrounding high-density international aerodromes provided with radar or/and MLAT surveillance system and integrated with ATC aircraft situation displays	Immediate
	ASUR-B0/2	MLAT or radar surveillance systems should be used to provide coverage of all Category S airspace as far as practicable consistent with ASUR-B0/2. Data from ATS surveillance systems should be integrated into operational ATC aircraft situation displays (standalone displays of ATS surveillance data should not be used operationally).	% of Category S airspace provided with radar or/and MLAT surveillance system and integrated with ATC aircraft situation displays	Immediate
To obtain additional information from an aircraft transponder in support of the provision of Air Traffic Services	ASUR-B0/3	All Category R and S upper controlled airspace should require the carriage of an operable mode S transponder within airspace where Mode S radar services are provided to support ASUR-B0/3	% of Category R and S Upper controlled airspace where Mode S radar services are provided and require carriage of an operable Mode S Transponder	Immediate
To support Air /Ground Data Link Communication	COMI-B0/3	Where applicable, all ATC Sectors should be supported by VDL Mode O/A consistent with COMI-B0/3	% of ACCs supported by VDL-Mode 0/A	Immediate
To supports improved communication over AFTN To provide flight information coordination between ANSPs at adjacent FIRs, and with relevant military units, support separation assurance, potentially providing, when	COMI-B0/7	Where applicable, all ATC Sectors should be supported by AMHS communication systems consistent with COMI-B0/7	% of ACCs supported by AMHS communication system	Immediate

used in conjunction with other enablers (e.g. navigation capabilities), reduced separation. 1. Flight Plan/Clearance 2. AIDC: Flight transfer 3. MET data				
To support Air Traffic Service Communication (ATSC) as well as Aeronautical Industry Service Communication (AINSC), such as Aeronautical Administrative Communications (AAC) and Aeronautical Operational Communications.	COMI-B1/1	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: b) COMI-B1/1 to B1/4, including VDL Mode 2 Multi-Frequency, SATCOM Class B (SB-S) Voice and Data, ATN/IPS and AeroMACS Ground-Ground;	% of ACCs which are equipped with ATN/IPS internetwork (e.g., CRV) for ATS Communication	Immediate
The main purpose of this element is to ensure that aeronautical data and information comply with quality standards to meet the needs of airspace users and support the safety of flight operations.	DAIM-B1/1	ATM systems should be supported by digitally based AIM systems consistent with DAIM-B1/1, Provision of quality-assured aeronautical data and information, in adherence with ICAO and regional AIM planning and guidance material. ATM systems should be supported by aeronautical information digital data exchange of at a minimum, version AIXM 5.1 (Priority 1)	Indicate whether aeronautical data and information comply with quality standards: • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
To make available digital AIP data and information in an interoperable and mutually understood manner.	DAIM-B2/6	ATM systems should be supported by digitally based AIM systems consistent with DAIM-B2/6, Provision of digital AIP data sets, in adherence with ICAO and regional AIM planning and guidance material.	Indicate whether digital AIP data sets are available – • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation	Immediate

			• 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
To make available digital terrain data and information in an interoperable and mutually understood manner.	DAIM-B2/7	ATM systems should be supported by digitally based AIM systems consistent with DAIM-B2/7, Provision of digital terrain data sets, in adherence with ICAO and regional AIM planning and guidance material.	Indicate whether digital terrain data sets are available – • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
To make available digital obstacle data in an interoperable and mutually understood manner.	DAIM-B2/8	ATM systems should be supported by digitally based AIM systems consistent with DAIM-B2/8, Provision of digital obstacles data sets, in adherence with ICAO and regional AIM planning and guidance material.	Indicate whether digital obstacle data sets are available – • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate

To make available digital aerodrome mapping data and information in an interoperable and mutually understood manner.	DAIM-B2/9	ATM systems should be supported by digitally based AIM systems consistent with DAIM-B2/9, Provision of digital aerodrome mapping data sets, in adherence with ICAO and regional AIM planning and guidance material.	Indicate whether digital aerodrome mapping data sets are available – • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
To improve the efficiency of coordination and transfer of control between ATSUs	FICE-B0/1	ATS systems should enable AIDC (version 3 or later), or an alternative process that achieves at least the same level of performance as AIDC, between en-route ATC units and terminal ATC units where transfers of control are conducted consistent with FICE-B0/1, unless alternate means of automated communication of ATM system track and flight plan data are employed (Priority 1). As far as practicable, the following AIDC message types should be implemented: • Advanced Boundary Information (ABI); • Coordinate Estimate (EST); • Acceptance (ACP); • TOC; and • Assumption of Control (AOC).	% of ACCs using AIDC (Version 3 or later) for ATS coordination with adjacent ACCs	Immediate
Direct routings are established with the aim of providing airspace users with additional flight planning route options on a larger scale across FIRs such that overall	FRTO-B0/1	ATC units should conduct Airspace Planning and enable systems that manage direct and flexible routings where practicable, and the	Indicate whether State has published DCT routings and made available for flight planning :	Immediate

planned leg distances are reduced in comparison with the fixed route network		optimal operation of FUA consistent with FRTO-B0/1, Direct Routing, (Priority 1)	• Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
Establish the Flexible Use of Airspace (FUA) process and improve data exchange between civil and military stakeholders by automation to enable a more efficient use of airspace based on transparency and due regard to national security needs	FRTO-B0/2		Has the State established a flexible Use of Airspace (FUA) process and automated airspace reservations? • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
A collection of routes that have been pre-validated and coordinated with impacted air route traffic control centres and airspace users	FRTO-B0/3		Has the State published flexible routings? Indicate • Indicate- 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation	Immediate

			• 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
Reduction of ATCO's workload via early and systematic conflict detection and conformance monitoring	FRTO-B0/4		Indicate whether the ATM Automation systems are equipped with i. RAM- ii. CLAM iii. MTCD Indicate YES -100% or NO-0%	Immediate
To assist the air traffic controller in preventing collision between aircraft, using position data from surveillance	SNET-B0/1	ATS surveillance systems should enable basic conflict detection and conformance monitoring consistent with FRTO-B0/4 and SNET-B0/1: STCA: MTCD	Indicate whether the ATM Automation systems are equipped with i. Short Tem Conflict Alert (STCA) - ii. MTCD Indicate YES -100% or NO-0%	Immediate
To assist the air traffic controller in preventing controlled flight into terrain accidents by generating, in a timely manner, an alert of aircraft proximity to terrain or obstacles	SNET-B0/2	ATS surveillance systems should enable basic conflict detection and conformance monitoring consistent with FRTO-B0/4 and SNET-B0/2 : MSAW;	Indicate whether the ATM Automation systems are equipped with i. MSAW- Indicate YES -100% or NO-0%	Immediate
APW is designed, configured and used to make a significant positive contribution to the prevention of accidents arising from unauthorized penetration of an airspace volume	SNET-B0/3	ATS surveillance systems should enable basic conflict detection and conformance monitoring consistent with FRTO-B0/4 and SET-B0/3 :APW	Indicate whether the ATM Automation systems are equipped with i. APW- Indicate YES -100% or NO-0%	Immediate
APM is a Ground-based safety net intended to warn the controller about increased risk of controlled flight into terrain accidents by generating, in a timely manner, an alert of aircraft proximity to terrain or obstacles during final approach	SNET-B0/4	ATS surveillance systems should enable basic conflict detection and conformance monitoring consistent with FRTO-B0/4 and SET-B0/4 : APM;	Indicate whether the ATM Automation systems are equipped with i. APM- Indicate YES -100% or NO-0%	Immediate

Aircraft Tracking To provide support to the ATSU Alerting Service in areas without ATS surveillance with an update rate of the aircraft position of at least once per 15 mins.	GADS-B1/1 GADS-B1/2	An appropriate enhanced SAR system and systems to support aircraft tracking capability should be established consistent with the provisions of Annex 12 and to support GADS-B1/1 and B1/2, and in accordance with the Asia/Pacific SAR Plan.	Indicate whether State has established appropriate enhanced SAR system • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
To support all PBN navigation specifications except for RNP APCH down to LPV/LP minima.	NAVS-B0/3	ABAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/3 subject to an assessment of benefits and costs.	Indicate whether State has established procedures using ABAS systems? Indicate YES-100% or NO-0%	Immediate
• To adjust conventional navaids networks through the increased deployment of satellite-based navigation systems and procedures to ensure the necessary levels of resilience for navigation. • To provide a minimum level of capabilities to accommodate State aircraft operations where there is a mismatch in terms of aircraft equipage. • To make a more efficient use of the frequency spectrum	NAVS-B0/4	Navigation Minimal Operating Networks (Nav. MON) system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/4 subject to an assessment of benefits and costs.	Indicate whether State has established a NAV MON network? Indicate • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate

Introduce ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process applicable to the strategic through to the tactical phases of operations	NOPS-B0/1	All ACCs operating within FIRs where demand may exceed capacity should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements, initial integration of ASM with ATFM, consistent with NOPS-B0/1 (Priority 1)	% of ACCs operating within FIRs implementing ATFM with CDM using bi-lateral and multilateral agreements	Immediate
Improve ATFM situation awareness in order to facilitate re-routings and coordinated application of ATFM measures	NOPS-B0/2	All ACCs operating within FIRs where demand may exceed capacity should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements, Collaborative Network Flight Updates, consistent with NOPS-B0/2 (Priority 1)	% of ACCs operating within FIRs implementing ATFM with initial integration of ASM	Immediate
The Network Operation Planning provides an overview of the situation from strategic planning through real time operations with ever increasing accuracy up to and including the day of operations by a common situational awareness for all ATFM actors within and adjacent to the ATFM area and allowing network wide demand and capacity balancing	NOPS-B0/3	All ACCs operating within FIRs where demand may exceed capacity should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements, Basic Network Operation Planning, consistent with NOPS-B0/3 (Priority 1)	% of ACCs operating within FIRs implementing ATFM with Basic Network Operation Planning and Initial Airport/ATFM slots,	Immediate
Initial integration of airports into the ATM network function	NOPS-B0/4	All ACCs operating within FIRs where demand may exceed capacity should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements, Initial Airport/ATFM slots and A-CDM Network Interface, consistent with NOPS-B0/4 (Priority 1)	% of ACCs operating within FIRs implementing ATFM with A-CDM Network Interface	Immediate
Provision of dynamic departure ATFM slot allocation including Calculated Take-off Time (CTOT) for regulated flights to avoid ATFM congestions.	NOPS-B0/5	All ACCs operating within FIRs where demand may exceed capacity should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements, Dynamic ATFM Slot	% of ACCs operating within FIRs implementing ATFM with Dynamic Slot Allocation	Immediate

		Allocation, consistent with NOPS-B0/5 (Priority 1)		
To optimize sequencing for arrivals	RSEQ-B0/1	All high-density international aerodromes where ATFM facilities are required should be served by AMAN facilities consistent with RSEQ-B0/1 (Priority 1)	% of high-density international aerodromes where AMAN is implemented	Immediate
To optimize departure operations	RSEQ-B0/2	All high-density international aerodromes where ATFM facilities are required should be served by DMAN facilities consistent with RSEQ-B0/2 (Priority 1)	% of high-density international aerodromes where DMAN is implemented	Immediate
For optimum utilization of airspace	*Regional* Civil Military Cooperation	Civil-Military Airspace expectations are as follows: a) SUA should only be established after due consideration of its effect on civil air traffic by the appropriate Airspace Authority to ensure it will be: • used for the purpose that it is established; • used regularly; • as small as possible, including any internal buffers, required to contain the activity therein; • if applicable, operated in accordance with FUA principles; and • activated only when it is being utilised;	Indicate whether State has established SUA management process: Indicate - • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
For optimum utilization of airspace	*Regional* Civil Military Cooperation	Civil-Military Airspace expectations are as follows: b) SUA should be regularly reviewed to ensure the activities that affect the airspace, and size and timing of such activity are accurately reflected by the SUA type, dimensions, activation notice and duration of activation.	Indicate whether State has established SUA review process: Indicate • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation	Immediate

			• 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
For increased safety	*Regional* ANSP Human and Simulator Performance - Human Performance training	The following systems should be established to support human performance in the delivery of a Seamless ANS service. The systems should consider all the elements of the SHEL Model (Software, Hardware, Environment and Liveware – humans), in accordance with the ICAO Human Factors Digest No. 1 and related reference material: a) human performance training for all managers of operational air navigation services (such as aerodrome operators, ATC organisations and aeronautical telecommunications), such training to include the importance of: • a proactive organisational culture where managers and operational staff are informed and safety is a first priority, using open communications and an effective team management approach; • assessment and management of risks by safety review and assessment teams comprising multidisciplinary operational staff and managers which review safety performance and assess significant proposals for change to ATM systems, particularly those related to human capabilities and limitations; • human factors in – o air safety investigation; o system design (ergonomics, human-in-the-loop); o effective training (including the improved application of simulators); o fatigue management; o automated safety nets; and	indicate whether State has established i. Human performance training for all managers of ANS – • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate

		o contingency planning; • effective safety reporting systems that – o are non-punitive, supporting a "positive safety culture"; o promote open reporting to management; and o focus on preventive (systemic), not corrective (individual) actions in response to safety concerns, incidents and accidents.		
For increased safety	Regional ANSP Human and Simulator Performance - Human Performance training	The following systems should be established to support human performance in the delivery of a Seamless ANS service. The systems should consider all the elements of the SHEL Model (Software, Hardware, Environment and Liveware – humans), in accordance with the ICAO Human Factors Digest No. 1 and related reference material: b) human performance-based training and procedures for operational staff providing ATS, including: • the application of tactical, surveillance-based ATC separation; • control techniques near minimum ATC separation; and • responses to ATM contingency operations, irregular/abnormal operations and safety net alerts.	indicate whether State has established ii. Human performance-based training for operational staff – • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate

	Regional ANSP Human and Simulator Performance - Human Performance training	The following systems should be established to support human performance in the delivery of a Seamless ANS service. The systems should consider all the elements of the SHEL Model (Software, Hardware, Environment and Liveware – humans), in accordance with the ICAO Human Factors Digest No. 1 and related reference material: c) human performance-based training and procedures for staff providing operational air navigation services (such as aerodrome staff operating 'airside', air traffic controllers and aeronautical telecommunications technicians) regarding the importance of: • an effective safety reporting culture; and • 'Just Culture' (Priority 1).	indicate whether State has established iii. Human performance-based training regarding safety reporting and just culture- • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
For optimum utilization of airspace; For increased safety	Regional Space object Launch and re-entry	All States with organisations that conduct space object launch or re-entry activities should ensure: a) the development of written coordination agreements between the State civil aviation authority and the launch/re-entry agency concerned	Indicate whether State has implemented a. coordination agreement between the concerned authorities- • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate

For optimum utilization of airspace For increased safety	Regional Space object Launch and re-entry	All States with organisations that conduct space object launch or re-entry activities should ensure: b) that strategic coordination is conducted between the State civil aviation authority and any States affected by the launch/re-entry activity at least 14 days prior to the proposed activity, providing notice of at least: • three days for the defined launch window; and • 24 hours for the actual planned launch timing	Indicate whether State has implemented b. Strategic coordination between authorities concerned- • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
For optimum utilization of airspace For increased safety	Regional Space object Launch and re-entry	All States with organisations that conduct space object launch or re-entry activities should ensure: c) that consideration of affected airspace users and ANSPs is made after consultation, so that the size of the airspace affected is minimized and the launch window is optimized for the least possible disruption to other users; and	Indicate whether State has implemented procedures for c. Due consideration to be made of affected AU and ANSPs • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Immediate
For optimum utilization of airspace For increased safety	Regional Space object Launch and re-entry	All States with organizations that conduct space object launch or re-entry activities should ensure: d) that communication is established with affected ANSPs to provide accurate and	Indicate whether State has implemented procedures for d. Communication with affected ANSPs. • 100% = YES / Completed / Operational	Immediate

		timely information on the launch/re-entry activity to manage tactical responses (for example, emergencies and activity completion) (Priority 1)	• 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	
For optimum utilization of airspace, For increased safety and efficiency	ASUR-B1/1, COMS-B0/1, COMS-B1/1, COMS-B1/2, CSEP-B1/3, CSEP-B1/4, FRTO-B1/5 OPFL-B2/1,	*APAC States and Administrations are encouraged to implement longitudinal separations of 55.5 km (30 NM) or less in oceanic and remote airspace, and 19 km (10 NM) or less elsewhere*	Indicate whether State has implemented longitudinal separations of 30NM or less in Oceanic and remote airspace • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Medium term
	ASUR-B0/1, ASUR-B1/1 COMS-B0/1, COMS-B1/1, COMS-B1/2, CSEP-B1/3, CSEP-B1/4, FRTO-B1/5 OPFL-B2/1,		Indicate whether State has implemented longitudinal separations of 10 NM or less in en-route airspace (other than Oceanic and Remote airspace) • 100% = YES / Completed / Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced	Medium term

Appendix B

APAC Main Planning Tables -Objectives and Targets for Priority 2 elements

Objectives		Target		Remark
Purpose	**ASBU/ Regional Element**	**Definition of Target**	**Definition of Indicator of Progress**	**Timeline**
Airport CDM operations will be enriched by enhanced arrival information from the ATM network and, at the same time, network operations will benefit from more accurate departure information from CDM airports	ACDM-B0/2	All high-density international aerodromes should operate an A-CDM system integrated with the ATM network, consistent with ACDM-B0/1 and B0/2.	% of high-density international aerodromes with operational A-CDM system integrated with ATM network operations	Medium term
Meteorological observation information supporting automated decision processes and ATM impact conversion.	AMET-B1/1	Capability for providing aeronautical meteorological observations in support of automated decision processes or aids and performance-based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support should be enabled, consistent with AMET-B1/1	Indicate whether State has commenced the process of providing MET observation information supporting automated decision process Indicate- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Meteorological forecast and warning information supporting automated decision processes and ATM impact conversion.	AMET-B1/2	Capability for providing aeronautical meteorological forecast and warning information s in support of automated decision processes or aids and performance-based requirements, should be enabled, consistent with AMET-B1/2	Indicate whether State has commenced the process of providing MET forecast and warning information Indicate- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Climatological information in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	AMET-B1/3	Capability for providing aeronautical climatological and historical information should be enabled, consistent with AMET-B1/3	Indicate whether State has commenced the process of providing Climatological and Historical MET information Indicate- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term

Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.	AMET-B1/4	All States should ensure that aeronautical meteorological products supported by automated decision systems or aids using IWXXM consistent with AMET- B1/4	Indicate whether State has commenced dissemination of MET information in IWXXM format and WEB services consistent with AMET-B1/4 Indicate-“ Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Reduce fuel burn by not requiring application or power during descent	APTA-B0/4	Terminal Areas serving high-density international aerodromes should implement CCO (Continuous Climb Operations) operations consistent with APTA-B0/4 where practicable	% of high-density international aerodromes implemented CCO	Medium term
Reduce fuel burn by not requiring level-offs during climb	APTA-B0/5	Terminal Areas serving high-density international aerodromes should implement CDO (Continuous Descent Operations) operations consistent with B0/5 where practicable	% of high-density international aerodromes implemented CDO	Medium term
Standard Aerodrome operating minima are predicated upon aircraft equipped with the minimum required equipment (the basic aircraft) for that approach. These aerodrome operating minima relate directly to the established types and categories of operations and the associated infrastructure requirements (e.g. runway lights, approach lights). Aircraft with more advanced equipage can take advantage of existing infrastructure to obtain special authorizations for enhanced approach operations to lower minimums than basic aircraft can use.	APTA-B0/7	Terminal Areas serving high-density international aerodromes should implement performance-based aerodrome operating minima-aerodromes advanced aircraft consistent with APTA-B0/7	% of high-density international aerodromes implementing Performance Based Operating Minima for aerodromes advanced aircraft	Medium term
For Basic aircraft, improvements include: Instrument approaches to non-instrument runways, improving	APTA-B0/8	Terminal Areas serving high-density international aerodromes should implement performance-based aerodrome operating minima-basic aircraft consistent with APTA-B0/8	% of high-density international aerodromes implementing Performance Based Operating Minima for basic aircraft	Medium term

airport access Flexibility to improve the ground infrastructure with consequent improvements in operating minima				
To provide surveillance coverage in locations where ground stations siting is not possible or not currently provided	ASUR-B1/1	ACCs operating within Category R airspace should implement SB AERODROMESS-B consistent with ASUR-B1/1, subject to an assessment of costs and benefits.	% of ACCs operating within Category R airspace implementing SB AERODROMESS-B	Medium term
To enable the data exchanges through Controller/Pilot Data Link Communication (CPDLC); ▪ To enable the data exchanges through Automatic Dependant Surveillance-Contract (AERODROMESS-C) Communication ▪ To enable Airlines Operations Communication	COMI-B0/1	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: a) COMI-B0/1, B0/2, B0/4, B0/5 and B0/6, including ACARS, ATN/OSI, VDL Mode 2 Basic, SATCOM Class C Data, and HFDL;	% of ACCs provided with ACARS	Medium term
To support Operational Data Exchange (Flight Plans, NOTAMs and OPMET)	COMI-B0/2		% of ACCs provided with ATN/OSI	Medium term
To support Air /Ground Data Link Communication with higher performance than VDLM0/A	COMI-B0/4		% of ACCs provided with VHF Mode 2 Basic	Medium term
To provide surveillance and communications in Continental Remote and Oceanic airspaces, where VHF usage is not possible or practical. • Satellite-based, narrow-band communication provided by multiple service providers that can be used for safety and routing communications	COMI-B0/5		% of ACCs provided with SATCOM Class C Data	Medium term

To exchange data messages between aircraft end-systems and corresponding ground based HFDL ground stations	COMI-B0/6		% of ACCs provided with HFDL	Medium term
• To support transmission of data link message sets to supplement current voice operations, thus • reducing voice channel congestion, while increasing productivity and capacity. • Support increased subnetwork capacity and reduces interference over the standard VDL Mode 2 system.	COMI-B1/2	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: b) COMI-B1/1 to B1/4, including VDL Mode 2 Multi-Frequency, ATN/IPS and AeroMACS Ground-Ground;	% of ACCs equipped with VDL Mode 2 Multi-Frequency	Medium term
To reduce Separation & Efficiency To improve situational awareness To reduced Cost	COMI-B1/4		% of high-density International Aerodromes equipped with AeroMACS Ground-Ground network connectivity	Medium term
To support: • reduction of voice channel congestion and increase of capacity in domestic airspace, • introduction of performance-based reduced separation minima in procedural airspace	COMS-B1/1	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: d) COMS-B1/1 to B1/2, including PBCS approved CPDLC (FANS 1/A+), ADS-C for domestic and procedural airspace	% of ACCs with operational PBCS approved CPDLC	Medium term
To support introduction of performance-based reduced separation minima in procedural airspace	COMS-B1/2		% of ACCs with operational PBCS approved AERODROMESS-C	Medium term
To improve traffic situational awareness in all phases of flight	CSEP-B1/1	Unless excepted by ATC, all aircraft operating within Category S and T controlled airspace should have	%age of ACCs which have procedures to utilize i) CDTI with TCAS (AIRB) ;	Medium term

		systems that enable basic airborne situational awareness AIRB consistent with CSEP-B1/1		
To assist pilots in maintaining own separation during successive visual approach procedures. VSA is defined to support aircraft performing successive visual approach and landing operations	CSEP-B1/2	Unless excepted by ATC, all aircraft operating within Category S and T controlled airspace should have systems that enable Visual Separation on Approach VSA consistent with CSEP-B1/2	% of ACCs which have mandated requirement for all aircraft operating within Category S and T airspace to have systems i) for conducting VSA using CDTI;	Medium term
Reduced separation allowing more flights to operate in their optimum flight levels	CSEP-B1/3	Unless excepted by ATC, all aircraft operating within Category S and T controlled airspace should have systems that enable where applicable, performance-based horizontal minima consistent with CSEP-B1/3	%age of ACCs which have mandated requirement for all aircraft operating within Category S and T airspace to have systems for application of (RCP240 and RSP 180) i) reduced longitudinal separation minima;	Medium term
To increase airspace capacity and allow optimum utilization of available airspace	CSEP-B1/4	Unless excepted by ATC, all aircraft operating within Category S and T controlled airspace should have systems that enable where applicable, performance-based horizontal minima consistent with CSEP-B1/4	%age of ACCs which have mandated requirement for all aircraft operating within Category S and T airspace to have systems for application of ii) reduced lateral separation minima ;	Medium term
To provide timely and relevant Information about status and condition of the ANS infrastructure to the next intended users via NOTAM.	DAIM-B2/10	ATM systems should be supported by digitally based NOTAM consistent with DAIM-B2/10	Indicate whether State has implemented provision of digital NOTAM through AIXM Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
To support implementation of FFICE	FICE-B2/2	States should establish FF-ICE (Flight and Flow Information for Collaborative Environment) consistent with FICE-B2/2, implementing the following as a minimum: a) Filing Service (FICE-B2/2) b) Flight Data Request Service (FICE-B2/4)	Indicate whether State has implemented FICE-B2/2 , i.e., Filing Service Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
	FICE-B2/4		Indicate whether State has implemented FICE-B2/4 , i.e., Flight Data Request service	Medium term

			Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	
The Free Route Airspace (FRA) concept brings significant flight efficiency benefits and a choice of user preferred routes to airspace users	FRTO-B1/1	ACCs should enable, where practicable, Free Route Airspace, consistent with FRTO-B1/1	Indicate whether in the State has established i) Free Route Airspace (FRTO-B1/1)- Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
RNP routes should be deployed within en- route airspace where Free Route Airspace (FRA) is not planned or if FRA is deployed the RNP routes should ensure the connectivity between FRA and TMAs	FRTO-B1/2	ACCs should enable, where practicable, RNP routes, consistent with FRTO-B1/2	%age of ACCs with established RNP routes (FRTO-B1/2) -	Medium term
FUA and airspace management (ASM) need to be enhanced with collaborative airspace data sharing between all ATM actors, negotiation procedures, system support and real time ASM data integration	FRTO-B1/3	ACCs should enable, where practicable, advanced FUA and Airspace Management (ASM), consistent with FRTO-B1/3	Indicate whether State has implemented iii) advanced FUA and airspace management (FRTO-B1/3) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Dynamically implement ATC sectorization to respond to traffic demand without increasing the number of controllers working position in use.	FRTO-B1/4	ACCs should enable, where practicable, Dynamic Sectorisation consistent with FRTO-B1/4	Indicate whether State has implemented iv) Dynamic sectorization (FRTO-B1/4) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Enhancements of basic mid-term conflict detection (MTCD)/ monitoring alert (MONA) functions and thus further improving the ATCO productivity and reducing the workload	FRTO-B1/5	ACCs should enable, where practicable, Enhanced Conflict Detection Tools and Conformance Monitoring consistent with FRTO-B1/5	Indicate whether State has implemented v) Enhanced conflict detection tools and conformance monitoring (FRTO-B1/5) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term

This element is applicable only to en- route sectors that are currently staffed by two ATCOs (planning and tactical). The multi-sector planning (MSP) function defines a new organization of controller team(s) and new operating procedures to enable the planning controller to provide support to several tactical controllers operating in different adjacent sectors. This function might reduce the ATCO workload related to intra/inter centre coordination. The workload conversion to potential capacity gains might vary considerably depending on the sector configurations	FRTO-B2/5	ACCs should enable, where practicable, Multi-Sector Planner Function consistent with FRTO-B2/5	Indicate whether State has implemented vi) Multi-sector planning (FRTO-B2/5) - Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
To support Precision Approach and landing operations (CAT I) at a specific airport (one system may support all runway ends). As an option, may support arrival and departure phases of flight	NAVS-B0/1	GBAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/1 subject to an assessment of benefits and costs.	Indicate whether GBAS systems have been established meeting the definition - Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
To support PBN in all phases of flight with an increased accuracy, integrity and availability compared to ABAS. Increases accuracy and integrity for the vertical guidance	NAVS-B0/2	SBAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/2 subject to an assessment of benefits and costs.	Indicate whether SBAS systems have been established meeting the definition - Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Short Term ATFM Measures (STAM) intends to smooth sector workload by reducing traffic peaks through short-term applications of minor ground delays, appropriate flight level capping, timing and modalities of ATC re- sectorisation These measures can reduce	NOPS-B1/1	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Short Term ATFM measures, consistent with NOPS-B1/1 supporting the integration of time-based management within a flow centric approach	Indicate whether State has implemented ATFM systems with i) application of short-term ATFM measures (NOPS-B1/1) –	Medium term

the traffic complexity for ATC with minimum curtailing impact on the airspace users			Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	
The Network Operations Planning needs to be enhanced to achieve collaborative planning with the support of services which can be automated (B2B interfaces/SWIM services)	NOPS-B1/2	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Enhanced NOPS Planning, consistent with NOPS-B1/2	Indicate whether State has implemented ATFM systems with ii) Enhanced Network Operations Planning (NOPS-B1/2) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Integrate the airport operations planning (AOP) into the network operations planning (NOP)	NOPS-B1/3	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Enhanced integration of airport operations and NOPS planning, consistent with NOPS-B1/3	Indicate whether State has implemented ATFM systems with iii) Enhanced integration of airport operations planning with network operations planning (NOPS- B1/3) - I indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Enhanced traffic complexity assessment by automation	NOPS-B1/4	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Enhanced Traffic Complexity Management, consistent with NOPS-B1/4	Indicate whether State has implemented ATFM systems with iv) Enhanced traffic complexity assessment by automation (NOPS-B1/4) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
Ensure a continuous, seamless and iterative airspace management and air traffic flow management approach	NOPS-B1/5	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Full integration of ASM with ATFM, consistent with NOPS-B1/5	Indicate whether State has implemented ATFM systems with v) Full integration of airspace management with ATFM (NOPS-B1/5) - Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”	Medium term
ASM solutions and initial dynamic	NOPS-B1/6	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable,	Indicate whether State has implemented ATFM systems with	Medium term

airspace configurations for ATFM planning, synchronization of traffic flows and demand/capacity balancing		where applicable, Initial Dynamic Airspace configurations, consistent with NOPS-B1/6	vi) Initial dynamic airspace configurations (NOPS- B1/6) - Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	
Improve the Airspace Users driven ATFM slot swapping process	NOPS-B1/7	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Enhanced ATFM slot swapping, consistent with NOPS-B1/7	Indicate whether State has implemented ATFM systems with vii) Enhanced ATFM slot swapping (NOPS-B1/7) – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
ATM Network function contributions to extended Arrival Management	NOPS-B1/8	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, Extended Arrival Management, consistent with NOPS-B1/8	Indicate whether State has implemented ATFM systems with viii) Extended Arrival Management (NOPS-B1/8)- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Use of Target Times for ATFM purposes including an initial level of arrival sequencing in case of an arrival ATFM measure	NOPS-B1/9	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, ATFM Target Times consistent with NOPS-B1/9	Indicate whether State has implemented ATFM systems with ix) Use of target times for ATFM purposes (NOPS-B1/9) – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Collaborative Trajectory Options Programs are Traffic Management Initiatives (TMI) that allow ATFM to choose the best possible balance between ATFM delay and rerouting by using airspace user provided Trajectory Option Sets (TOS) to mitigate the operational impact of weather or traffic demand airspace constraints.	NOPS-B1/10	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, ATFM Target Times consistent with NOPS-B1/10	Indicate whether State has implemented ATFM systems with x) Collaborative Trajectory options program (NOPS-B1/10) - Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term

To enhance predictability and ATM decision compliance	RSEQ-B1/1	All ATC units providing services to high-density international aerodromes should operate extended arrival metering consistent with RSEQ-B1/1	% of high-density international AERODROMES with extended arrival metering capability	Medium term
Assist the air traffic controller in preventing collision between aircraft, using position data from ground surveillance and flight intent reported by aircraft	SNET-B1/1	ATS surveillance systems should enable Enhanced STCA with aircraft parameters consistent with SNET-B1/1	Indicate whether State has implemented Enhanced STCA with aircraft parameters according to SNET-B1/1 Indicate YES-100% or NO-0%	Medium term
Assist the air traffic controller in preventing collision between aircraft, using position data from ground surveillance, and considering possible crew intents linked to traffic patterns and ATC practices in complex TMAs	SNET-B1/2	ATS surveillance systems should enable Enhanced STCA in complex TMAs consistent with SNET-B1/2	Indicate whether State has implemented Enhanced STCA in complex TMAs according to SNET-B1/2 Indicate YES-100% or NO-0%	Medium term
To improve safety and efficiency during ground operations by providing proper indications to pilots and vehicle drivers	SURF-B0/1	All ATC units providing services to high-density international aerodromes should operate basic ATC surface operations tools consistent with SURF-B0/1	% of high-density international AERODROMES fulfil the criteria	Medium term
To better maintain ATCO awareness of ground operations.	SURF-B0/2	All ATC units providing services to high-density international aerodromes should operate Comprehensive situational awareness of surface operations consistent with SURF-B0/2	% of high-density international AERODROMES fulfil the criteria	Medium term
Detection by the ATCO of potentially unsafe situations with regard to runway operations.	SURF-B0/3	All ATC units providing services to high-density international aerodromes should operate initial ATCO alerting service for surface operations consistent with SURF-B0/3	% of high-density international AERODROMES fulfil the criteria	Medium term
To improve surface operations with the aim to reduce taxi time and fuel burn, potential mistakes	SURF-B1/1	All ATC units providing services to high-density international (ICAO aerodrome reference codes 3 and 4) aerodromes having complex layouts should implement	% of high-density international AERODROMES fulfil the criteria	Medium term

		A-SMGCS incorporating advanced surface traffic management visual aids, consistent with SURF-B1/1		
To improve ground operations based on increasing pilot's situational awareness and safety especially at taxiway and runway intersections, as well as for aircraft landing and taking off	SURF-B1/2	All ATC units providing services to high-density international (ICAO aerodrome reference codes 3 and 4) aerodromes having complex layouts should implement A-SMGCS incorporating pilot comprehensive awareness consistent with SURF-B1/2	% of high-density international AERODROMES fulfil the criteria	Medium term
The enhanced A- SMGCS alerting service anticipates potential runway conflicts, runway incursion and other hazardous situations on the aerodrome surface	SURF-B1/3	All ATC units providing services to high-density international (ICAO aerodrome reference codes 3 and 4) aerodromes having complex layouts should implement A-SMGCS incorporating runway alerting, enhanced ATC alerting, consistent with SURF-B1/3.	% of high-density international AERODROMES fulfil the criteria	Medium term
To improve pre- departure and departure sequencing by provision of accurate taxi times and efficient routing service	SURF-B1/4	All ATC units providing services to high-density international (ICAO aerodrome reference codes 3 and 4) aerodromes having complex layouts should implement A-SMGCS incorporating routing service to support ATC consistent with SURF-B1/4	% of high-density international AERODROMES fulfil the criteria	Medium term
To define the requirements for an information service provider to make aviation-related information available as an information service	SWIM-B2/1	States should establish SWIM services consistent with SWIM-B2/1 and B2/2, implementing the following as a minimum: a) Information Service Provision (SWIM-B2/1);	Indicate whether State has established Information Service provision Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
To define the requirements for an information service consumer to discover and access aviation-related information provided via information services.	SWIM-B2/2	States should establish SWIM services consistent with SWIM-B2/1 and B2/2, implementing the following as a minimum: Information Service Consumption (SWIM-B2/2)	Indicate whether State has established Information Service consumption Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term

Guidance to comprehensive Airport Master Plan	Regional-Aerodromes	All high-density international aerodromes should enable, in accordance with an Airport Master Plan, aerodrome management and coordination services: a) when traffic density requires, an appropriate apron management service to regulate aircraft operations in coordination with ATS;	% of high-density International AERODROMES s with operational Apron Management Service	Medium term
	Regional-Aerodromes	b) ATS coordination (including meetings and agreements) related to: • airport development and maintenance planning; • local authority coordination (environmental, noise abatement, and obstacles);	% of high-density International AERODROMES s with operational ATS Coordination	Medium term
	Regional-Aerodromes	c) regular airport capacity analysis, including a detailed assessment of passenger, airport gate, apron, taxiway and runway capacity.	% of high-density International AERODROMES s with regular airport capacity analysis	Medium term
To enhance Surveillance coverage and improve airspace capacity	Regional-ADS-B	Unless supported by alternative means of ATS surveillance (such as radars, where there are no plans for ADS-B), all Category T airspace supporting international aerodromes should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B OUT using 1090ES with DO-260/260A and 260B capability to support ASUR-B0/1.	% of Category T airspace supporting international aerodromes meeting the criteria	Medium term
To enhance Surveillance coverage and improve airspace capacity	Regional-SSR Mode S	All Category T airspace supporting international aerodromes should require the carriage of an operable mode S transponder within airspace where Mode S radar services are provided to support ASUR-B0/3.	% of Category T airspace supporting international aerodromes meeting the criteria	Medium term
To optimise airspace capacity by utilising aircraft capability	Regional-PBN Airspace	All Category T airspace supporting international aerodromes should be designated as non-exclusive or exclusive PBN airspace as appropriate to allow operational priority for PBN approved aircraft, except for State aircraft, to facilitate seamless operations and off-track events such as weather deviations to support APTA-B0/1, B0/2, B0/3 and B0/6.	% of Category T airspace supporting international aerodromes meeting the criteria	Medium term
Standardization	Regional-FLOS	All States should use the ICAO Table of Cruising Levels (FLOS) based on feet as contained in Annex 2 Appendix 3a	Indicate whether State has implemented FLOS - YES-100% or NO-0%	Medium term
To support UAS operations	Regional-	States should implement regulations supporting the integration of UAS operations in nonsegregated airspace,	Indicate whether State has implemented regulations regarding UAS operations:	Medium term

	UAS	using a risk-based approach and in accordance with the guidance provided by the UAS Advisory Group of the Remotely Piloted Aircraft Systems (RPAS) Panel, as a minimum	Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	
To improve ATS units' coordination	Regional- ATS COM	All ATS sectors providing ATS surveillance in controlled airspace should have direct speech circuits or digital voice communications, meeting pre-established safety and performance requirements, and where practicable, automated hand-off procedures that allow the TOC of aircraft without the necessity for voice communications, unless an aircraft requires special handling.	% of ACCs meeting the criteria	Medium term
To enhance regional surveillance coverage	Regional- ATS SUR	Subject to appropriate filtering, ATS surveillance data, particularly from ADS-B, should be shared with neighbouring ATC units to support ASUR-B0/1 and B0/2.	% of ACCs meeting the criteria	Medium term
To standardise airspace classification across region	Regional- Airspace	Controlled airspace classification should be consistent with Annex 11 Appendix 4 and applied as follows: Category R upper controlled airspace – Class A; and	% of ACCs meeting the criteria	Medium term
	Regional- Airspace	Category S upper controlled airspace – Class A, or if there are high level general aviation or military VFR operations: Class B or C; and	% of ACCs meeting the criteria	Medium term
	Regional- Airspace	Category S lower controlled airspace – Class C, D or E airspace, as determined by safety assessments.	% of ACCs meeting the criteria	Medium term
To optimise airspace capacity	Regional- ATC Separation	All ATC units should authorise the use of the horizontal separation minima stated in ICAO Doc 4444 (PANS ATM), or as close to the separation minima as practicable, considering such factors as: a) the automation of the ATM system, including automated hand-off between sectors; b) the capability of the ATC communications system; the performance of the ATS surveillance system, including data-sharing or overlapping coverage at TOC points; c) and ensuring the competency of air traffic controllers to apply the full tactical capability of ATS surveillance systems.	Indicate whether State has implemented ATC horizontal separation minima as stated in Doc 4444 Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term

To optimise safe air traffic flow	Regional- FLAS	Priority for FLAS level allocations should be given to higher density ATS routes over lower density ATS routes. FLAS should comply with Annex 2, Appendix 3a unless part of an OTS.	Indicate whether State has implemented FLAS in compliance with Annex 2 , Appendix 3a. Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
To encourage ATS planners to conduct regular capacity assessment	Regional- ATM Capacity	All 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	Indicate whether State has implemented ATC Sector Capacity Assessment and declared a nominal aircraft capacity figure Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
To enhance efficiency	Regional- Aerodromes	ATC systems should utilise electronic flight progress strips wherever automation systems allow the capability due to efficiency and transcription error/data mismatch issues	Indicate whether State has implemented Electronic Flight Systems (EFS) in all the ATM automation systems in all ATS units; Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Promote Civil-Military cooperation	Regional- Civil Military Cooperation	Civil-Military ATM expectations are as follows: a) a national Civil-Military body should be formed to coordinate strategic civil-military activities (military training should be conducted in locations and/or at times that do not adversely affect civilian operations, particularly those associated with major aerodromes)	Indicate whether State has established i) Strategic Civil-Military coordination body and process – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
	Regional- Civil Military Cooperation	b) formal civil-military liaison should take place for tactical responses by encouraging military participation at civil ATM meetings and within ATC centres;	Indicate whether State has established ii) Tactical Civil -Military coordination process – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
	Regional-	c) integration of civil and military ATM systems using joint procurement, and sharing of ATS surveillance data	Indicate whether State has implemented	Medium term

	Civil Military Cooperation	(especially from AERODROMESS-B systems) should be provided as far as practicable	i) Integration of Civil-Military ATM systems- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	
	Regional- Civil Military Cooperation	d) joint provision of Civil-Military navigation aids and aerodromes	Indicate whether State has implemented iii) Operation and provision of Nav Aids in joint civil-military aerodromes – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
	Regional- Civil Military Cooperation	e) common training should be conducted between civil and military ATM units in areas of common interest;	Indicate whether State has implemented; i) Common Training between Civil and Military Units – Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
	Regional- Civil Military Cooperation	f) civil and military ATM units should utilize common procedures as far as practicable.	Indicate whether State has implemented; ii) Provision of common procedures between Civil and Military ATM units- Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Medium term
Improve ATC communication	Regional- ATC Operations	All ATM systems serving high-density international aerodromes should implement Data link Departure Clearance (DCL) compliant with EUROCAE WG78/RTCA SC 214 standards.	% of high-density International Aerodromes having ATM Systems with operational DCL systems	Medium term

Appendix C

APAC Main Planning Tables -Objectives and Targets for Priority 3 elements

Objective		Target		Remark
Purpose	ASBU / Regional Element	Definition of Target	Definition of Indicator of Progress	Timeline
To enhance the planning and management of airport operations and allow their fully integration in the ATM network and enhance collaboration between airport stakeholders.	ACDM-B2/1	All high-density international aerodromes should establish Airport Operations Plan (AOP) consistent with ACDM-B2/1	"% of high-density international AERODROMES implementing AOPs	Long term
	ACDM-B2/2	All high-density international aerodromes should establish Airport Operations Centres (AOPCs) consistent with ACDM-B2/2	"% of high-density international AERODROMES implementing AOPCs	Long term
	ACDM-B2/3	All high-density international aerodromes should implement Total Airport Management (TAM) consistent with ACDM-B2/3	"% of high-density international AERODROMES implementing TAM	Long term
Integrated meteorological observations in support of enhanced ATM and airport decision-making processes, particularly in the near-term	AMET-B2/1	Capability for providing integrated aeronautical meteorological observations, in support of automated decision processes and the design and planning of infrastructure, flight routes and airspace management should be enabled, consistent with AMET-B2/1	Indicate whether State has commenced the planning for providing MET observation information in support of automated decision making to users as described in AMET-B2/1: Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%""	Long term
Integrated meteorological forecast and warning information in support of enhanced operational ground and air decision-making processes, particularly in the near-term.	AMET-B2/2	Capability for providing integrated aeronautical meteorological forecast and warning information in support of automated decision processes and the design and planning of infrastructure, flight routes and airspace management should be enabled, consistent with AMET-B2/2	Indicate whether State has commenced the planning for providing MET forecast and warning information in support of automated decision making to users as described in AMET-B2/2: Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%""	Long term
Climatological products (historical and forecast) in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	AMET-B2/3	Capability for providing integrated climatological and historical meteorological products in support of automated decision processes and the design and planning of infrastructure, flight routes and airspace management should be enabled, consistent with AMET-B2/3	Indicate whether State has commenced the planning for providing MET climatological and historical information in support of automated decision making to users as described in AMET-B2/3 Indicate- "In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%""	Long term

Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, particularly in the planning phase and near-term.	AMET-B2/4	States should establish Meteorological information service consistent with AMET-B2/4, implementing the following as a minimum	Indicate whether State has commenced the planning for Met Information Service in SWIM environment to users as described in AMET-B2/4 Indicate-“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75%” and “In Operation-100%”"	Long term
Introduction of SBAS and GBAS CAT I procedures allow for reduced minima at aerodromes situated in areas of significant terrain, where ILS is not possible.	APTA-B0/3	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement SBAS/GBAS CAT I precision approach procedures n accordance with APTA-B 0/3	"% of high-density international aerodromes and terminal airspace which fulfil the criteria	Long term
Helicopter unique capabilities allow IFR operations that start or terminate from any suitable point in space (PinS), as long as visual conditions support take-off/landing capability from that point.	APTA-B0/6	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement PBN Helicopter Point in Space (PinS) operations consistent with APTA- B0/6	"% of high-density international aerodromes and terminal airspace which fulfil the criteria	Long term
Introduction of GBAS CAT III/III procedures allow for reduced minima at aerodromes where ILS is not possible.	APTA-B2/1	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement GBAS CAT II/III precision approach procedures consistent with APTA- B2/1	"% of high-density international aerodromes and terminal airspace which fulfil the criteria	Long Term
To enable Helicopter Steep Approach procedures	APTA-B2/3	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement PBN Helicopter Steep Approach operations consistent with APTA- B2/3	"% of high-density international aerodromes and terminal airspace which fulfil the criteria	Long term
PBN approaches with advanced functionality allow for the introduction of more flexible approaches including the use of RF legs within the Final Approach Segment (FAS) and RNP.	APTA-B2/5	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement advanced capability PBN SID and STAR procedures and performance based aerodrome operating minima for advanced aircraft with SVGS consistent with APTA-B2/5	"% of high-density international aerodromes and TMA which fulfil the criteria	Long term
Advanced PBN functionality further supports flexibility of route placements in airspace design.	APTA-B2/6	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement advanced capability PBN SID and STAR procedures and performance-based aerodrome operating minima for advanced aircraft with SVGS consistent with APTA-B2/6	%age of Terminal Areas servicing high-density international aerodromes implementing advanced capability PBN SID and STAR procedures	Long term
Increase the ability CDO operations to contribute to terminal airspace efficiency.	APTA-B2/7	Where there is an operational benefit, all Terminal Areas serving high-density international aerodromes should implement Advanced CDO operations consistent with APTA-B2/7	"% of high-density international aerodromes implementing Advanced CDO operations	Long term

Increase the ability CCO operations to contribute to terminal airspace efficiency.	APTA-B2/8	Where there is an operational benefit, all Terminal Areas serving high-density international aerodromes should implement Advanced CCO operations consistent with APTA-B2/8	"% of high-density international aerodromes implementing Advanced CCO operations	Long term
To: • reduce operational cost; • improve performance; • take advantage of new technologies sooner; • enable the global exchange of non-safety information.	COMI-B2/3	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: a) COMI- B2/3, including Links for non-safety communication;	% of ACCs with links for non-safety communication Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Provision of new data-link functionalities and Improved CPDLC performance for Air Traffic Services (ATS).	COMS-B2/1	All ATC units should be equipped with or be able to interface with communication systems appropriate to support the service provided, consistent with: b) COMS-B2/1 to B2/3, including PBCS approved CPDLC, ADS-C for domestic and procedural airspace	% of ACCs with PBCS approved CPDLC Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Provision of new data-link functionalities and performance to support Air Traffic Services (ATS) and the extension of data link communications use in support of including trajectory-based operations, in particular with ADS-C Extended Project Profile	COMS-B2/2		% of ACCs with PBCS approved ADS-C Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Integrated aeronautical information service in a SWIM environment in support of enhanced operational ground and air decision-making processes for all phases of flight .	DAIM-B2/1	States should establish Aeronautical Information dissemination consistent with DAIM-B2/1, implementing the following as a minimum: d) Dissemination of Aeronautical Information in a SWIM Environment (DAIM-B2/1)	Indicate whether State has implemented dissemination of Aeronautical Information in SWIM environment Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
To provide ATS at aerodromes not from a traditional on-site building, but remotely from either a local or a different location. The service provided may be an aerodrome control service or an aerodrome flight information service (AFIS) as appropriate.	DATS-B1/1	Where there is an operational benefit, remotely operated Aerodrome Air Traffic Services should be implemented, consistent with DATS B1/1	% of high-density international aerodromes with Remote ATS Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term

Large -scale operations based on regional implementation can provide even greater freedom and benefits to Airspace Users to fly according to their own business models to full trajectory-based operations.	FRTO-B2/3	ACCs should enable, where practicable, large-scale cross-border Free Route Airspace in coordination with adjacent FIRs, consistent with FRTO-B2/3	% of ACCs which have enabled Free Route Airspace Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Providing conflict resolution support for ATCOs considering elements of ATM layered planning and overall network effect.	FRTO-B2/4	ACCs should enable, where practicable, enhanced conflict resolution tools consistent with FRTO-B2/4.	% of ACCs which have enhanced conflict resolution tools Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Enhance Network Operation Planning to support the Collaborative Network Management in the context of more dynamic /rolling planning processes and the initial Trajectory Based Operations (TBO).	NOPS-B2/3	All ACCs operating within FIRs where demand may exceed capacity should operate systems that enable, where applicable, collaborative network operations planning, consistent with NOPS-B2/3 supporting the integration of time-based management within a flow centric approach.	% of ACCs with Collaborative Network Operations Planning Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Advanced ATFM to accommodate cross border Free Route operations.	NOPS-B2/6	ACCs should enable, where practicable, ATFM for cross-border Free Route Airspace in coordination with adjacent FIRs consistent with NOPS-B2/6 and FRTO-B2/3	% of ACCs which have ATFM systems for cross border FRA operations Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
To enable aircraft to reach a more satisfactory flight level for flight efficiency or to avoid turbulence for safety.	OPFL-B0/1	ACCs should enable, where practicable, In Trail Procedures (ITP)	% of ACCs which have ITP procedures Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Use of increased frequency of position information update from Space Based ADS-B	OPFL-B2/1	ACCs should enable, where practicable, reduced lateral and longitudinal separation minima that capitalize on the increased frequency of position information update, using Space Based ADS-B information	% of ACCs which have reduced lateral and longitudinal separation minima procedures Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
To allow merging of arrival flows.	RSEQ-B0/3	Where there is an operational benefit, Terminal Areas serving all high-density international aerodromes should implement point merge operations consistent with RSEQ-B0/3	% of high-density international aerodromes implementing point merge operations Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term

To set up detailed integrated arrival and departure sequence for the same runway.	RSEQ-B2/1	All aerodromes where ATFM facilities are required, should be served by an integrated system of arrival and departure management sequences into a single runway or dependent runways consistent with RSEQ-B2/1	% of relevant aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
To improve the guidance of pilots and vehicle drivers on the aerodrome surface.	SURF-B2/1	All ATC units providing services to high-density international aerodromes should operate enhanced surface guidance for pilots and vehicle drivers consistent with SURF-B2/1	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Expansion of situation awareness to vehicle drivers	SURF-B2/2	All ATC units providing services to high-density international aerodromes should operate comprehensive vehicle driver situational awareness on airport surface consistent with SURF-B2/2	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
To improve safety during runway operations by providing traffic indication and alerts to pilots and/or vehicle drivers	SURF-B2/3	All ATC units providing services to high-density international aerodromes should operate conflict alerting service for runway operations consistent with SURF-B2/3	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
Guidance for comprehensive Airport Master Plan	Regional-Aerodrome Infrastructure	Where practicable, all high-density international aerodromes should provide, in accordance with an Airport Master Plan, the following facilities to optimise runway capacity: a) aerodromes additional runway(s) with aerodromes equate separation between runway centrelines for parallel independent operations;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		b) parallel taxiways, rapid exit taxiways at optimal locations to minimize runway occupancy times and entry/exit taxiways;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		c) rapid exit taxiway indicator lights (distance to go information to the nearest rapid exit taxiway on the runway);	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		d) twin parallel taxiways to separate arrivals and departures;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term

		e) perimeter taxiways to avoid runway crossings;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		f) taxiway centreline lighting systems;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		g) aerodromes equate manoeuvring area signage (to expedite aircraft movement);	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		h) holding bays;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		i) aerodromes additional apron space in contact stands for quick turnarounds;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		j) short length or tailored runways to segregate low speed aircraft;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		k) taxi bots or towing systems, preferably controlled by pilots, to ensure efficiency and the optimal fuel loading for departure;	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term
		l) aerodromes advanced visual docking guidance systems.	% of high-density international aerodromes fulfil the criteria Indicate-"In Preparation/Planning -0-25%, "Under Development/Implementation- 25-75%" and "In Operation-100%"	Long term