International Civil Aviation Organization

The Second Meeting of the APANPIRG ATM Sub-Group (ATM /SG/2)

Hong Kong, China, 04 – 08 August 2014

Agenda Item 3: Performance Frameworks and Metrics

SEAMLESS ATM REPORTING AND MONITORING

(Presented by the Secretariat)

SUMMARY
This paper presents an overview of the Seamless ATM planning and reporting required by States, and provides an update on the progress towards the performance-based monitoring regime being implemented during 2014.

1.   INTRODUCTION

1.1   APANPIRG/24 noted that although the Global Air Navigation Plan (GANP) had a global perspective, all ASBU modules may not be applicable to every State or Region. Some of the modules were specialized packages that should be applied only where specific operational requirements or corresponding benefits existed. Implementation priorities for Air Traffic Management (ATM) enhancements would vary between regions, as each had different operational environments, traffic volumes etc. Prioritization could be determined by individual states and regionally by APANPIRG. Guided by the GANP, APANPIRG/24 acknowledged that the regional planning process required the full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by everyone for implementation.

1.2   APANPIRG/24 further noted that the PIRG–RASG Global Coordination Meeting held on 19 March 2013 requested PIRGs to establish regional priorities and set targets and report to ICAO by May 2014. APANPIRG/24 also noted that the APAC Seamless ATM Plan spelt out six regional ASBU priorities, which are aligned to GANP (ASBU modules) and adopted Conclusion 24/2:

> ***Conclusion 24/2 — Establishing Regional Priorities and Targets***
>
> *That, following the PIRG - RASG Global Coordination meeting held in March 2013 APANPIRG/24 invited the Chairpersons of ATM, RASMAG, CNS, and MET sub groups to establish regional priorities and targets for the APAC Region in alignment with the GANP and APAC Seamless ATM Plan by December 2013 in order to facilitate submission to ICAO by May 2014.*

1.3   In accordance with APANPIRG Conclusion 24/2, the Chairpersons of Sub-Groups (ATM, RASMAG, CNS and MET) and the Asia Pacific Seamless ATM Planning Group (APSAPG) were invited to consider the further development of Asia/Pacific Regional Priorities and Targets (refer WP07).

1.4   The Chairpersons of the Sub Groups agreed on the regional priorities and targets for the APAC Region which was based on the highest priority elements. In addition, all 42 Seamless ATM elements were assigned priorities.

2.   DISCUSSION

Seamless ATM Implementation Guidance

2.1   The Seamless ATM plan version 1.0 was endorsed by APANPIRG in June 2013 under Conclusion 24/54. Informal Seamless ATM Implementation Guidance was developed from April to June 2013 and comments had been received from States and ICAO since then. The Seamless ATM Implementation Guidance provides valuable guidance on the expected impacts and on documents to be used when implementing any of the ASBU/Seamless elements. The latest version (version 4.3, May 2014) of the guidance material is available on the ICAO Asia/Pacific Regional Office website at: http://www.icao.int/APAC/Documents/edocs/Seamless%20ATM%20Implementation%20Guidance%20v4-3.pdf.

Air Navigation Reporting Forms (ANRF)

2.2   APANPIRG/23 noted the developments in revising the Global Air Navigation Plan and agreed to take the revised edition of the Global Plan into account in planning and implementation of regional and national air navigation systems. APANPIRG/23 also noted that as ICAO would be migrating to the ASBU framework, consequently the Performance Framework Form would be modified to the Air Navigation Report Form (ANRF) effective from 2013.

2.3   The Asia/Pacific Region had to now progress the implementation of the 42 Seamless ATM items. The ANRF acted as high level regional planning documents (and are intended for APANPIRG Sub-Groups to complete, not States), while a web-based report process and graphical dashboard would allow tracking of progress.

2.4   The ANRFs have replaced the earlier Performance Framework Forms (PFF). The ANRF are intended to be a means of setting milestones, targets, and metrics for each of the key planning elements (at first, the seven priority elements). The ANRF also identifies the implementation challenges. A total of 18 ANRF corresponding to the 18 ASBU elements have to be developed at the regional level and presented to APANPIRG and its Sub-Groups as appropriate for review. It should be noted that States are not expected to fill ANRF for global or regional purposes; however they are a practical solution for planning the ANS improvements at the national level.

2.5   Regional priorities and targets, along with the supporting ANRF, are proposed for endorsement (**Attachments A**, **B**, **C**, **D**, **E**, **F**, **G**, **H**, **I**, **J**, **K**, **L**, **M**, and **N**) so they can be submitted to the APANPIRG/25. **Attachment N** is a draft Search and Rescue (SAR) ANRF, which is provided only for information as there was no current ASBU module for SAR, and the Asia/Pacific SAR Task Force (APSAR/TF) was expected to review this draft at its next meeting.

2.6   During the planning process which took place in 2012 and 2013 in the APAC Region and led to the adoption by APANPIRG/24 of the Seamless ATM Plan version 1.0, all objectives and targets pertaining to ATM performance were discussed and planned accordingly.

Endorsing Bodies

2.7   **Appendix A** provides a draft matrix of Seamless ATM responsibilities for APANPIRG bodies, which had been developed by the ICAO Regional Office to allocate the ASBU modules and corresponding seamless ATM elements to the different technical subgroups of APANPIRG for review by the meeting. The role of the endorsing body is to endorse the amendments to the ANRF, and review and discuss the progress implementation, using the monitoring tools for this purpose.

2.8   While the table presents the endorsing body (ATM/SG related responsibilities are in red), it is understood that other technical sub-groups would be consulted as necessary.

2.9   APANPIRG/24 had also adopted the following Conclusion and Decision:

Conclusion 24/55: State Seamless ATM Planning

That, given the urgency and priority of Seamless ATM planning for the Asia/Pacific as acknowledged by the 46th Conference of Directors General of Civil Aviation (DGCA, Osaka, Japan, 12-16 October 2009) and APANPIRG/22 (05-09 September 2011), States should be urged to:

a)   *review Version 1.0 of the Asia/Pacific Seamless ATM Plan and utilise the Plan to develop planning for State implementation of applicable Seamless ATM elements;*

b)   *ensure relevant decision-makers are briefed on the Seamless ATM Plan;*

c)   *submit the first Regional Seamless ATM Reporting Form to the ICAO Regional Office by 01 March 2014; and*

d)   *where possible, participate and contribute to Seamless ATM system collaborative training and research initiatives.*

Decision 24/56: Seamless ATM Seminars/Workshops
That, ICAO be urged to facilitate Asia/Pacific Seamless ATM Planning and Implementation Seminars/ Workshops for Asia/Pacific and trans-regional States.

Seminars

2.10   In accordance with APANPIRG Decision 24/56, the Asia/Pacific Regional Office had conducted a number of Seminars or presentations to States and organisations on Seamless ATM:

- 10 September 2013: Bangkok, Thailand (ASEAN Air Transport Working Group - (ATWG);

- 23 – 25 September 2013, Beijing, China (Europe – Asia Trans-regional Special Coordination Meeting);

- 21 October 2013: Hyderabad, India (Bay of Bengal, Arabian Sea and Indian Ocean Region - BOBASIO);

- 26 November 2013, Bangkok, Thailand (Collaborative Development of Operational Safety and Continuing Airworthiness Programme-Southeast Asia - COSCAP-SEA);

- 27 November 2013, Bangkok, Thailand Meteorological Requirements Task Force (MET-R/TF); and

- 28 November 2013: Bangkok, Thailand (Civil Air Navigation Services Organisation - CANSO).

- 24 March 2014: Singapore (Inaugural ATM Research Institute Seminar).

State Seamless ATM Plans

2.11   The State Seamless ATM Plans were intended to be high-level and concise, so that each of the Seamless ATM elements that were applicable to the State could be elucidated in a brief paragraph, explaining the basic benefits and costs, barriers and steps to implementation, and an outline of the expected result. A template of a State Seamless ATM Plan is available on the same web page that the Seamless ATM Plan is located. It was not necessary to submit the State Seamless ATM Plan to the Regional Office at this juncture, although this may become necessary in the future.

Seamless ATM Reporting Forms

2.12   The reporting of implementation progress of the Seamless ATM Plan elements in accordance with APANPIRG Conclusion 24/55 c) was crucial for:

- airspace users (for planning of equipage and fleets);

- neighbouring Flight Information Regions (FIRs, for harmonisation of progress);

- Regional Office (to update the Seamless ATM Plan and for APANPIRG); and

- ICAO HQ (to update the GANP in response to regional implementation feedback).

2.13   Whilst guidance is provided for each and every action of the Seamless ATM Plan, only a very limited subset of actions needed a periodic implementation report from Asia/Pacific States at the regional level to keep all stakeholders coordinated. Through the Seamless ATM Reporting Form, available as a spreadsheet in Excel format on the ICAO Asia/Pacific Regional Office website at (http://www.icao.int/APAC/Documents/edocs/Regional%20Seamless%20ATM%20Reporting%20Form%20-%20v4.xlsx) and soon as a web-based reporting form, States were invited to report their progress on implementation and issues encountered. In this way, potential delays may be anticipated and managed.

2.14   The Seamless ATM Reporting Form enabled a formal process of regional planning that could identify areas where greater support for States was required. In this regard, the scope of support and desired timeframe should be specified in the column "Remarks" of the Seamless ATM Reporting Form. The Reporting Form was also used for collecting and analysing data from States from a global perspective. This allowed planning that supported the GANP, and reporting of the overall progress of Asia/Pacific Seamless ATM implementation to appropriate bodies.

2.15   Since APANPIRG/24, only 13 States and administrations (Australia, Bangladesh, China, French Polynesia, Hong Kong China, India, Japan, Republic of Korea, Malaysia, New Zealand, Singapore, Thailand, and the United States) had submitted their first Seamless ATM reporting form. The remaining States/Administrations that had not reported were reminded to submit a Seamless ATM reporting form as soon as possible, using the attached reporting form, in accordance with ICAO State letter T 8/5.1 & T 3/10.1.2- AP101114 dated 1 July 2014 (**Attachment O**).

2.16   The form may include more items in the future. For example, if the ANRF on B0-FICE is approved with its revision concerning AMHS and the migration of communications between States on the regional network, those two items would be added to the Reporting Form.

Web-based Reporting Process

2.17   The ICAO Asia/Pacific Regional Office had developed a web-based tool in an effort to ease the submission of Seamless ATM reports in the future for States, and reap the benefits of data analysis for ICAO. This tool will be available on the ICAO Regional Office website using a secure webpage dedicated to the States and administrations, and would provide the ability to submit up to four reports times a year, as well as exporting and archiving functions. It would be possible for users to prepare a report based on the previous submissions, which should minimize the input workload.

2.18   The testing process was currently ongoing, and showcasing will be proposed at different ICAO Sub Groups meetings including this meeting. Additionally, Snapshots of the application are placed at **Appendix B**. A 'How To' Users' Manual will be available online to describe how to operate the tool.

2.19   The ICAO State letter in **Attachment O** also requested States and administrations to nominate a Point of Contact (POC) and a substitute POC before 31 August 14, who will be in charge of preparing and submitting the form online at least once per year on behalf of their State or administration.

2.20   Once the tool is online, States/Administrations would submit their Seamless ATM reporting forms through the web-based tool. The estimated date for the cut-over was September 2014, and registered POCs would be informed by email.

Monitoring

2.21   Two levels of monitoring were desirable:

- monitoring of the regional performance gains, through the Regional Performance Dashboard, allowing global correlation of status and expectations for selected priority items; and

- monitoring of regional implementation progress through a Regional Picture, one level below, allowing corrective actions by APANPIRG on the implementation. The monitoring would be done for all 42 Seamless ATM items.

2.22   In the discussions of the Chairpersons meetings, the added value of having two levels of monitoring (the high level regional performance dashboard and the process-orientated regional picture, focusing on the 42 Seamless ATM elements) to steer the air navigation improvements was acknowledged. It was envisaged that the monitoring tools (regional picture and regional performance dashboard) could serve a more streamlined project-oriented process for the Asia/Pacific Region by identifying issues, challenges or risks and speeding up the decision–making process to take corrective actions and adapt plans.

Regional Performance Dashboard

2.23   The Performance Dashboards presented up-to-date regional implementation results, highlighting what States and groups of States were achieving in collaboration with their respective Planning and Implementation Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs). Their ultimate intention, besides ICAO's basic measurement, accountability and transparency goals, was to help motivate aviation groups and stakeholders to continue to participate in and improve upon the applicable cooperative programmes being implemented at the regional level. The dashboards were available at: http://www.icao.int/safety/Pages/Regional-Targets.aspx. This link would be provided in the dedicated State/administration web-based Reporting Process Home page as well.

2.24   The targets and metrics in WP07 were expected to be recommended to ICAO/HQ for inclusion and use in the public ICAO Asia/Pacific Regional Performance Dashboard until further update. Some of the Dashboard indicators would be calculated using the data collection obtained through the web-based Reporting Process.

Regional Picture (Project)

2.25   Export functions including calculation were provided to the ICAO Regional Office staff members to analyse the inputs form States/Administrations and later on, feed a GIS-based regional picture that would present a regional picture (i.e. a regional map with the progress on each item for all States/administrations). However this project was still in progress.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

a)   note the information contained in this paper;

b)   except for the draft ANRF on SAR, review the draft ANRF accordingly and endorse their adoption to APANPIRG/25 (note: the CNS/SG/18 would review the draft ANRF first and prepare the necessary Draft Conclusions associated with Seamless ATM implementation, reporting and monitoring, which would be available for review in WP14);

c)   Note that the targets and metrics would be recommended to ICAO/HQ for inclusion and use in the public ICAO Asia/Pacific Performance Regional Dashboard until further update if such draft conclusion is endorsed; and

d)   discuss any relevant matters as appropriate.

………………………….

Appendix A: proposed matrix of responsibilities for APANPIRG bodies

ASBU Module	ASBU - Module title	Regional Priority	Seamless ATM Specification title	Seamless Reference	**Endorsing body (Proposal)**
B0-ACDM	Improved Airport Operations through Airport-CDM	2	Airport Collaborative Decision-Making (ACDM)	70	**AOP WG**
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	1	Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	80	**ATFM SG**
B0-RSEQ	Improve Traffic flow through Sequencing (AMAN/DMAN)	2	Arrival Manager/Departure Management (AMAN/DMAN)	50	**ATFM SG**
B0-DATM	Service Improvement through Digital Aeronautical Information Management	1	Aeronautical Information Management	300	**ATM SG**
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	1	Civil Military use of SUA	360	**ATM SG**
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles using Continuous Descent Operations (CDOs)	2	Continuous Descent Operations (CDO)	90	**ATM SG**
B0-CCO	Improved Flexibility and Efficiency Departure Profiles – Continuous Climb Operations (CCO)	2	Continuous Climb Operations (CCO)	100	**ATM SG**
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	2	Performance-based Navigation (PBN) Routes	140	**ATM SG**
B0-APTA	Optimization of Approach Procedures including vertical guidance	2	ATM systems enabling optimal PBN/ATC operations	250	**ATM SG**
B0-FRTO	Improved Safety and Efficiency through the initial application of Data Link En-Route	3	UPR and DARP	290	**ATM SG**
B0-WAKE	Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B	3	Nil	-	**ATM SG**
B0-OPFL	Increased Runway Throughput through Optimized Wake Turbulence Separation	3	Nil	-	**ATM SG**
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	Performance-based Navigation (PBN) Approach	110	**CNS SG**
B0-ASUR	Initial Capability for Ground Surveillance	1	ATS Surveillance	180	**CNS SG**
B0-FICE	Increased Interoperability Efficiency & Capacity through Ground-Ground Integration	1	ATS Inter-facility Data-link Communications (AIDC)	220	**CNS SG**
B0-ASUR	Initial Capability for Ground Surveillance	1	ATS surveillance with data integrated	270	**CNS SG**

B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	1	ADS-C and CPDLC	280	**CNS SG**
B0-CCO B0-CDO	Optimization of Approach Procedures including vertical guidance	2	Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR)	120	**CNS SG**
B0-SNET	Increased effectiveness of ground-based safety nets	2	Safety Nets	160	**CNS SG**
B0-ACAS	Airborne Collision Avoidance Systems (ACAS) Improvements	2	Airborne Safety Systems	170	**CNS SG**
B0-ASEP	Air Traffic Situational Awareness (ATSA)	2	Nil	-	**CNS SG**
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	3	Safety and Efficiency of Surface Operations	40	**CNS SG**
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	2	Meteorological Information	310	**MET SG**

Appendix B: Web-based Seamless ATM Reporting Process

Home page of a State/Administration user showing number of FIR/aerodromes,
the starting point for reporting ("To report from a blank form"), useful links ("How to") and archived reporting forms
Note: content displayed is fictive

Regional Seamless Reporting Form

State/Administration:	Japan	Number of FIR:	1	General Comment (Optional):
		Number of high density FIR:	1	
Date of Report:	11/06/2014			

Priority	Seamless Plan Reference	Applicable or not	Reaching the Objective Phase I		Reaching the Objective Phase II		Remarks (e.g. project scope, FIRs or routes concerned by implementation, etc.)	Issues Encountered/ Expected
			Date of Complete Implementation (Planned or Actual)	Progress	Date of Complete Implementation (Planned or Actual)	Progress		
3	Apron Management	Applicable		70%				
3	ATM-Aerodrome Coordination	Applicable	26/06/2014	80%			test	
3	Aerodrome capacity	Applicable		60%		60%		
3	Safety and Efficiency of Surface Operations	Not yet analyse		Select...				

**Online Reporting form (partial view) showing metadata,
and the first 4 seamless items**

			Not yet analysed / Not applicable / Applicable					
1	ATS Inter-facility Data-link Communications (AIDC)		17/07/2014	1 FIR		0 FIR		

Different status shown for the column "Applicable or not"

3	ℹ️ Safety and Efficiency of Surface Operations	Applicable ▾	ℹ️ All high density international aerodromes (100,000 scheduled movements per annum or more) should have provide electronic surface movement guidance and control	ℹ️ Select ▾			
2	ℹ️ Arrival Manager/Departure Management (AMAN/DMAN)	Not yet analys ▾	ℹ️ 📅	ℹ️ Select... ▾	ℹ️ 📅	ℹ️ Select... ▾	
2	ℹ️ ATC Sector Capacity	Applicable ▾			ℹ️ 📅	ℹ️ Select... ▾	

Information tips by overflying a "i" with the mouse

1	ℹ️ ATS Inter-facility Data-link Communications (AIDC)	Applicable ▾	ℹ️ 17/07/2014 📅	ℹ️ 1 FIR ▾	ℹ️ ◀ February, 2015 ▶ 📅	ℹ️ 0 FIR ▾
2	ℹ️ Automated Transfer of Control in an ATSU	Not yet analys ▾	ℹ️ 📅	ℹ️ Select...	ℹ️ Today is July 4, 2014	ℹ️ Select... ▾
	ℹ️		ℹ️	ℹ️	ℹ️	ℹ️

Calendar detail:
```
◀ February, 2015 ▶
S  M  T  W  T  F  S
1  2  3  4  5  6  7
8  9  10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
Today is July 4, 2014
```

Example of selection of a date in the calendar

3	ℹ️ Performance-based Navigation (PBN) Visual and Arrival Procedures	Applicable ▾		ℹ️ 31/12/2017 📅	ℹ️ Select... ▾	
2	ℹ️ Performance-based Navigation (PBN) Routes	Not yet analys ▾	ℹ️ 📅	ℹ️ Select... ▾	ℹ️ 📅	
	ℹ️ Performance-based	Not yet analys ▾	ℹ️ 📅	ℹ️ No data a ▾		

Dropdown detail:
```
Select...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
```

Example of selection of a percentage of implementation for PBN visual/arrival procedures

The indicator can be overflown to recall what is measured:

ℹ️ Select... ▾ % of high density aerodromes with PBN procedures that overlay visual arrival and departure procedures
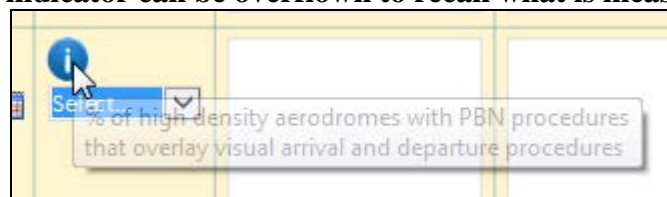
2	Civil Military common training	Applicable			Yes				
2	Civil Military common procedures	Applicable			Yes				
2	Air traffic Situational awareness	Applicable					Yes		
3	Optimized wake turbulence separation	Applicable					80%		
3	In-trail procedures	Applicable					1 FIR		

Save	Submit	Exit without saving

**Choice of actions to perform after filling in the form
(Save/Submit/Exit without saving)**

AIR NAVIGATION REPORT FORM (ANRF)
APAC Regional Planning for ASBU Modules

<table>
<tr><td colspan="6">

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-SURF:
Safety and Efficiency of Surface Operations (A-SMGCS)

Performance Improvement Area 1:
Airport Operations

</td></tr>
</table>

ASBU B0-SURF: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

ASBU B0-SURF: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
Safety and Efficiency of Surface Operations	November 2015 (Seamless ATM Phase I): All high density international aerodromes (100,000 scheduled movements per annum or more) should have provided electronic surface movement guidance and control.

ASBU B0-SURF: Implementation Challenges

Elements	Implementation Area			
	Ground system Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
Safety and Efficiency of Surface Operations	A-SMGCS system integrating sensors. Vehicles properly equipped (cooperative transponder systems)	Nil	Nil	Nil

ASBU B0-SURF: Performance Monitoring and Measurement (Implementation)	
Elements	**Performance Indicators/Supporting Metrics**
Surveillance system for ground surface movement(PSR,SSR, ADS-B or Multilateration (aircraft vehicles)	Percentage of applicable international aerodromes having implemented A-SMGCS

ASBU B0-SURF: Performance Monitoring and Measurement (Benefits)	
Key Performance Areas	**Performance Metrics**
Access & Equity	Improves portions of the Manoeuving area obscured from view of the control tower for vehicles and aircraft. Ensures equity in ATC handling of surface traffic regardless of the traffic's position on the international aerodrome
Capacity	Sustained level of aerodrome capacity during periods of reduced visibility
Efficiency	Reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only. Reduced fuel burn
Environment	Reduced emissions due to reduced fuel burn
Safety	Reduced runway incursions. Improved response to unsafe situations. Improved situational awareness leading to reduced ATC workload

AIR NAVIGATION REPORT FORM (ANRF)
APAC Regional Planning for ASBU Modules

<table>
<tr>
<td colspan="6" align="center">REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-ACDM:
Improved Airport Operations through Airport-CDM

Performance Improvement Area 1:
Airport Operations</td>
</tr>
<tr>
<td colspan="6" align="center">ASBU B0-ACDM: Impact on Main Key Performance Areas (KPA)</td>
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<tr>
<td></td>
<td align="center">Access & Equity</td>
<td align="center">Capacity</td>
<td align="center">Efficiency</td>
<td align="center">Environment</td>
<td align="center">Safety</td>
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<tr>
<td>Applicable</td>
<td align="center">Y</td>
<td align="center">Y</td>
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<tr>
<td colspan="6" align="center">ASBU B0-ACDM: Implementation Progress</td>
</tr>
<tr>
<td colspan="3" align="center">Elements</td>
<td colspan="3" align="center">Target and Implementation Status
(Ground and Air)</td>
</tr>
<tr>
<td colspan="3">Airport CDM at all high density aerodromes</td>
<td colspan="3">November 2015 (Seamless ATM Phase I): - Airport CDM at all high density aerodromes.</td>
</tr>
<tr>
<td colspan="3">Apron Management</td>
<td colspan="3">November 2015- (Seamless ATM Phase I) All high density international aerodromes (100,000 scheduled movements per annum or more) should provide an appropriate apron management service in order to regulate entry of aircraft into and coordinate exit of aircraft from the apron;</td>
</tr>
<tr>
<td colspan="3">ATM- Aerodrome coordination</td>
<td colspan="3">November 2015- (Seamless ATM Phase I) All high density international aerodromes (100,000 scheduled movements per annum or more) should have appropriate ATM coordination on airport development and maintenance planning;

coordination with local authorities regarding environmental, noise abatement, and obstacles;

and ATM/PBN procedures for the aerodrome</td>
</tr>
<tr>
<td colspan="3">Aerodrome Capacity - assessment of passenger, airport gate, apron, taxiway and runway capacity;</td>
<td colspan="3">November 2015- (Seamless ATM Phase I) All high density international aerodromes (100,000 scheduled movements per annum or more) should have a declared airport terminal and runway capacity

November 2018- (Seamless ATM Phase II) All high density aerodromes should have a declared airport terminal and runway capacity</td>
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APPENDIX A to the Report on Agenda Item 3

<table>
<tr><td colspan="5" align="center">ASBU B0-ACDM: Implementation Challenges</td></tr>
<tr><td rowspan="2" align="center">Elements</td><td colspan="4" align="center">Implementation Area</td></tr>
<tr><td align="center">Ground system Implementation</td><td align="center">Avionics Implementation</td><td align="center">Procedures Availability</td><td align="center">Operational Approvals</td></tr>
<tr><td>Airport CDM at all high density aerodromes</td><td>Inter connection of ground systems of all stakeholders</td><td>Nil</td><td>Lack of guidance material and Coordination procedures</td><td>Lack of Agreements (MOU) among stake holders, and procedures</td></tr>
<tr><td>Apron Management</td><td>communication facilities</td><td>Nil</td><td>Lack of Coordination procedures between a provider of ATS Services and the aerodrome operator.</td><td>Lac k of Agreements, (MOU) and procedures</td></tr>
<tr><td>ATM coordination</td><td>Nil</td><td>Nil</td><td>Lack of Coordination procedures</td><td>Lack of Agreements (MOU),and procedures</td></tr>
<tr><td>Aerodrome Capacity</td><td>Availability of space</td><td>Nil</td><td>Lack of guidance material to assess airport capacity</td><td>Nil</td></tr>
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<tr><td colspan="2" align="center">ASBU B0-ACDM: Performance Monitoring and Measurement (Implementation)</td></tr>
<tr><td align="center">Elements</td><td align="center">Performance Indicators/Supporting Metrics</td></tr>
<tr><td>Airport CDM at all high density aerodromes.</td><td>% of applicable international aerodromes having implemented improved airport operations through airport-CDM (applicable=high density)</td></tr>
<tr><td>Apron Management</td><td>% of high density international aerodromes (100,000 scheduled movements per annum or more) providing an appropriate apron management service</td></tr>
<tr><td>ATM – Aerodrome coordination</td><td>% of high density international aerodromes having appropriate ATM coordination in accordance with the Seamless ATM Plan</td></tr>
<tr><td>Aerodrome Capacity –Phase 1</td><td>% of high density international aerodromes having declared capacity in accordance with the Seamless ATM Plan Phase 1</td></tr>
</table>

Aerodrome Capacity- Phase 2	% of high density aerodromes having declared capacity in accordance with the Seamless ATM Plan Phase 2

ASBU B0-ACDM: Performance Monitoring and Measurement (Benefits)	
Key Performance Areas	**Performance Metrics**
Access & Equity	Enhanced equity on the use of aerodrome facilities.
Capacity	Enhanced use of existing of gate and stands (unlock latent capacity). Reduced workload, better organization of the activities to manage flights. Enhanced aerodrome capacity
Efficiency	Improved operational efficiency (fleet management); and reduced delay. Reduced fuel burn due to reduced taxi time and lower aircraft engine run time. Improved aerodrome expansion in accordance with Master Plan
Environment	Reduced emissions due to reduced fuel burn
Safety	Not applicable

AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-ACAS: ACAS Improvements				
Performance Improvement Area3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM				
ASBU B0-102: Impact on Main Key Performance Areas (KPA)				
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	N	N	Y	N	Y

ASBU B0-101: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Air Ground)**
1. ACAS II (TCAS Version 7.1)	**Nov. 15 (phase 1):** All Category R and S upper controlled airspace, and Category T airspace supporting high density aerodromes should require the carriage of ACAS and Terrain Awareness Warning Systems (TAWS), unless approved by ATC
	Nov. 18 (phase 2): All Category R and S upper controlled airspace, and Category T airspace should, unless approved by the State, require the carriage of an operable ACAS and TAWS

ASBU B0-101: Implementation Roadblocks/Issues				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ACAS II (TCAS Version 7.1)	NIL	Lack of funding	NIL	NIL

ASBU B0-101: Performance Monitoring and Measurement (Implementation)	
Elements	**Performance Indicators/Supporting Metrics**
1. ACAS II (TCAS Version 7.1)	Percentage of States/Administrations requiring the carriage of ACAS (with TCAS 7.1 evolution) and TAWS for all Category R and S upper controlled airspace, and Category T airspace supporting high density aerodromes Percentage of States/Administrations requiring the carriage of ACAS and TAWS for all Category T airspace

ASBU B0-101: Performance Monitoring and Measurement (Benefits)	
Key Performance Areas	**Benefits**
Access & Equity	NA
Capacity	NA
Efficiency	ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations
Environment	NA
Safety	ACAS increases safety in the case of loss of separation

1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional planning for ASBU Modules

2. REGIONAL PERFORMANCE OBJECTIVE – ASBU B0-AMET: Meteorological Information Supporting Enhanced Operational Efficiency and Safety				
Performance Improvement Area 2: Globally Interoperable Systems and Data				
3. ASBU B0-AMET: Impact on Main Key Performance Areas				
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y

4. ASBU B0-AMET: Planning Targets and Implementation Progress	
5. Elements	6. Targets and implementation progress (Ground and Air)
Implementation of meteorological forecasts, warnings and alerts	November 2015 (Seamless ATM Plan Phase 1): All ATM systems should be supported by appropriate meteorological information reporting systems, providing, *inter-alia,* observations, forecasts, warnings and alerts (Seamless element 310)
Provision of relevant meteorological data to meteorological authorities	November 2015 (Seamless ATM Plan Phase 1): All ATM systems should provide information to meteorological authorities or offices where required (Seamless element 310).

7. ASBU B0-AMET: Implementation Challenges				
Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
Implementation of forecasts	Data exchange with ATM systems	AIREP	NIL	
Implementation of warnings				
Implementation of alerts				

8. ASBU B0-ASUR Performance Monitoring and Measurement 8A. ASBU B0-AMET: Implementation Monitoring	
Elements	Performance Indicators/Supporting Metrics
	Indicator: Percentage of FIRs within which Supporting metric: Number of FIRs within which

8. ASBU B0-AMET. Performance Monitoring and Measurement 8 B. ASBU B0-AMET: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Improved airspace capacity, separation standards and ATC situational awareness permit better opportunity for access to airspace by all users.
Capacity	Benefits: x.
Efficiency	Benefits: reduced diversions through improved probabilistic terminal area forecasting x.
Environment	Benefits: x.
Safety	Benefits: x.

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – Module PBN Terminal
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-TBO: Impact on Main Key Performance Areas (KPA)				
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	N	N	Y	Y	Y

4. PBN Terminal: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
CCO implementation [1]	November 2015 (Phase I): all high density international aerodromes implement CCO and CDO operations where States have assessed it applicable [2]
CDO implementation	
PBN SIDs implementation	November 2015 (Phase I): all international high density aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR
PBN STARs	

7. PBN Terminal: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
CCO implementation	NIL	NIL	Airspace and procedure design enable optimized climb profile until cruising level	NIL
CDO implementation	NIL	NIL	Airspace and procedure design enable optimized profile descents (avoid stepped arrivals)	NIL

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[1] CCO and CDO are flight operations procedures and only indirectly related to PBN procedures - SID/STAR, and APV. Whether this stays in this ANRF or not will depend entirely on finding a performance measurement that has some meaning. If we do not, then these items should be removed.

[2] The Seamless ATM Plan does not state that CCO/CDO is expected to be implemented in all high density aerodromes. It says that States should consider implementation. The target is to implement 100% of procedures that have been assessed as beneficial (i.e.: according to the States plan)

7. PBN Terminal: Implementation Challenges				
	Implementation Area			
Elements	**Ground System Implementation**	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
PBN SIDs implementation	ATM systems enable PBN spec. and ATC separation standards (as per Seamless item 250)	NIL	NIL	NIL
PBN STARs	ATM systems enable PBN spec. and ATC separation standards (as per Seamless item 250)	NIL	NIL	NIL

8. PBN Terminal: Performance Monitoring and Measurement 8A. PBN Terminal: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
CCO implementation	Indicators: Percentage of high density international aerodromes implementing CCO and CDO operations
CDO implementation	Supporting metric: Number of high density international aerodromes implementing CCO and CDO operations
PBN SIDs implementation	Indicators: percentage of international high density aerodromes implementing Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR) Supporting metric: Number of international high density aerodromes implementing Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR)
PBN STARs	Indicators: percentage of high density international aerodromes implementing ATM systems enabling optimal PBN operations Supporting metric: Number of high density international aerodromes implementing ATM systems enabling optimal PBN operations

8. PBN Terminal: Performance Monitoring and Measurement 8 B. PBN Terminal: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	NA
Capacity	NA
Efficiency	Benefit: Cost savings for aircraft operators through reduced fuel burn and efficient aircraft operating profiles.
Environment	Benefit: Environmental benefits through reduced emissions and noise reduction Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted.
Safety	Benefit: More consistent flight paths. Lower pilot and air traffic control workload

APAC Regional planning for ASBU Modules

2. REGIONAL PERFORMANCE OBJECTIVE – ASBU B0-ASEP: Air Traffic Situational Awareness

Performance Improvement Area 3: Optimum Capacity and Flexible Flights

3. ASBU B0-ASEP: Impact on Main Key Performance Areas

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	N	N	Y

4. ASBU B0-ASEP: Planning Targets and Implementation Progress

5. Elements	6. Targets and implementation progress (Ground and Air)
Air Traffic Situational Awareness (ATSA)	**Nil**

7. ASBU B0-ASEP: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
Air Traffic Situational Awareness (ATSA)	NIL	Upgrade of avionics	NIL	NIL

8. ASBU B0-ASEP Performance Monitoring and Measurement
8A. ASBU B0-ASEP: Implementation Monitoring

Elements	Performance Indicators/Supporting Metrics
Air Traffic Situational Awareness (ATSA)	Indicator: Percentage of States/Administrations implementing air traffic situational awareness Supporting metric: Number of States/Administrations implementing air traffic situational awareness

8. ASBU B0-ASEP. Performance Monitoring and Measurement
8 B. ASBU B0-ASEP: Performance Monitoring

Key Performance Areas	Metrics (if not indicate qualitative Benefits)
Access & Equity	-
Capacity	Provides crews with the means to achieve quicker visual acquisition of targets
Efficiency	-
Environment	-
Safety	Crew awareness is improved

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional planning for ASBU Modules

2. REGIONAL PERFORMANCE OBJECTIVE – ASBU B0-ASUR: Initial capability for ground surveillance				
Performance Improvement Area 1: Airport Operations				
3. ASBU B0-ASUR: Impact on Main Key Performance Areas				
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

4. ASBU B0-ASUR: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
Item 180- ATS surveillance	November 2015 (Seamless ATM Plan Phase 1): All Category S upper controlled airspace and Category T airspace supporting high density aerodromes should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B
	November 2018 (Seamless ATM Plan Phase 2): All Category S upper controlled airspace and Category T airspace should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B using 1090ES with DO-260/260A and 260B capability. In areas where ADS-B based separation service is provided, the mandatory carriage of ADS-B OUT using 1090ES with DO260/60A and 260B should be prescribed
Item 270- ATS surveillance with data integrated	November 2015 (Seamless ATM Plan Phase 1): ADS-B or MLAT or radar surveillance systems should be used to provide coverage of all Category S-capable airspace as far as practicable, with data integrated into operational ATC aircraft situation displays

7. ASBU B0-ASUR: Implementation Challenges				
	Implementation Area			
Elements	**Ground System Implementation**	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
Item 180- ATS surveillance	Long transition time to ADS-B systems for SSR equipped providers Misuse of ADS-B messages of insufficient integrity	Ratio of fleet ADS-B equipped and approved, particularly in general aviation, and ageing commercial fleet	NIL	Dependent on States' development of approval standards.

7. ASBU B0-ASUR: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
	Sharing of data surveillance	Faulty/ageing avionics		
Item 270- ATS surveillance with data integrated	Lack of any automation functionality. Quality control of integration of data into ATM automation systems.	NIL	NIL	NIL

8. ASBU B0-ASUR Performance Monitoring and Measurement
8A. ASBU B0-ASUR: Implementation Monitoring

Elements	Performance Indicators/Supporting Metrics
Item 180- ATS surveillance	Indicator: Percentage of FIRs with ATS surveillance using ADS-B or SSR or MLAT where ATS surveillance is possible Supporting metric: Number of FIRs with ATS surveillance using ADS-B or SSR or MLAT where ATS surveillance is possible
Item 270- ATS surveillance with data integrated	Indicator: Percentage of ACCs with ATS Surveillance using ADS-B, MLAT or radar where ATS surveillance is possible and having data integrated into the ATC system situation display Supporting metric: Number of ACCs with ATS Surveillance using ADS-B, MLAT or radar where ATS surveillance is possible and having data integrated into the ATC system situation display

8. ASBU B0-ASUR. Performance Monitoring and Measurement
8 B. ASBU B0-ASUR: Performance Monitoring

Key Performance Areas	Metrics (if not indicate qualitative Benefits)
Access & Equity	Improved airspace capacity, separation standards and ATC situational awareness permit better opportunity for access to airspace by all users.
Capacity	Benefits: Typical surveillance-based horizontal separation minima are 3 NM or 5 NM enabling a significant increase in airspace capacity compared to procedural minima.
Efficiency	Benefits: Optimized air traffic flow sequencing and runway throughput rates enabled by typical surveillance separation minima. Reduced ATC workload with implementation of surveillance separation minima and significantly reduced radiotelephony traffic required for managing identified aircraft.

8. ASBU B0-ASUR. Performance Monitoring and Measurement 8 B. ASBU B0-ASUR: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Environment	Benefits: Reduced carbon emissions resulting from increased airspace capacity and efficiency, which lead to greater opportunity for flight at optimal flight levels and reduction in airborne holding.
Safety	Benefits: Less likelihood of airspace and ATC overload due to increased airspace capacity and reduced controller workload. Reduced likelihood of breakdown-of-separation incidents. Support for search and rescue alerting response.

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL PERFORMANCE OBJECTIVE – B0-DATM: Service Improvement through Digital Aeronautical Information Management Performance Improvement Area 2: Globally Interoperable Systems and Data – Through Globally Interoperable System Wide Information Management					
3. ASBU B0-DATM: Impact on Main Key Performance Areas					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

4. ASBU DATM: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
Item 300 - Aeronautical Information Management	November 2015 (Seamless ATM Phase I): ATM systems should be supported by digitally-based AIM systems through implementation of Phase 1 and 2 of the AIS-AIM Roadmap
	November 2018 (Seamless ATM Phase II): ATM systems should be supported by digitally-based AIM systems through implementation of Phase 3 of the AIS-AIM Roadmap

7. ASBU B0-DATM: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
AIM Phase 1 and Phase 2	- Current AIS systems may be too segmented. - Slow implementation of electronic databases. - AIS/AIM departments of State Regulators and/or ANSPs not being accorded appropriate priority within their organizations - Late updating of AIM guidance material (ICAO Doc 8126 – *AIS Manual*) and delayed publication of new PANS/AIM may delay State progress.	NIL	Lack of procedures to allow airlines to provide digital AIS data to on-board devices, in particular electronic flight bags (EFBs). Lack of training for AIS/AIM personnel.	Operational approvals of EFB.

7. ASBU B0-DATM: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
AIM Phase 3	• Lack of IP-based infrastructure for data integration and user access. • System configuration (populating of data models) may require time	NIL	NIL	NIL

8. ASBU B0-DATM: Performance Monitoring and Measurement 8A. ASBU B0-DATM: Implementation	
Elements	**Performance Indicators/Supporting Metrics**
AIM Phase 1 and Phase 2	Indicator: Percentage of States which implement the total number of Phase 1 and 2 AIS-AIM elements Supporting Metric: Number of States which implement the total number of Phase 1 and 2 AIS-AIM elements
AIM Phase 3	Indicator: Percentage of States which implement the total number of Phase 3 AIS-AIM elements Supporting Metric: Number of States which implement the total number of Phase 3 AIS-AIM elements

8A. ASBU B0-DATM: Performance Monitoring and Measurement 8 B. ASBU B0-DATM: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Benefit: Improved access to aeronautical information through dynamically updated web-based applications
Capacity	Benefit: Improved capacity resulting from higher quality data and its application to improvements in airspace and ATS route and flight procedure design.
Efficiency	Benefit: Improved flight efficiency facilitated by better quality data and consequent improvements in airspace and airport capacity.
Environment	Benefit: Reduced amount of paper for promulgation of information. Reduced carbon emissions as a consequence of improved flight efficiency.
Safety	Benefit: Improved quality management, accessibility, usability and dynamic update of aeronautical information.

1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-FICE: **Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration** **Performance Improvement Area 2:** **Globally Interoperable Systems and Data – Through Globally Interoperable System Wide Information Management**				
3. ASBU B0-FICE: Impact on Main Key Performance Areas (KPA)				
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

4. ASBU B0-FICE: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
Item 220 - ATS Inter-facility Data-link Communications (AIDC)	November 2015 (Seamless ATM Plan Phase I): ATM systems should enable AIDC between ATC units where transfers of control are conducted. As far as practicable, the AIDC messages types ABI, EST, ACP, TOC, AOC should be implemented.
	November 2018 (Seamless ATM Plan Phase II): Implement full AIDC messaging, or alternate communication standard.
Complete the regional ATN/AMHS network in the whole APAC region (enabler)	*November 2015: all States are interconnected in AMHS*
Migrate communications between States on the regional network (AIDC, ATFM, SUR data, performance monitoring, SWIM, etc)[1](enabler)	*November 2018: all States have migrated their communications*

7. ASBU B0-FICE: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**

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[1] Valid only if the study requested by APANPIRG/24 concludes that such network should be implemented in the APAC region

	7. ASBU B0-FICE: Implementation Challenges			
	Implementation Area			
Elements	**Ground System Implementation**	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ATM systems should enable AIDC between ATC units where transfers of control are conducted. As far as practicable, the AIDC messages types ABI, EST, ACP, TOC, AOC should be implemented.	ATM automation system capability and supporting data communications network.	NIL	ATC procedures for intervention and interaction with ATM automation system, and for operational improvements including reduced ATC manual coordination requirement where supported by appropriate airspace and ATS route design or redesign.	NIL
2. Implement full AIDC messaging, or alternate communication standard.	ATM automation system capability and supporting data communications network.	NIL	ATC procedures for intervention and interaction with ATM automation system, and for operational improvements including reduced ATC manual coordination requirement where supported by appropriate airspace and ATS route design or redesign.	
3. *Complete the regional ATN/AMHS network in the whole APAC region*	*Readiness of all States for double stack*	*NIL*	*NIL*	*NIL*
4. *Migrate communications between States on the regional network*	*Multinational agreement and Common Procurement*	*NIL*	*NIL*	*NIL*

8. ASBU B0-FICE: Performance Monitoring and Measurement 8A. ASBU B0-FICE: Implementation	
Elements	**Performance Indicators/Supporting Metrics**
1. Implement AIDC at APAC States between ATC units where transfers of control are conducted (minimum set: ABI, EST, ACP, TOC, AOC)	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs

8. ASBU B0-FICE: Performance Monitoring and Measurement	
8A. ASBU B0-FICE: Implementation	
Elements	**Performance Indicators/Supporting Metrics**
2. Implement AIDC compliant with PAN-Regional AIDC ICD, or alternate higher performance data communications between all ACCs and between ACCs and all associated terminal ATC units.	% of FIRs within which all applicable ACCs have implemented full AIDC messaging, or alternate communication standard
3. *Complete the regional ATN/AMHS network in the whole APAC region (enabler)*	% of States interconnected in AMHS
4. *Migrate communications between States on the regional network (enabler)*	% of States with migration of applications terminated

8A. ASBU B0-FICE: Performance Monitoring and Measurement	
8 B. ASBU B0-FICE: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Benefit: Greater access afforded by improvements in capacity and efficiency.
Capacity	Benefit: Increased capacity due to reduced controller workload associated with ATS coordination and transfers of control.
Efficiency	Benefit: Reduced voice coordination, improved timeliness of coordination, leading to better efficiencies in ATC workload and task prioritization
Environment	Benefit: Increased capacity due to reduction in ATC workload, leading to more aircraft operating at preferred flight levels on optimum trajectories.
Safety	Benefit: Reduction and early detection of human coordination errors, thus reducing large height deviation (LHD) events. Extension of safety net alerts to aircraft operating beyond FIR boundary when to or intending to transit the FIR.

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – Module N° B0-FRTO: Improved Operations through Enhanced En-Route Trajectories
Performance Improvement Area 3:
Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-FRTO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

4. ASBU B0-FRTO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
Item 360 - Civil Military use of SUA	November 2015 (Phase I): All States should ensure that SUA are regularly reviewed by the appropriate Airspace Authority to assess the effect on civil air traffic and the activities affecting the airspace

7. ASBU B0-FRTO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
Item 360 - Civil Military use of SUA	NIL	NIL	States without an independent airspace authority may have trouble achieving effective airspace management	NIL

8. ASBU B0-FRTO: Performance Monitoring and Measurement 8A. ASBU B0-FRTO: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
Item 360 - Civil Military use of SUA	Percentage of States having made arrangements to effectively manage the designation, size, activation and operation of military/State SUA Supporting metric: number of States having made arrangements to effectively manage the designation, size, activation and operation of military/State SUA

ASBU B0-FRTO: Performance Monitoring and Measurement 8 B. ASBU B0-FRTO: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Benefit: More flexibility in airspace management to provide different airspace users with access to airspace and optimal routes

ASBU B0-FRTO: Performance Monitoring and Measurement 8 B. ASBU B0-FRTO: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Capacity	Benefit: more airspace offered allowing access to optimal routes
Efficiency	Benefit: Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on
Environment	Benefit: Reduced fuel burn as delays are absorbed on the ground, with shut engines; or at optimum flight levels through speed or route management
Safety	Benefit: Reduction of occurrences of sector capacity being lesser than demand

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – Module B0-NOPS: Improved Flow Performance through Planning based on a Network-Wide view
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-NOPS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	Y	Y	Y	Y	Y

4. ASBU B0-NOPS: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
Item 80: Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	November 2015: (Seamless ATM Plan Phase I) All high density FIRs supporting the busiest Asia/Pacific traffic flows and high density aerodromes should implement ATFM incorporating CDM using operational ATFM platform/s.
	November 2018 (Seamless ATM Plan Phase II): All FIRs supporting Major Traffic Flows should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements

7. ASBU B0-NOPS: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**

7. ASBU B0-NOPS: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
Item 80: Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	Procurement and commissioning of interoperable systems supporting collaborative ATFM	NIL	Development and implementation of necessary ATC, airspace user and airport operator knowledge,skills, and procedures Defined in Regional Collaborative ATFM Framework, including procedures to include relevant non-networked FIRs or ATSUs in ATFM processes	NIL
	Interoperability of intra-and inter-regional sub-Regional ATFM network communications	NIL	Interoperability of inter-Regional procedures and processes.	NIL

8. ASBU B0-NOPS: Performance Monitoring and Measurement 8A. ASBU B0-NOPS: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
Item 80: Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	November 2015: (Seamless ATM Plan Phase I). Percentage of high density FIRs supporting the busiest Asia/Pacific traffic flows and high density aerodromes having ATFM incorporating CDM using operational ATFM platform/s. Supporting metric: Number of high density FIRs supporting the busiest Asia/Pacific traffic flows and high density aerodromes having ATFM incorporating CDM using operational ATFM platform/s.
	November 2018 (Seamless ATM Plan Phase II): Percentage of FIRs supporting Major Traffic Flows that have implemented ATFM incorporating CDM Supporting metric: Number of FIRs supporting Major Traffic Flows that have implemented ATFM incorporating CDM

ASBU B0-NOPS: Performance Monitoring and Measurement 8 B. ASBU B0-NOPS: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Benefits: Priorities for access determined by optimal network operations outcomes.
Capacity	Benefits: Improved airspace and airport capacity through the continuous, dynamic management of demand and the reduction of late notice ATFM measures such as holding, vectoring and ground stop.
Efficiency	Benefits: Reduced fuel burn due to better, more dynamic capacity and demand measurement, and capacity/demand balancing by collaborative planning and execution of ATFM measures
Environment	Benefits: Reduced fuel burn as delays are absorbed either on the ground, ideally with engines shut-down, or at optimum flight levels through early application of airborne ATFM measures.
Safety	Benefits: Reduced risk and incidence of ATC sector overload, and better planned, more stable aircraft trajectories through all phases of flight.

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AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-SNET: Increased Effectiveness of Ground-Based Safety Nets
Performance Improvement Area3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

ASBU B0-SNET: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	N	N	Y

4. ASBU B0-SNET: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Status (Air Ground)
1. Short Term Conflict Alert (STCA) Area Proximity Warning (APW) Minimum Safe Altitude Warning (MSAW)	**Nov. 18 (Phase 2):** ATS surveillance systems should enable STCA, APW and MSAW

7. ASBU B0-SNET: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. Short Term Conflict Alert (STCA) Area Proximity Warning (APW) Minimum Safe Altitude Warning (MSAW)	ATM Systems upgrade	NIL	ATC Manual update and approval	NIL

8. ASBU B0-SNET: Performance Monitoring and Measurement (Implementation)
8A. ASBU B0-SNET: Implementation Monitoring

Elements	Performance Indicators/Supporting Metrics
1. Short Term Conflict Alert (STCA) Area Proximity Warning (APW) Minimum Safe Altitude Warning (MSAW)	Indicator: Percentage of States/Administrations implementing ground-based safety-nets (STCA, APW, MSAW, etc.) Supporting Metric: Number of States/Administrations implementing ground-based safety-nets (STCA, APW, MSAW, etc.)

ASBU B0-SNET: Performance Monitoring and Measurement (Benefits)
8 B. ASBU B0-SNET: Performance Monitoring

Key Performance Areas	Benefits
Access & Equity	NA
Capacity	NA
Efficiency	NA
Environment	NA
Safety	Significant reduction of the number of major incidents

AIR NAVIGATION REPORT FORM (ANRF)
APAC Regional Planning for ASBU Modules

<table>
<tr><td colspan="6">

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-SURF:
Safety and Efficiency of Surface Operations (A-SMGCS)

Performance Improvement Area 1:
Airport Operations

</td></tr>
</table>

ASBU B0-SURF: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y

ASBU B0-SURF: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
Safety and Efficiency of Surface Operations	November 2015 (Seamless ATM Phase I): All high density international aerodromes (100,000 scheduled movements per annum or more) should have provided electronic surface movement guidance and control.

ASBU B0-SURF: Implementation Challenges

Elements	Implementation Area			
	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
Safety and Efficiency of Surface Operations	A-SMGCS system integrating sensors. Vehicles properly equipped (cooperative transponder systems)	Nil	Nil	Nil

ASBU B0-SURF: Performance Monitoring and Measurement (Implementation)	
Elements	**Performance Indicators/Supporting Metrics**
Surveillance system for ground surface movement(PSR,SSR, ADS-B or Multilateration (aircraft vehicles)	Percentage of applicable international aerodromes having implemented A-SMGCS

ASBU B0-SURF: Performance Monitoring and Measurement (Benefits)	
Key Performance Areas	**Performance Metrics**
Access & Equity	Improves portions of the Manoeuving area obscured from view of the control tower for vehicles and aircraft. Ensures equity in ATC handling of surface traffic regardless of the traffic's position on the international aerodrome
Capacity	Sustained level of aerodrome capacity during periods of reduced visibility
Efficiency	Reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only. Reduced fuel burn
Environment	Reduced emissions due to reduced fuel burn
Safety	Reduced runway incursions. Improved response to unsafe situations. Improved situational awareness leading to reduced ATC workload

1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – Module B0-TBO: Improved Safety and Efficiency through the initial application of Data Link En-Route
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-TBO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	Y

4. ASBU B0-TBO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
ADS-C	November 2015 (Phase I): Within Category R airspace (remote en-route airspace within ATS communications and surveillance coverage dependent on a third-party CSP), ADS-C surveillance should be enabled to support PBN-based separations
CPDLC	November 2015 (Phase I): Within Category R airspace (remote en-route airspace within ATS communications and surveillance coverage dependent on a third-party CSP), CPDLC should be enabled to support PBN-based separations

7. ASBU B0-TBO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
ADS-C	RCP and RSP framework should ensure that the end to end performance is reached and maintained, including CSP performance	Implementation of ADS-C for general aviation	NIL	NIL
CPDLC	RCP and RSP framework should ensure that the end to end performance is reached and maintained, including CSP performance	Implementation of CPDLC for general aviation	NIL	NIL

8. ASBU B0-TBO: Performance Monitoring and Measurement	
8A. ASBU B0-TBO: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**

8. ASBU B0-TBO: Performance Monitoring and Measurement 8A. ASBU B0-TBO: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
ADS-C	Indicators: Percentage of FIRs utilising ADS-C to provide service within all category R airspace Supporting metric: Number of FIRs utilising ADS-C to provide service within all category R airspace
CPDLC	Indicators: Percentage of FIRs utilising CPDLC to provide service within all category R airspace Supporting metric: Number of FIRs utilising CPDLC to provide service within all category R airspace

ASBU B0-TBO: Performance Monitoring and Measurement 8 B. ASBU B0-TBO: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	NA
Capacity	Benefit: A better localization of traffic and reduced separation allow increased capacity. Reduced communication workload and better organization of controller tasks increase sector capacity.
Efficiency	Benefit: Routes/tracks and flights can be separated by reduced minima, allowing flexible routings and vertical profiles closer to the user-preferred ones. In association with AIDC, implementation of DARP procedures.
Environment	Benefit: Reduced emissions as a result of reduced fuel burn
Safety	Benefit: ADS-C based tools support cleared level adherence monitoring, route adherence monitoring, danger area infringement warning and improved search and rescue. Reduced occurrences of misunderstandings; solution to stuck microphone situations. Quicker responses to route deviation requests and emergencies.

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1. AIR NAVIGATION REPORT FORM (ANRF)

APAC Regional Planning

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – Module B0-SAR: Improved Safety and Efficiency through the initial application of Regional SAR Initiatives
Performance Improvement Area 2: Globally Interoperable Systems and Data

3. ASBU B0-SAR: Impact on Main Key Performance Areas (KPA)				
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y

4. ASBU B0-SAR: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and implementation progress (Ground and Air)**
SAR Regulatory and Coordination Mechanisms	November 2018: All States should develop statutes and related provisions for a SAR organization and its framework, resources, policies and procedures, including a State SAR Plan, international SAR agreements and SAR exercises (SAREX).
SAR Facilities and Assets	November 2018: All States should establish Rescue Coordination Centres (RCCs) of sufficient size with facilities, tools, and access to SAR Units (SRU) commensurate with the State's responsibilities, or delegate the function as appropriate (all States should investigate the feasibility of establishing Joint Rescue Coordination Centres (JRCCs) and implement where beneficial).
SAR Information	November 2018: All States should establish a centralised SAR information source, which includes data supporting the Aeronautical Information Publication (AIP), SAR Library, 24 hour Contacts database of SAR facilities, assets and lists of SRUs.
SAR Improvement	November 2018: All States should implement Quality Assurance (QA) programmes that include continuous improvement and audit processes, gap and safety/quality indicator analysis, and SAR promotion activities.

7. ASBU B0-SAR: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
SAR Regulatory and Coordination Mechanisms	NA	NA	Legislative restrictions and legal problems enacting SAR agreements. Lack of political support.	NA

7. ASBU B0-SAR: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
SAR Facilities and Assets	Lack of resources to establish appropriate facilities and SRUs . Cospas-Sarsat facilities or sharing access with other States.	Lack of appropriate communications and direction-finding equipment.	Lack of local, State and regional agreements between agencies to facilitate sharing of SAR resources, including SRUs.	Lack of Civil/Military SAR cooperation, including use of military facilities and SRUs.
SAR Information	Lack of computers and software	NA	Lack of established information support processes.	NA
SAR Improvement	NA	NA	Lack of regional and local training of RCC staff and SRUs. Lack of QA and improvement plans and procedures.	NA

8. ASBU B0-SAR: Performance Monitoring and Measurement 8A. ASBU B0-SAR: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
SAR Regulatory and Coordination Mechanisms	Indicators: Percentage of States implementing SAR regulatory and coordination mechanisms Supporting metric: Number of States implementing SAR regulatory and coordination mechanisms
SAR Facilities and Assets	Indicators: Percentage of States establishing SAR facilities and assets Supporting metric: Number of States establishing SAR facilities and assets
SAR Information	Indicators: Percentage of States implementing SAR information systems Supporting metric: Number of States implementing SAR information systems
SAR Improvement	Indicators: Percentage of States implementing SAR improvement programmes Supporting metric: Number of States implementing SAR improvement programmes

ASBU B0-SAR: Performance Monitoring and Measurement 8 B. ASBU B0-SAR: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative benefits)**
Access & Equity	NA
Capacity	NA
Efficiency	Benefit: enhanced sharing of SRUs and information leading to more efficient responses that involve less time searching.
Environment	Benefit: reduced emissions as a result of reduced fuel burn of airborne, maritime and land based SRUs.
Safety	Benefit: quicker response times to safety of life events, with better information providing SAR Mission Coordinators the opportunity to better match the SRU with the emergency requirement. Improved civil/military cooperation.

…………………………

International Civil Aviation Organization	Organisation de l'aviation civile internationale	Organización de Aviación Civil Internacional	Международная организация гражданской авиации	منظمة الطيران المدني الدولي	国际民用 航空组织

Ref.: T 8 /5.1 & T 3/10.1.2 - AP101/14 (CNS/ATM)   01 July 2014

Subject: Seamless ATM Reporting Process

Action Required:

–   To note the availability of a web-based reporting tool from September 2014 onwards;

–   To nominate 2 Points of contact **before 31 August 2014**; and

–   States/Administrations not having reported their Seamless ATM status yet are requested to submit their Seamless ATM Reports as soon as possible

Sir/Madam,

       I have the honour to recall you that the Seamless ATM Plan version 1.0 was endorsed by APANPIRG in June 2013 with the Conclusion 24/54.

       Since then and in line with APANPIRG Conclusion 24/55 on State Seamless ATM Planning, a number of States have submitted their first Seamless ATM reporting form. The remaining States/Administrations that had not reported are requested to submit a Seamless ATM reporting form **as soon as possible**, using the attached reporting form at Attachment 1. The form is also available on the Asia/Pacific website at:
http://www.icao.int/APAC/Documents/edocs/Regional%20Seamless%20ATM%20Reporting%20Form%20-%20v4.xlsx

       Moreover, I have the pleasure to inform you that the ICAO APAC Regional Office has developed a web-based tool in an effort to ease the submission of such reports in the future for States, and reap the benefits of data analysis for ICAO. This tool will be available on the ICAO APAC website using a secure webpage dedicated to the States/Administrations, and will provide the ability to submit up to four reports a year, as well as exporting and archiving functions. It will be possible for users to prepare a report based on the previous submissions, which should minimize the input workload. The testing process is currently ongoing, and showcasing will be proposed at different ICAO Sub-group meetings. A "How To" will be available online to describe how to use the tool.

…2/

In view of the above, States/Administrations are kindly requested to nominate a point of contact and a substitute **before 31 August 2014** that will be in charge of preparing and submitting the form online at least once per year on behalf of their State/Administration by using the attached form at Attachment 2 and returning it to apac@icao.int.

Once the tool is online, States/Administrations will submit their Seamless ATM reporting forms through the web-based tool. The estimated date for the cut-over is September 2014. Points of contact will be informed by email.

Accept, Sir/Madam, the assurances of my highest consideration.

Arun Mishra
Regional Director

Enclosures:
   Attachment 1 – A Seamless ATM Reporting Form
   Attachment 2 – Nomination Form for Point of Contact

APAC Regional Seamless ATM Reporting Form

Administration:

f report:

Number of FIR:
Number of high density FIR:
Number of international aerodromes:
Number of high density international aerodromes:

General comment (optional)

	Seamless Plan reference				SEAMLESS ATM PLAN PHASE I			SEAMLESS ATM PLAN PHASE II			Remarks (e.g. project scope, FIRs or routes concerned by implementation, etc)	Issues encountered/expected
#	Paragraph	Item	Regional/ ASBU reference	Applicable or not	Target Nov. 2015	Date of complete implementation (planned or actual)	Progress against this target	Target Nov. 2018	Date of complete implementation (planned or actual)	Progress against this target		
	Refers to the paragraph(s) of Seamless plan v1	*Example*	*Refers to ASBU element name, or "Regional" if not on ASBU*	*Applicable*	*Gives the target that should be reached at the end of the phase I (Nov. 2015) according to the seamless plan v1.0. The date may be in the past if your State reached the target in the past, or may be the future*	*15-Jan-12*	*Refer to this column to know what to input in the next column. Example for item 80, the progress is measured in terms of number of FIRs*	*2 FIR* *Gives the target that should be reached at the end of the phase II (Nov. 2018) according to the seamless plan v1.0*	*30-Jun-18*	*Refer to this column to know what to input in the next column. Example for item 110 the box is greyed so no input is needed*		
10	7.1	Apron Management	Regional		All high density international aerodromes (100,000 scheduled movements per annum or more) should provide an appropriate apron management service in order to regulate entry of aircraft into and coordinate exit of aircraft from the apron;		% of high density international aerodromes (100,000 scheduled movements per annum or more) providing an appropriate apron management service					
20	7.1	ATM-Aerodrome Coordination	Regional		All high density international aerodromes (100,000 scheduled movements per annum or more) should have appropriate ATM coordination on airport development and maintenance planning; coordination with local authorities regarding environmental, noise abatement, and obstacles; and ATM/PBN procedures for the aerodrome		% of high density international aerodromes having appropriate ATM coordination in accordance with the Seamless ATM Plan					
30	7.1 ; 7.13	Aerodrome capacity	Regional		All high density international aerodromes (100,000 scheduled movements per annum or more) should have a declared airport terminal and runway capacity		% of high density international aerodromes having declared capacity in accordance with the Seamless ATM Plan Phase 1	All high density aerodromes should have a declared airport terminal and runway capacity		% of high density aerodromes having declared capacity in accordance with the Seamless ATM Plan Phase 2		
40	7.1	Safety and Efficiency of Surface Operations	B0-SURF		All high density international aerodromes (100,000 scheduled movements per annum or more) should have provide electronic surface movement guidance and control.		% of applicable international aerodromes having implemented A-SMGCS Level 2					
50	7.25 ; 7.45	Arrival Manager/Departure Management (AMAN/DMAN)	B0-RSEQ		All high density aerodromes should have AMAN/DMAN facilities		% of applicable international aerodromes having implemented AMAN / DMAN (applicable = high density)	All AMAN systems should take into account airport gates for runway selection and other aircraft departures from adjacent gates that may affect arriving aircraft		% of applicable international aerodromes having implemented AMAN / DMAN (applicable = high density)		
60	7.44 ; 7.50	ATC Sector Capacity	Regional					All all enroute ATC sectors and terminal ATC Sectors should have a nominal aircraft capacity figure based on a scientific capacity study and safety assessment, to ensure safe and efficient aircraft operations.		% of ATC sectors with capacity figures in accordance with Seamless ATM Phase 2		
70	7.2	Airport Collaborative Decision-Making (ACDM)	B0-ACDM		Airport CDM at all high density aerodromes.		% of applicable international aerodromes having implemented improved airport operations through airport-CDM (applicable=high density)					
80	7.27 ; 7.47	Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	B0-NOPS		All high density FIRs supporting the busiest Asia/Pacific traffic flows and high density aerodromes should implement ATFM incorporating CDM using operational ATFM platform/s.		Number of FIRs within which all ACCs utilize ATFM systems	All FIRs supporting Major Traffic Flows should implement ATFM incorporating CDM to enhance capacity, using bi-lateral and multi-lateral agreements		(same metric)		
90	7.3	Continuous Descent Operations (CDO)	B0-CDO		All high density international aerodromes implement CCO and CDO operations where States have assessed it applicable		% of international aerodromes/TMA where CDO is implemented					
100	7.3	Continuous Climb Operations (CCO)	B0-CCO		All high density international aerodromes implement CCO and CDO operations where States have assessed it applicable		% of international aerodromes where CCO is implemented					
110	7.5 ; 7.14 ; 7.16	Performance-based Navigation (PBN) Approach	B0-APTA		Where practicable, all high density aerodromes with instrument runways serving aeroplanes should have precision approaches or APV or LNAV		No input needed here - Measured through the Regional Performance Dashboard: % of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures	Where practicable, all aerodromes with instrument runways serving aeroplanes should have precision approaches or APV or LNAV		No input needed here - Measured through the Regional Performance Dashboard: % of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures		
120	7.4 ; 7.15	Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR)	B0-CCO B0-CDO		All international high density aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR		% of international aerodromes / TMAs with PBN STAR implemented	All international aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR		% of international aerodromes / TMAs with PBN SID implemented		
130	7.19	Performance-based Navigation (PBN) Visual Departure and Arrival Procedures	Regional					PBN procedures that overlay visual arrival and departure procedures should be established where this provided an operational advantage		Number of high density aerodromes with PBN procedures that overlay visual arrival and departure procedures		
140	7.9 ; 7.22	Performance-based Navigation (PBN) Routes	B0-FRTO		All ATS routes should be designated with a navigation performance specification for category R airspace RNP 4 or RNP 10 (RNAV 10) or RNP 2 oceanic; and for Category S airspace RNAV 2 or RNP 2		% of ATS routes designated as PBN routes in accordance with Seamless ATM Phase 1	All ATS routes should be designated with a navigation performance specification RNP 2		% of ATS routes designated as PBN routes in accordance with Seamless ATM Phase 2		
150	7.8	Performance-based Navigation (PBN) Airspace	Regional		All Category R and S upper controlled airspace, and Category T airspace supporting high density aerodromes should be designated as non-exclusive or exclusive PBN airspace as appropriate.		Are all your Category R and S upper controlled airspace, and Category T airspace supporting high density aerodromes designated as non-exclusive or exclusive PBN airspace as appropriate.? (1- yes, 0-no)					
160	7.52 ; 7.54	Safety Nets	B0-SNET				Does your State implement ground-based safety-nets (STCA, APW, MSAW, etc.)? (1- yes, 0-no)	ATM systems providing services within Category R airspace should enable appropriate ATC capabilities including CPAR, which is a key enabler for UPR and DARP operations		% of ACCs using CPAR in R airspace in accordance with Seamless ATM Phase 2		
170	7.7 ; 7.21	Airborne Safety Systems	B0-ACAS		All Category R and S upper controlled airspace, and Category T airspace supporting high density aerodromes should require the carriage of ACAS and Terrain Awareness Warning Systems (TAWS), unless approved by ATC		Does your State/Administration require the carriage of ACAS (with TCAS 7.1 evolution) ? (1- yes, 0-no)	All Category R and S upper controlled airspace, and Category T airspace should, unless approved by the State, require the carriage of an operable ACAS and TAWS		Does your State/Administration require the carriage of TAWS? (1- yes, 0-no)		
180	7.6 ; 7.23 ; 7.24	ATS Surveillance	B0-ASUR		All Category S upper controlled airspace and Category T airspace supporting high density aerodromes should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B		Number of FIRs with ATS surveillance using ADS-B or SSR or MLAT where ATS surveillance is possible	All Category S upper controlled airspace and Category T airspace should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B using 1090ES with DO-260/260A and 260B capability. In areas where ADS-B based		(same metric)		
190	7.28	Airspace classification	Regional		Harmonization of upper airspace classification should be as follows: a) Category R controlled airspace– Class A; and b) Category S controlled airspace– Class A, or if there are high level general aviation or military VFR operations: Class B or C.		Has your State/Administration harmonized the upper airspace classification as follows: a) Category R controlled airspace– Class A; and b) Category S controlled airspace– Class A, or if there are high level general aviation or military VFR operations: Class B or C.? (1- yes, 0-no)					
200	7.10	Flight Level Orientation Schemes (FLOS)	Regional		The ICAO Table of Cruising Levels based on feet as contained in Appendix 3a to Annex 2 should be used.		Does your State/Administration use the ICAO Table of Cruising Levels based on feet as contained in Appendix 3a to Annex 2 ? (1- yes, 0-no)					

APAC Regional Seamless ATM Reporting Form

Administration:

f report:

Number of FIR:
Number of high density FIR:
Number of international aerodromes:
Number of high density international aerodromes:

General comment (optional)

	Seamless Plan reference				SEAMLESS ATM PLAN PHASE I			SEAMLESS ATM PLAN PHASE II			Remarks (e.g. project scope, FIRs or routes concerned by implementation, etc)	Issues encountered/expected
#	Paragraph	Item	Regional/ ASBU reference	Applicable or not	Target Nov. 2015	Date of complete implementation (planned or actual)	Progress against this target	Target Nov. 2018	Date of complete implementation (planned or actual)	Progress against this target		
210	7.36 ; 7.40	Flight Level Allocation Schemes (FLAS)	Regional		Priority for FLAS level allocations should be given to higher density ATS routes over lower density ATS routes. Any aircraft that does not meet specified equipage requirements should receive a lower priority.		Does your Operations Manual give priority for FLAS level allocations to higher density ATS routes over lower density ATS routes, and a lower priority to any aircraft that does not meet specified equipage ? (1- yes, 0-no)					
220	7.35 ; 7.49	ATS Inter-facility Data-link Communications (AIDC)	B0-FICE		ATM systems should enable AIDC between ATC units where transfers of control are conducted. As far as practicable, the AIDC messages types ABI, EST, ACP, TOC, AOC should be implemented.		Number of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	Implement full AIDC messaging, or alternate communication standard.		Number of FIRs within which all applicable ACCs have implemented full AIDC messaging, or alternate communication standard		
230	7.29 ; 7.46	Automated Transfer of Control	Regional		Where practicable, all ATC Sectors within the same ATC unit with ATS surveillance capability should have automated hand-off procedures that allow the TOC of aircraft without the necessity for voice communications, unless an aircraft requires special handling		% of ATC sectors with automated hand-off procedures in accordance with Seamless ATM Plan Phase 1	Where practicable, all ATC Sectors with adjacent ATC Centres using ATS surveillance capability should have automated hand-off procedures that allow the TOC of aircraft without the necessity for voice communications, unless an aircraft requires special handling		% of ATC sectors with automated hand-off procedures in accordance with Seamless ATM Plan Phase 2		
240	7.34 ; 7.48	ATS Surveillance data sharing	Regional		Subject to appropriate filtering, ATS surveillance data, particularly from ADS-B, should be shared with neighbouring ATC units within high density FIRs		% of ACCs within high density FIRs (as per the Seamless ATM Plan) sharing ATS surveillance data	Subject to appropriate filtering, ATS surveillance data, particularly from ADS-B, should be shared with all neighbouring ATC units		% of ACCs sharing ATS surveillance data		
250	7.37 ; 7.43 ; 7.53	ATM systems enabling optimal PBN/ATC operations	B0-APTA		ATM systems, including communication and ATS surveillance systems and the performance of those systems, should support the capabilities of PBN navigation specifications and ATC separation standards applicable within the airspace concerned		% of ATC units with ATM systems enabling optimal PBN operations	ATM system design should be planned and implemented to support optimal aerodrome capacity expectations for the runway(s) concerned. Electronic flight progress strips should be utilised wherever practicable.		% of ATC units with ATM systems supporting optimal aerodrome capacity and using electronic fight progress strips		
260	7.30	ATC Horizontal separation	Regional		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,		Does your AIP authorise the use of the horizontal separation minima stated in ICAO Doc 4444 (PANS ATM), or as close to the separation minima as practicable ? (1- yes, 0-no)					
270	7.32	ATS surveillance with data integrated	B0-ASUR		ADS-B or MLAT or radar surveillance systems should be used to provide coverage of all Category S-capable airspace as far as practicable, with data integrated into operational ATC aircraft situation displays		% of ACCs with ATS Surveillance using ADS-B, MLAT or radar where ATS surveillance is possible and having data integrated into the ATC system situation display					
280	7.33	ADS-C and CPDLC	B0-TBO		Within Category R airspace (remote en-route airspace within ATS communications and surveillance coverage dependent on a third-party CSP), ADS-C surveillance and CPDLC should be enabled to support PBN-based separations		Number of FIRs utilising data link en-route in applicable airspace					
290	7.33	UPR and DARP	B0-FRTO		Within Category R airspace, UPR and DARP should be enabled to support PBN-based separations		Number of FIRs using UPR and DARP within R airspace					
300	7.38 ; 7.51	Aeronautical Information Management	B0-DATM		ATM systems should be supported by digitally-based AIM systems through implementation of Phase 1 and 2 of the AIS-AIM Roadmap		Total number of Phase 1 and 2 AIS-AIM elements completed (0-13)	ATM systems should be supported by digitally-based AIM systems through implementation of Phase 3 of the AIS-AIM Roadmap		Total number of Phase 3 AIS-AIM elements completed (0-8)		
310	7.26 ; 7.39	Meteorological Information	B0-AMET		All high density aerodromes should provide meteorological forecasts, aerodrome warnings and alerts that support efficient terminal operations. ATM systems should be supported by implementation of appropriate meteorological information reporting systems.		% of high density aerodromes providing meteorological forecasts, aerodrome warnings and alerts					
320	7.41 ; 7.55	ATM Managers' Performance	Regional		Human performance training for all ANSP managers, including management of risks related to human capabilities and limitations; effective participation in a team and team management, effective safety reporting systems, human factors in air safety investigation, fatigue management approaches		Does your Operations Manual require the human performance training for all ANSP managers? (1- yes, 0-no)	Prevention of fatigue systems should be established to support human performance in the delivery of a Seamless ATM service		Is the prevention of fatigue systems established to support human performance in the delivery of your ATM services? (1- yes, 0-no)		
330	7.41	ATC simulators performance	Regional		Enhancement and improved application of ATC simulators should be established to support human performance in the delivery of a Seamless ATM service		Do you have a programme for enhancement and improved application of ATC simulators ? (1- yes, 0-no)					
340	7.41	Safety assessment of changes	Regional		Safety teams comprising multidisciplinary operational staff and managers which review safety performance and assess significant proposals for change to ATM systems should be established to support human performance in the delivery of a Seamless ATM service		Do you have safety teams comprising multidisciplinary operational staff and managers which review safety performance and assess significant proposals for change to ATM systems? (1-yes, 0-no)					
350	7.41	ATM Operators' performance	Regional		Human performance-based training and procedures for staff providing ATS should be established to support human performance in the delivery of a Seamless ATM service		Do you have human performance-based training and procedures for staff providing ATS? (1-yes, 0-no)					
360	7.11	Civil Military use of SUA	B0-FRTO		All States should ensure that SUA are regularly reviewed by the appropriate Airspace Authority to assess the effect on civil air traffic and the activities affecting the airspace		Number of FIRs in which FUA is implemented					
370	7.42	Strategic Civil Military coordination	Regional		All States should ensure that a national civil/military body coordinating strategic civil-military activities is established		Number of FIRs within which all ACCs utilise FUA techniques for operation of SUA with strategic civil/military liaison capability					
380	7.42	Tactical Civil Military coordination	Regional		All States should ensure that formal civil-military liaison for tactical responses is established		Number of FIRs within which all ACCs utilise FUA techniques for operation of SUA with tactical civil/military liaison capability					
390	7.42	Civil Military system integration	Regional		Civil and military ATM systems integrated using joint procurement, and sharing of ATS surveillance data (especially from ADS-B systems) should be provided as far as practicable		Are civil ATS and military systems integrated? 1-yes, 0-no					
400	7.42	Civil Military navaids joint provision	Regional		Joint provision of civil/military navigation aids should be encouraged;		Are there joint civil and military navigation aids? 1-yes, 0-no					
410	7.42	Civil Military common training	Regional		Common training should be conducted between civil and military ATM units in areas of common interest;		Is Civil Military common training conducted in areas of common interest? 1-yes, 0-no					
420	7.42	Civil Military common procedures	Regional		Civil and military ATM units should utilize common procedures as far as practicable		Are there common procedures for Civil Military operations where appropriate? 1-yes, 0-no					

State/Administration	Point of contact for Seamless ATM reporting					Substitute				
	Last name	First name	email address	phone number	Postal address	Last name	First name	email address	phone number	Postal address
Afghanistan										
Australia										
Bangladesh										
Bhutan										
Brunei Darussalam										
Cambodia										
China										
Hong Kong, China										
Macao, China										
Cook Islands										
Democratic People's Republic of Korea										
Fiji										
French Polynesia, France										
India										
Indonesia										
Japan										
Kiribati										
Lao People's Democratic Republic										
Malaysia										
Maldives										
Marshall Islands										
Micronesia (Federated States of)										
Mongolia										
Myanmar										
Nauru										
Nepal										
New Caledonia, France										
New Zealand										
Pakistan										
Palau										
Papua New Guinea										
Philippines										
Republic of Korea										
Samoa										
Singapore										
Solomon Islands										
Sri Lanka										
Taiwan										
Thailand										
Timor Leste										
Tonga										
United States										
Vanuatu										
Viet Nam										