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Agenda Item 3: Performance Frameworks and Metrics

3.1: APAC ANP Plan and APAC Seamless ANS Plan

APAC REGIONAL PRIORITIES AND THE RELATIONSHIP WITH THE ICAO MIP

(Presented by Singapore and United States)

SUMMARY

This paper examines the alignment between the ICAO Minimum Implementation Path (MIP), currently under development by the GANP Study Group, and the Asia/Pacific (APAC) regional priorities as reflected in the Asia/Pacific Seamless ANS Plan (APSAP).

The paper assesses the relationship between candidate MIP elements and APAC regional implementation priorities through the APSAP and identifies potential gaps where regionally relevant elements may not be reflected in the MIP.

The paper proposes that APAC inputs, including capability initiatives, timelines, and dependency considerations, be consolidated and submitted to the ICAO GANP Study Group to support the development of a robust and operationally meaningful MIP.

1. INTRODUCTION

1.1 Global air traffic passenger demand is expected to triple over the next 25 years, placing increasing pressure on air navigation service provision. To meet this demand while ensuring safety, efficiency, and sustainability, the modernisation of air navigation systems must be undertaken in a coordinated and interoperable manner.

1.2 To this end, ICAO's development of the Minimum Implementation Path (MIP), which aims to define a global baseline of minimum interoperable capabilities together with associated timelines, would help to clarify the minimum capabilities needed globally and harmonise implementation timelines to ensure interoperability in the modernisation of air navigation systems. This work is guided by ICAO Assembly Resolution A42-6 to develop a "roadmap of minimum capabilities necessary for the evolution of the air navigation system and timelines for global implementation". The MIP is targeted for endorsement by the 43rd ICAO Assembly in 2028. Recent ICAO Global Air Navigation Plan Study Group (GANP-SG) discussions indicate that the MIP is being developed with a focus on achieving Evolutionary Step 2 (Time-based operations enabled by an information revolution) of the conceptual roadmap as an initial baseline by 2035.

1.3 As part of this work, the GANP-SG is expected to consult the regions through the PIRGs. It is therefore opportune for APAC to assess the alignment between the MIP and APAC priorities so as to provide coherent regional inputs that reflect operational needs, challenges and implementation experience and ensure that APAC’s needs and implementation realities are adequately reflected.

2. DISCUSSION

Mapping of Priorities in APAC and Initial MIP Candidate Elements (Selected by GANP-SG)

2.1 APAC has established implementation priorities through the Asia/Pacific Seamless ANS Plan (APSAP), which categorises ASBU elements into Priority 1 (critical), Priority 2 (recommended) and Priority 3 (desirable). These priorities support a harmonised regional implementation approach and facilitate seamless cross-border operations. As part of the APSAP, APAC has also developed a TBO roadmap, which provides guidance for States/Administrations in APAC with a pathway towards the implementation of TBO.

2.2 As APSAP Priority 1 elements are critical upgrades and are considered “essential”¹, it may be inferred that APAC has identified these elements as representing minimum capabilities. The mapping of the Priority 1 elements against the implementation timelines contained in the APSAP’s Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ANS Service Levels (PASL) frameworks² indicates that these capabilities were expected to be implemented in Phases II (2019) and III (2022), both of which have passed. However, implementation remains incomplete, indicating that further efforts are required to achieve the implementation of these crucial elements.

2.3 The GANP-SG has preliminarily identified a set of candidate elements for inclusion in the MIP, primarily focused on information-centric capabilities and supporting communication infrastructure (see **Appendix A**). These include elements related to meteorological information (AMET), digital aeronautical information management (DAIM), Flight and Flow Information for a Collaborative Environment (FICE), System-Wide Information Management (SWIM), and Communication Infrastructure (COMI). Collectively, these elements reflect a focus on enabling data exchange, information services, and interoperability within a SWIM-enabled environment.

2.4 A comparison between the current candidate MIP elements and the APSAP Priority 1 ASBU elements reveals that several regionally prioritised elements, comprising elements that support information exchange, data quality, and foundational communication capabilities, are not currently included in the MIP (see **Table 1**). Additionally, all operational Priority 1 ASBU elements in the APSAP (e.g. ACDM and FRT0) have been excluded from the MIP. Given the identification of these elements as critical and essential in APAC, their absence from the MIP may warrant further consideration, particularly in ensuring that the global baseline reflects operationally relevant and implementable capabilities.

¹ Priority 2 elements are recommended, and “generally to be implemented from 2022, but States are encouraged to implement earlier if beneficial”; while Priority 3 elements are elements which “may not be universally implemented in the APAC Region”.

² PARS and PASL are planning and implementation frameworks contained in the APSAP. They identify regional performance improvement initiatives and associated implementation solutions, including indicative implementation phases and timelines adopted by the APAC region.

Table 1. APSAP Priority 1 Elements and Their Alignment with Current MIP Candidate Elements

Functional Category	Element ID	Revised Element ID based on update to 8th Edition of the GANP (if applicable)	Description	Included in current MIP list?
Information	AMET-B0/1		Meteorological observations products	NO
	AMET-B0/2		Meteorological forecast and warning products	NO
	AMET-B0/3		Climatological and historical meteorological products *in support of the design and planning of infrastructure, flight routes and airspace management. Historical products in support of incident and accident investigations	NO
	AMET-B0/4		Dissemination of meteorological products *in support of flexible airspace management, situational awareness, CDM, dynamically optimized flight trajectory planning	NO
	DAIM-B1/1		Provision of quality-assured aeronautical data and information	NO
	DAIM-B1/2	DAIM-B2/6	Provision of digital Aeronautical Information Publication (AIP) data sets	YES
	DAIM-B1/3	DAIM-B2/7	Provision of digital terrain data sets	YES
	DAIM-B1/4	DAIM-B2/8	Provision of digital obstacle data sets	YES
	DAIM-B1/5	DAIM-B2/9	Provision of digital aerodrome mapping data sets	YES
	DAIM-B1/6	DAIM-B3/1	Provision of digital instrument flight procedure data sets	YES
	FICE-B0/1		Automated basic interfacility data exchange (AIDC)	NO
Operational	ACDM-B0/1		Airport CDM Information Sharing (ACIS)	NO
	APTA-B0/1		PBN non-precision approaches (with basic capability)	NO

	APTA-B0/2		Basic PBN SID and STAR procedures (with basic capability)	NO
	FRT0-B0/1 to B0/4		Direct routing, airspace planning and FUA, flexible routings, and basic conflict detection and conformance monitoring	NO
	RSEQ-B0/1 to B0/2		Arrival and Departure Management	NO
	SNET-B0/1 to B0/4		STCA, MSAW, APW, APM	NO
Technology	ASUR-B0/1 to B0/3		ADS-B, MLAT, SSR-DAPS	NO
	COMI-B0/3		VHF Data Link (VDL) Mode 0/A	NO
	COMI-B0/7		ATS Message Handling System (AHMS) *expected to carry traffic for AIDC/FPL/MET until SWIM is ready in Block 2	NO
	COMI-B1/1		Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	YES

2.5 On the other hand, a comparison between the current list of elements in the MIP and the APSAP also indicates a mismatch (see **Appendix A**). Notably, many candidate MIP elements are not included in the list of Priority 1 elements in the APSAP, despite their role in information exchange in an interoperable environment. In particular, with the sunset of FPL2012, the absence of **FICE-B2/2 (Filing service)**, **FICE-B2/4 (Flight data request service)**, **SWIM-B2/1 (Information service provision)**, and **SWIM-B2/2 (Information service consumption)** in the list of Priority 1 elements may warrant further consideration.

Dependency Assessment

2.6 Several elements within the APSAP that are not identified as candidate MIP elements are nevertheless recognised, within the GANP ASBU framework, as dependencies³ for selected MIP elements. For example, FICE-B0/1 [Automated basic interfacility data exchange (AIDC)] is identified as a dependency (relation-operational need) of FICE-B3/2 (Flight information management support for inflight re-planning) which is itself included as a candidate MIP element. This reflects the functional role of AIDC in enabling flight information management capabilities, as also captured in the ASBU framework.

³ In the GANP ASBU framework, “Dependencies and Relations” (including information, technology, and operational needs) describe the supporting elements or enablers that may be required for the implementation of a given capability.



Type of Dependencies	ASBU Element
Relation-operational need	FICE-B0/1 - Automated basic inter facility data exchange (AIDC)

Figure 1. Extract from the ASBU Portal showing FICE-B0/1 identified as a dependency of FICE-B3/2

2.7 This observation raises the question of how such dependencies should be treated within the MIP. In particular, whether:

- a) dependencies should be **included within the MIP**, such that the MIP represents a consolidated set of ASBU elements forming a clear implementation pathway; or
- b) the MIP should **only include key target elements**, with States/Administrations expected to determine and implement additional dependent elements based on identified relationships.

2.8 This distinction has implications on how the MIP would be interpreted and implemented by States/Administrations. If dependencies are not explicitly included, there is a risk of inconsistency and/or delay in implementation, particularly where supporting elements are critical enablers of the target capability.

2.9 Furthermore, the identification of dependencies may require further validation. Where elements currently identified as operational needs are not strictly required for the implementation of the global baseline, this may indicate that some relationships are beneficial rather than essential. Accordingly, there may be a need for the ICAO ASBU Panel Project Team (ASBU-PPT) to review the treatment of such dependencies, particularly if States/Administrations are expected to determine and prioritise implementation based on these relationships. This highlights the need for APAC to consider how dependencies should be treated within the MIP, and to provide views to the GANP-SG to support a clear and implementable global pathway.

2.10 This paper highlights the importance of reviewing APAC regional priorities and the APSAP, particularly before the integration of the APSAP into Volume III of the APAC Air Navigation Plan (APAC eANP Vol III) – please also see **ATM/SG/14 WP/05**. As the GANP-SG continues to define the global baseline of minimum air navigation system capabilities and associated timelines, this is an opportunity for the region to consider if the existing priorities remain relevant or if additional elements should be reflected in the MIP. Considering that there would likely be limited scope for review once the global minimum capabilities have been established and adopted by the ICAO Assembly, APAC should take this opportunity to determine what capabilities, and by when, are essential for global interoperability.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review the list of Priority 1 elements in the APAC Seamless ANS Plan, especially in the context of the list of candidate elements in the MIP;
- b) identify additional capabilities that APAC considers essential for global interoperability;
- c) discuss on how dependencies should be reflected in the prioritisation within the APAC Seamless ANS Plan and the MIP; and

- d) discuss and adopt the **Draft Conclusion ATM/SG/14-X – Regional Inputs to ICAO Minimum Implementation Path (MIP) Development**; and
- e) discuss any relevant matters as appropriate.

Draft Conclusion ATM/SG/14-X: Regional Inputs to ICAO Minimum Implementation Path (MIP) Development	
What: That the Asia/Pacific region, noting the relevance of regionally coordinated ANS initiatives to ICAO's development of the Minimum Implementation Path (MIP), should: 1. identify initiatives and associated timelines, including those related to information-centric capabilities (e.g. SWIM, FF-ICE and standardised information exchange models), required for interoperable ANS and network-wide benefits; 2. consider the relationship between candidate MIP elements and regional implementation priorities, including aspects such as dependencies and implementation pathways, with a view to providing regional perspectives to the GANP-SG; and 3. relay these initiatives, considerations and associated timelines, together with regional implementation experiences (as appropriate), to support the continued development of the ICAO MIP.	Expected impact: ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To provide inputs from the Asia/Pacific region in support of the development of global, minimum ANS capabilities under the ICAO MIP	Follow-up: ☐ Required from States
When: On adoption by APANIRG	Status: Draft to be adopted by Subgroup
Who: ☐ Sub groups ☒ APAC States ☒ ICAO APAC RO ☒ ICAO HQ ☐ Other:	

APPENDIX A

PRELIMINARY MIP ELEMENTS SELECTED BY GANP-SG

Table A-1. Current MIP Candidate Elements Selected by GANP-SG and their Alignment with the APSAP

Element ID	Element name	APSAP Priority (previous element ID as in APSAP)
AMET-B2/1	Meteorological observations information	3
AMET-B2/2	Meteorological forecast and warning information	3
AMET-B2/4	Meteorological information service in SWIM	3
DAIM-B2/6	Provision of digital Aeronautical Information Publication (AIP) data sets	1 (DAIM-B1/2)
DAIM-B2/7	Provision of digital terrain data sets	1 (DAIM-B1/3)
DAIM-B2/8	Provision of digital obstacle data sets	1 (DAIM-B1/4)
DAIM-B2/9	Provision of digital aerodrome mapping data sets	1 (DAIM-B1/5)
DAIM-B2/1	Dissemination of aeronautical information in a SWIM environment	3
DAIM-B3/1	Provision of digital instrument flight procedure data sets	1 (DAIM-B1/6)
DAIM-B3/2	Daily airspace management information to support flight and flow	3 (DAIM-B2/2)
DAIM-B3/4	NOTAM replacement	3 (DAIM-B2/5)
FICE-B2/1	Planning service	NIL
FICE-B2/2	Filing service	2
FICE-B2/4	Flight data request service	2
FICE-B2/5	Notification service	NIL
FICE-B3/2	Flight information management service support for inflight re-planning	NIL (FICE-B2/9)
SWIM-B2/1	Information service provision	2
SWIM-B2/2	Information service consumption	2
SWIM-B2/4	Air/Ground SWIM for non-safety critical information	NIL
SWIM-B3/1	SWIM implementation framework	NIL (SWIM B2/5)
COMI-B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	1

COMI-B2/3	Links meeting requirements for non-safety critical communication	3
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