Webinar on the implementation of AMET-B0 and AMET-B1

(Virtual, 21 March 2023)

Agenda Item 1 : ASBU applicable elements in MET, Enablers and ASBU data Collection Tool

WP2.1 - ASBU elements applicable to the region in MET

(Presented by the Secretariat)

SUMMARY	
This paper presents the proposed future work programmes and meeting plans of APIRG and its contributory bodies for the period up to December 2023 for discussion. Action by the Meeting **is provided in paragraph 3**	
REFERENCES ▪ APIRG/24 Meeting Report ▪ APIRG/25 Meeting Report ▪ The 6tfh GANP	
Strategic Objectives	***A – Safety, B – Air Navigation Capacity and Efficiency***

1 INTRODUCTION

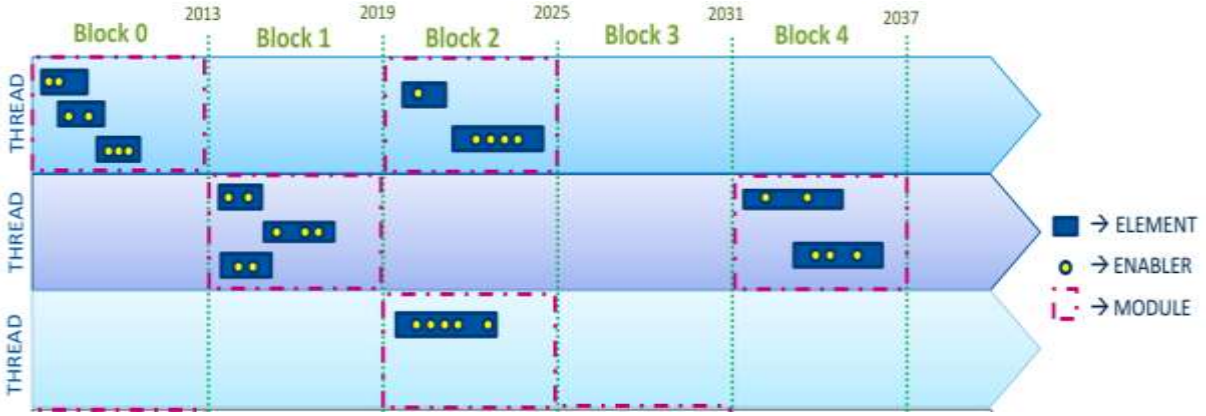
1.1 APIRG/24 Conclusions /Decisions requesting for the implementation of the provisions of the GANP

APIRG/24 Decision 24/30	***Alignment of the Regional Air Navigation Plan with the 6th Edition of the GANP***
APIRG/24 Decision 24/31	***Alignment of Projects to ASBU references in the GANP***
APIRG/24 Conclusion 24/48	***Review of State National ASBU Plans***
APIRG/24 Decision 24/49	***Review of the AAO-SG and IIM-SG Projects' ASBU references in relation to the 6th Edition of the GANP***

1.2 APIRG/25 Conclusions and Decisions taking Actions with regards to the above APIRG/24 Conclusions & Decisions

APIRG/25 Decision 25/10	***Adoption of the ASBU Elements applicable to the region***
APIRG/25 Decision 25/13	***Alignment of the APIRG Projects to the 6th Edition of the GANP***

1.3 ASBU Key Concepts



An ASBU ELEMENT: is a specific change in operations designed to improve the performance of the air navigation system under specified operational conditions.

Un ÉLÉMENT ASBU *: est un changement spécifique dans l'exploitation, conçu pour améliorer les performances du système de navigation aérienne dans des conditions opérationnelles spécifiées.*

The ASBU Threads: Key feature areas of the air navigation system where improvements are needed in order to achieve the vision outlined in the Global ATM Operational Concept

The ASBU Threads are being categorized in **3 groups**:

- **Operational threads**: ACDM, APTA, NOPS…
- **Information threads**: SWIM, AMET, DAIM, FICE,…
- **Technology threads**: COMS, COMI, NAVS, ASUR (previous roadmaps)

Les Fils ASBU *: domaines clés du système de navigation aérienne où des améliorations sont nécessaires pour réaliser la vision décrite dans le Concept Opérationnel ATM Mondial.*

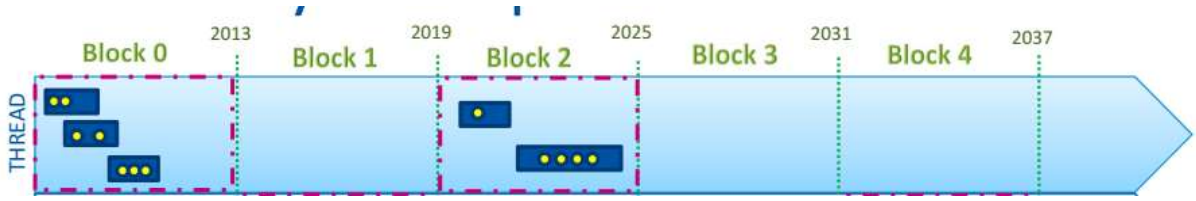
Les Fils ASBU *sont classés en* ***3 groupes*** *:*

- *Fils opérationnels : ACDM, APTA, NOPS…*
- *Fils d'information : SWIM, AMET, DAIM, FICE,…*
- *Fils technologiques : COMS, COMI, NAVS, ASUR (feuilles de route précédentes)*

ASBU Enablers are the components including **standards, procedures, training, technology, etc**., required to implement an element. Their goal is **to identify the stakeholders** involved in the implementation of an ASBU element as well as **all the necessary requirements**, in order **to ensure an effective implementation**. Some of the enablers can be elements in other threads, for instance: avionics or ground systems in the technology threads.

Les facteurs de mise en œuvre ASBU *sont les composants comprenant les* ***normes, les procédures, la formation, la technologie, etc.****, nécessaires à la mise en œuvre d'un élément. Leur objectif est d'identifier* ***les parties prenantes*** *impliquées dans la mise en œuvre d'un élément ASBU ainsi que toutes les exigences nécessaires, afin d'assurer une mise en œuvre efficace. Certains des facteurs peuvent être des éléments d'autres Fils, par exemple : l'avionique ou les systèmes au sol dans les fils technologiques.*

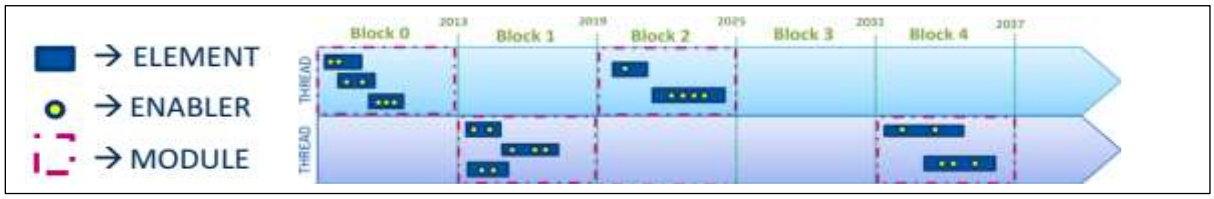
An ASBU Block is the **<u>end date of a six years timeframe</u>** that defines a **<u>deadline for an element to be available for implementation</u>**. This implies, that the **<u>element and all the enablers associated to it</u>**, need to be available for implementation by the ASBU block year.



ASBU Blocks years: 2013, 2019, 2025, 2031….

Un bloc ASBU : est la **<u>date de fin d'une période de six ans</u>** qui définit **<u>un délai pour qu'un élément soit disponible pour la mise en œuvre</u>**. Cela implique que l'élément et tous les facteurs de mise en œuvre qui lui sont associés doivent être disponibles pour la mise en œuvre d'ici **<u>l'année du Bloc ASBU.</u>**

ASBU modules: are the crossing point between the Threads and the Blocks.



Therefore, an ASBU module is the group of elements from a thread that, according to the enablers' roadmap, will be available for implementation within the defined deadline established by the ASBU Block

Les modules ASBU : s*ont le point de croisement entre les Threads et les Blocks. Par conséquent, un module ASBU est le groupe d'éléments d'un fil qui, selon la feuille de route des facilitateurs, sera disponible pour la mise en œuvre dans le délai défini établi par le bloc ASBU*

2 DISCUSSIONS

2.1. Basic considerations for identifying applicable ASBU MET elements

1) **ICAO Triennium BP:** BP 2023 -2025
2) **Level of maturity of ASBU elements:** Ready for Implementation, Standardization, Validation, Concept, etc.
3) **Provisions requiring to implement identified elements: RANP provisions, APIRG Con. & Dec., SARPs:** RANP provisions, APIRG Con. & Dec., SARPs

Considérations de base pour l'identification des éléments ASBU MET applicables

1) ***BP Triennale OACI :*** *BP 2023 -2025*
2) ***Niveau de maturité des éléments ASBU :*** *Prêt pour la mise en œuvre, Standardisation, Validation, Concept, etc.*

3) ***Dispositions nécessitant la mise en œuvre d'éléments identifiés :*** *Dispositions RANP, APIRG Con. & déc., SARP : Dispositions RANP, APIRG Con. & déc., SARP*

AREA	Threads	B0 2013	B1 2019	B2 2025	B3 2031	B4 2037
MET CNS	**AMET**					
	AMET					

	Thread in 5th Edition of the GANP continuing		Continuing Thread in 6th Ed of the GANP

2.2. Identified ASBU MET elements applicable to the region considering above

AMET-B0 Global, regional and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

Element ID	Element Title
AMET-B0/1	Meteorological observations products
AMET-B0/2	Meteorological forecast and warning products
AMET-B0/3	Climatological and historical meteorological products
AMET-B0/4	Dissemination of meteorological products

AMET-B1 Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.

Element ID	Element Title
AMET-B1/1	Meteorological observations information
AMET-B1/2	Meteorological forecast and warning information
AMET-B1/3	Climatological and historical meteorological information
AMET-B1/4	Dissemination of meteorological information

2.3. The Appendix 1 to this paper provides details on the applicable ASBU MET elements identified for the region

3 ACTION BY THE MEETING

3.1. The meeting is invited to:

a) Note the information provided in this working paper; and

b) Review the ASBU MET elements provided in Appendix 1 for consideration.

Appendix 3E3 - Identified ASBU elements applicable to AFI region in MET Field

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
AMET-B0 Global, regional, and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	**AMET-B0/1** Meteorological observations products	Provides Meteorological observations in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	**Ready for implementation**	**Yes**	• A3 Chap. 4: §4.1.5 requires that at aerodromes with runways intended for Category II and III instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure shall be installed to support approach and landing and take-off operations. • Annex 3 Appx. 6: §6.2.5 requires that the wind shear alerts shall be disseminated from automated, ground-based, wind shear	• National framework amendment for the provision of meteorological observations products	• CAA
						• Procedures for the provision of meteorological observations products	• ANSP • MET Service Provider
						• Transmission of meteorological observations data from aircraft	• Aircraft Manufacturer
						• Automated systems and infrastructure to support the provision of meteorological observations products	• Airport Operator • ANPS • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
					remote-sensing or detection equipment in accordance with local arrangements to those concerned.	• Training requirements for the provision of meteorological observations products	• CAA • ANSP • MET Service Provider • Airport Operator
	AMET-B0/2 Meteorological forecast and warning products	Provides Meteorological forecasts, advisories and warnings in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.	**Ready for implementation**	**Yes**	• Annex Chap. 3: §3.2 & Appendix 2: §1.2 require for the provision of the new gridded WAFS information (e.g. Wind, Temperature, Icing, Turbulence, CB clouds.	• National framework amendment for the provision of meteorological forecast products and warnings	• CAA
						• Procedures for the provision of Meteorological forecast products and warnings	• ANSP • MET Service Provider
						• Training requirements for the provision of meteorological forecast products and warnings	• CAA • ANSP • MET Service Provider • Airport Operator

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						• Systems and infrastructure to support the provision of meteorological forecast and warning products	• MET Service Provider
	AMET-B0/3 Climatological and historical meteorological products	Climatological products in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations	**Ready for implementation**	**Yes**	• Annex 3 Chap 8: §8.1.1 requiring for the provision of Aerodrome climatological information and historical meteorological products in support of the design and planning of infrastructure, flight routes and airspace management.	• National framework amendment for the provision of climatological meteorological information products	• CAA
						• Procedures for the provision of climatological meteorological information products	• ANSP • MET Service Provider
						• Training requirements for the provision of climatological meteorological information products	• CAA • ANSP • MET Service Provider • Airport Operator

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						• Systems and infrastructure to support the provision of climatological meteorological products	• MET Service Provider
	AMET-B0/4 Dissemination of meteorological products	Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning	**Ready for implementation**	**Yes**	• The requirements for the dissemination of OPMET messages in both TAC and digital formats as of November 2020 prescribed by Annex 3 provisions (A3 App. 3: §2.1.3; App. 6: §1.1.6 & §1.2)	• National framework amendment for meteorological information exchange	• CAA
						• Procedures for meteorological information exchange	• ANSP • MET Service Provider
						• Communications infrastructure for meteorological information exchange	• ANSP • MET Service Provider
						• Training for meteorological information exchange	• ANSP • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						• ICAO Meteorological Information Exchange Model (IWXXM) V1-V2	• ANSP • MET Service Provider
AMET-B1 Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support	**AMET-B1/1** Meteorological observations information	Provides Meteorological observations information in support of automated decision processes or aids and performance based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support**.**	**Standardization**	**Yes**	• IWXXM format became a Standard for dissemination on 5 November 2020 with the applicability of Amendment 79 to Annex 3 for the following TAC products: SIGMET, AIRMET, METAR, SPECI, TREND, TAF, VAA, TCA and SWXA. • Significant weather (SIGWX) forecasts, is recommended for dissemination in IWXXM as of 4 November 2021 • Furthermore, the Conclusion 23/29 of APRG/23 Established a Regional Space Weather Project to assist States with the implementation of Space Weather requirements as per the	• National framework amendment for the provision of meteorological observations information	• CAA
						• Procedures for the provision of meteorological observations information	• ANSP • MET Service Provider
						• Transmission of meteorological observations information from aircraft	• Aircraft Manufacturer
						• Automated systems and infrastructure to support the provision of meteorological	• Airport Operator • ANSP • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
					provisions of Annex 3 to Chicago Convention.	observations information	
						• Training requirements for meteorological observations information	• CAA • ANSP • MET Service Provider • Airport Operator
	AMET-B1/2 Meteorological forecast and warning information	Meteorological forecast and warning information for automated support for decision processes or aids and performance based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision processes	**Standardization**	**Yes**	• The above is applied	• National framework amendment for the provision of meteorological forecast and warnings information	• CAA
						• Procedures for the provision of meteorological forecast and warnings information	• ANSP • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						• Training requirements for Meteorological forecast and warning information	• CAA • ANSP • MET Service Provider • Airport Operator
						• Systems and infrastructure to support the provision of meteorological forecast and warning information	• MET Service Provider •
	AMET-B1/3 Climatological and historical meteorological information	Climatological information in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.	**Standardization**	**Yes**	• Enhanced climatological data/Information with their associated characteristics such as metadata; required to support the design and planning of infrastructure, flight routes and airspace management.	• National framework amendment for the provision of climatological meteorological information	• CAA
						• Procedures for the provision of climatological meteorological information	• ANSP • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
						• Training requirements for climatological meteorological information	• CAA • ANSP • MET Service Provider • Airport Operator
						• Systems and infrastructure to support the provision of climatological meteorological information	• MET Service Provider
	AMET-B1/4 Dissemination of meteorological information	Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.	**Standardization**	**Yes**	• As of 5 November 2020, States were required by Annex 3 to the Convention to implement IWXXM format for the international exchange of MET information. • States, ROCs and RODBs in a position to do so will begin to disseminate gridded and imagery products throughout Block 1. • RODBs to implement TAC Request/Reply and	• National framework amendment for the dissemination of meteorological information	• CAA
						• Procedures for the dissemination of meteorological information	• ANSP • MET Service Provider
						• Communication infrastructure for meteorological information exchange	• ANSP • MET Service Provider

ASBU Modules	ASBU Elements	Purpose of elements	Maturity level	Applicable (Yes or No)	Rational of applicability	Enablers	Stakeholders
					IWXXM Request/Reply Procedures.	• Training for the dissemination of meteorological information	• CAA • ANSP • MET Service Provider • Airport Operator
						• ICAO Meteorological Information Exchange Model (IWXXM) V3	• ANSP • MET Service Provider