

## Space Weather Workshop

(Hybrid, Hermanus (South Africa), 5-7 June 2023)

### ASBU MET Elements and Enablers

(Presented by the Secretariat)

<b>SUMMARY</b>	
<p>This paper presents the enablers of applicable ASBU MET elements as identified and approved by APIRG/25 through Decision 25/10.</p> <p>Action by the Meeting is <b>provided in paragraph 3</b></p>	
<p><b>REFERENCES</b></p> <ul style="list-style-type: none"> <li>▪ APIRG/24 Meeting Report</li> <li>▪ APIRG/25 Meeting Report</li> <li>▪ The 6th GANP</li> </ul>	
<i>Strategic Objectives</i>	<i>A – Safety, B – Air Navigation Capacity and Efficiency</i>

## 1 INTRODUCTION

- 1.1 **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.

## 2 DISCUSSIONS

- 2.1. The enablers (generic) as defined above are provided in Appendix 1 to working paper.
- 2.2. The ASBU elements should be implemented through the appropriated enables in close coordination/work with the relevant/key stakeholders involved.

## 3 ACTION BY THE MEETING

- 3.1. The meeting is invited to:
- a) Note the information provided in this working paper; and
  - b) Make comments as appropriate.

**WP2.2 - Appendix 1- ASBU MET element Enablers**

ASBU Modules	ASBU Elements	Enablers	Stakeholders
<p><b>AMET-B0</b></p> <p>Global, regional, and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.</p>	<p><b>AMET-B0/1</b> Meteorological observations products</p>	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Transmission of meteorological observations data from aircraft</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft Manufacturer</li> </ul>
		<ul style="list-style-type: none"> <li>• Automated systems and infrastructure to support the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>• Airport Operator</li> <li>• ANPS</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Training requirements for the provision of meteorological observations products</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
	<p><b>AMET-B0/2</b> Meteorological forecast and warning products</p>	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological forecast products and warnings</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of Meteorological forecast products and warnings</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

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		<ul style="list-style-type: none"> <li>• Training requirements for the provision of meteorological forecast products and warnings</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
		<ul style="list-style-type: none"> <li>• Systems and infrastructure to support the provision of meteorological forecast and warning products</li> </ul>	<ul style="list-style-type: none"> <li>• MET Service Provider</li> </ul>
	<b>AMET-B0/3</b> Climatological and historical meteorological products	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Training requirements for the provision of climatological meteorological information products</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
		<ul style="list-style-type: none"> <li>• Systems and infrastructure to support the provision of climatological meteorological products</li> </ul>	<ul style="list-style-type: none"> <li>• MET Service Provider</li> </ul>
	<b>AMET-B0/4</b> Dissemination of meteorological products	<ul style="list-style-type: none"> <li>• National framework amendment for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Communications infrastructure for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

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		<ul style="list-style-type: none"> <li>• Training for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• ICAO Meteorological Information Exchange Model (IWXXM) V1-V2</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
<b>AMET-B1</b>  Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support	<b>AMET-B1/1</b> Meteorological observations information	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Transmission of meteorological observations information from aircraft</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft Manufacturer</li> </ul>
		<ul style="list-style-type: none"> <li>• Automated systems and infrastructure to support the provision of meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• Airport Operator</li> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Training requirements for meteorological observations information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
	<b>AMET-B1/2</b> Meteorological forecast and warning information	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of meteorological forecast and warnings information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of meteorological forecast and warnings information</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

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		<ul style="list-style-type: none"> <li>• Training requirements for Meteorological forecast and warning information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
		<ul style="list-style-type: none"> <li>• Systems and infrastructure to support the provision of meteorological forecast and warning information</li> </ul>	<ul style="list-style-type: none"> <li>• MET Service Provider</li> <li>•</li> </ul>
	<b>AMET-B1/3</b> Climatological and historical meteorological information	<ul style="list-style-type: none"> <li>• National framework amendment for the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Training requirements for climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
		<ul style="list-style-type: none"> <li>• Systems and infrastructure to support the provision of climatological meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• MET Service Provider</li> </ul>
	<b>AMET-B1/4</b> Dissemination of meteorological information	<ul style="list-style-type: none"> <li>• National framework amendment for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> </ul>
		<ul style="list-style-type: none"> <li>• Procedures for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

ASBU Modules	ASBU Elements	Enablers	Stakeholders
		<ul style="list-style-type: none"> <li>• Communication infrastructure for meteorological information exchange</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>
		<ul style="list-style-type: none"> <li>• Training for the dissemination of meteorological information</li> </ul>	<ul style="list-style-type: none"> <li>• CAA</li> <li>• ANSP</li> <li>• MET Service Provider</li> <li>• Airport Operator</li> </ul>
		<ul style="list-style-type: none"> <li>• ICAO Meteorological Information Exchange Model (IWXXM) V3</li> </ul>	<ul style="list-style-type: none"> <li>• ANSP</li> <li>• MET Service Provider</li> </ul>

