



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

NACC/WG/6 — WP/14  
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**Sixth North American, Central American and Caribbean Working Group Meeting (NACC/WG/6)**

On-line, 25 to 27 August 2021, 09:00 to 13:00 (UTC-5)

**Agenda Item 4: Implementation of Air Navigation Issues**  
**4.1 New version 6 of the Global Air Navigation Plan (GANP)**

**IMPACT OF THE NEW GANP VERSION IN THE REGIONAL PLANNING**

(Presented by the Secretariat)

**EXECUTIVE SUMMARY**

The new version of the Global Air Navigation Plan, version 6, approved in the 40<sup>th</sup> Assembly of ICAO in 2019, introduce new information that it has to be taken into account for the current and future air navigation implementation, ANS project planning, coordination between different States and to improve the National air Navigation plan of each State.

<b>Action:</b>	Suggested action is presented in Section 5.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li><li>• Economic Development of Air Transport</li><li>• Environmental Protection</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• New Global Air Navigation Plan <a href="https://www4.icao.int/ganpportal/">https://www4.icao.int/ganpportal/</a></li><li>• Basic Building Block (BBB) Framework <a href="https://www4.icao.int/ganpportal/BBB">https://www4.icao.int/ganpportal/BBB</a></li><li>• ASBU Elements <a href="https://www4.icao.int/ganpportal/ASBU">https://www4.icao.int/ganpportal/ASBU</a></li></ul>

**1. Introduction**

1.1 The Global Air Navigation Plan (Doc 9750) is the ICAO's highest air navigation strategic document and the plan to drive the evolution of the global air navigation system, in line with the Global Air Traffic Management Operational Concept (GATMOC, Doc 9854) and the Manual on Air Traffic Management System Requirements (Doc 9882).

1.2 The GANP supports planning for local and regional implementation. GANP has a multilayer structure of four layers; two global levels, a regional level and a national one.

### MULTILAYER STRUCTURE OF THE GANP

Click a level to navigate



1.3 The Basic Building Block (BBB) framework outlines the foundation of any robust air navigation system. It is the identification of the essential services must have to be provided for international civil aviation in accordance with ICAO Standards. These essential services are defined in the areas of aerodromes, air traffic management, search and rescue, meteorology and information management.

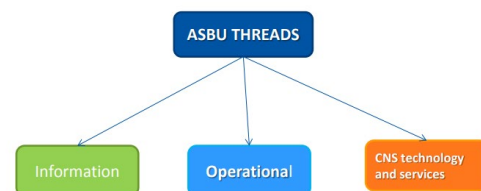
1.4 BBB is defined by essential services recognized by ICAO Member States as necessary for international civil aviation to develop in a safe and orderly manner. Once these essential services are provided, they constitute the baseline for any operational improvement.

## 2. The Aviation System Block Upgrade (ASBU)

2.1 The ASBU aims to enable aviation to realise the global harmonization, increased capacity, and improved environmental efficiency that modern air traffic growth now demands in every region around the world.

2.2 The ASBU thread is a key feature area of the air navigation. Thread are been categorized in 3 groups:

1. Operational threads: ACDM, APTA, NOPS...
2. Information threads: SWIM, AMET, DAIM, FICE
3. Technology threads: COMS, COMI, NAVS, ASUR



2.3 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.

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

2.5 ASBU Enabler – Another key concept in the updated framework. – The ASBU enablers are a new concept in the updated ASBU framework. – They are the components (standards, procedures, training, technology, etc.). Under **Appendix** you will find an example how an element could be implemented taking into account all ASBU concepts.

2.6 Each ASBU element has different maturity levels:

1. Ready for implementation
2. Validation
3. Concept

### **3. Analysis**

3.1 According with the previous information not all elements are available to be implemented and every element has to take into consideration:

1. Main Purpose: Benefits, operational needs, others.
2. Enables: regulation, training, procedures, others according with the implementation.
3. Previous technologies that enable the implementation of a new element.
4. Others.

3.2 One important enabler of any implementation is the CNS technologies, especially in the case of data improve, sharing information, improve operational procedures; communication network, as an important technology that support any operational implementation.

3.3 The MEVA network, it is the most important regional communication network that support voice and data channel between CAR States. According with the last MEVA/TMG/36 meeting. It was agreed to extend the contract with the actual MEVA service provider “FREQUENTIS” for three more years, from April 2022 to March 2025.

3.4 MEVA/TMG is going to evaluate technical improvements in the network that could be implemented and improve the implementation to support more operational facilities, but, it is necessary to get information about actual and near future operational needs with the aim that MEVA network could incorporate this information and support these services implementations.

### **4. Recommendations**

4.1 Actually ICAO NACC in conjunction with ICAO SAM Office is in the process to update the e-ANP Volume I and II and development the Volume III. Information about BBB Status implementation, impact in the information of the Volume I and Volume II. States should conduct an evaluation of the status of their implementation.

4.2 The evaluation of all ASBU elements implementation, especially all elements ready for implementation will be important information for the development of the e-ANP Volume III.

4.3 ICAO NACC recommend that all ANI/WG Task Force integrate under their action plan the evaluation of the different ASBU elements (ready for implementation) according with their responsibility.

4.4 Also, is our recommendation that all Task Force work together and evaluate “enables” especially technologies that must have to be ready, before to implement any ASBU element.

**5. Suggested actions**

5.1 The Meeting is invited to approve the following NACC/WG/06 decision:

<p><b>DRAFT DECISION</b>  <b>NACC/WG/06/XX</b></p> <p style="text-align: center;"><b>ALL ANI/WG TASK FORCE INTEGRATE UNDER THEIR ACTION PLAN THE EVALUATION OF THE ASBU ELEMENTS WITH MATRITY LEVEL: READY FOR IMPLEMENTATION.</b></p>	
<p><b>That:</b>                  The evaluation of the ASBU elements provides relevant information that should be taken into account to improve the definition of regional Air Navigation objectives, support the development of Volume III of the e-ANP and provide valid information to the CAR States to improve their Air Navigation Plans, define future ANS projects, among others. In this sense the meeting agrees to:</p> <ol style="list-style-type: none"> <li>1. Have each task group, part of the ANI/WG, evaluate the ASBU elements, "ready to be implemented".</li> <li>2. Provide information on the technologies that should be available for operational implementation of the ASBU elements.</li> <li>3. According to the previous points, the Task Groups provide the necessary communication channel needs in the short and medium term, with the objective that the MEVA/TMG Group incorporates the communication needs under the technical improvements for the MEVA network.</li> </ol>	<p><b>Expected impact:</b></p> <p><input type="checkbox"/> Political / Global  <input checked="" type="checkbox"/> Inter-regional  <input type="checkbox"/> Economic  <input type="checkbox"/> Environmental  <input checked="" type="checkbox"/> Technical / Operational</p>
<p><b>Why:</b>                  Because it is important to have the appropriate information to support decision making.</p>	
<p><b>When:</b> Complete the evaluation by March 2022.</p>	<p><b>Status:</b> <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Invalidate / <input type="checkbox"/> Finalized</p>
<p><b>Who</b> <input type="checkbox"/> States <input type="checkbox"/> ICAO <input checked="" type="checkbox"/> Others:</p>	<p>ANI/WG Task Forces</p>

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# ASBU Framework

<b>ASBU Block</b> Specific concept of operations. Deadline for an element to be available for implementation.	<b>ASBU Thread</b> Key feature area of the air navigation system. <b>ASBU Element</b> A specific operational improvement
<b>ASBU Enabler</b> Component (standards, procedures, training, technology,...)	<b>ASBU Module</b> A group of elements from a thread.



## ASBU ELEMENTS

ASUR-B0/1

- Functional Description
- Enablers
- Deployment Applicability
- Performance Impact Assessment

### ASUR

ASUR-B0/1      Automatic Dependent Surveillance – Broadcast      Technology  
 (ADS-B)

**Main Purpose** <sup>?</sup> To support the provision of Air Traffic Services and operational applications at reduced cost and increased surveillance coverage.

**New Capabilities** <sup>?</sup> ADS-B provides precise position/velocity information in all airspace (accuracy not range-dependent as with radar). It also provides aircraft call sign and precise position/velocity information to nearby aircraft with ADS-B-In receivers.

ADS-B can also support State aircraft airspace access, however it should, when possible, leverage benefits from dual-use of State aircraft capabilities to reduce cost and technical impact.

**Description** <sup>?</sup> ADS-B provides an aircraft’s identification, position, altitude, velocity, and other information to any receiver (airborne or ground) within range. The broadcasted aircraft position/velocity is normally based on the global navigation satellite system (GNSS) and transmitted at least once per second.

**Maturity Level** <sup>?</sup> Ready for implementation

**Human Factor Considerations**

#### PLANNING LAYERS <sup>?</sup>

Tactical-During ops

#### OPERATIONS <sup>?</sup>

Taxi-out    Departure    En-route    Arrival    Taxi-in

#### DEPENDENCIES AND RELATIONS <sup>?</sup>

Type of Dependencies	ASBU Element
Relation-operational need	NAVS-B0/3 - Aircraft Based Augmentation Systems (ABAS)
Relation-benefit	NAVS-B0/2 - Satellite Based Augmentation Systems (SBAS)

#### ENABLERS

Enabler Category	Enabler Type	Enabler Name	Description / References	Stakeholders	Year
Ground system infrastructure	Surveillance	ADS-B ground stations	ADS-B ground stations receive information from aircraft and transmit it to one or more Service Delivery Points Reference material: Technical standards and guidance material: ICAO Annex 10 Volume IV Chapter 2,3 and 5 ICAO Doc. 9871 Technical Provisions for Mode S Services and Extended Squitter RTCA/EUROCAE MOPS: DO-260/ED-102, DO-260A, or DO-260B/ED-102A EUROCAE ED-129, ED-129A or ED-129B ICAO Doc. 9924 Aeronautical Surveillance Manual	ANSP	2008
Ground system infrastructure	Surveillance	*Service Delivery Point(s) for ADS-B information	Service Delivery Point(s) receive ADS-B information provides it to ATC automation for processing and display to controller Reference material: Guidance material: ICAO Doc. 9924 Aeronautical Surveillance Manual	ANSP	2008
Ground system infrastructure	Technical systems	HMI that supports controller awareness	Human Machine Interface (HMI) of the Air Traffic Controller Working Position (ATCo CWP) Reference: Guidance material: ICAO Doc. 9924 Aeronautical Surveillance Manual	ANSP	2008
Airborne system capability	Surveillance	SSR Mode S transponder with extended squitter version 0, version 1 and version 2	Reference: Technical standards and guidance material: ICAO Annex 10 Volume IV Chapter 2,3 and 5 ICAO Doc. 9871 Technical Provisions for Mode S Services and Extended Squitter RTCA/EUROCAE MOPS: DO-260/ED-102, DO-260A, or DO-260B/ED-102A ICAO Doc. 9924 Aeronautical Surveillance Manual	Aircraft manufacturer Aircraft operator	2008
Training	-	Training requirements ADS-B implementation	Depending on the ANSP implementation, some controller training on new symbology may be required. If phraseology is changed by an ANSP, then controller and pilot training on the new phraseology is required. If new ANSP equipment is installed, then training for maintenance personnel may be required (see ICAO Doc 8071).	ANSP	2008

Airborne  
system  
capability

Navigation

Basic Aviation  
GNSS receiver  
with RAIM

Position source. Basic Aviation GNSS receiver with RAIM. Such a receiver must comply with the technical performance requirements of either [E]TSO-C129, or [E]TSO-C196, or [E]TSO-C145/-C146. (Note that the US/Europe and equivalent ADS-B mandates require more – see FAA AC 20-165 or EASA CS-ACNS).

Aircraft  
manufacturer

2008

Aircraft  
operator