Aviation System Block Upgrade (ASBU)

GANP 6th Edition (2019)

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ICAO EUR/NAT Office

AIM SG/6

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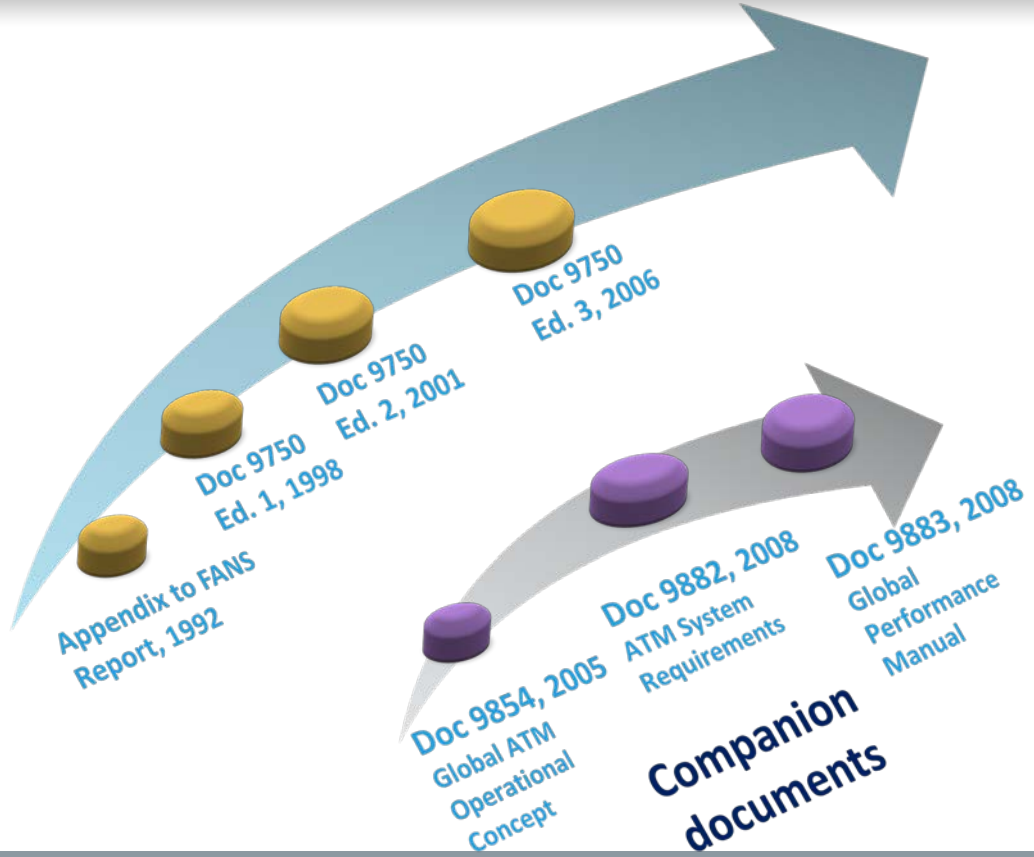
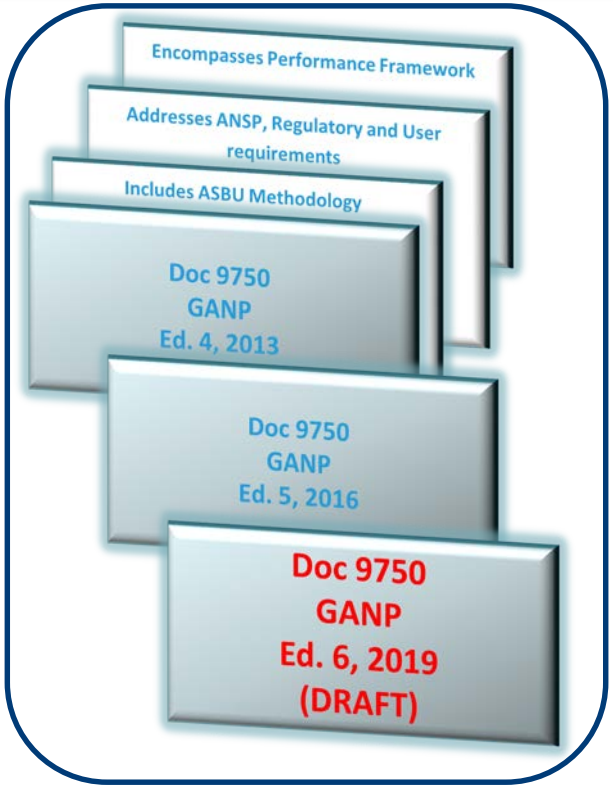
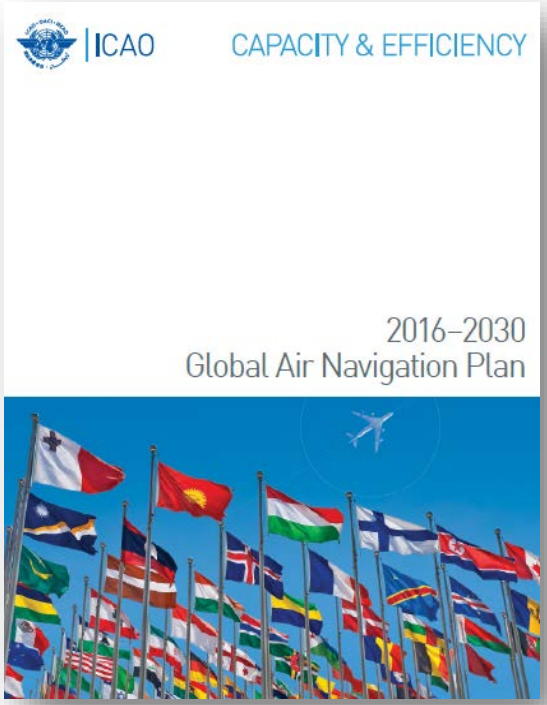
GANP history





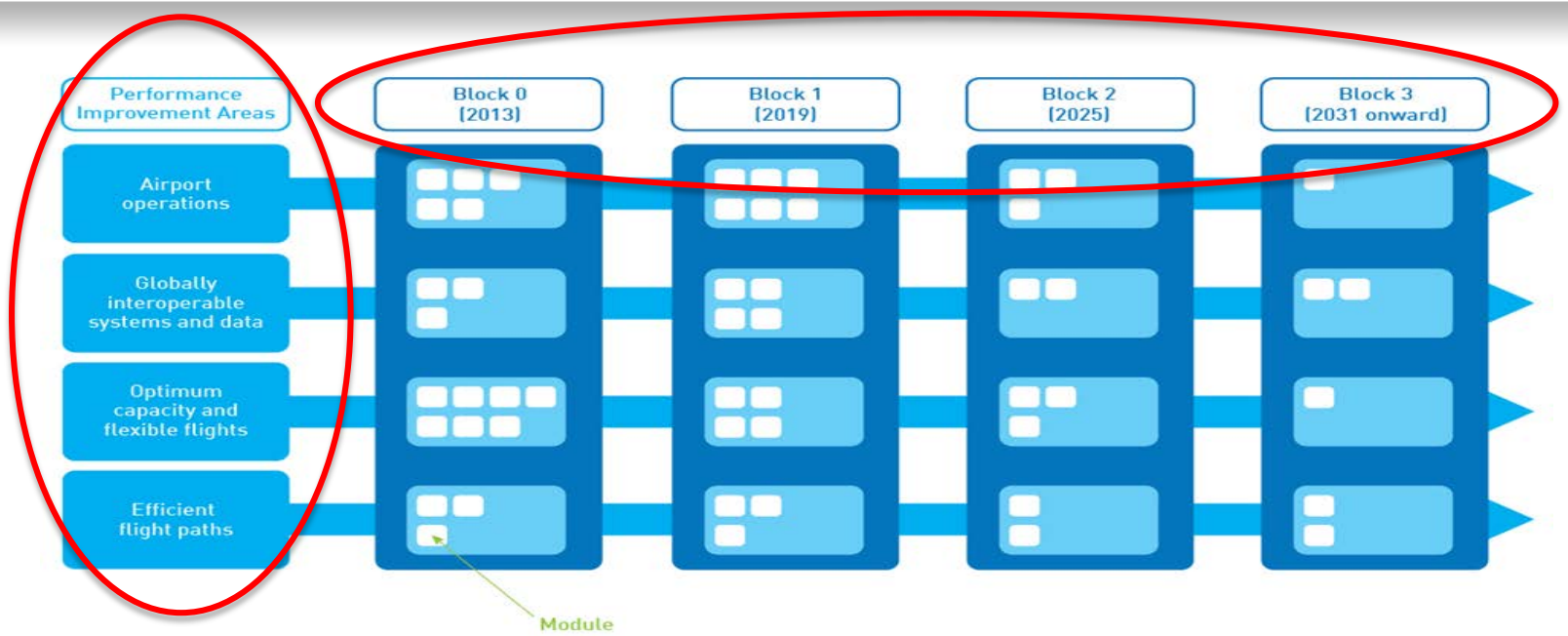
Global Air Navigation Plan



What is the GANP?

- Supports a harmonized global Air Navigation System
- It is an overarching framework
- Addresses key civil aviation policy principles
- Assists ICAO Regions and States to establish air navigation priorities for the next 15 years
- Assists ICAO Regions and States to prepare their navigation plans

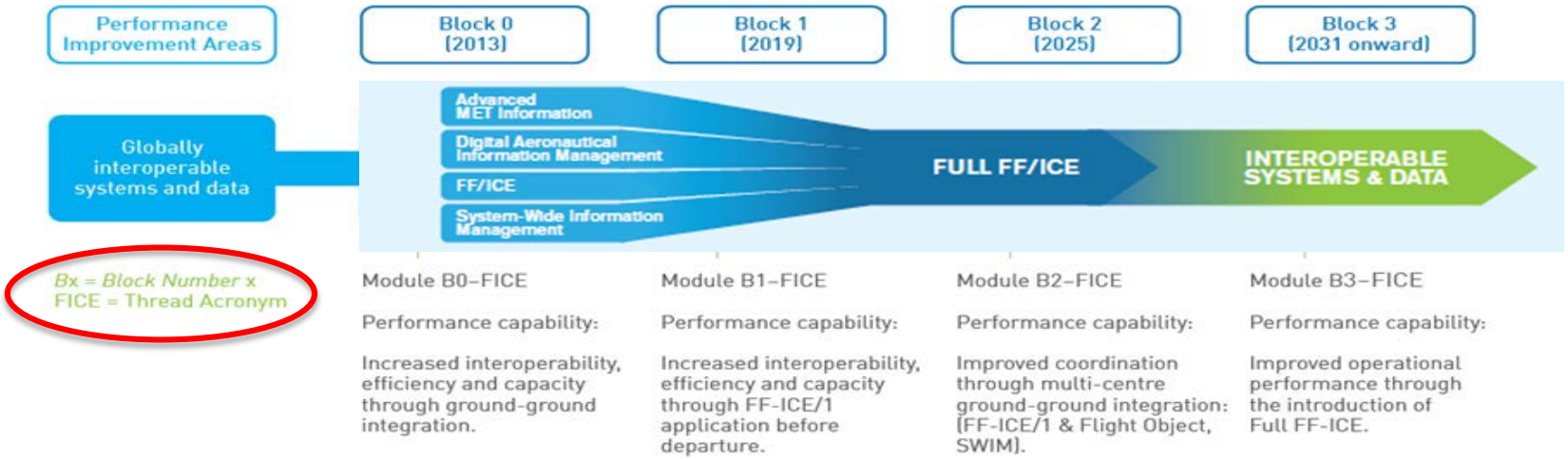
ASBU Framework



Block — is made up of modules that, when combined, enable significant improvements and benefits (within a defined time frame).

Module — a deployable package based on performance or capability. It offers a clear operational benefit, supported by procedures, technology, regulation/standards as necessary, and a business case. A module will be also characterized by the operating environment within which it may be applied.

ASBU Threads



ASBU Thread: key feature area of the air navigation system that needs to be improved in order to achieve the vision outlined in the Global ATM Operational Concept.

6th Edition of the GANP

Main Goals of GANP 2019

- **Evolution of the global air navigation system**
  - Promote investment in **innovation** through research and development activities **AND** Align Regional **Research and Development Programmes**

- **Support implementation → GLOBAL TECHNICAL LEVEL**
  - Ensure the **pillars** of a robust **air navigation system - BBBs**
  - Facilitate a **transformational change - ASBU framework**
  - Optimize **allocation and use of resources** for air navigation - **Performance-based** decision making method

Contribution of the Global Events to GANP 2019

Symposiums: GANIS/SANIS

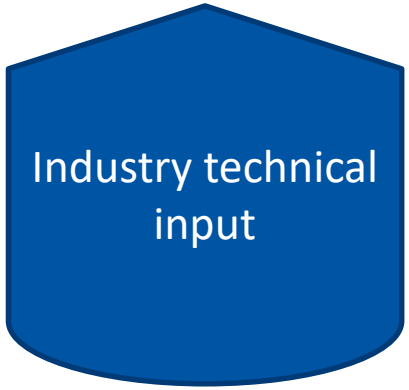
December 2017

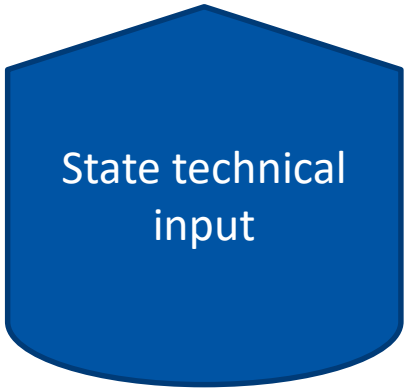
13th Air Navigation Conference

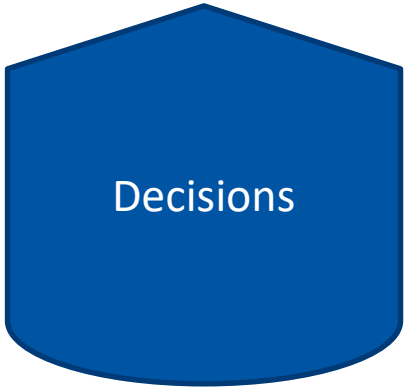
October 2018

40th Session General Assembly

September 2019







DRAFT GANP 2019 – Multilayer Structure

- Front door for all stakeholders to ICAO
- Document endorsed by the
- political level lication: reports
- Written in executive language
- Contents derived from underlying
- Performance-based de thod for
- ICAO Regional Air Navigation Plans defining implementation strategies
- Global Performance Ambitions

A- Global Strategic Level

3

SUMMARY OF THE GANP PERFORMANCE AMBITIONS "A high performing system by 2040 and beyond"	
KPA	**Ambition**
ACCESS AND EQUITY	No aviation community member excluded or treated unfairly.
CAPACITY	Nominal capacity easily scalable with demand.
	Disruptive events do not interrupt service provision and do not significantly affect the performance of the system.
COST-EFFECTIVENESS	No increase of total direct ANS cost while maintaining the safety and quality of service.
	Significant increase of ANS productivity, irrespective of demand.
EFFICIENCY	Reduction of the gap between the flight efficiency achieved and the desired optimum trajectory of airspace users.
ENVIRONMENT	ANS-induced inefficiencies to be progressively removed to contribute to the global ICAO aspirational goals for CO_2 emissions.
	To benefit from achieved flight efficiency gains.
FLEXIBILITY	To absorb required changes to individual business and operational trajectories.
INTEROPERABILITY	Essential at an operational and technical level.
PARTICIPATION BY THE ATM COMMUNITY	Pre-agreed level of participation to make the maximum shared use of the air navigation resources.
PREDICTABILITY	No increase in ANS delivery variability including asset availability.
SAFETY	Zero ANS-related accidents and a significant (50%) reduction of ANS-related serious incidents.
SECURITY	Zero significant disruptions due to cyber incidents

1

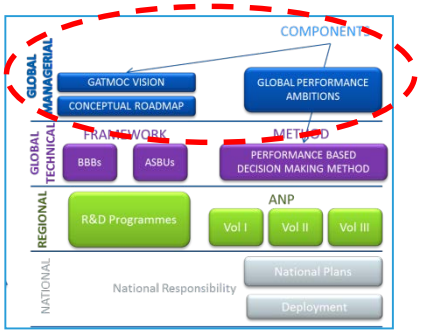
GATMOC Vision
(Global ATM Operational Concept – DOC 9854)

To achieve an interoperable global air traffic management system, for all users during all phases of flight, that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements.

2

GANP Vision

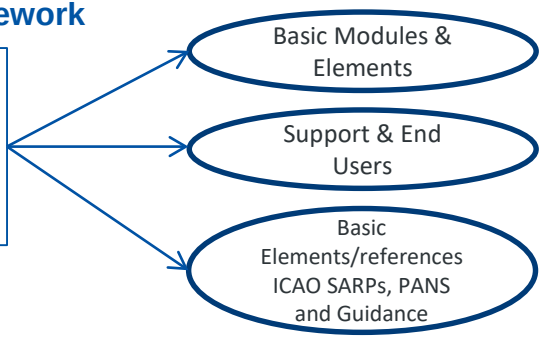
The GANP vision reflects the ultimate objectives of the air navigation system as well as the emerging challenges and opportunities stemming from aviation and technological trends. The evolution driven by this vision will yield a high-performing global air navigation system that meets the ever-growing expectations of society.



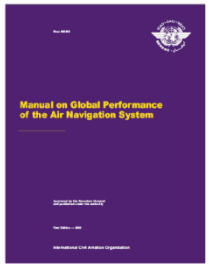
B- Global Technical Level

1 Basic Building Blocks (BBBs) Framework

- METEOROLOGICAL INFORMATION
- AERONAUTICAL INFORMATION
- SEARCH AND RESCUE
- AIR TRAFFIC MANAGEMENT
- AERODROME OPERATIONS

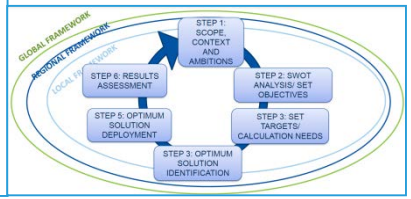


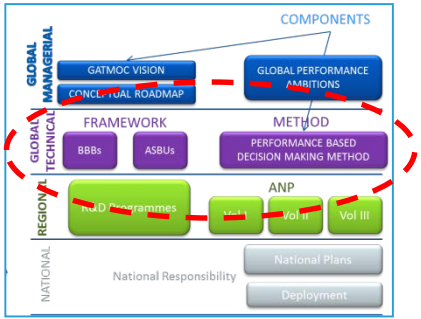
2 Performance-based Decision Making



Principles:

- Strong focus on desired/required results
- Reliance on facts and data for decision making
- Collaborative justified decision-making





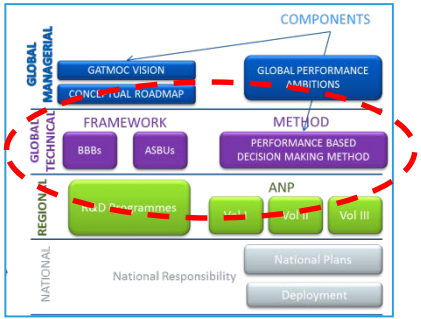
B- Global Technical Level

	B0	B1	B2	B3	B4
ACAS		X	X		
Airborne Collision avoidance System	X		X		
ACDM	X	X	X	X	
Airport Collaborative Decision Making	X	X			
AMET	X	X	X	X	X
Advance MET Information	X	X		X	
APTA	X	X	X		
Airport Accessibility	X	X			
ASEP					
Airborne Separation	X	X	X		
ASUR	X	X	X	X	X
Alternative Surveillance	X				
CCO					
Continuous Climb Operation	X				
CDO					
Continuous Descent Operation	X	X	X		
COMI	X	X	X	X	
COM Infrastructure					
COMS	X	X	X	X	
COM Services/systems					
CSEP		X	X	X	X
Cooperative Separation					
DAIM		X	X		
Digital Aeronautical Information Management	X	X			
FICE	X		X	X	X
Flight & Flow in Collaborative Environment	X	X	X	X	

	B0	B1	B2	B3	B4
FRTO	X	X	X		
Free Route Operations	X	X			
GADS		X	X		
Global Aeronautical Distress and Safety System (GADSS)					
NAVS	X	X	X		
Navigation Systems					
NOPS	X	X	X	X	
Network Operations	X	X	X	X	
OPFL	X	X			
Optimum Flight Levels	X				
RATS		X			
Remote ATS		X			
RPAS					
Remotely Piloted Aircraft System		X	X	X	
RSEQ	X	X	X	X	
Runway Sequencing	X	X	X	X	
SNET	X	X			
Ground-based Safety Nets	X	X			
SURF	X	X	X	X	
Surface Operations	X	X	X		
SWIM			X	X	
System-Wide Information Management		X	X		
TBO	X	X	X	X	X
Trajectory-based Operations	X	X		X	
WAKE			X	X	X
Wake Turbulence Separations		X	X	X	

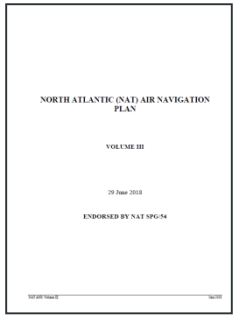
3 Changes to ASBU Modules

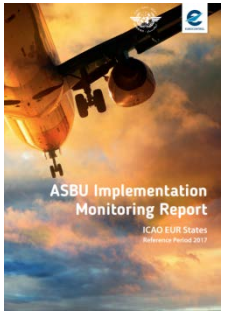
Green: 2019
Blue: 2016



C- Regional Level
D- National Level

Regional Level



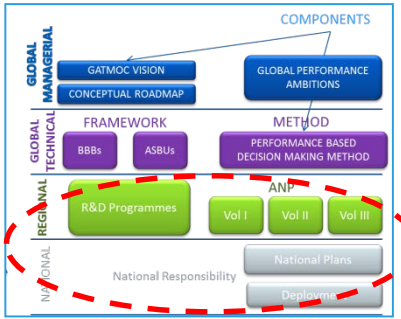


National Level

National ASBU Implementation Plan

National Air Navigation Implementation Plan

Deployment & Implementation



DAIM in the new GANP

PIA2 Schematic Diagram

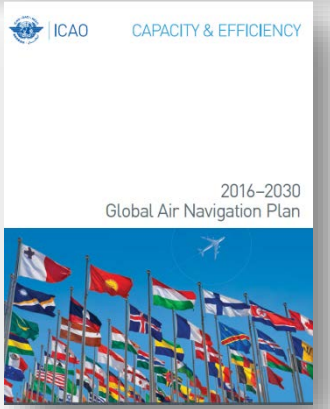
Thread	Block 0	Block 1	Block 2	Block 3
AMET	B0-AMET	B1-AMET	-	B3-AMET
DATM	B0-DATM	B1-DATM	-	-
FICE	B0-FICE	B1-FICE	B2-FICE	B3-FICE
SWIM	-	B1-SWIM	B2-SWIM	-

GANP 2016

Thread	Block 0	Block 1	Block 2	Block 3	Block 4
AMET	B0-AMET	B1-AMET	B2-AMET	B3-AMET	B4-AMET
DATM	-	B1-DAIM	B2-DAIM	-	
FICE	B0-FICE		B2-FICE	B3-FICE	B4-FICE
SWIM	-	-	B2-SWIM	B3-SWIM	

GANP 2019

2013 | 2019 | 2025 | 2031 | xxx



DAIM

B0-DAIM (GANP 2019)

NIL

B0-DATM (GANP 2016)

1. WGS-84
2. QMS
3. AIRAC
4. AIXM AIS Database
5. eAIP
6. Terrain & Obstacle Datasets (area 1 & 4)

B1-DAIM (GANP 2019)

1. Quality-assured aeronautical information (WGS-84, WGS-84, AIRAC, Automation, SLA)
2. Digital Datasets:
   - AIP datasets
   - Terrain datasets
   - Obstacle datasets
   - Aerodrome mapping
   - IFP datasets
3. NOTAM improvements

B2-DAIM (GANP 2019)

1. Dissemination of AI in SWIM environment
2. AIM data requirements to support network operation
3. AIM information requirements to support high airspace operation
4. AIM information requirements tailored to UTM
5. NOTAM replacement

B3-DAIM (GANP 2019)

NIL

B4-DAIM (GANP 2019)

NIL

Exhaustive list of B1-DAIM Elements (GANP 2019)

- QMS
- Formal arrangement with data originators
- WGS-84 (*horizontal and vertical*)
- AIRAC adherence
- AIS Automation (*Full move to automated data-centric environment: management, processing, verification, usage and exchange can be done in a structured, automatic manner and human intervention is reduced*)
- AIP Datasets
- Terrain Datasets (*area 1, area 2a/TKOF flight path area and area 4 for CAT II/III*)
- Obstacle Datasets (*area 1, area 2a/TKOF flight path area and area 4 for CAT II/III*)
- Aerodrome mapping datasets (for international aerodromes)
- Instrument Flight Procedure Datasets
- NOTAM in digital format (*e.g. AIXM*) – *initial implementation*

More Information:

(GANP Portal)

https://www4.icao.int/ganpportal

ICAO

THANK YOU