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# Global Air Navigation Plan and the Aviation System Block Upgrades (ASBUs)

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Dakar, Senegal, September 2017

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# Objective

**To increase the level of knowledge on the GANP, the ASBUs, the relationship between them and their operational impact.**



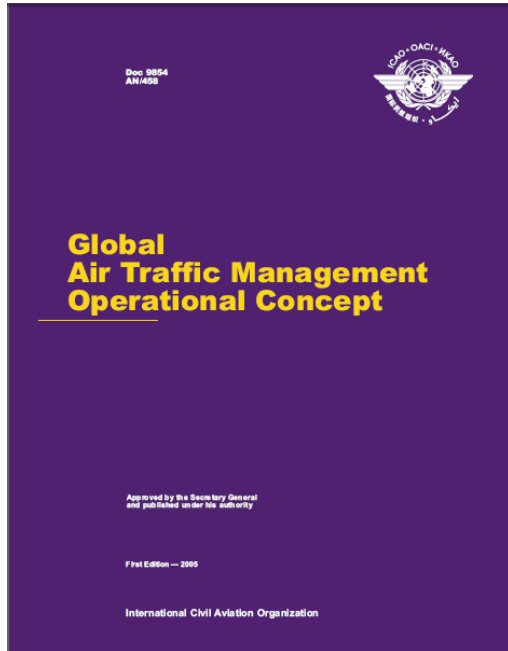
- Vision
- Planning mechanism based on scenarios
- GANP
- ASBUs
- Enhancement plan.



***“Do we know where to go?”***



# YES



*“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**”*



**AOM**

— Airspace organization and management

**DCB**

— Demand/capacity balancing

**AO**

— Aerodrome operations

**TS**

— Traffic synchronization

**CM**

— Conflict management

**AUO**

— Airspace user operations

**ATM SDM**

— ATM service delivery management

# GAP



A yellow diamond-shaped sign with a black border and two screws at the top and bottom. The sign is mounted on a brown post. The text on the sign is in bold, black, uppercase letters.

**DRIVERS  
FOR  
CHANGE**

Aviation is  
undergoing a  
**FUNDAMENTAL**  
change



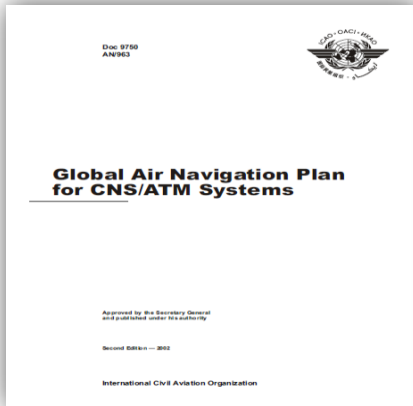


***WORKING TOGETHER** – Overcoming today's challenges and tomorrow's needs*

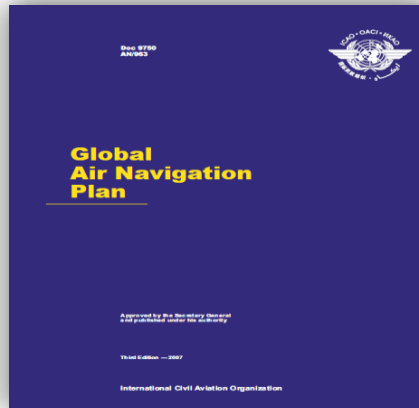


# Global Air Navigation Planning: an evolution

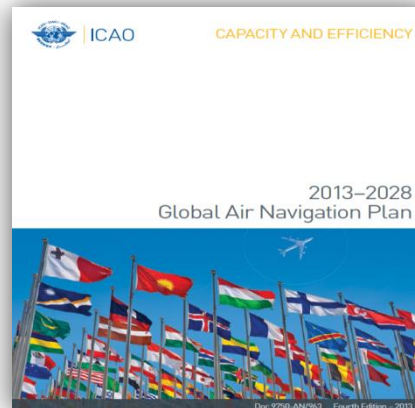
2002



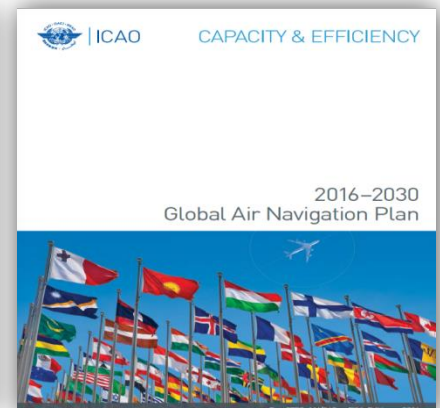
2007



2013



2016





## Gave us Global Plan Initiatives

GPI-1 Flexible use of airspace

GPI-2 Reduced vertical separation minima

GPI-3 Harmonization of level systems

GPI-4 Alignment of upper airspace classifications

GPI-5 RNAV and RNP (Performance-based navigation)

GPI-6 Air traffic flow management

GPI-7 Dynamic and flexible ATS route management

GPI-8 Collaborative airspace design and management

GPI-9 Situational awareness

GPI-10 Terminal area design and management

GPI-11 RNP and RNAV SIDs and STARs

GPI-12 Functional integration of ground systems with airborne systems

GPI-13 Aerodrome design and management

GPI-14 Runway operations GPI-15 Match IMC and VMC operating capacity GPI-16 Decision support systems and alerting systems

GPI-17 Data link

GPI-18 Aeronautical information

GPI-19 Meteorological systems

GPI-20 WGS-84

GPI-21 Navigation systems

GPI-22 Communication infrastructure

GPI-23 Aeronautical radio spectrum

# ICAO's Role in ATM Modernization

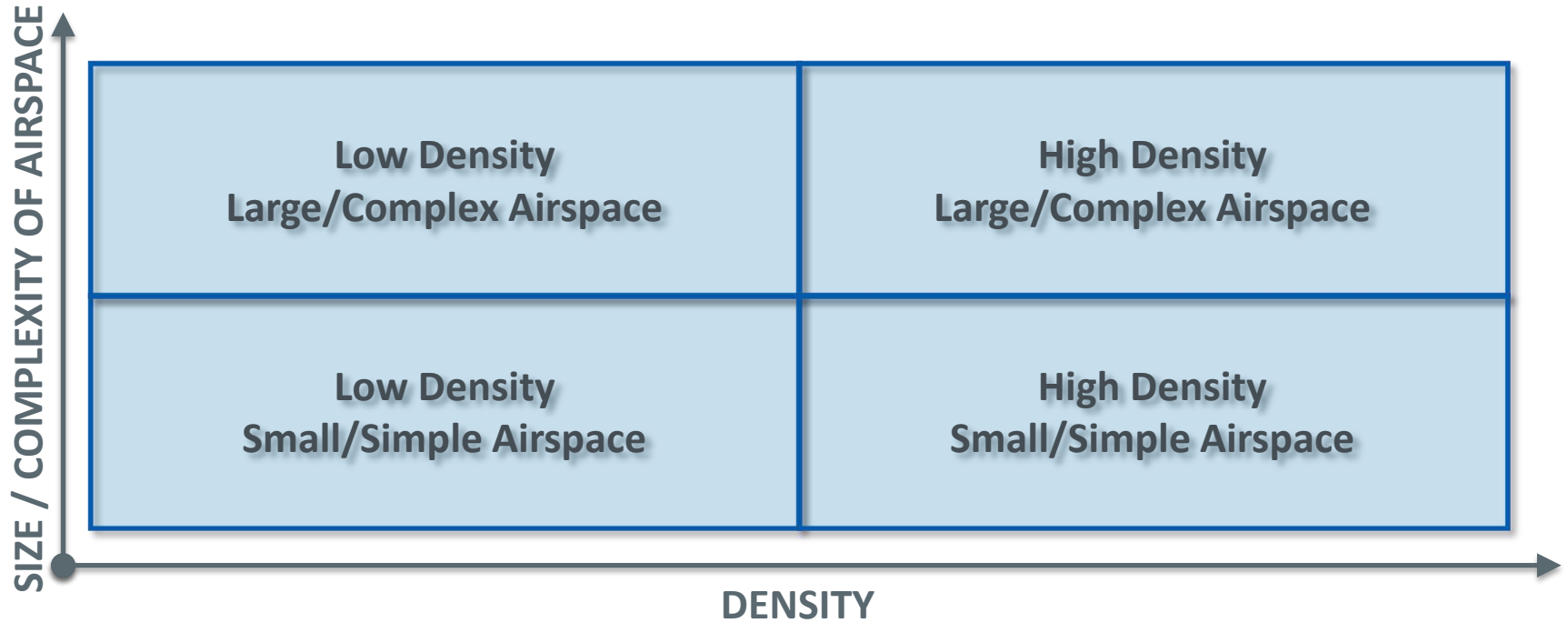
## STRATEGIC OBJECTIVE ②



*“Increase the capacity and improve the efficiency of the global civil aviation system”*

- Through the **GANP**, offer a long-term vision to assist all aviation stakeholders, and ensure continuity and harmonization among modernization programmes
- Through the **Aviation System Block Upgrades (ASBU)**, provide a consensus-driven modernization framework for integrated planning based on performance



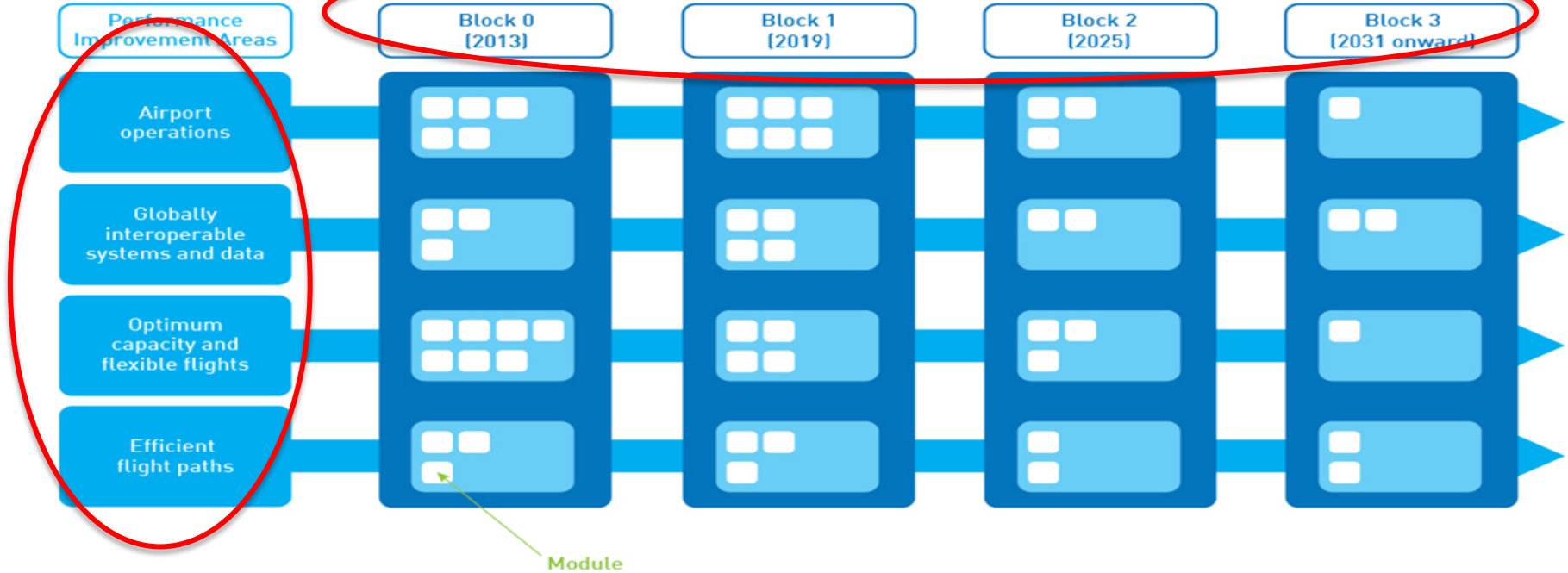




# ASBU framework

4 Performance Improvement Areas

6-year blocks (new 2016)





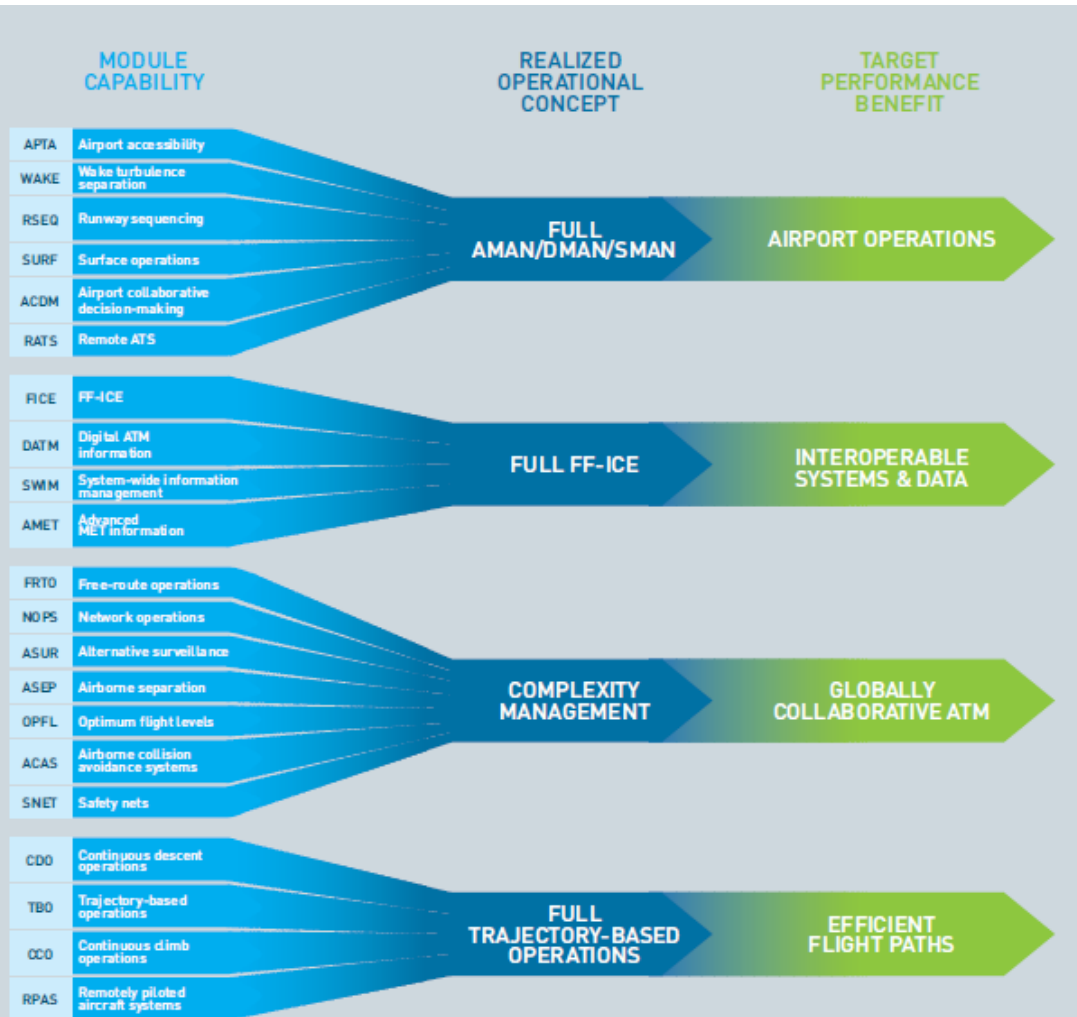
# Key concepts

- **ASBU Block:** a six year timeframe whose starting date defines a deadline for an element to be available for implementation.
- **ASBU Thread:** key feature area of the air navigation system that needs improvement in order to achieve the vision outlined in the Global ATM Operational Concept.
- **ASBU Module:** a 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.
- **ASBU Element:** a specific change in operations designed to improve the performance of the air navigation system under specified operational conditions.
- **ASBU Enabler:** component (standards, procedures, training, technology, etc) required to implement an element.



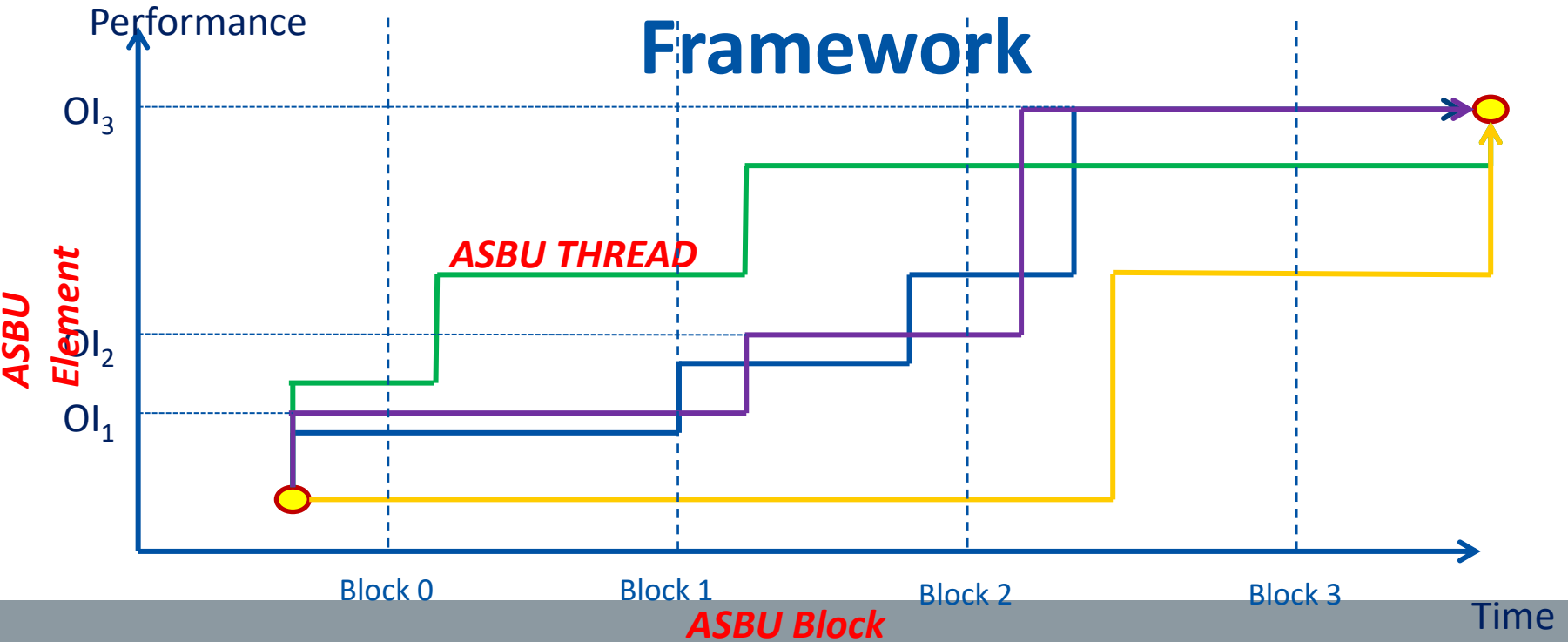


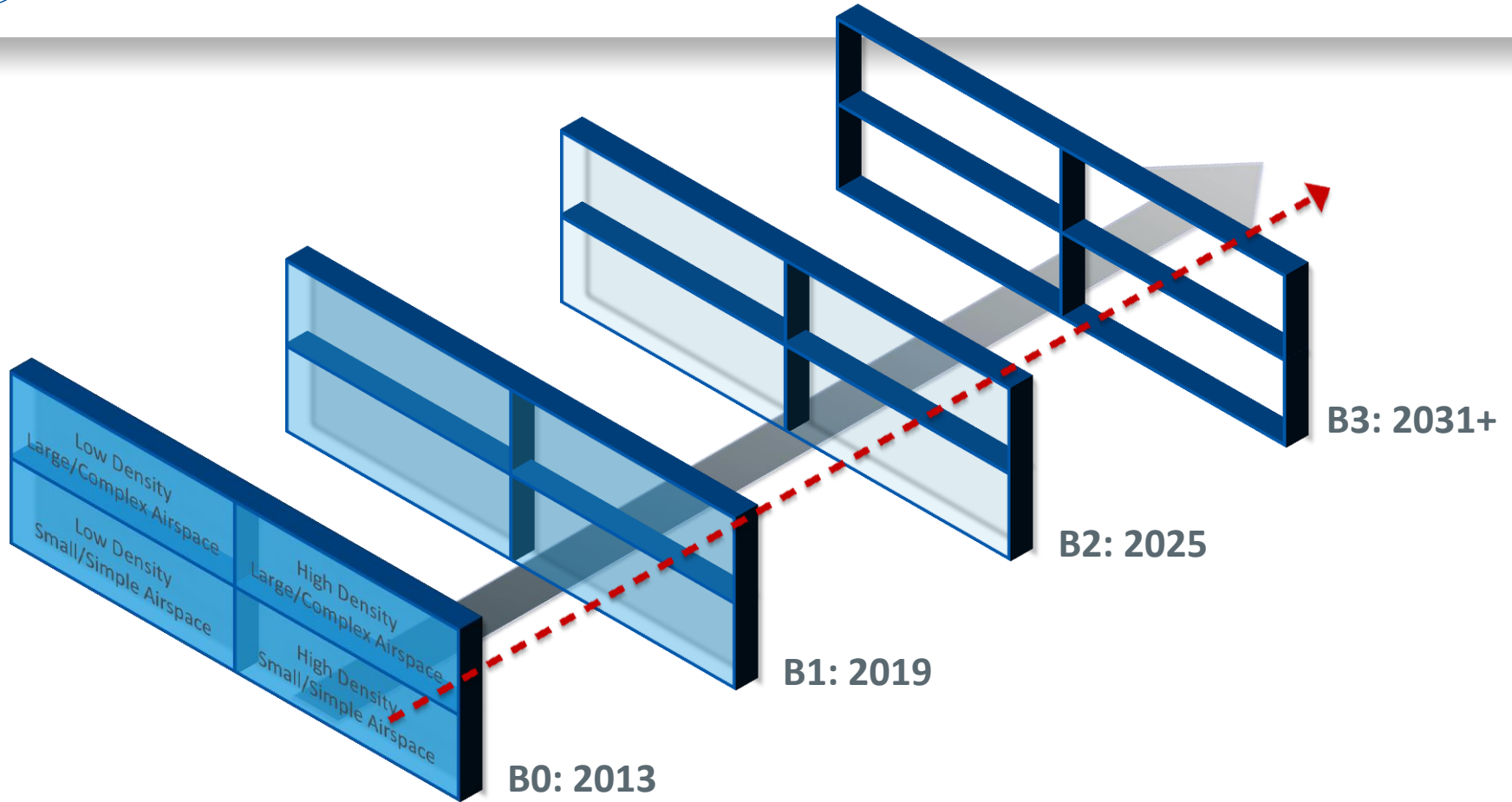
The **ASBU Framework** supports a *phased implementation* with many synergies between threads which allows *threads to converge* around a *target performance benefit*

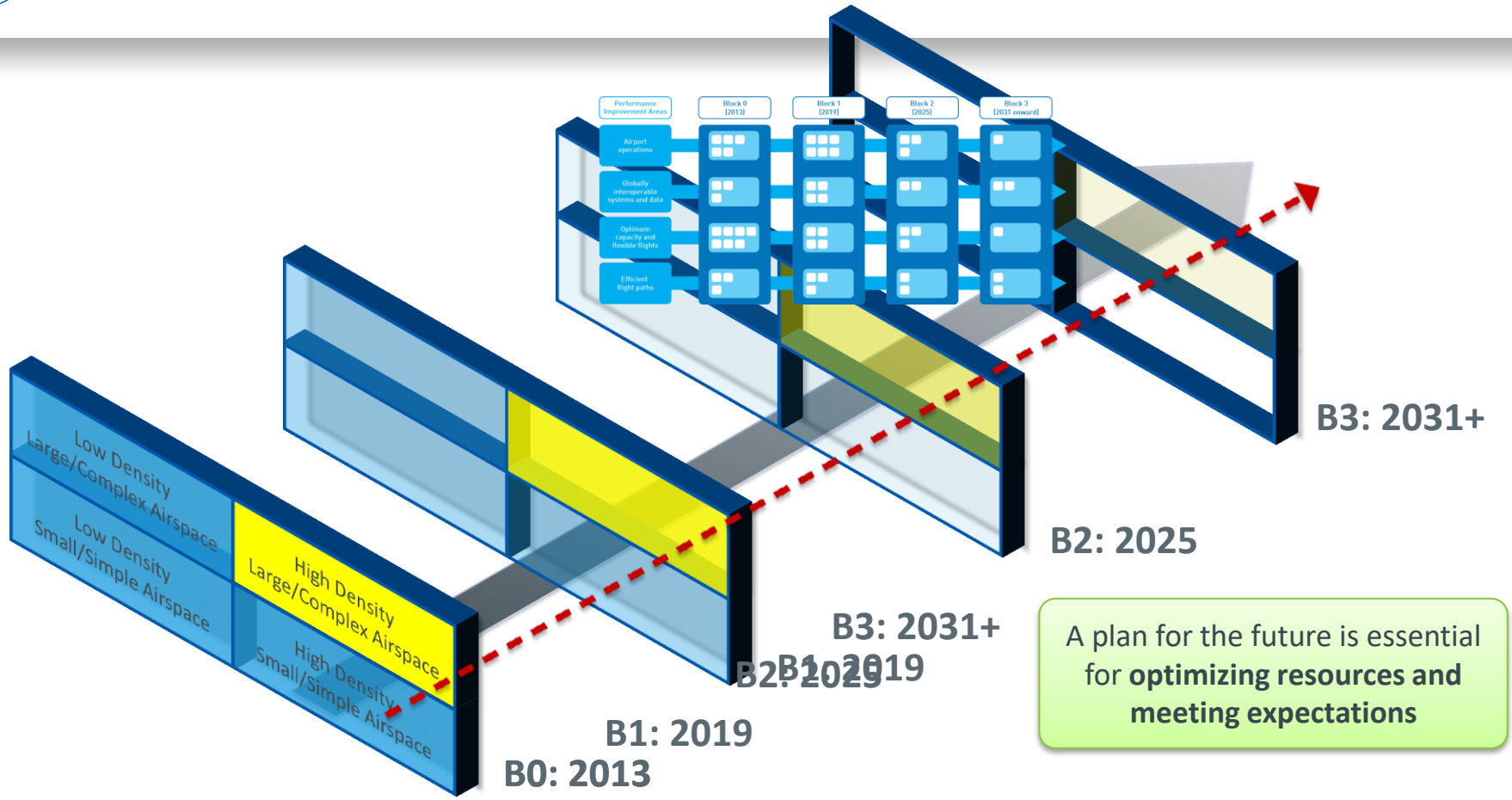




# Aviation System Block Upgrades (ASBU)



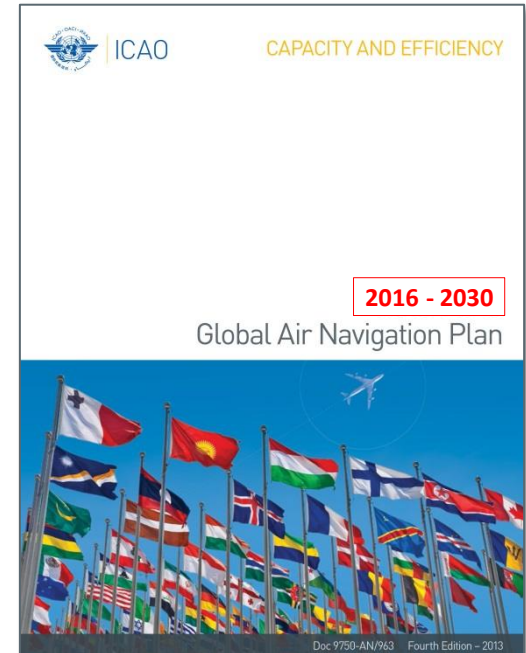




A plan for the future is essential for optimizing resources and meeting expectations

# GANP Update

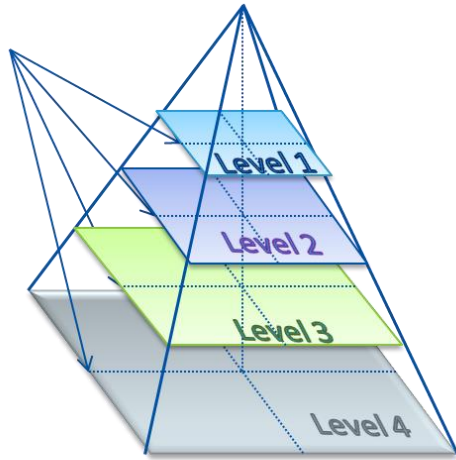
- **Objectives**
  - **International and overarching framework** of a global investment plan: make it more usable towards implementation
  - Keep it **stable** while making the necessary updates/additions
  - Adjust the **periodicity** to the Assembly and ICAO editing cycles
- **A Planning Document for Implementation**
  - GANP should be comprehensive planning tool to **support the development and implementation** of a harmonized global air navigation system



# 2019 Update of the GANP

## Multilayer Structure

LAYERS





# iAID



Search ICAO

ELEMENT OVERVIEW    THREAD OVERVIEW    ENABLERS ▾

## ELEMENT OVERVIEW

Functional Description     Enablers     Deployment Applicability     Performance Impact Assessment

+ Add Element

WAKE-BO/1    Wake turbulence separation minima based on six aircraft categories



APTA-BO/1    PBN Approaches (with basic capabilities)



APTA-BO/2    PBN SID and STAR procedures (with basic capabilities)



APTA-BO/3    Cat I Precision Approach Procedures



APTA-BO/4    PBN transitions to/from xLS (with basic capabilities)





# What is Global Plan?

- Strategic Document for global, regional and national planning for air navigation improvements
- Refers to five major disciplines
  - ATM, CNS, MET, AIM and AGA







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## GANP Policy Principles



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CAPACITY & EFFICIENCY

2016–2030  
Global Air Navigation Plan



Doc 9750-AN/963 Fifth Edition - 2016

1. Commitment to the Implementation of ICAO's Strategic Objectives and KPAs
2. Aviation Safety is the highest priority
3. Tiered approach to air navigation planning
4. Global Air Traffic Management Operational Concept (GATMOC)
5. Global air navigation priorities



## GANP Policy Principles



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2016–2030

Global Air Navigation Plan



6. Commitment to the Implementation of ICAO's Strategic Objectives and KPAs
7. Aviation System Block Upgrades (ASBUs), Modules and Roadmaps
8. Use of ASBU Blocks and Modules Global air navigation priorities
9. Cost-benefit and financial issues
10. Review and evaluation of air navigation planning



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## Benefits



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2016–2030  
Global Air Navigation Plan



Doc. 9750-AN/963 Fifth Edition – 2016

- Represents a rolling, 15-year strategic methodology
- Leverages existing technologies and anticipates future developments
- Offers a long-term vision
- Assist ICAO, States and industry to ensure continuity and harmonization among their modernization programmes.



## Content



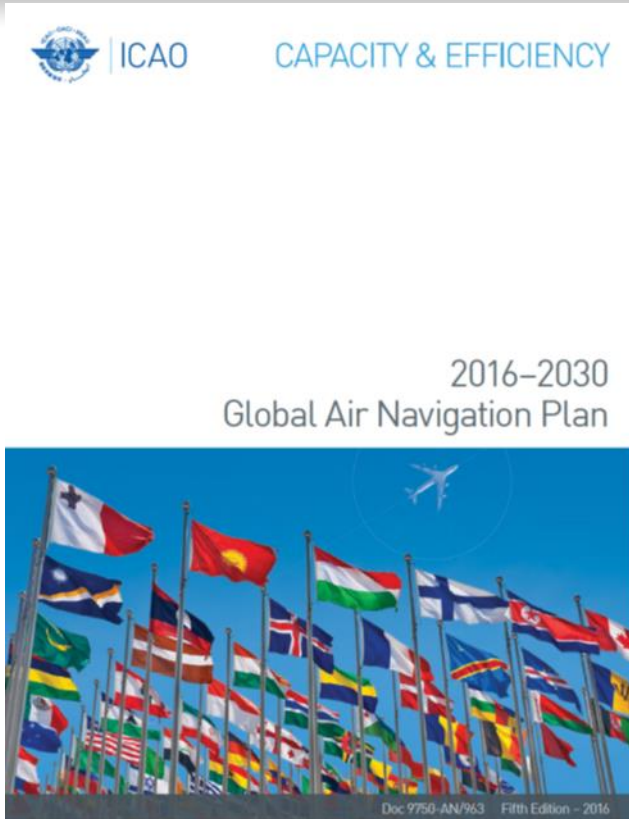
2016–2030  
Global Air Navigation Plan



- Identifies issues to be addressed in the near future alongside financial aspects of aviation system modernization
- Recognizes importance of collaboration and partnership and addresses its multidisciplinary challenges.



## Content



- Information on online support documentation, description of ASBU Threads, and Technology Roadmaps, as well as financial guidance
- Explores the need for more integrated aviation planning at both regional and national level
- Identifies issues to be addressed in the near future alongside financial aspects.



2016–2030  
Global Air Navigation Plan



- Link improvements in air navigation with reduction in aviation emissions – as aviation pursues its commitment to comprehensively reduce its environmental impacts.



## Aviation System Block Upgrades – Definition

- What is an ‘Aviation System Block Upgrade’ (ASBU)?

A global operational framework that allows all Member States to advance their air navigation capabilities based on their specific operational requirements.



## What is the Basis for Block Upgrades?

- Foundation of blocks originates from existing near term implementation plans
- Aligned with ICAO ATM Operational Concept
- Block upgrades will allow **structured approach to meet regional and local needs, while considering associated business cases**
- They reflect recognition that all **elements are not required in all airspaces or airports.**





# Challenges



- Air traffic growth expands **two-fold every 15 years**
- Growth can be a **double-edged sword**. Challenge is how to achieve both safety and efficiency
- The 37<sup>th</sup> session of ICAO General Assembly advised to redouble our efforts with focus on **ensuring interoperability** of systems while at the same time maintaining or enhancing aviation safety.

## National/Regional Plans - interoperability challenges

### Examples..



Many Regional and National ATM modernization programmes are being developed worldwide

- They are following the Global ATM Operational Concept view, but nevertheless **they are different in their own way**
- Resulting in **interoperability and procedures harmonization challenges**



## What is the difference between current implementation approach and ASBU framework?

- **Current method**
  - Scope covers only **ground equipment for ANSPs**
  - Planning based on short and medium term
- **ASBU framework**
  - Scope extends to **airspace users** and regulators
  - Planning based on short, medium and **long terms**
  - Provisions development process is through Blocks and corresponding module elements
  - **Envisages enhancement in performance and not in implementation of technologies**



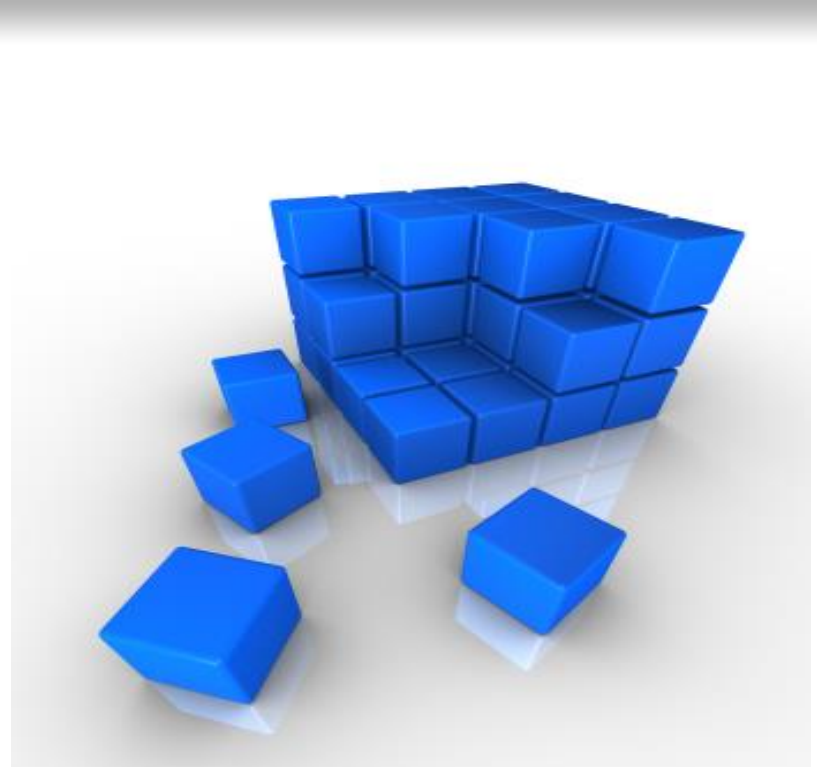
## What are the advantages of ASBU framework?

- Takes into account all related issues such as air/ground systems, air/ground procedures, air/ground regulatory requirements and business case formulation
- One stop planning at the same time **flexible and scalable**
- Module elements provide a series of **measurable, operational performance improvements**, which can be introduced as needed.



# ASBUs Summary

- **Addresses ANSP, aircraft and regulatory requirements**
- **Identify 4 improvement areas**
- **Availability of provisions through Block Upgrades ( 0,1,2, and 3) each comprising a number of threads**
- **Each thread and its elements is explained in a standardized 4-5 pages template**



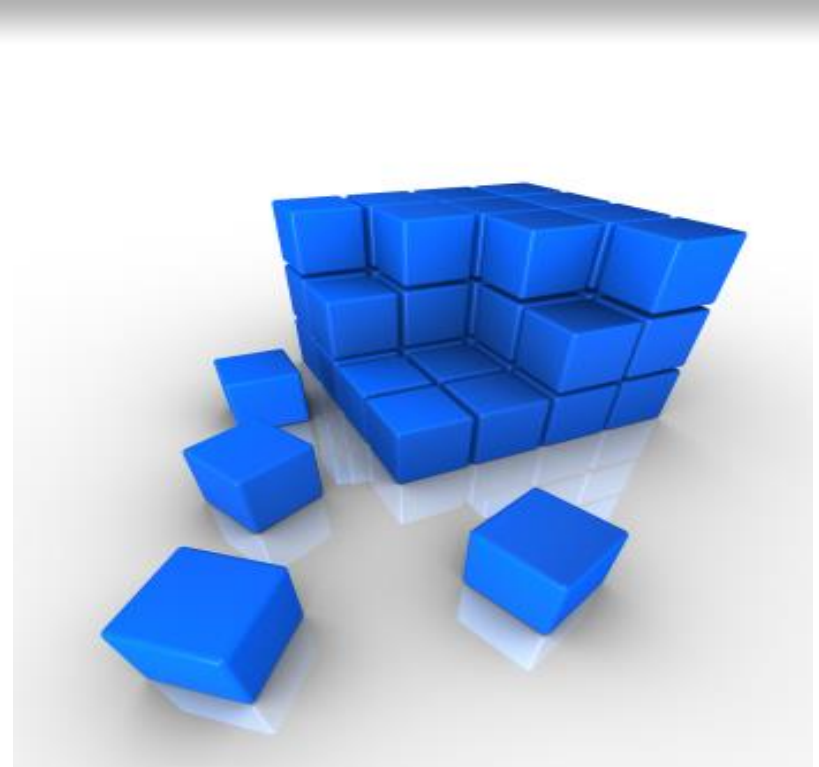


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# ASBUs Summary

- **Provide a series of measurable, operational performance improvements**
- **Organized into flexible & scalable building blocks**
- **Can be introduced as needed**
- **All elements are not required in all airspaces.**

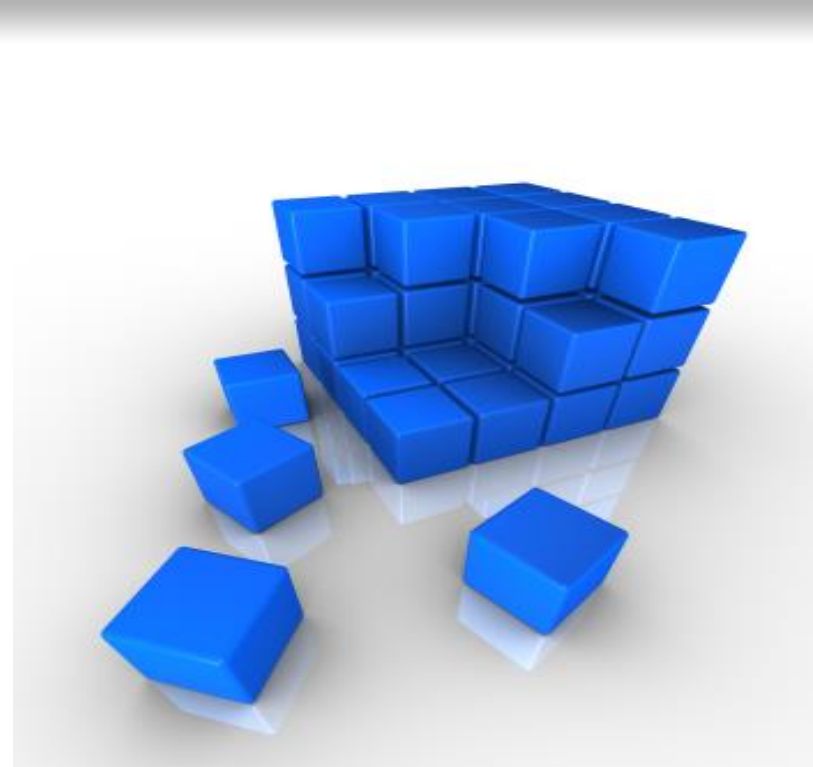




# Enhancement Plan

## Consists of two distinct phases:

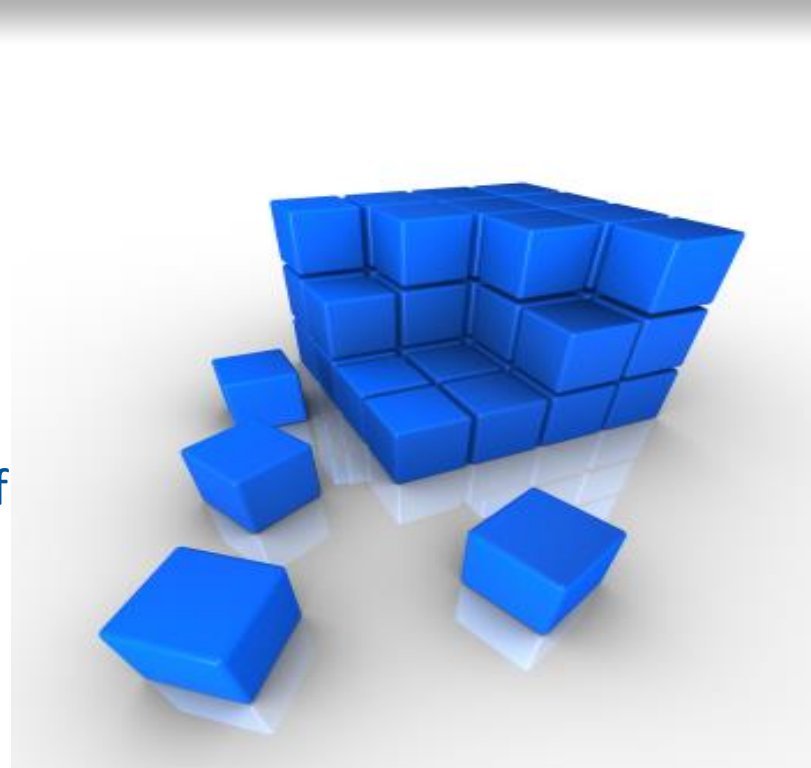
- **Phase one:** harmonization of the provision of air navigation services in according to the ICAO SARPs and PANS
- **Phase two:** to improve the performance of the air navigation system as a whole





# Enhancement Plan

- A **performance-based approach** will set the basis for collaboration among all aviation stakeholders
- Will ensure the achievement of agreed performance targets and the **optimization of resource allocation** for the implementation of air navigation operational improvements.









- Vision
- Planning mechanism based in scenarios
- GANP
- ASBUs
- Enhancement plan.



# Objective

**To level knowledge on the relationship between the GANP, the ASBUs and their operational impact.**



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THANK YOU