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# Global Air Navigation Plan



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- ✈ Global Air Navigation Plan (GANP)
- ✈ Multilayer GANP structure
- ✈ Aviation new era
- ✈ Global performance ambitions
- ✈ GANP conceptual map





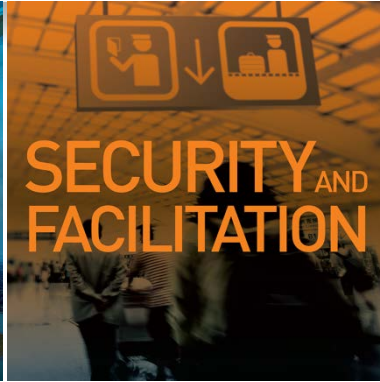
# Vision

✈ Empowering air transport system to provide social development, economic progress worldwide, a safe, efficient and sustainable air navigation system to limit the impact of aviation in climate change.



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A. Safety: Enhance global civil aviation safety.

B. Air Navigation Capacity and Efficiency: Increase the capacity and improve the efficiency of the global civil aviation system.

C. Security & Facilitation: Enhance global civil aviation security and facilitation.

D. Economic Development of Air Transport: Foster the development of a sound and economically-viable civil aviation system.

E. Environmental Protection: Minimize the adverse environmental effects of civil aviation activities.



# Global Air Navigation Plan (GANP)

- ✈ The Global Air Navigation Plan (GANP) is the strategy to achieve a global interoperable air navigation system offering safe, secure and efficient air transport for people and goods worldwide, while limiting the impact of aviation on the environment. The GANP serves as a worldwide reference to transform the air navigation system in an evolutionary and inclusive manner so that no State or Stakeholder is left behind.



# Global Air Navigation Plan (GANP)

- ✈ The Global Air Navigation Plan (**Doc 9750**) is the most important ICAO strategic document on air navigation and the plan to boost 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) . It also supports planning for local and regional implementation.



## Global Air Traffic Management Operational Concept (GATMOC, Doc 9854)

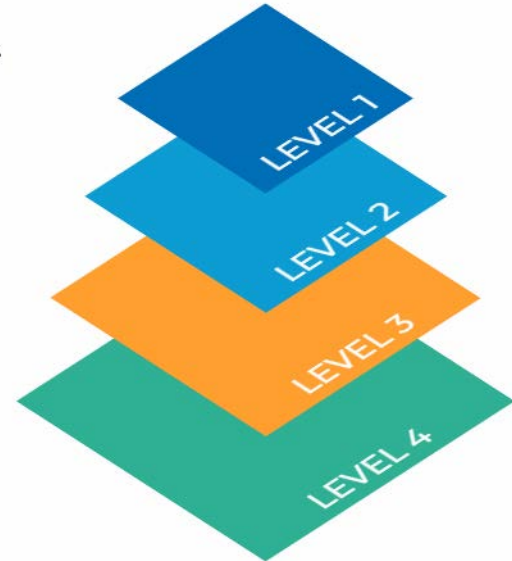
- To achieve an interoperable global air traffic management system, for all users during all phases of flight, that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements.



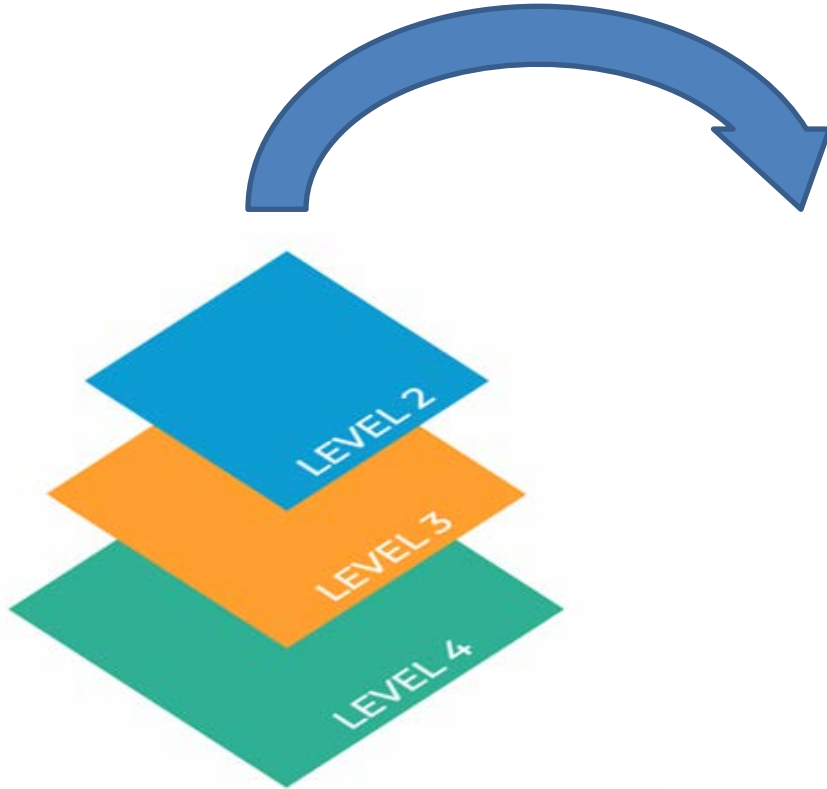


# GANP Multilayer Structure

- ✈ Level 1: Global Strategy
- ✈ Level 2: Global Technical Requirements
- ✈ Level 3: Regional Objectives
- ✈ Level 4: National Objectives



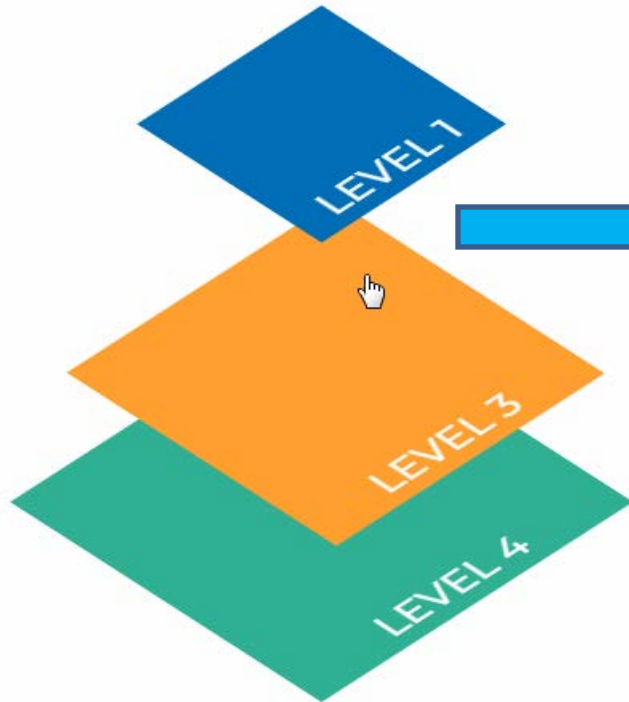




## **GLOBAL STRATEGY**

Provides high level strategic guidelines for the decision-makers to drive the evolution of the global air navigation system towards an agreed common vision.

**Doco 9750**  
**Global Air Navigation Plan**



### GLOBAL TECHNICAL

Supports technical managers planning the implementation of air navigation basic services and in affordable new operational improvements.



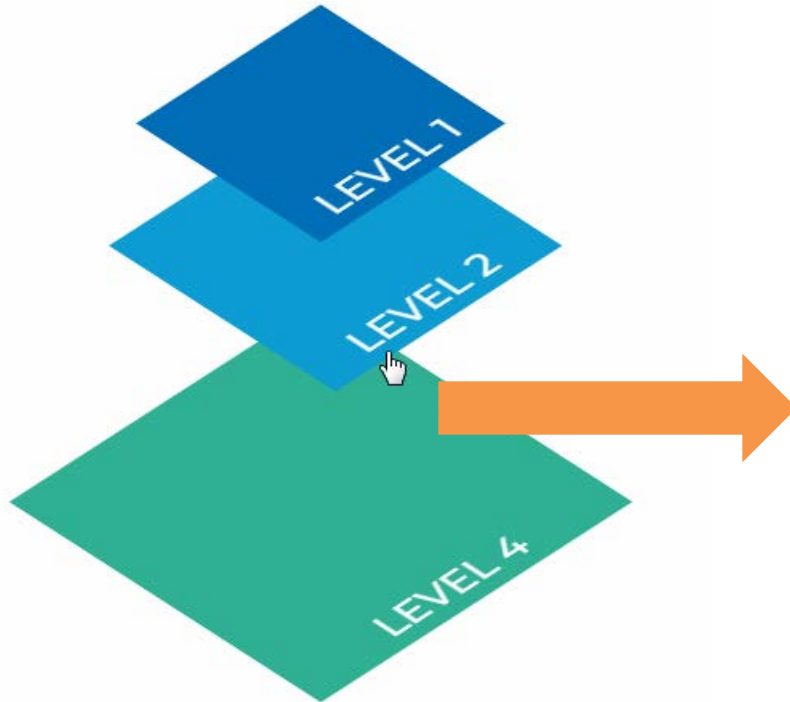
ASBUs



AN-SPA



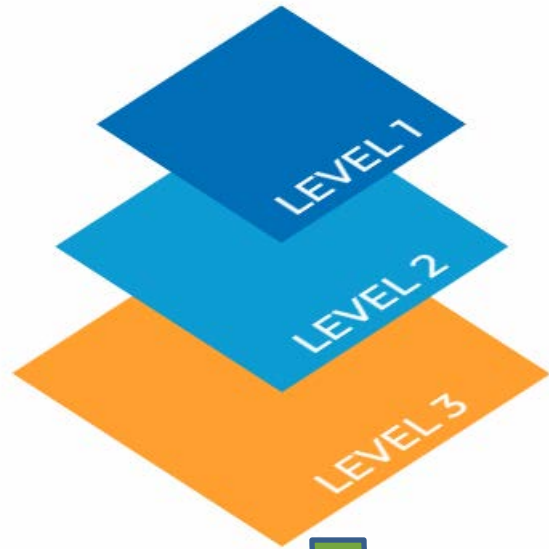
BBBs



## REGIONAL

Addresses regional and subregional necessities aligned with the global objectives

 AFI ANP	 APAC ANP
 EUR ANP	 MID ANP
 NAM ANP	 NAT ANP
 <b>CARSAM ANP</b>	



**NATIONAL**

Development of the air navigation plans by the States, in coordination with stakeholders, aligned with regional and global plans.



NANP  
TEMPLATE



CBA  
CHECKLIST



- ✈ The fourth level, under the responsibility of States, focuses on national planning. The development by the States, in coordination with stakeholders, of air navigation plans, aligned with regional and global plans, is crucial to achieve the common vision that is being carried out in the GANP. These air navigation plans serve as reference documents for national investment in air navigation infrastructure.

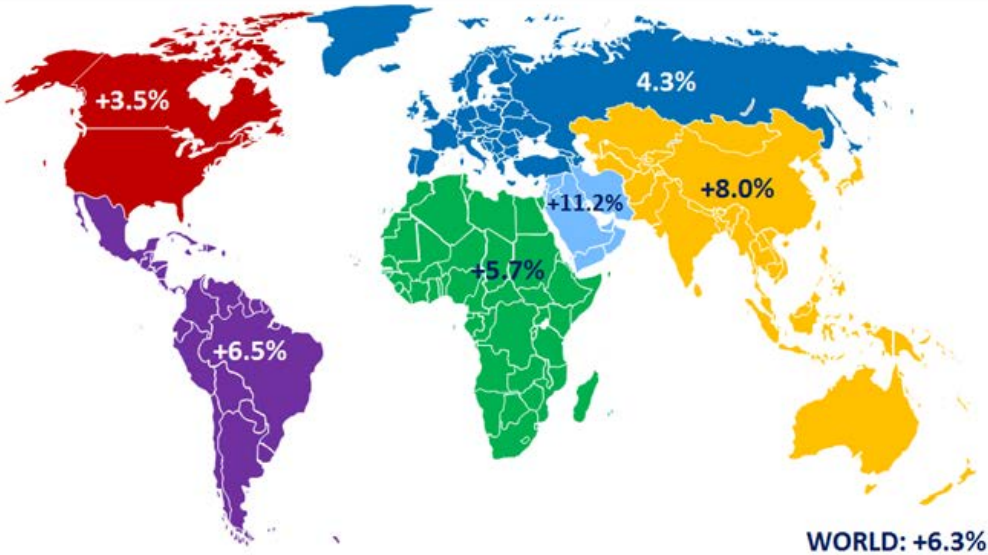


# States consultation

- ✈ Have you identified stakeholders that affect national civil aviation operations?*
- ✈ Do you know the Strategic Objectives of your State?*
- ✈ Is your investment plan focused on the air navigation development of your State?*



# Why should we prepare?



<https://www.icao.int/Newsroom/Pages/ES/traffic-growth-and-airline-profitability-were-highlights-of-air-transport-in-2016.aspx>



# New Era in Aviation

✈ New forms of demand, emerging technologies and innovative ways of doing business, together with human talent, are returning the feeling of astonishment and excitement to aviation. In addition, they are bringing new opportunities that require a transformation of the air navigation system to boost social welfare throughout the world.





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CAPABILITY

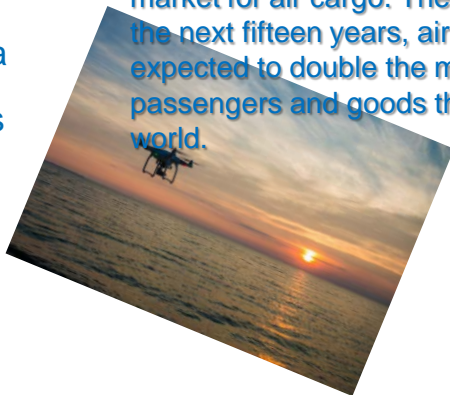
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# Human Talent Management



The aviation industry provides personal and social benefits. Gather people: families, friends and business colleagues. It gives people the freedom to be almost anywhere in just 24 hours and has turned a great planet into a small world full of huge and infinite opportunities. But this is just the half of the story.

✈ World population and the growth of prosperity will make air travel accessible to more people. Similarly, the current trend towards economic globalization will further strengthen the need to rapidly move high-value goods around the world, creating a growing market for air cargo. Therefore, within the next fifteen years, air traffic is expected to double the movement of passengers and goods throughout the world.



✈ Enabling technologies, such as increasingly autonomous systems and artificial intelligence, encompass a wide range of aviation capabilities ranging from the capabilities of today's automatic systems, such as autopilots and remote pilots, to the highly sophisticated systems that would be necessary for air traffic management systems to perform complex tasks.

**Cybersecurity**

**Competitiveness**

**Conectivity**

**Environment-friendly**



# Global performance ambitions

## ✈ Safety

ICAO Global Aviation Safety Plan(GASP) implementation

✈ Access and equity will be key points in the next years

No member should be treated unfairly.

✈ ATM community participation.

Collaboration

✈ Cost-effectiveness

Maximum benefit at a minimal cost.



# Global performance ambitions

✈ Flexibility.

Predictable planned operations to support the business model.

✈ Predictability.

It is critical in terms of cost-effectiveness, operational efficiency and commercial credibility.

✈ Global interoperability

Data sharing





# Global performance ambitions



## Security

Zero significant interruptions due to cyber incidents.



# Global performance ambitions

## ✈ Flexibility

Making common-benefit decisions, the air navigation system should be flexible enough to integrate changes in commercial trajectories to the frequency required by airspace users.





# Global performance ambitions



## ✈ Efficiency

As a side effect of this evolution, the cancellations and operational deviations will be reduced, and the flight efficiency in all flight phases and all the dimensions of the trajectory (delay / longitudinal / speed, more lateral and vertical) will improve to get closer to the user desired airspace, only subject to safety and noise restrictions.



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# Global performance ambitions

## ✈ Environment

Contribute to the global goals of carbon emissions reduction.





# States consultation

- ✈ ¿What actions are executed by the States for the implementation of safety management systems?
- ✈ Are you getting prepared for the future? What activities have been placed to support cybersecurity? Information integrity?
- ✈ What information do you share with your adjacent States? Do they make decisions based on information in real time?
- ✈ Is your airspace ready to become a flexible airspace?
- ✈ Are your activities related to the objectives of your users?
- ✈ What benefit will you provide in the future to make your services attractive to your users?



## Conceptual Roadmap

### 1EVOLUTIONARY STEP 1: FLIGHT OPERATIONS IN A DIGITAL RICH ENVIRONMENT

#### Opportunities:

The use and design of specific decision-supporting tools and the automation of some decision-making processes in ATM.

#### Challenges:

Take advantage of the benefits that technology provides, exchange information and the search for flexible and safe use of data.





## Conceptual Roadmap

### EVOLUTIONARY STEP 2: TIME-BASED OPERATIONS ENABLED BY AN INFORMATION REVOLUTION

#### Opportunities:

Sharing of information in a system-wide environment, will improve the predictability of the system. The application of big data analysis will also enable a more proactive approach to safety.

#### Challenges:

Assure that all required systems and data are connected and available.



## Conceptual Roadmap

### EVOLUTIONARY STEP 3: TRAJECTORY-BASED OPERATIONS ENABLED BY FULL CONNECTIVITY THROUGH THE INTERNET OF AVIATION

#### Opportunities:

The internet of aviation takes the next step on information by turning every actor into a node, a source of and user of information

#### Challenges:

**The use of infrastructure designed for new services.**



## Conceptual Roadmap

### EVOLUTIONARY STEP 4: TOTAL PERFORMANCE MANAGEMENT SYSTEM FOCUS ON BUSINESS/MISSION NEEDS

#### Opportunities:

Data sharing, decision making based in real time and business focused.



#### Challenges:

- Moving the decision making to the edge requires new approaches to ensuring access and equity. Care must be taken that the user with the fastest IT does not dominate the process. The simple rules for rationing in an ATFM and time-based scheduling need to be replaced by “market rules” with market type regulation to allow for the increased operator flexibility without inhibiting access and equity.



# Global Interoperability

- The GANP encourages innovation and urges the aviation community to modernize the provision of air navigation services by applying innovative solutions. This encourages users to select the most mature alternative and avoid the costs of legacy solutions.
- The GANP provides the community with a flexible and scalable family of solutions (applications) that fit the diverse needs of the global users. It is recognized that “one size does not fit all” and the functionalities can be implemented as needed, based on specific and agreed upon operational requirements. The advantages of this pre-coordinated approach ensures interoperability and the overall harmonization of operations.
- There is no end-state, or end-date to the evolution of the air navigation system. Continuous improvement (change) will ensure that aviation adapts to global, regional and local opportunities and challenges, in a timely manner. The GANP provides a path to this safe, orderly and efficient evolution. New users, new operations and new roles for the players are all part of this structured transformation. Through the leadership demonstrated by the creation of this Plan and the vision of ICAO embodied by the GANP, the aviation community can rest assured that a relevant air navigation evolution for all will warrant that no country, or stakeholder, is left behind.



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## ICAO GANP Webpage

<https://www.icao.int/airnavigation/Pages/GANP-Resources.aspx>



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THANK YOU