ICAO CAPACITY & EFFICIENCY

Global Air Navigation Plan
SWIM Implementation

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Procedures for Air Navigation Services of Aeronautical Information Management (PANS-AIM) Workshop

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AGENDA

- Global Air Navigation Plan (GANP)
- Multilayer GANP structure
- Global performance ambitions
- GANP conceptual map
- Global harmonization

Vision

- The GANP (Global Air Navigation Plan) reflects the ultimate objectives of the air navigation system and 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.

PERFORMANCE AMBITIONS

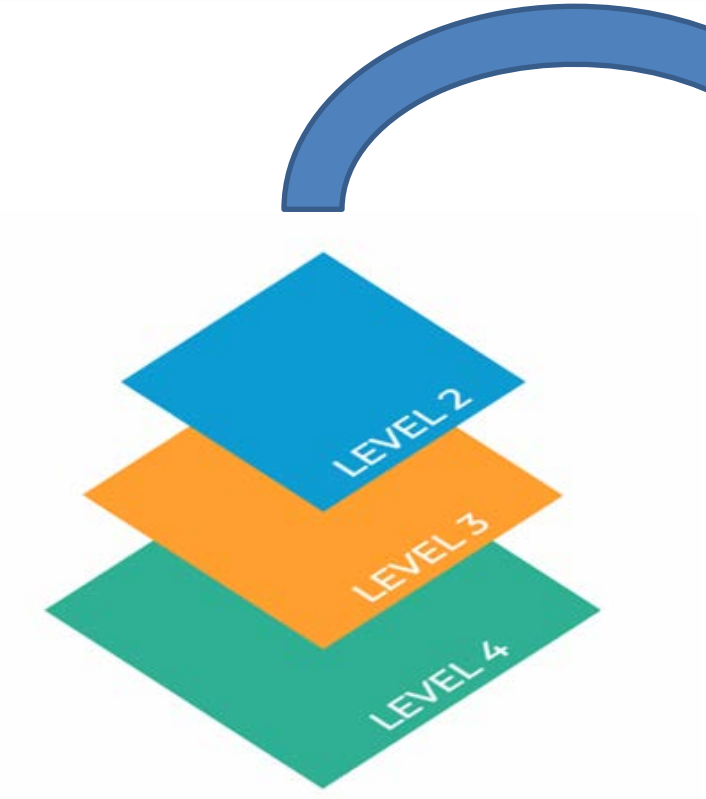
In addition to the fundamental aviation principles of safety, security and economic and environmental sustainability, there are several consequential performance requirements that the air navigation system must meet to fulfil the ever-growing expectations of society in general and, in particular, the aviation community. The air navigation system's required level of performance involves difficult decisions and strong commitments. Based on what we know about the future and its opportunities and challenges, the air navigation system should provide for certain performance ambitions.

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

GANP Multilayer Structure

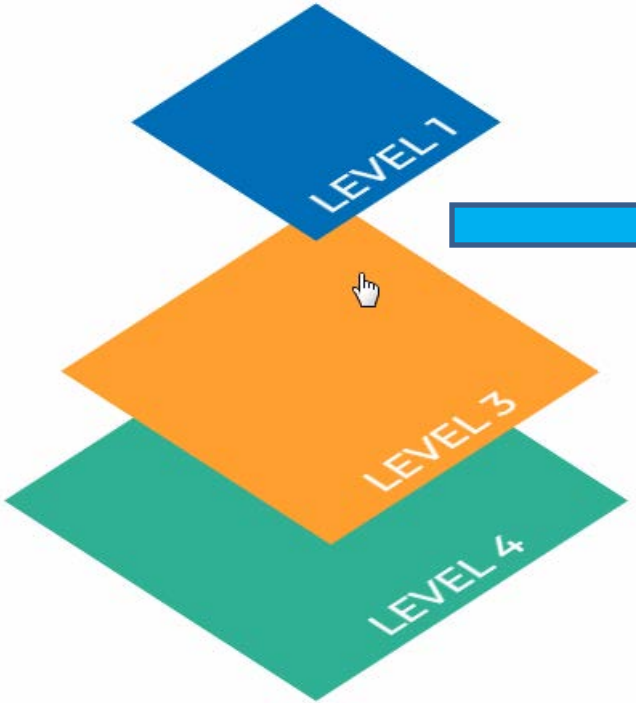
- Level 1: Global Strategy
- Level 2: Global Technical Requirements
- Level 3: Regional Objectives
- Level 4: National Objectives



GLOBAL STRATEGY

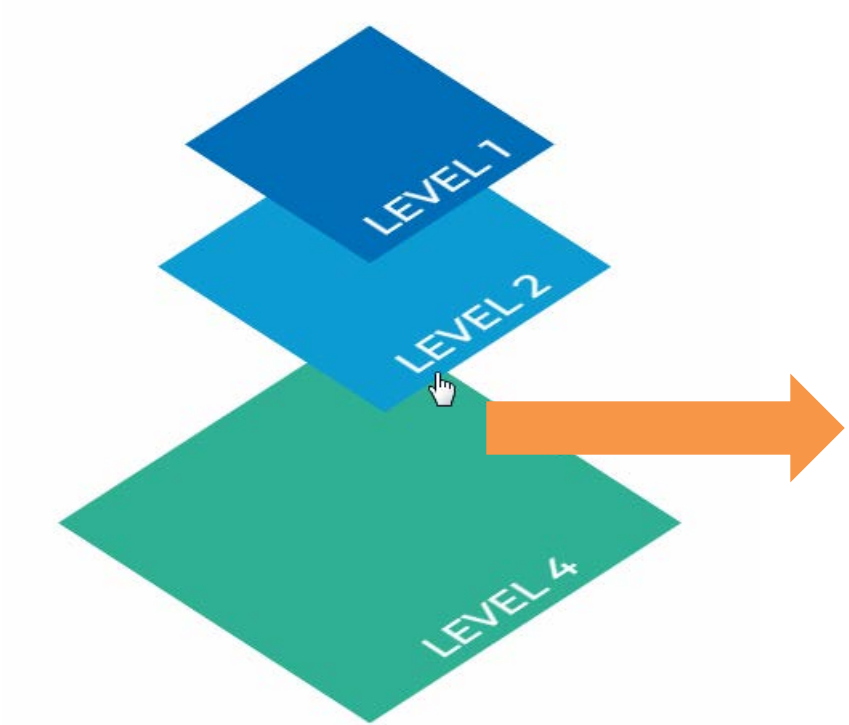
Provides high level strategic guidelines for the decision-makers to drive the evolution of the global air navigation system towards an agreed common vision.

Doc 9750
Global Air Navigation Plan



GLOBAL TECHNICAL

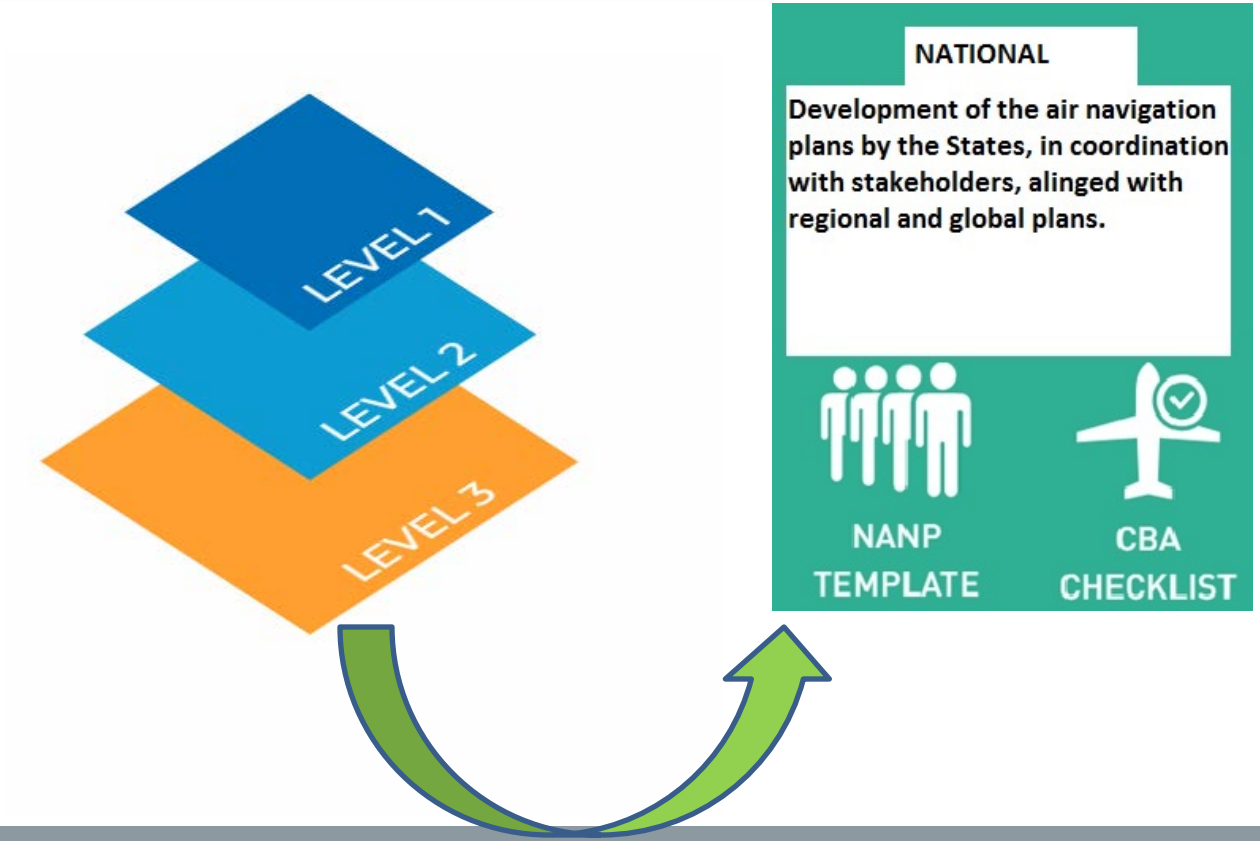
Supports technical managers planning the implementation of air navigation basic services and in affordable new operational improvements.



REGIONAL

Addresses regional and subregional necessities aligned with the global objectives

- AFI ANP
- APAC ANP
- EUR ANP
- MID ANP
- NAM ANP
- NAT ANP
- CARSAM ANP


LEVEL 1
LEVEL 2
LEVEL 3
NATIONAL
Development of the air navigation plans by the States, in coordination with stakeholders, alinged 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.

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. But this is just the half of the story.

Cybersecurity

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

Human Talent Management

Competitiveness

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, to the highly sophisticated systems that would be necessary for air traffic management systems to perform complex tasks.

Conectivity

Environment-friendly

Conceptual Roadmap

EVOLUTIONARY 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 replaces by “market rules” with market type regulation to allow for the increased operator flexibility without inhibiting access and equity.

ASBU Thread

– Another key concept in the updated framework.

– The ASBU threads already existed in previous versions of the GANP and they were key feature areas of the air navigation system where improvements are needed in order to achieve the vision outlined in the Global ATM Operational Concept.

– The ASBU threads are been categorized in 3 groups:

Operational threads: ACDM, APTA, NOPS…
Information threads: SWIM, AMET, **DAIM**, FICE,…
Technology threads: COMS, COMI, NAVS, ASUR

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 to 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.**

GLOBALLY HARMONIZED PERFORMANCE MANAGEMENT PROCESS

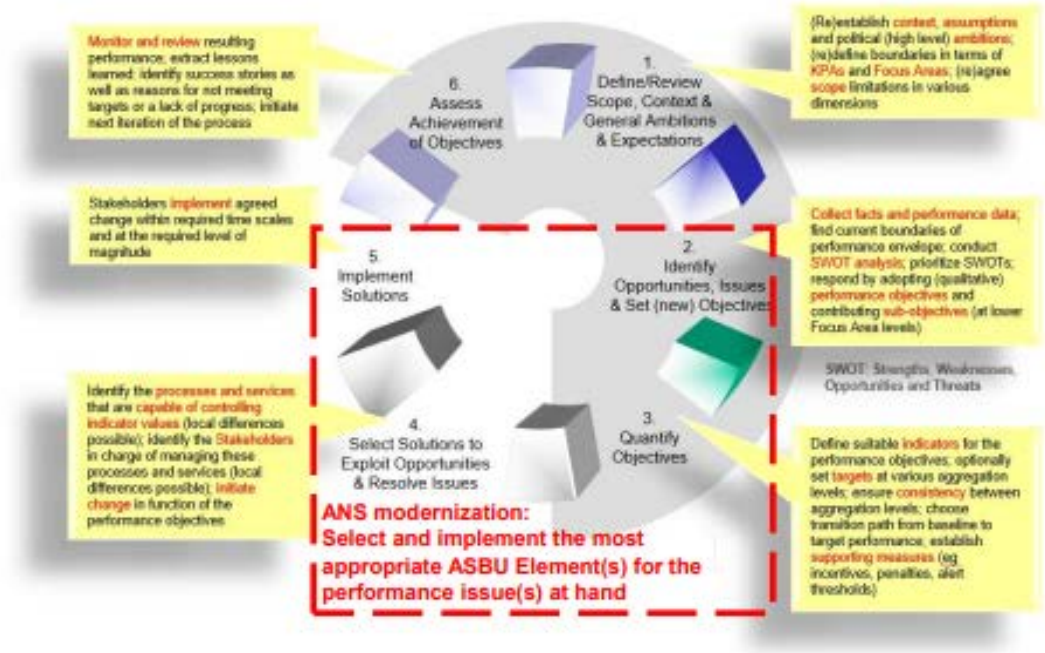
- GANP is about opportunities, the appropriate way to utilize the GANP is to apply a performance-based approach. A performance-based approach is results-oriented, helping decision makers set priorities and determine appropriate trade-offs that support optimum resource allocation while maintaining an acceptable level of safety performance and promoting transparency and accountability among stakeholders.

- ICAO advocates for a globally harmonized performance management process based on six well-defined steps.

- The goal of this cyclic six-steps method is to identify optimum solutions based on operational requirements and performance needs so that the expectations of the aviation community can be met by enhancing the performance of the air navigation system and optimizing allocation and use of the available resources.
  - **This process can be applied at global, regional and local levels. At a global level, the performance ambitions and a conceptual roadmap resulted from the application of this approach.**

- States and Regions should use, in collaboration with all the members of the aviation community, this performance management process as the basis to develop national and regional air navigation plans adapted to their specific operational requirements and performance needs. AN-SPA (*Air Navigation System Performance Assessment)*, is an automated tool to guide the user on the application of the six-steps method at a local level.

The ICAO six-steps method



SWIM

SWIM-B2/1	Information service provision
SWIM-B2/2	Information service consumption
SWIM-B2/3	SWIM registry
SWIM-B2/4	Air/Ground SWIM for non-safety critical information
SWIM-B2/5	Global SWIM processes
SWIM-B3/1	Air/Ground SWIM for safety critical information

https://www4.icao.int/ganpportal/

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