ICAO UNITING AVIATION

THE GANP
PERFORMANCE MANAGEMENT PROCESS

Olga de Frutos
Air Navigation Bureau
International Civil Aviation Organization (ICAO)

Agenda

- Sixth Edition of the GANP
- Performance Management Process
- Regional Air Navigation Plans-PBIP

Sixth Edition of the GANP- 2019

- **6th Edition of the GANP**
  - Multilayer structure
  - GANP Portal

  https://www4.icao.int/ganpportal/
- **Included improvements**:
  - Communication: Tailored to different audiences
  - Accessibility: Publically available
  - Global, Regional and national

  air navigation planning alignment
  - Digital:
    - Consistent
    - Relevant
    - Tool development

- **Global Strategic Level**

(https://www4.icao.int/ganpportal/GanpDocument#/?_k=cjyevq)

  - High-level decision makers
  - Umbrella the other three layers
  - Challenges and opportunities
    - Continued support of social well-being worldwide
    - Accommodation of increasing demand and new types of demand
    - Use of advanced technologies
    - Human capability and capacity
    - Emerging, new and adapted business models
  - Vision
    - URGENT TRANSFORMATION: TURNING CHALLENGES INTO OPPORTUNITIES

- **Global Strategic Level**
  - A Performance-driven strategy: 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

- **Global Strategic Level**
  - Working on common solutions: Conceptual Roadmap

Four evolutionary steps:

- EVOLUTIONARY STEP 1: FLIGHT OPERATIONS IN A DIGITAL RICH ENVIRONMENT
- EVOLUTIONARY STEP 2: TIME-BASED OPERATIONS ENABLED BY AN INFORMATION REVOLUTION
- EVOLUTIONARY STEP 3: TRAJECTORY-BASED OPERATIONS ENABLED BY FULL CONNECTIVITY THROUGH THE INTERNET OF AVIATION
- EVOLUTIONARY STEP 4: TOTAL PERFORMANCE MANAGEMENT SYSTEM FOCUS ON BUSINESS/MISSION NEEDS

  - Scalable transformation for the evolution of the air navigation system
    - Increase cooperation and support
    - Forefront of innovation
    - Modernization of the global air navigation system

- **Global Technical Level**
  - Technical managers
  - Global technical frameworks
    - Basic Building Block (BBB)

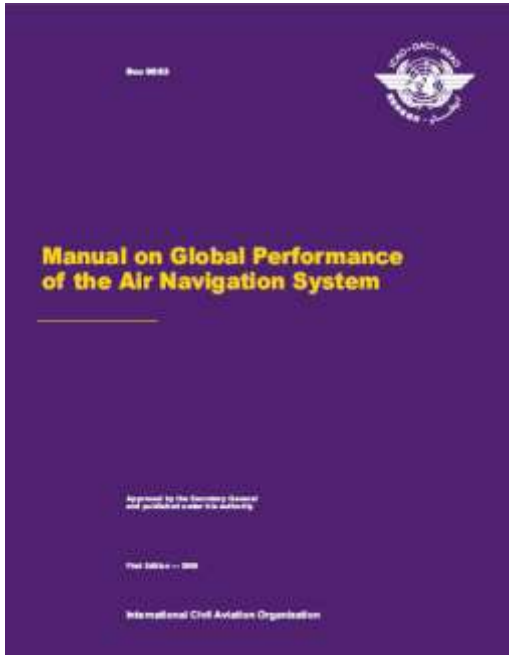
    https://www4.icao.int/ganpportal/BBB
    - Aviation System Block Upgrade (ASBU)

    https://www4.icao.int/ganpportal/ASBU
  - Performance Framework

https://www4.icao.int/ganpportal/ASBU
    - Performance Objectives
    - List of KPIs

More info: tutorial: https://www4.icao.int/ganpportal/Tutorial

PERFORMANCE MANAGEMENT PROCESS



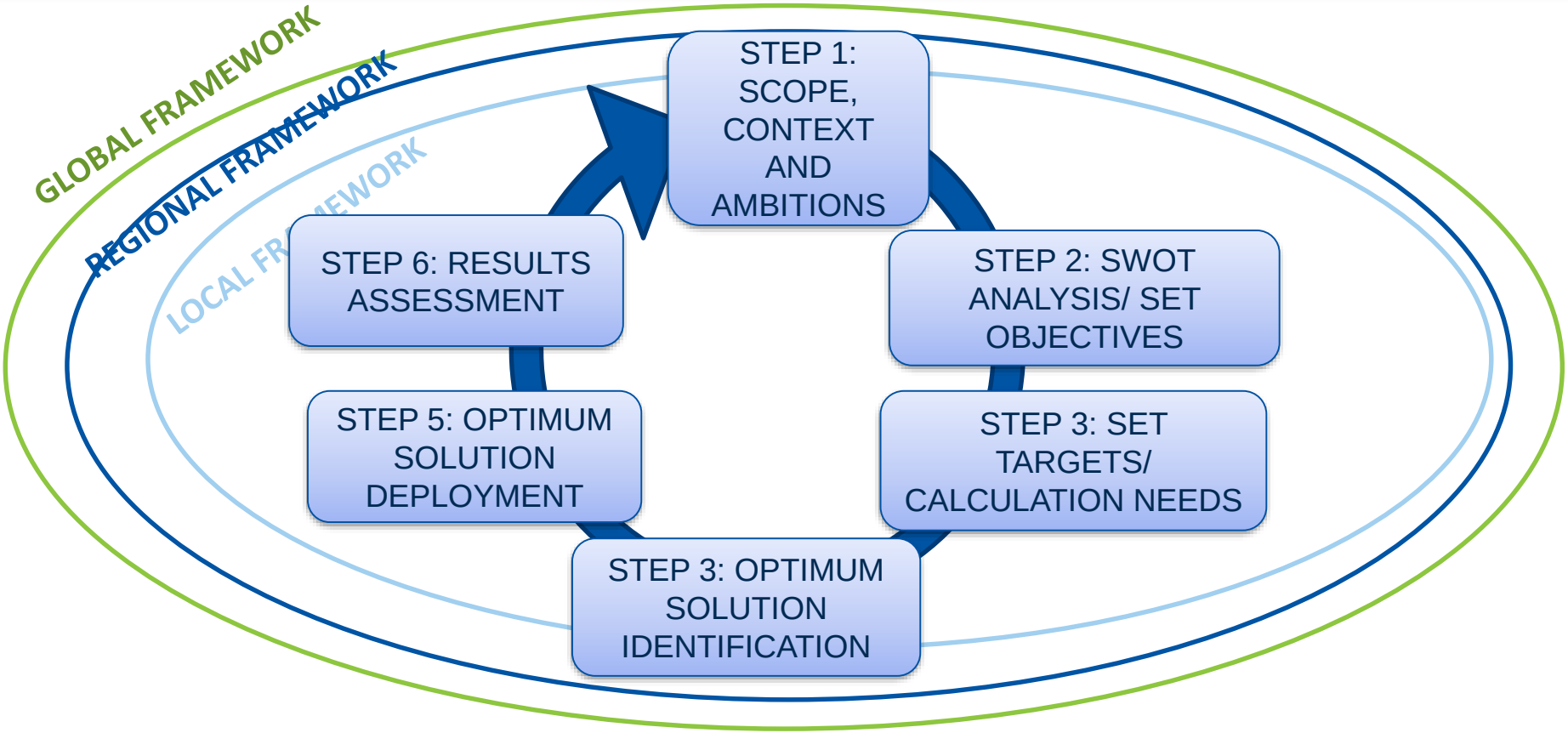
Principles:

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

*“Fall in love with the **problem**, not with the solution”*

Six steps Method

- STEP 1: Scope, Context & General Ambitions and expectations
- STEP 2: SWOT Analysis/ set objectives
- STEP 3: Set of targets/ Calculation of needs
- STEP 4: Optimum solution identification
- STEP 5: Optimum solution deployment
- STEP 6: Results assessment


GLOBAL FRAMEWORK
REGIONAL FRAMEWORK
LOCAL FRAMEWORK
STEP 1: SCOPE, CONTEXT AND AMBITIONS
STEP 2: SWOT ANALYSIS/ SET OBJECTIVES
STEP 3: SET TARGETS/ CALCULATION NEEDS
STEP 3: OPTIMUM SOLUTION IDENTIFICATION
STEP 5: OPTIMUM SOLUTION DEPLOYMENT
STEP 6: RESULTS ASSESSMENT

STEP 1: SCOPE, CONTEXT & AMBITIONS

- Context
  - 2019 Global Air Navigation Plan
    - Global Strategic Level: Performance Ambitions
      - Objective
      - ICAO KPAs
      - Design criteria
    - Global Technical Level: Performance Objectives
  - Regional Air Navigation Plan
    - ANP Vol III
    - Specific Performance Objectives based on regional requirements

STEP 1: SCOPE, CONTEXT & AMBITIONS

- Scope
  - National Air Navigation Plan
    - Performance Targets: who, when and where
    - Make clear assumptions on what is “surrounding” it
  - National Development Plan

STEP 2: SWOT Analysis/ set objectives

- Operational analysis (baseline performance)
  - Data collection, process and analyze
  - Monitor current operations
    - KPIs (GANP 2016)
  - Traffic forecast
- SWOT Analysis
  - Strengths, Weaknesses, Opportunities and Threats

→Performance objectives

STEP 2: SWOT Analysis/ set objectives

- National level
  - National Performance Framework
    - Performance Objective
    - High level SWOT analysis
- Local Level
  - KPIs
    - National Performance Framework
    - Specific
  - Detailed SWOT analysis

STEP 3: TARGETS & NEEDS

- Agree & Prioritize performance objectives
  - Focus area within KPAs

  →Performance objectives
  - Prioritization

STEP 3: TARGETS & NEEDS

- **SMART** Objectives
  - **S**pecific
  - **M**easurable
  - **A**chievable
  - **R**elevant
  - **T**ime-bounded

STEP 3: TARGETS & NEEDS

- **SMART** Objectives
  - **S**pecific
  - **M**easurable

  } PERFORMANCE INDICATORS → ***ICAO KPIs Catalogue***

  - Achievable
  - Relevant
  - Time-bounded

STEP 3: TARGETS & NEEDS

- **SMART** Objectives
  - **S**pecific
  - **M**easurable
  - **A**chievable
  - **R**elevant
  - **T**ime-bounded

PERFORMANCE INDICATORS

VALUE= f(baseline)

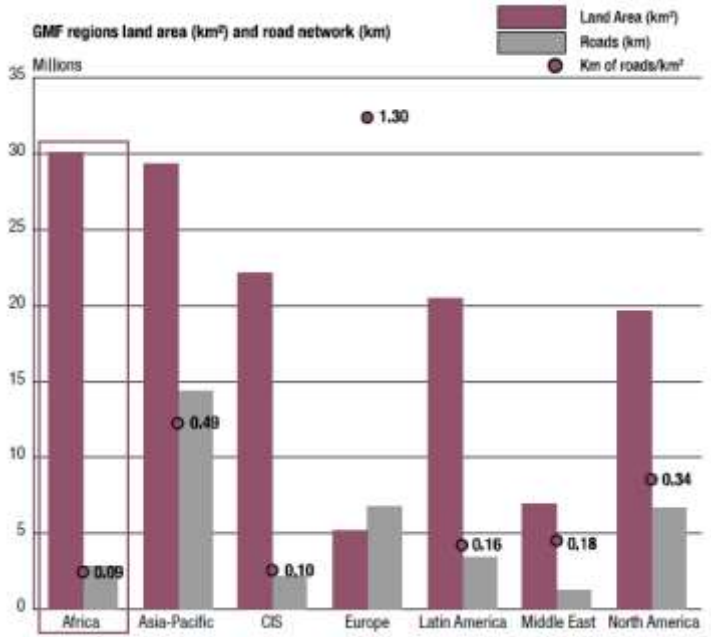
SPEED PROGRESS

PERFORMANCE TARGETS = **PERFORMANCE BASELINE** = **PERFORMANCE NEEDS**

Africa

- **Aviation essential for further development**

- **Challenges**
  - Nature: desserts, forest, ocean,…
  - Slow liberalization
  - Limited resources
  - Security



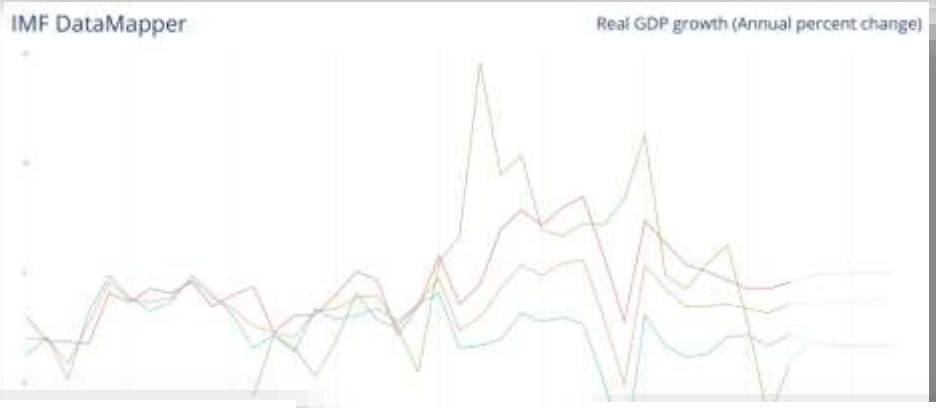
Source: IRF, The World Bank, Airbus GMF 2017

Africa

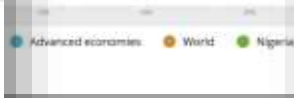
- **Traffic statistics: Average annual growth 2016-2036**

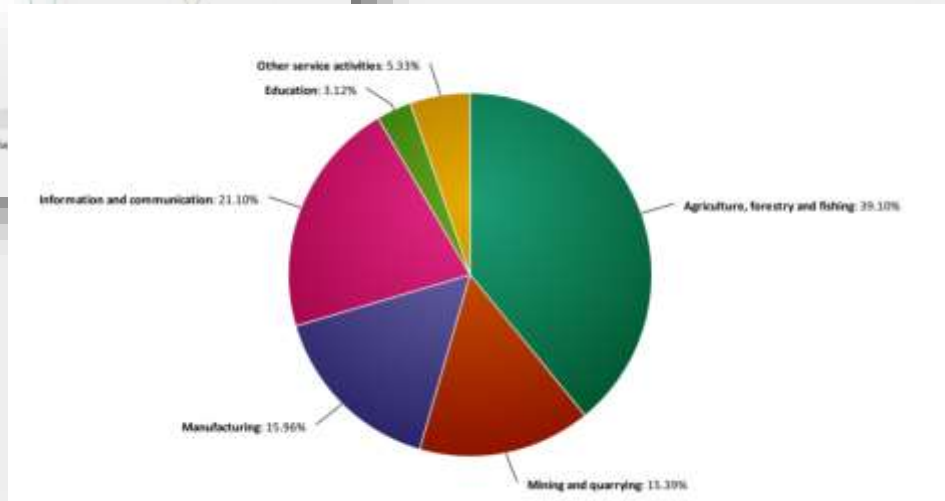
Segment	Boeing
Africa -Africa	6.5%
Africa - Europe	4.7%
Africa - Middle East	7.6%
Africa - North America	5.9%
Africa - Southeast Asia	5.7%

Nigeria



Source: NIGERIAN NATIONAL BUREAU OF STATISTICS





Nigeria

- **FIR: Kano**
  - Sectors: Kano and Lagos
- **Several TMAs**
- **30 aerodromes, 9 international aerodromes**

YEAR 2016	Abuja	Calabar	Enugu	Kaduna	Kano	Lagos	Maiduguri	Port Harcourt	Sokoto
Passengers	936,814	199,880	353,972	129,804	413,906	2,984,829	10,0928	1,041,821	96,358
Cargo (kg)	3,313,209	2,587	-	-	6,930	175,740,101	-	5,532,259	-
Operations	12,730	3,129	5,394	2,407	4,666,520	28,307	4,411	19,848	1,966

Based on this data…

- How is the system performing?
- Do we have delays?
- Are we punctual?
- Are we accommodating our demand?

Nigeria

		Abuja	Kano	Lagos	Port Harcourt
KPI01	DEPARTURE PUNCTUALITY (10 MIN)	10%	63%	63%	7%
KPI02	TAXI-OUT ADDITIONAL TIME (MIN)	5 over 7min	3*	3*	6 over 6min
KPI 09	AIRPORT PEAK ARRIVAL CAPACITY (RADAR)	30	30	45	30
KPI 09	AIRPORT PEAK ARRIVAL CAPACITY (NO RADAR)	12	15		15
KPI 10	AIRPORT PEAK ARRIVAL THROUGHPUT	28	28	42	28
KPI 11	AIRPORT ARRIVAL CAPACITY UTILIZATION	75%	75%	67%	75%
KPI 13	TAXI-IN ADDITIONAL TIME (MIN)	3 over 7min	3	5	5 over 5min
KPI 14	ARRIVAL PUNCTUALITY	15%	7%	1%	15%

So let's me ask again, based on this data…

- How is the system performing?
- Do we have delays?
- Are we punctual?
- Are we accommodating our demand?

STEP 4: IDENTIFICATION OPT. SOLUTION

- Assessment of the SWOT analysis
  - Dominant factors:

    main constraints/opportunities

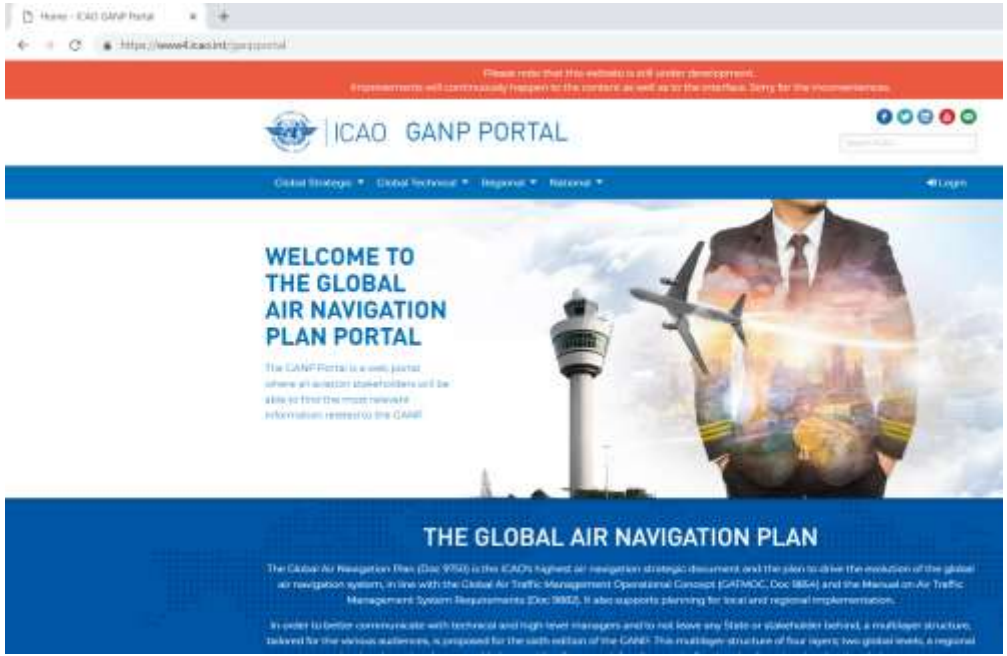
    → selection and prioritization of opportunities and issues

STEP 4: IDENTIFICATION OPT. SOLUTION

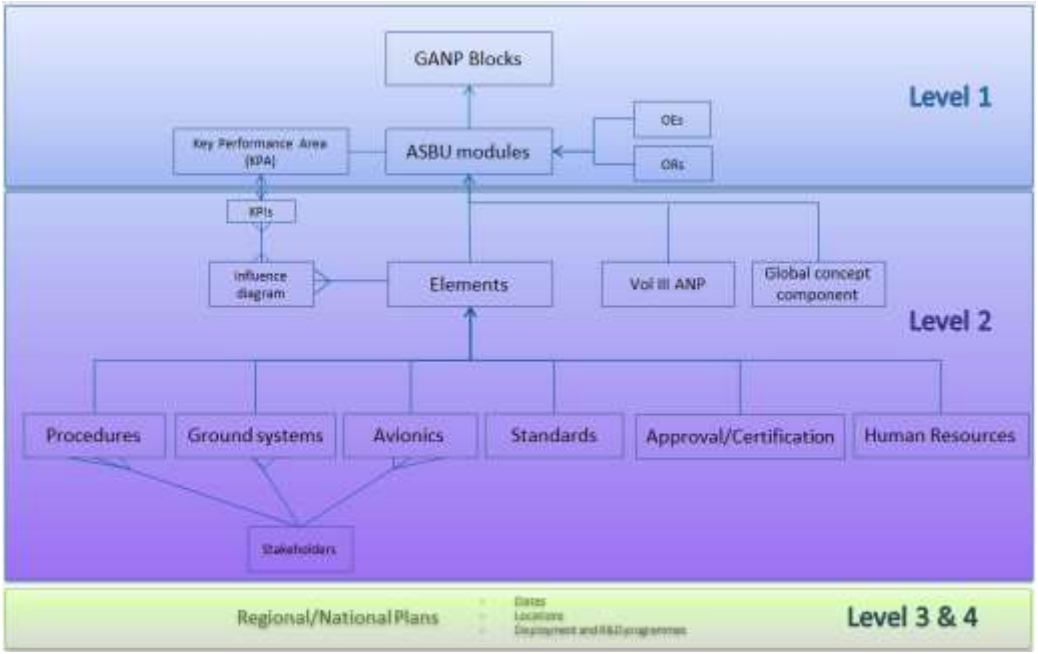
- List of options
  - High-level strategy
  - Operational concept
  - Technical enablers
  - Baseline
  - Availability
  - Safety Assessment
  - Human Factors Assessment
  - Assessment of expected performance

ASBU Framework

Digital ASBU framework



STEP 4: IDENTIFICATION OPT. SOLUTION



STEP 4: IDENTIFICATION OPT. SOLUTION

- Make decisions
  - Information available
    - Scope
    - Performance objectives and targets
    - Assessment of SWOT analysis
    - List of solutions (ASBUs)

Plus…

- Associated Safety Assessment
- Associated Human Factors Assessment
- Associated Environmental Impact Assessment
- Associated Cost-benefits analysis

Safety assessment guidance

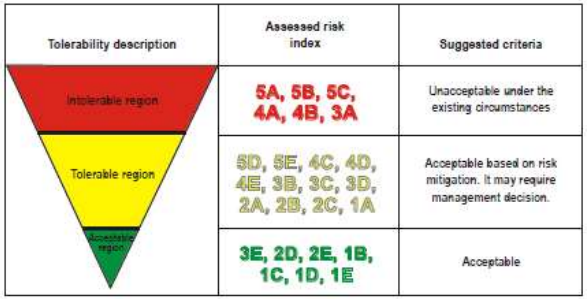
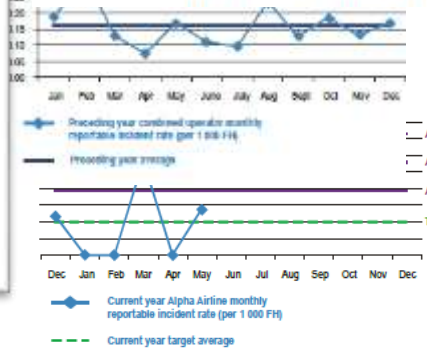
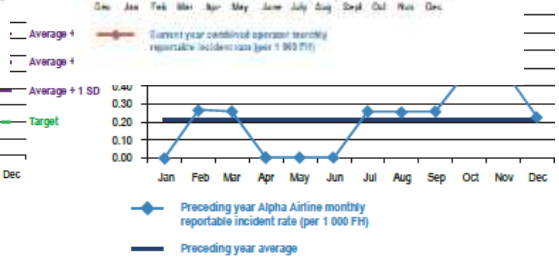
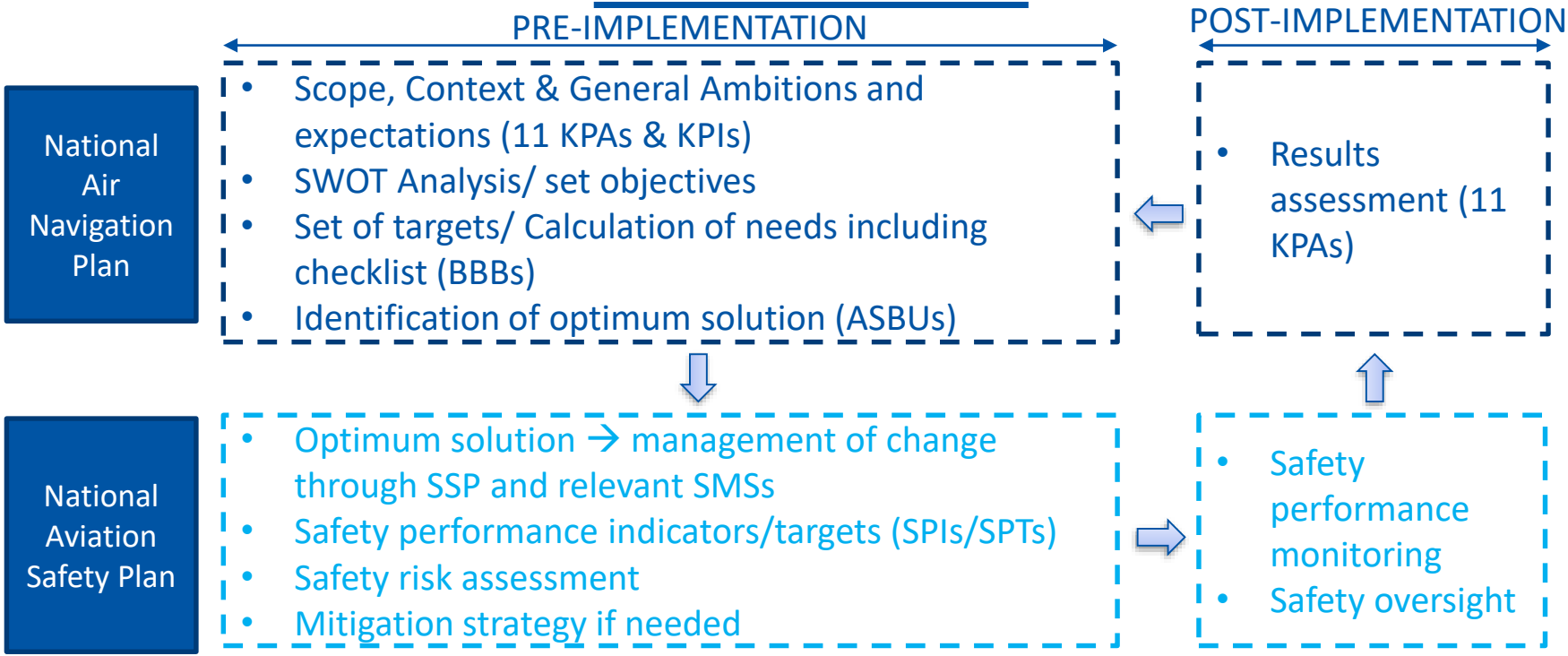


Figure 2-14. Safety risk tolerability matrix

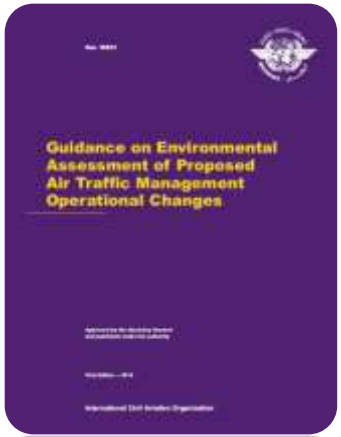


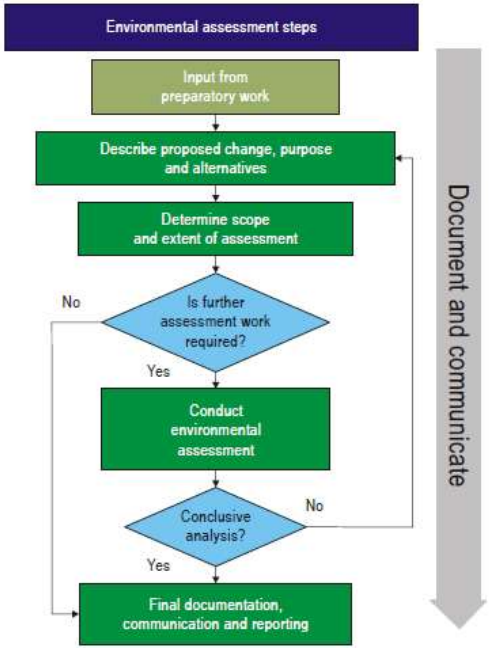


GANP & GASP TECHNICAL ALIGNMENT

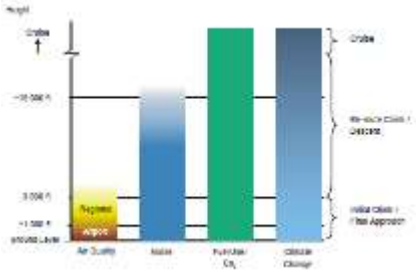


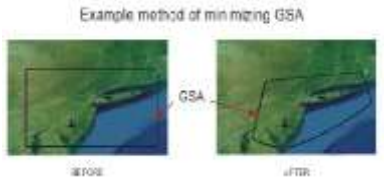
Environmental impact assessment guidance



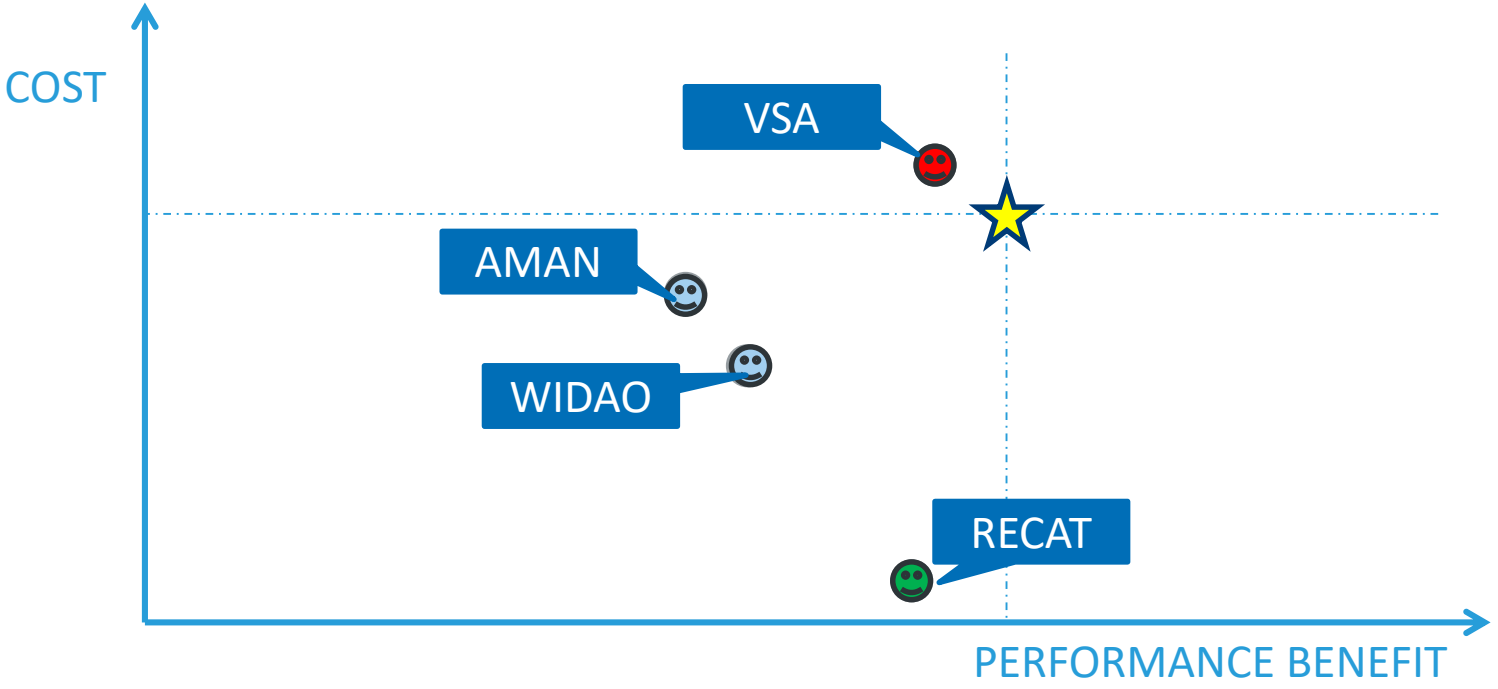


Impact \ Height AGL	Below 1 000 ft (300 m)	1 000-3 000 ft (300-900 m)	3 000-10 000 ft (900-3 000 m)	Above 10 000 ft (3 000 m)
Air quality (e.g. NOx, PM, etc.)	Most relevant	Relevant (Note 1)	Less relevant	Less relevant
Noise	Potentially (Note 2)	Relevant	Relevant	Potentially (Note 3)
Fuel use / CO_2	Relevant	Relevant	Most relevant (Note 4)	Most relevant (Note 4)
Climate change	Relevant	Relevant	Most relevant (Note 5)	Most relevant (Note 5)

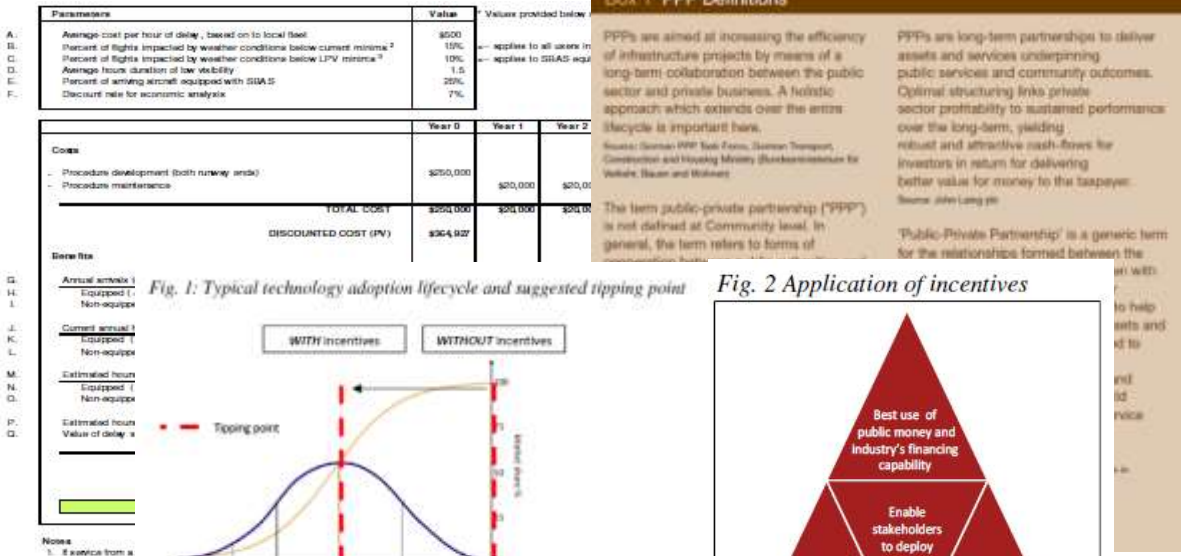




CBA



Cost-Benefits Analysis guidance



Parameters	Value
Average cost per hour of delay, based on to local fleet	$500
Percent of flights impacted by weather conditions below current minima [2]	15%
Percent of flights impacted by weather conditions below LPV minima [3]	10%
Average hours duration of low visibility	1.5
Percent of arriving aircraft equipped with SWAS	25%
Discount rate for economic analysis	7%

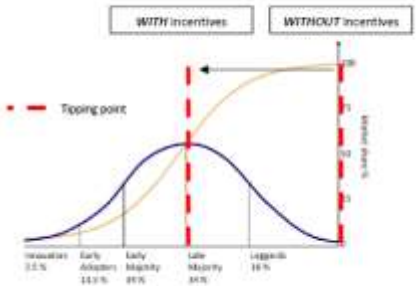
Costs	Year 0	Year 1	Year 2
Procedure development (both runway ends)	$250,000		
Procedure maintenance		$20,000	$20,0
TOTAL COST	$250,000	$20,000	$20,0
DISCOUNTED COST (PV)	$304,927		

Benefits

Notes

1. If service from a
This would not b
2. This information
3. One of the benef

Fig. 1: Typical technology adoption lifecycle and suggested tipping point



Source: Everett Rogers, Diffusion of Innovations (5th edition), WG1 analysis

Box 1 PPP Definitions

PPPs are aimed at increasing the efficiency of infrastructure projects by means of a long-term collaboration between the public sector and private business. A holistic approach which extends over the entire lifecycle is important here.

Source: German PPP Task Force, German Transport, Construction and Housing Ministry (Bundesministerium für Verkehr, Bauen und Wohnen)

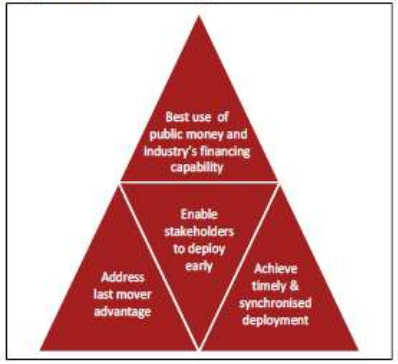
The term public-private partnership ("PPP") is not defined at Community level. In general, the term refers to forms of

PPPs are long-term partnerships to deliver assets and services underpinning public services and community outcomes. Optimal structuring links private sector profitability to sustained performance over the long-term, yielding robust and attractive cash-flows for investors in return for delivering better value for money to the taxpayer.

Source: John Laing plc

'Public-Private Partnership' is a generic term for the relationships formed between the

Fig. 2 Application of incentives



gure 1 – Relationship between business case, CBA, CEA and EIA

STEP 4: IDENTIFICATION OPT. SOLUTION

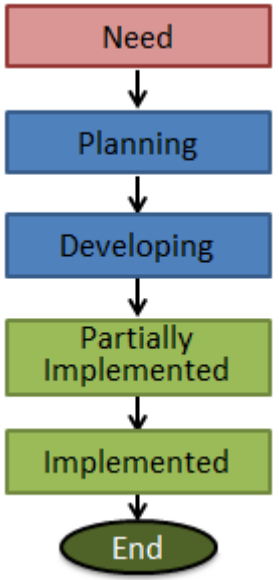
- Make decisions
  - Information available
    - Scope
    - Performance objectives and targets
    - Assessment of SWOT analysis
    - List of solutions (ASBUs)
    - Safety Assessment, HP Assessment, CBA and Environment Impact Assessment
  - Single optimum solution or a roadmap of optimum solutions

STEP 5: DEPLOYMENT OF THE SOLUTION

- Execution phase
  - Planning
  - Implementation
    - National mechanism

    for tracking the implementation

    of the elements
  - Benefits



STEP 6: ASSESSMENT OF RESULTS

- Continuously assess performance
- Monitor progress of implementation
- Review actually achieved performance
  - Update performance gaps

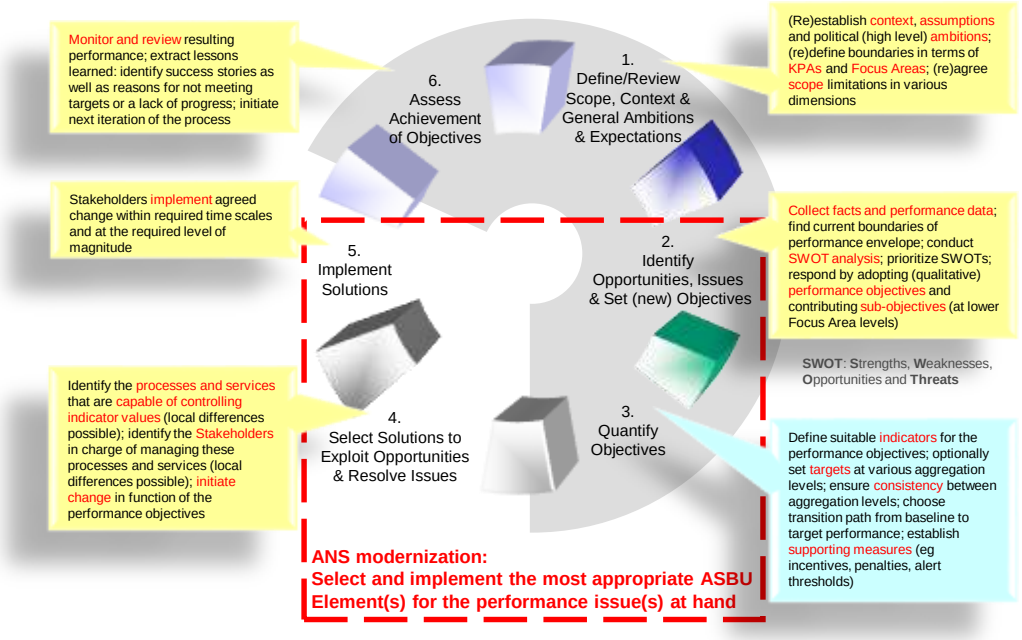
→ +(Step 1&2)=

PERFORMANCE MONITORING AND REVIEW

STEP 6: ASSESSMENT OF RESULTS

- Tasks in the PMR:
  - Data collection
  - Data publication
  - Data analysis
  - Formulation of conclusions; and
  - Formulation of recommendations.

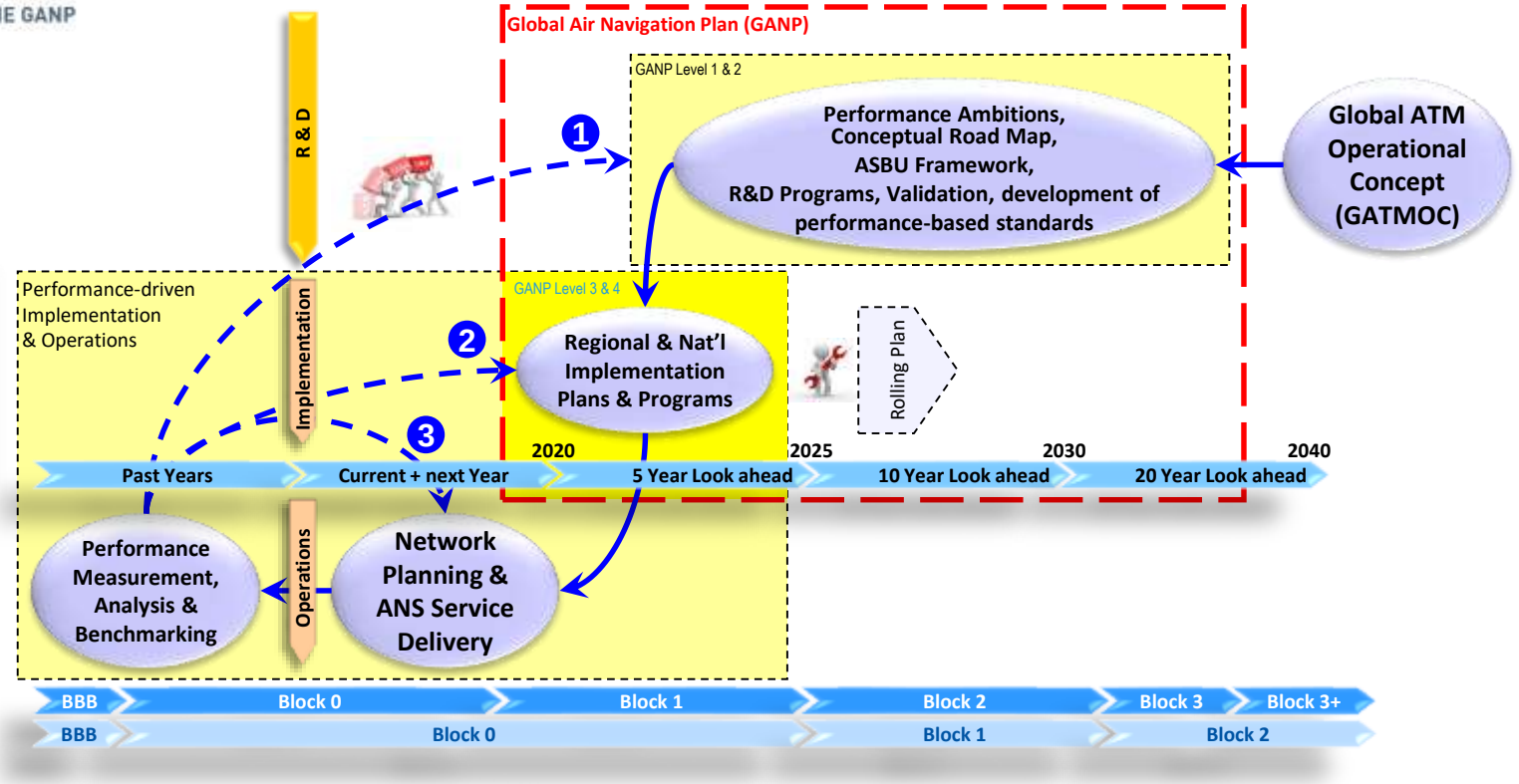
Summary



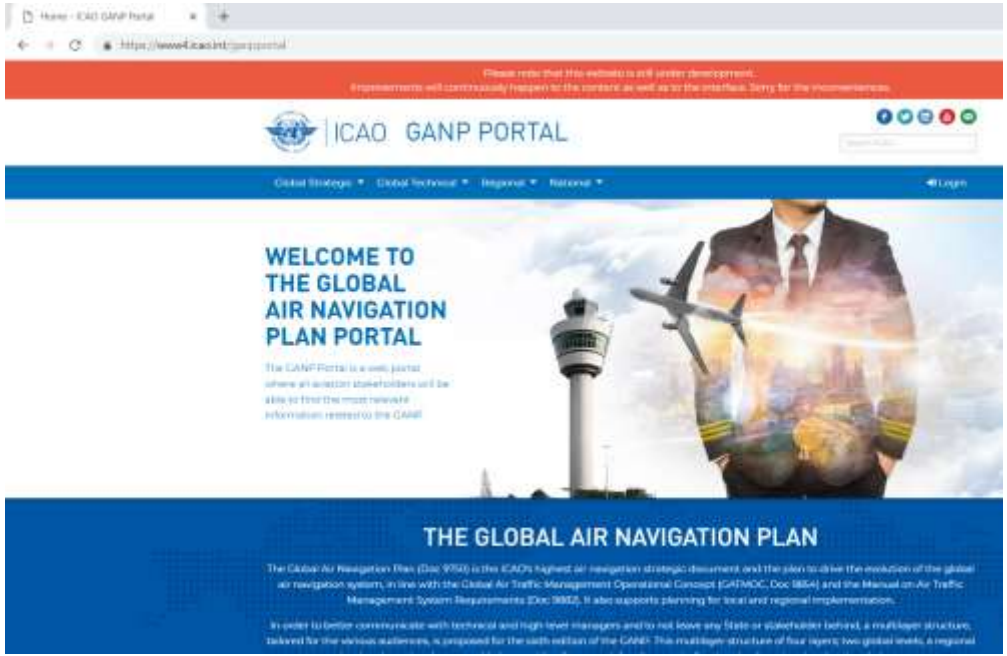
ICAO Doc 9883 Figure I-2-4

The big picture – 3 performance loops in the GANP context

A holistic approach from research and development to deployment and operations based on stakeholders operational needs and a global network approach to ensure harmonized and synchronized implementation delivering performance benefits



ICAO'S support



REGIONAL AIR NAVIGATION PLAN

- Till 2014→ Basic & FASID
- Council Approved template with Vol I, Vol II & Vol III → ALIGNEMENT AND FLEXIBILITY
- Vol I
  - Former Basic
  - Stable elements, approved by Council
    - FIR boundaries (requires Council approval)
- Vol II
  - Former FASID
  - Traditional Service and Facilities, approved based on regional agreement
    - Navigation aids
- Vol II
  - New
  - Performance-based modernization of the air navigation system, approved by the PIRGs
    - ASBUs

REGIONAL AIR NAVIGATION PLAN

- Structure Vol I & Vol II
  - Introduction
  - Generic aspects
    - Regional traffic flows
  - Aerodromes
    - General Regional Requirements
    - Specific Regional requirements
  - CNS
    - General Regional Requirements
    - Specific Regional requirements
  - ATM
    - General Regional Requirements
    - Specific Regional requirements
  - MET
    - General Regional Requirements
    - Specific Regional requirements
  - SAR
    - General Regional Requirements
    - Specific Regional requirements
  - AIM
    - General Regional Requirements
    - Specific Regional requirements

GANP: BBBs

REGIONAL AIR NAVIGATION PLAN

- Structure Vol III
  - Introduction
  - Generic aspects
  - Air Navigation Implementation

GANP: PF and ASBUs

→ Evolution to a performance-based planning


MONTRÉAL
(HEADQUARTERS)
PARIS
(EUROPEAN AND
NORTH ATLANTIC)
BEIJING
(ASIA-PACIFIC
SUB-OFFICE)
MEXICO CITY
(NORTH AMERICA AND CARIBBEAN)
CAIRO
(MIDDLE EAST)
DAKAR
(WESTERN AFRICA)
BANGKOK
(ASIA-PACIFIC)
NAIROBI
(EASTERN AFRICA)
LIMA
(SOUTH AMERICA)

THANK YOU!