



ICAO

UNITING AVIATION

THE GANP PERFORMANCE MANAGEMENT PROCESS



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Air Navigation Bureau

International Civil Aviation Organization (ICAO)

10 December 2024

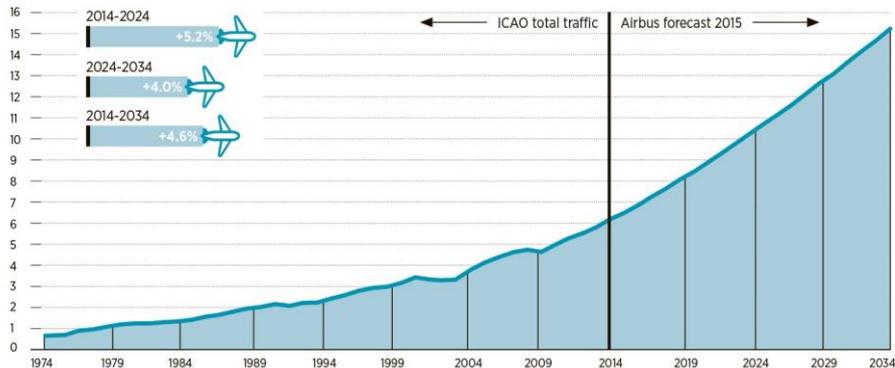


A NEW ERA IN AVIATION

Demand, including new entrants

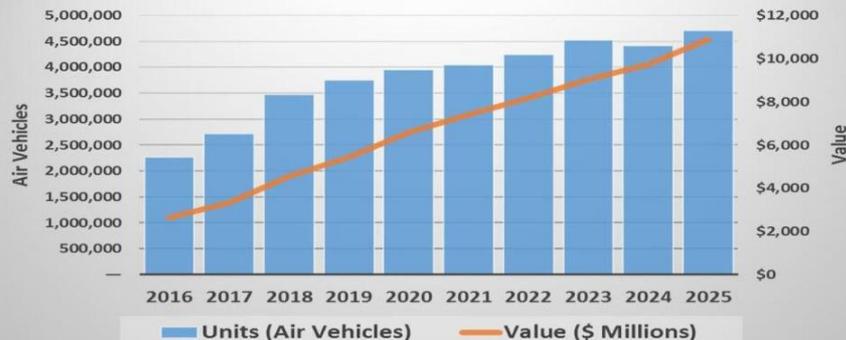
GLOBAL AIR TRAFFIC (TRILLION REVENUE PASSENGER KILOMETRES)

Traffic is expected to double in the next 15 years



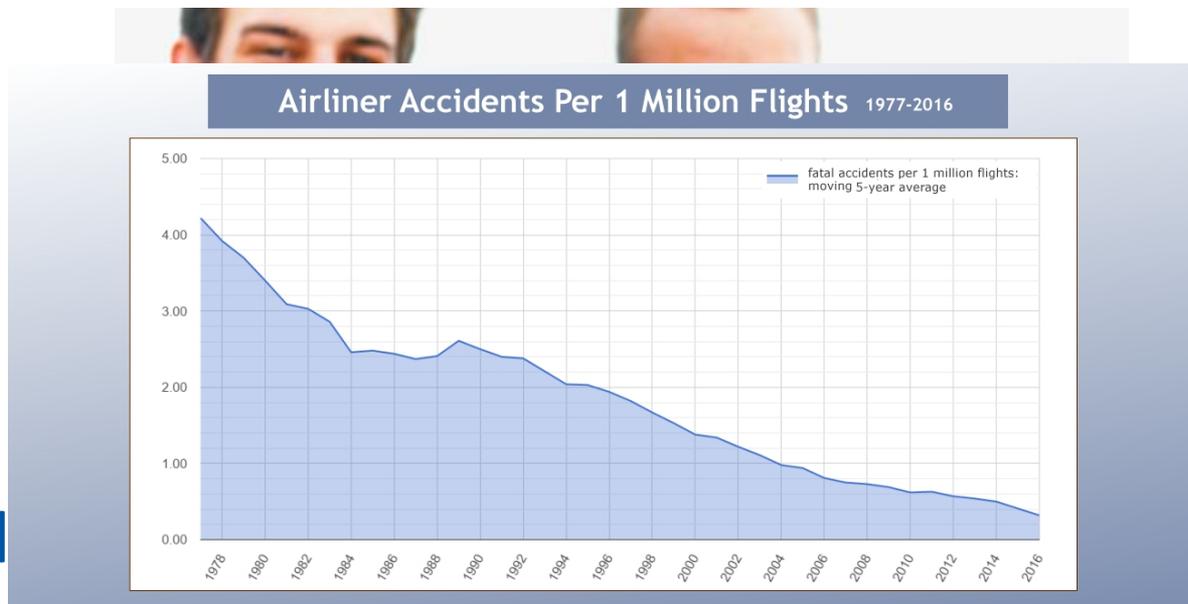
Source: International Civil Aviation Organization (ICAO)/Airbus 2015

World Civil UAS Production Forecast



SOCIAL WELLBEING ALL PEOPLES OF THE WORLD

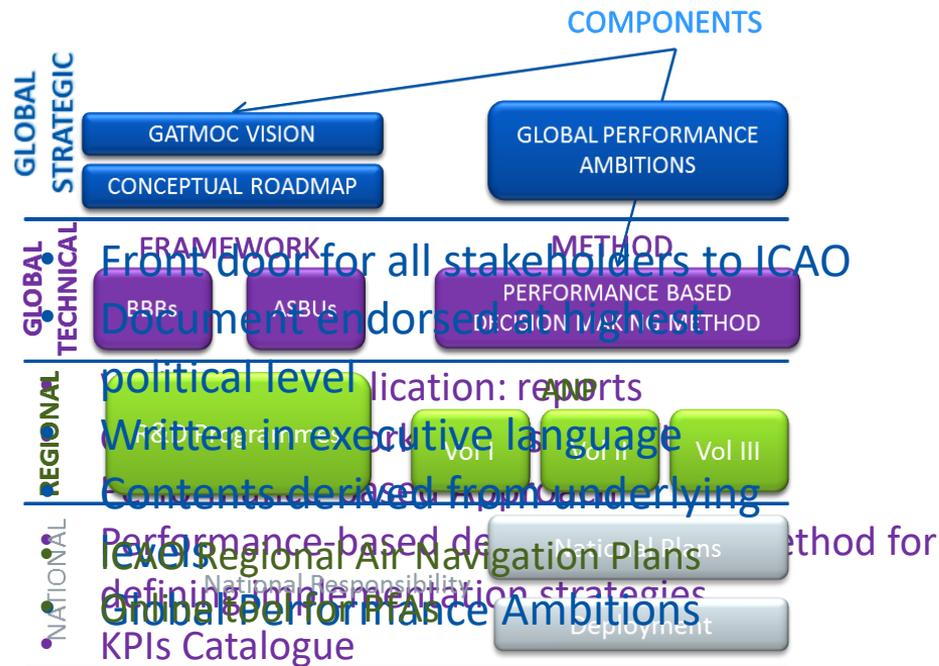
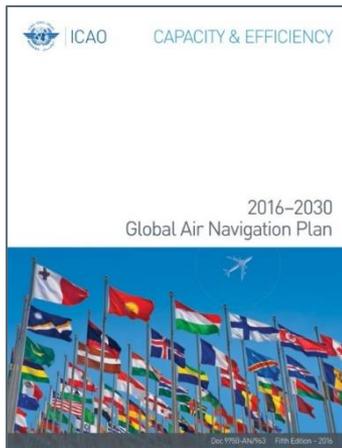
- More quiet
- Cleaner
- Safer
- More resilient
- More profitable



Statistics are based on all worldwide fatal accidents involving civil aircraft with a minimum capacity of 14 passengers, from the ASN Safety Database <https://aviation-safety.net>

DRAFT GANP 2019

MULTILAYER STRUCTURE



<https://www4.icao.int/ganportal>

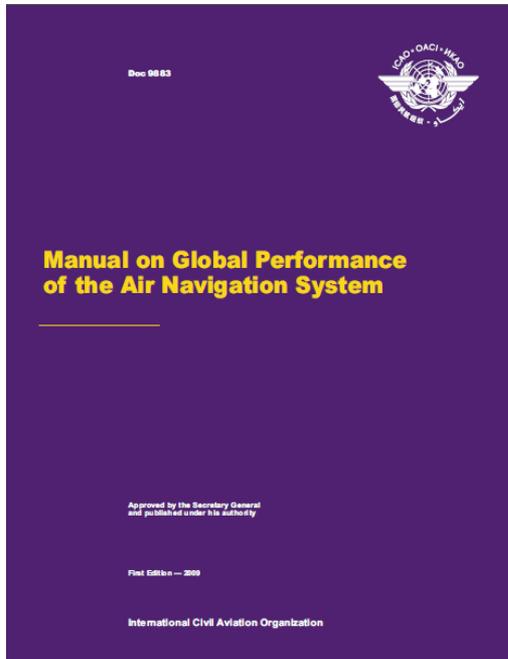


MAIN GOALS of the 2019 GANP

- **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



PERFORMANCE-BASED APPROACH



Principles:

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



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*“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

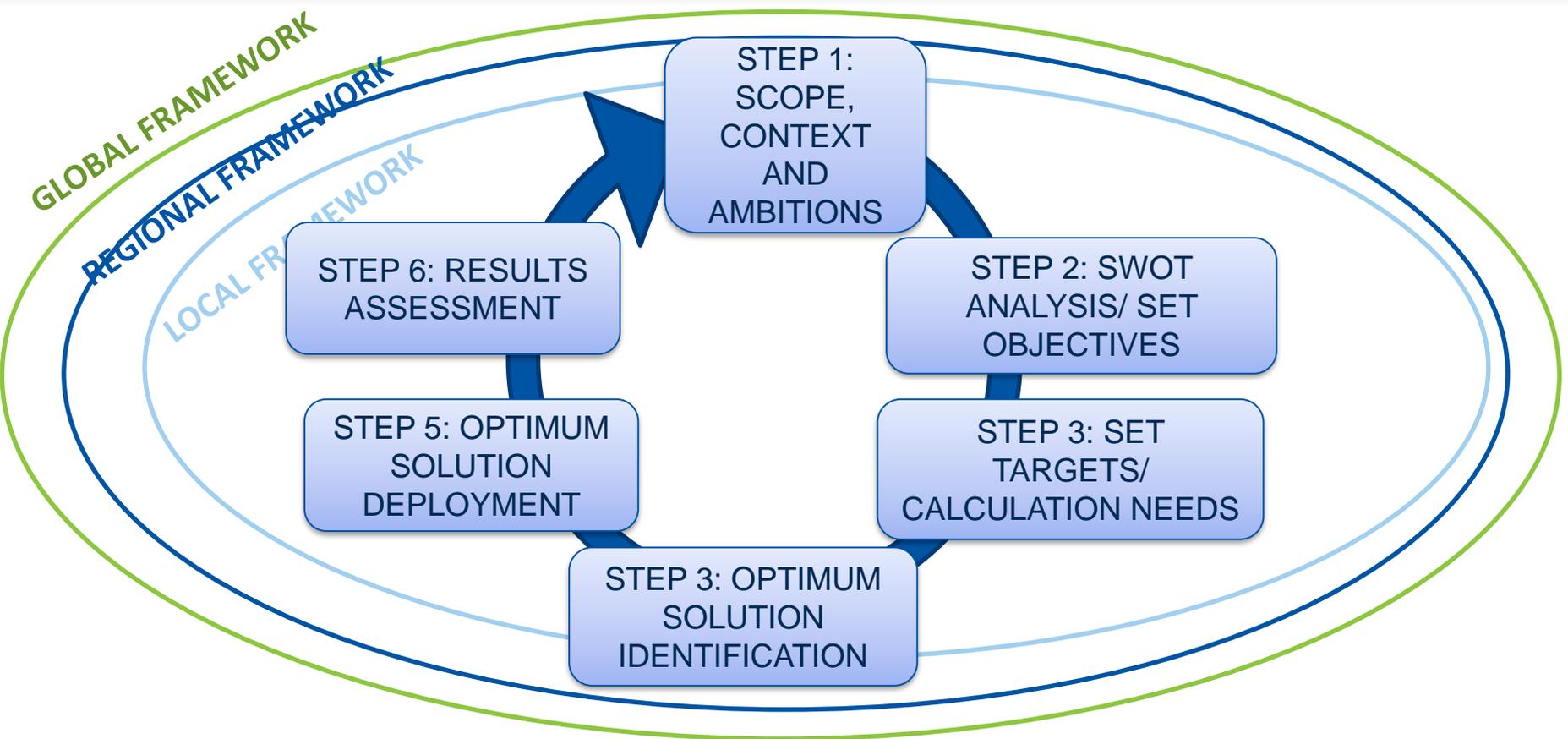
STEP 2: SWOT
ANALYSIS/ SET
OBJECTIVES

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
 - **A**chievable
 - **R**elevant
 - **T**ime-bounded
- } PERFORMANCE
INDICATORS → *ICAO KPIs Catalogue*

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

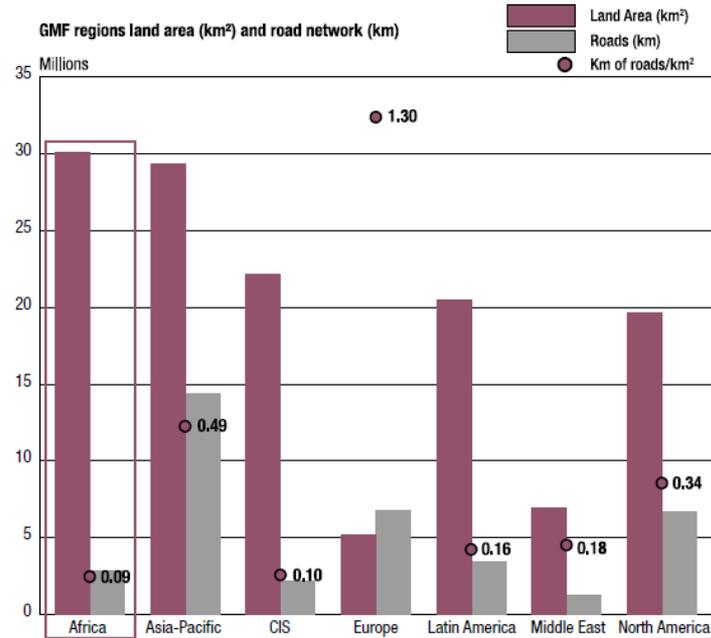


PERFORMANCE
NEEDS

Africa

- **Aviation essential for further development**

- **Challenges**
 - Nature: deserts, forest, ocean,...
 - Slow liberalization
 - Limited resources
 - Security



Source: IRF, The World Bank,
Airbus GMF 2017



Africa

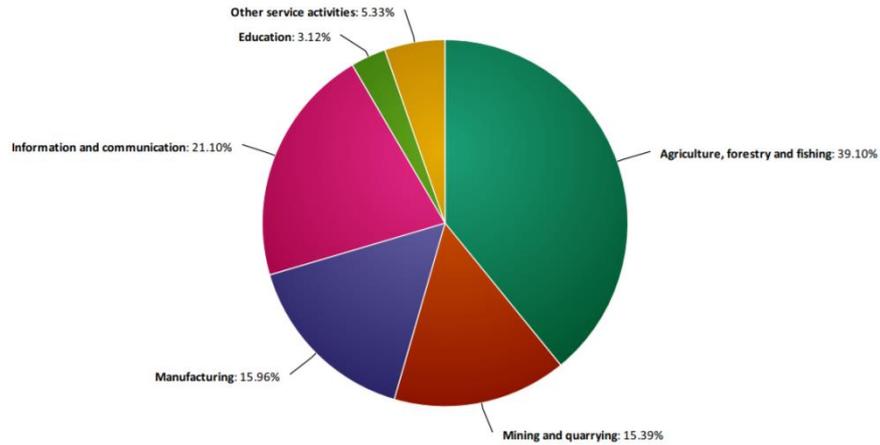
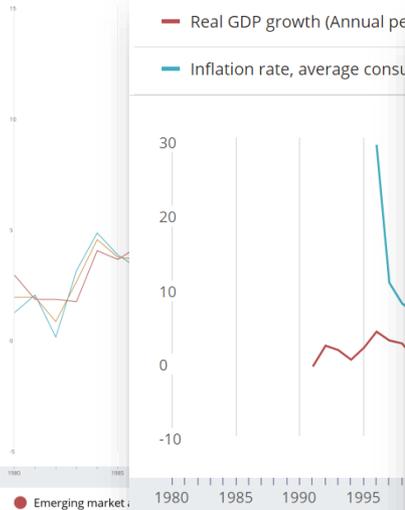
- **Traffic statistics: Average annual growth 2016-2036**

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

IMF DataMapper

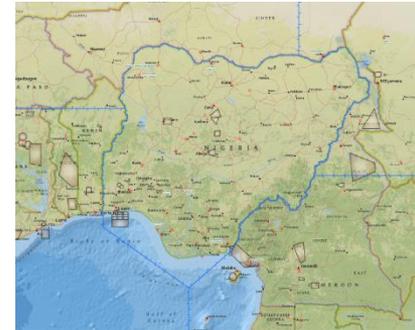
Real GDP growth (Annual percent change)



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



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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



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Digital ASBU framework

The screenshot shows a web browser window with the URL <https://www4.icao.int/ganportal>. The page features a red banner with a development notice, a blue navigation bar with the ICAO logo and 'GANP PORTAL' text, and a main content area with a large image of a man in a suit. The main content includes a 'WELCOME TO THE GLOBAL AIR NAVIGATION PLAN PORTAL' heading and a section titled 'THE GLOBAL AIR NAVIGATION PLAN' with descriptive text.

Home - ICAO GANP Portal x +

← → ↻ 🔒 <https://www4.icao.int/ganportal>

Please note that this website is still under development. Improvements will continuously happen to the content as well as to the interface. Sorry for the inconveniences.

ICAO GANP PORTAL

Global Strategic ▾ Global Technical ▾ Regional ▾ National ▾ Login

WELCOME TO THE GLOBAL AIR NAVIGATION PLAN PORTAL

The GANP Portal is a web portal where all aviation stakeholders will be able to find the most relevant information related to the GANP.

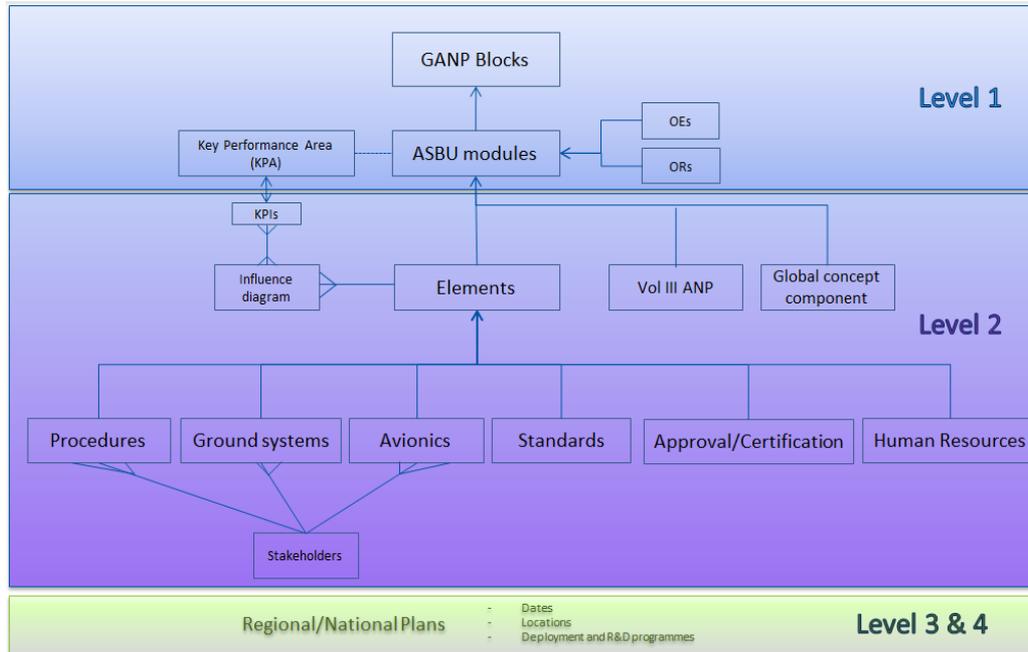
THE GLOBAL AIR NAVIGATION PLAN

The Global Air Navigation Plan (Doc 9750) is the ICAO's highest air navigation strategic document and the plan to drive 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.

In order to better communicate with technical and high-level managers and to not leave any State or stakeholder behind, a multilayer structure, tailored for the various audiences, is proposed for the sixth edition of the GANP. This multilayer structure of four layers; two global levels, a regional



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

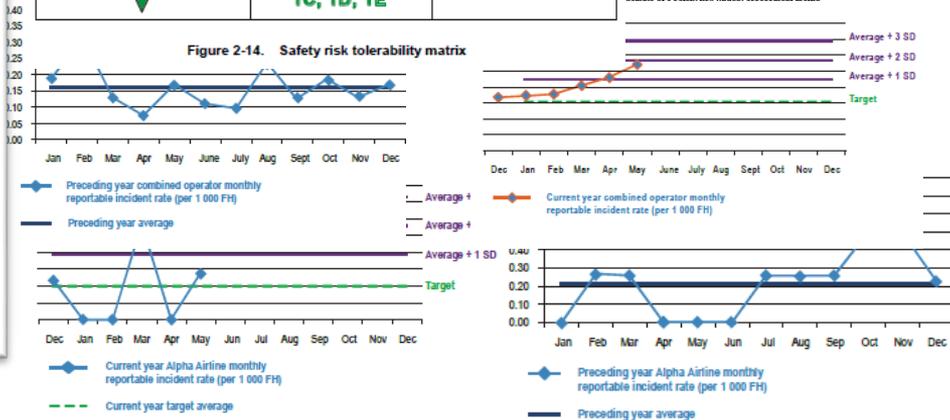


Safety assessment guidance

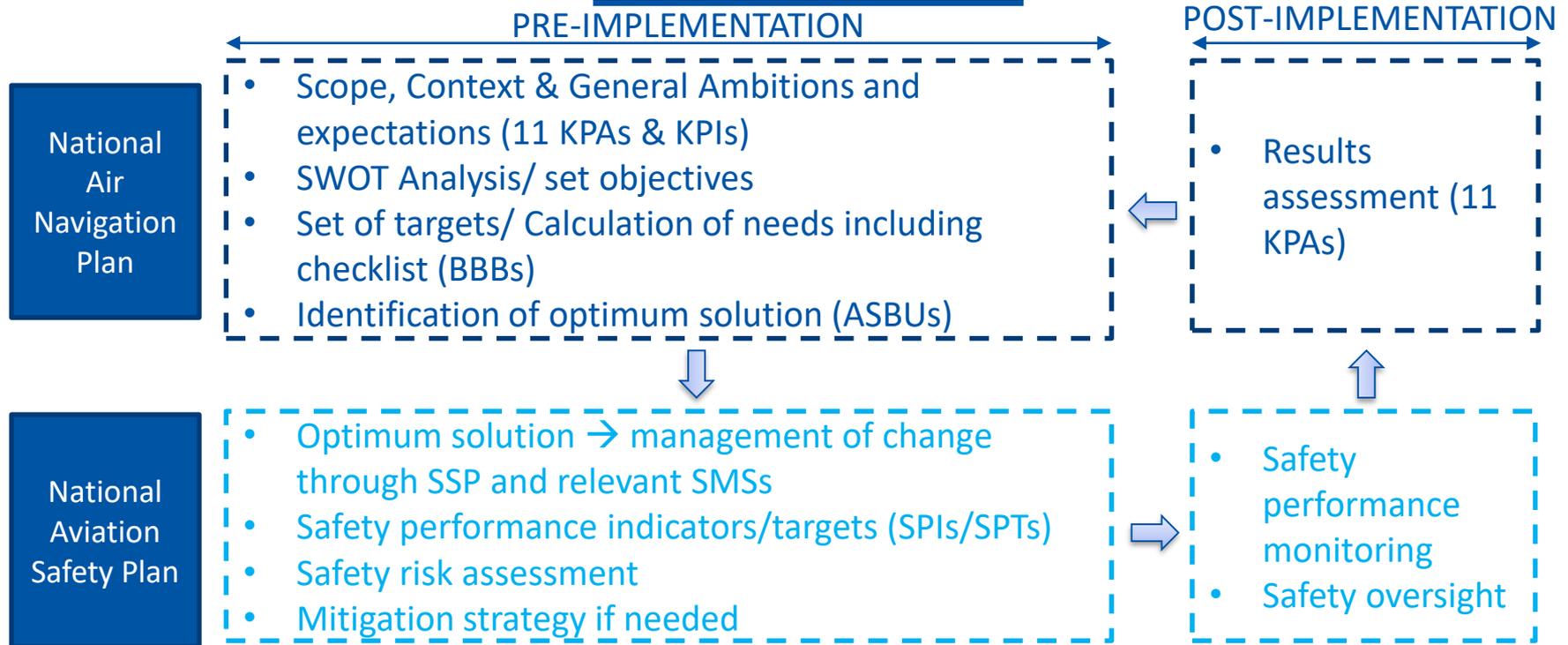


Tolerability description	Assessed risk index	Suggested criteria
Intolerable region	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
Tolerable region	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	Acceptable based on risk mitigation. It may require management decision.
Acceptable region	3E, 2D, 2E, 1B, 1C, 1D, 1E	Acceptable

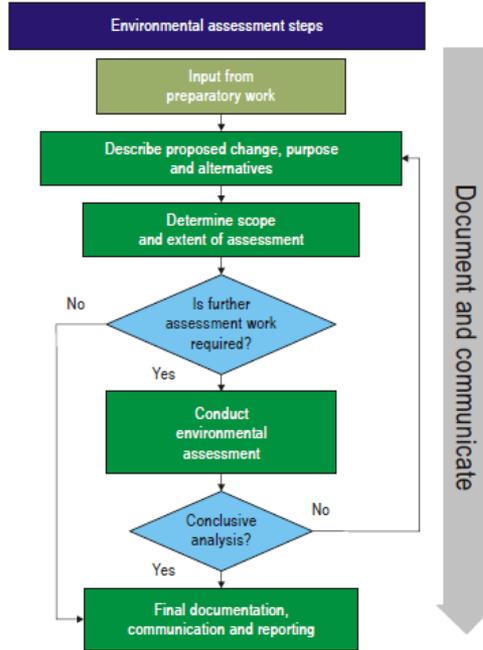
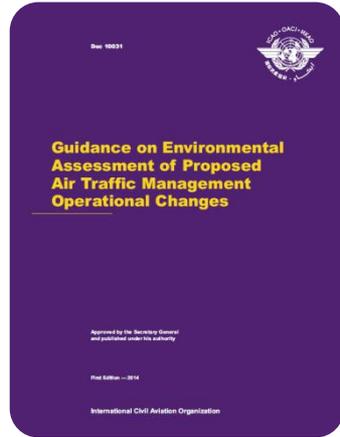
Risk severity				
astrophic A	Hazardous B	Major C	Minor D	Negligible E
5A	5B	5C	5D	5E
4A	4B	4C	4D	4E
3A	3B	3C	3D	3E
2A	2B	2C	2D	2E
1A	1B	1C	1D	1E



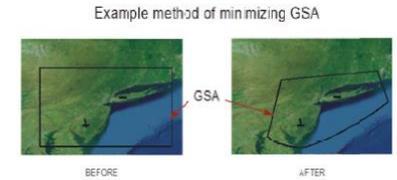
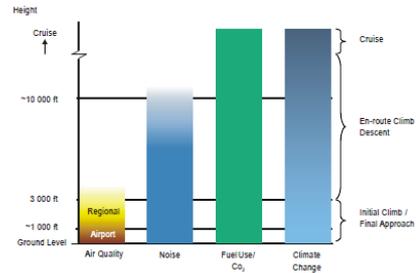
GANP & GASP TECHNICAL ALIGNMENT



Environmental impact assessment guidance

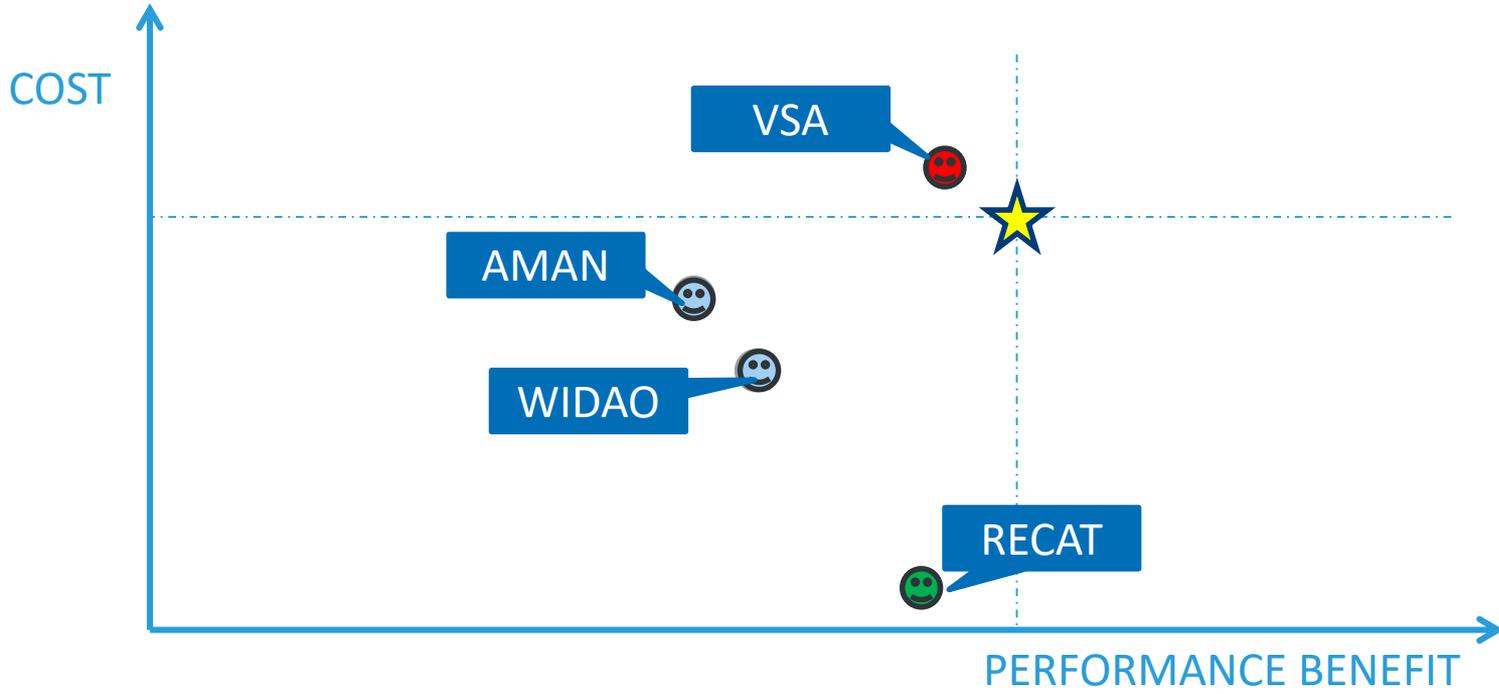


Height AGL	Below 1 000 ft (300 m)	1 000-3 000 ft (300-900 m)	3 000-10 000 ft (900-3 000 m)	Above 10 000 ft (3 000 m)
Impact				
Air quality (e.g. NOx, PM, etc.)	Most relevant	Relevant (Note 1)	Less relevant	Less relevant
Noise	Potentially (Note 2)	Relevant	Relevant	Potentially (Note 3)
Fuel use / CO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





CBA

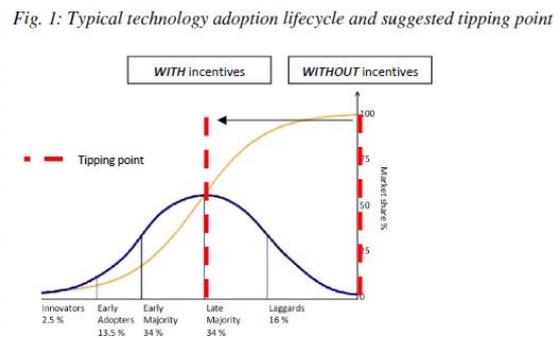


Cost-Benefits Analysis guidance

Parameters	Value	Values provided below
A. Average cost per hour of delay, based on local fleet	\$500	
B. Percent of flights impacted by weather conditions below current minima ²	10%	← apply to all users in
C. Percent of flights impacted by weather conditions below LPV minima ²	10%	← apply to SIAAS equip
D. Average hours duration of low visibility	1.5	
E. Percent of arriving aircraft equipped with SIAAS	20%	
F. Discount rate for economic analysis	7%	

Costs	Year 0	Year 1	Year 2
- Procedure development (both runway ends)	\$250,000		
- Procedure maintenance		\$20,000	\$20,000
TOTAL COST	\$250,000	\$20,000	\$20,000
DISCOUNTED COST (PV)	\$264,927		

- G. Annual arrival¹
- H. Equipped¹
- I. Non-equipped
- J. Current arrival¹
- K. Equipped¹
- L. Non-equipped
- M. Estimated hours
- N. Equipped¹
- O. Non-equipped
- P. Estimated hours
- Q. Value of delay¹



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

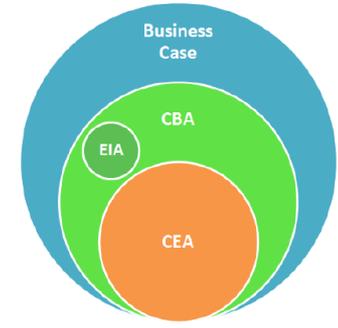
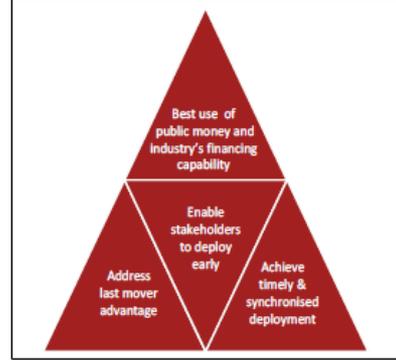


Figure 1 – Relationship between business case, CBA, CEA and EIA

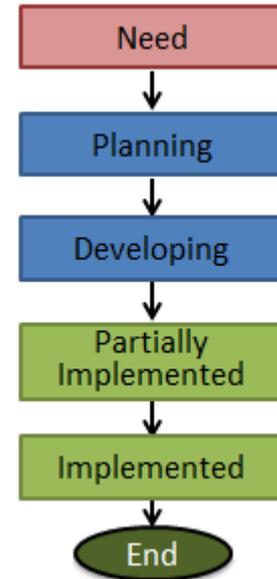


STEP 4: IDENTIFICATION OPT. SOLUTION

- 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.



GLOBAL FRAMEWORK

REGIONAL FRAMEWORK

LOCAL FRAMEWORK

STEP 1:
SCOPE,
CONTEXT
AND
AMBITIONS

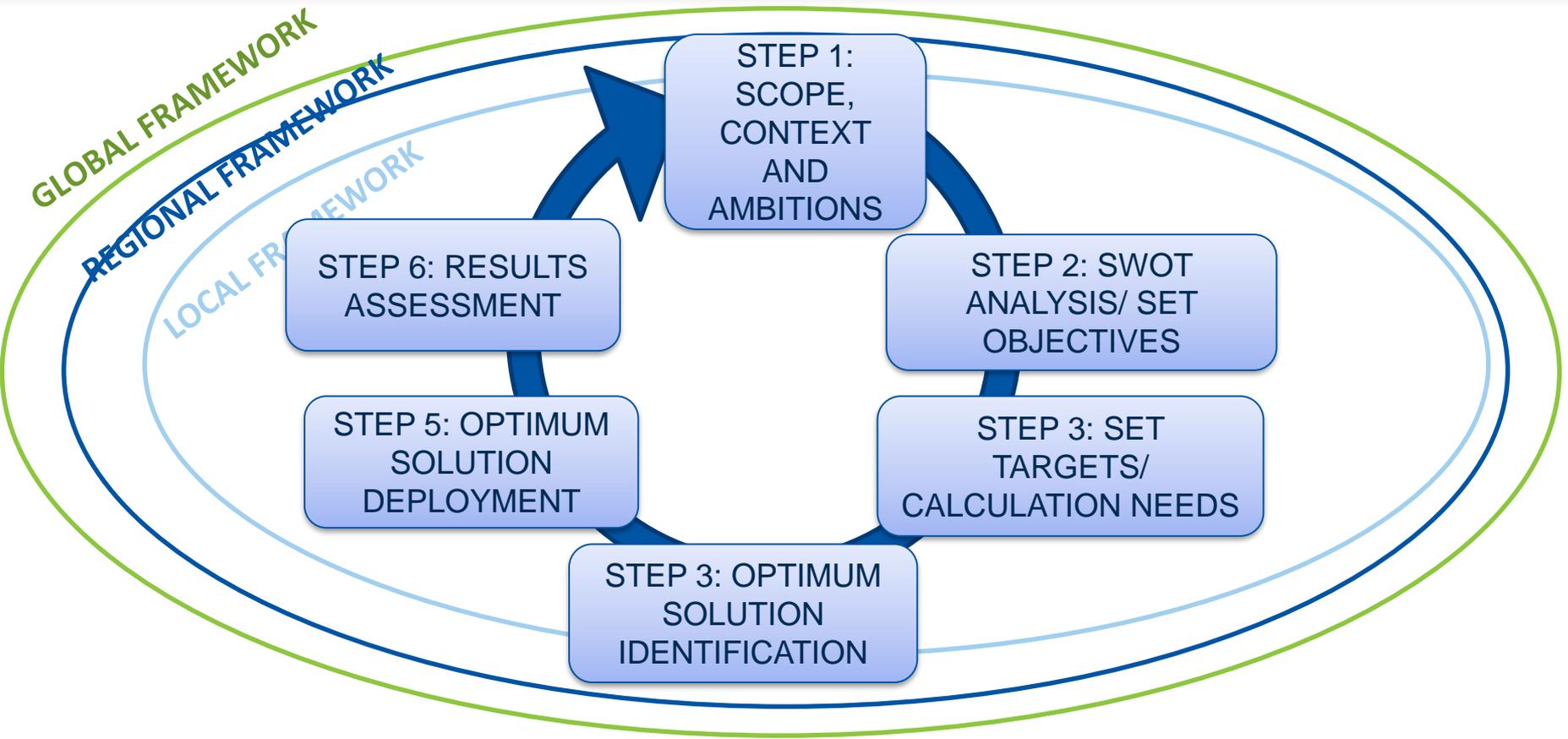
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IDENTIFICATION

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SOLUTION
DEPLOYMENT

STEP 6: RESULTS
ASSESSMENT





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ICAO'S support

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THANK YOU!