International Civil Aviation Organization

MIDANPIRG RANP/NANP Task Force

First Meeting (RANP/NANP TF/1)
(Cairo, Egypt, 19 – 22 February 2024)

Agenda Item 6: **Performance –Based Approach**
- National Air Navigation Plans (NANP)

Development of National Air Navigation Plans (NANP)

Presented by Saudi Arabia

SUMMARY

The National Air Navigation Plan (NANP) serves as reference and master document for the planning and development of air navigation services, deployment of operational improvements, upgrading of infrastructure and facilities and setting of roadmaps for the evolution of air navigation systems and services.

This paper proposes an "adapted performance-based process" to support MID States in identifying the best fit solutions and operational improvements for ANS modernization. It also defines a proposal for the contents of NANP. Both proposals may be considered in the guidance material that will be developed by RANP/NANP Task force (TF).

Action by the meeting is under paragraph 4 of this WP.

Reference(s)	A41-6: ICAO global planning for safety and air navigation MIDANPIRG CONCLUSION 20/9: DEVELOPMENT OF NANP MIDANPIRG DECISION 20/12: RANP/NANP TASK FORCE Doc 9750, Global Air Navigation Plan, 7th Edition ICAO MID ANP ICAO MID Region Air Navigation Strategy - Doc 002.

1. INTRODUCTION

1.1 As defined under the GANP, the fourth layer is under the responsibility of each State and should focus on national planning and implementation. The development of the National Air Navigation Plan (NANP) should be conducted in coordination with stakeholders with a formal process to gather inputs from all affected users, and operators. It is considered as a strategic part of a MID State aviation development plans and its alignment with MID Region ANP and ICAO global plans for air navigation (GANP), safety (GASP), and security (GASeP) is crucial to achieve the main objectives of regional and global harmonization.

1.2 The NANP serves as reference and master document for the planning and development of air navigation services, deployment of operational improvements, upgrading of infrastructure and facilities and setting of roadmaps for the evolution of air navigation systems and services.

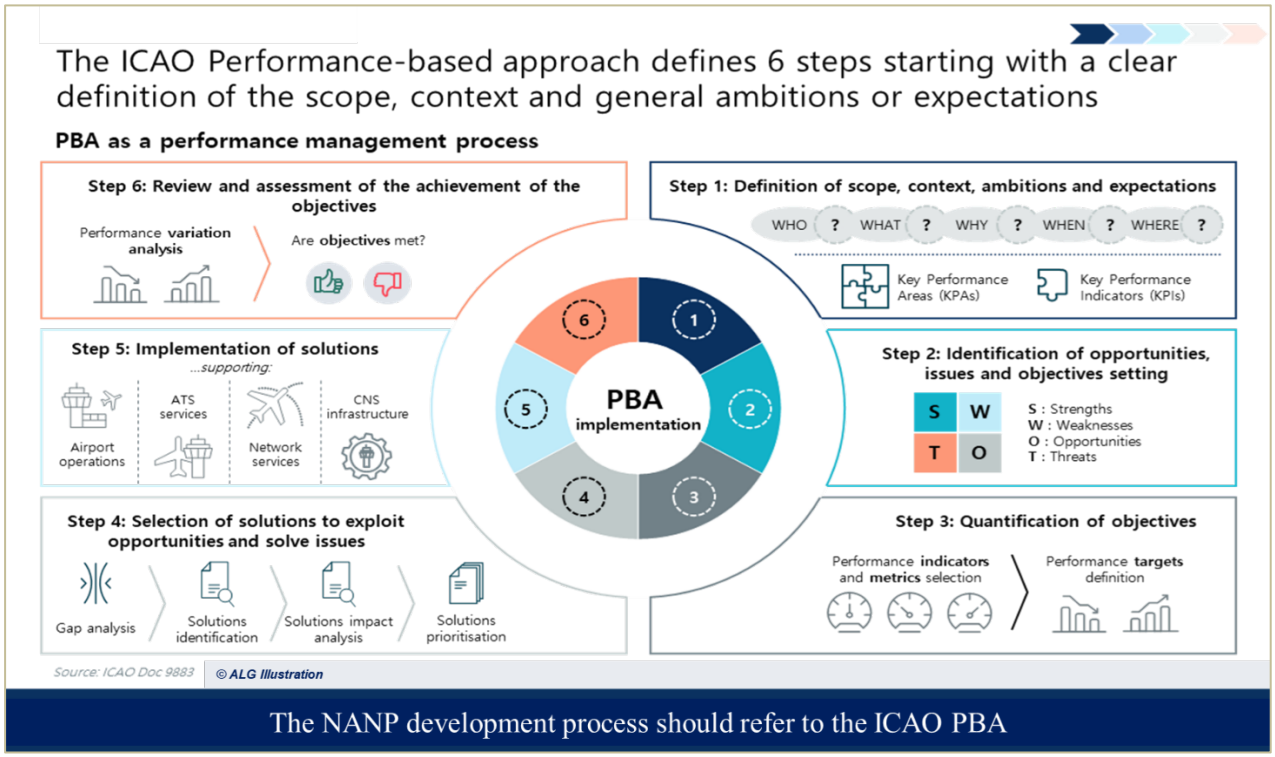
1.3 To support Contracting States in the development of NANPs, ICAO recommends use of the Performance Based Approach (PBA) and the six-step of the performance management process described in the Manual on Global Performance of the Air Navigation System (Doc 9883). At regional level, the MIDANPIRG/20 meeting adopted conclusion i.e., MIDANPIRG CONCLUSION 20/9 on the development of NANP where the PBA is adopted as main framework for the development of ANS modernization plans. The MIDANPIRG has also adopted a decision establishing RANP/NANP Task force (TF) to ensure regional harmonization and to provide guidance to MID States in the development, assessment, and maintenance of their NANPs.

2. DISCUSSION

2.1. ICAO Performance based approach

2.1.1 ICAO introduced a Performance-Based Approach (PBA) as part of the GANP to prioritize future developments by States as part of the aviation system block upgrades (ASBUs). ICAO has also published Doc 9883 to support States in adopting a performance-based approach, detailing the benefits of this approach and providing information on performance measurement and monitoring to meet the objectives and targets.

2.1.2 The ICAO PBA defines a closed-loop process with six-steps starting by the definition of scope, context, ambitions, and expectations and ending with the assessment of achievements considering targeted objectives. An illustration of ICAO PBA by ALG is provided in the following figure.



2.1.3 While ICAO PBA is focusing on performance management for ATM operational improvements, there is no detailed methodology to guide implementation or identify ways and means for stakeholders' engagement. Therefore, there is a need for RANP/NANP Task force to adopt practical approach to support the implementation of the performance framework related to BBB framework and regional ASBU threads and elements in the MID region considering best practices.

2.1.4 The lessons learned and experience gained by ICAO MID States in the deployment of operational improvements is a valuable source of information to identify the best fit solutions for planning and implementation methodology. Therefore, the RANP/NANP Task force should invite all participants to share their experience in implementing regional ASBU threads and elements and define concrete and easy step-by-step methodology that can support MID States in the development, assessment, and maintenance of their NANPs.

2.1.5 To this end, a proposal for process-based methodology is given in Appendix A to this WP with reference to the ICAO PBA steps. This proposal includes a clustering of tasks and activities to easy the understating and simplify the application and may be considered by RANP/NANP Task force as an initial input for the development of an "adapted ICAO PBA" under the development of guidance material for the development of NANPs.

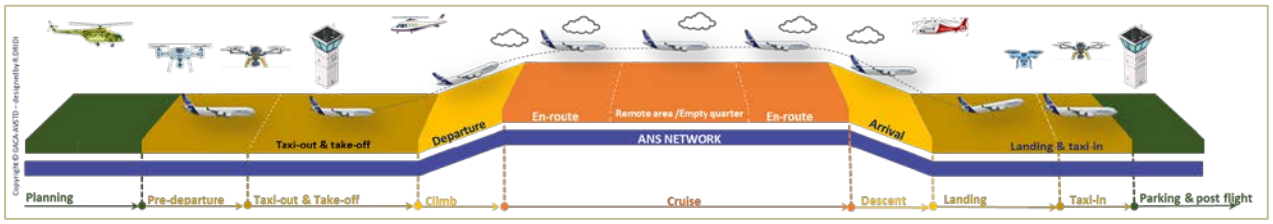
2.1.6 Regarding the performance measurements and monitoring, a collaborative approach between RANP/NANP Task force members is needed to identify the best practical methods for calculation and tracking of the KPIs listed in the ICAO MID Region Air Navigation Strategy - Doc 002, and to provide guidance on stakeholders' engagement with typical samples related to the calculation and post-operations analysis of the performance.

2.2. ICAO GANP & MID ASBU threads and elements

2.2.1 The global ambition for ANS modernization is covered under the GANP which drives the evolution of the global air navigation system targeting the accommodation of all airspace users' and new entrants operations in a safe, secure and cost-effective manner, while reducing environmental impact.

2.2.2 To meet the global objectives, the GANP is defining a series of operational improvements to increase capacity, efficiency, predictability, and flexibility while ensuring interoperability of functional systems and harmonization of working methods and procedures. The GANP is supported by the Global Aviation Safety Plan (GASP, Doc 10004) and the Global Aviation Security Plan (GASeP) (Doc 10118).

2.2.3 Aviation System Block Upgrades (ASBUs) are the building blocks of the GANP. They define a global planning framework to ICAO and its member States, associated air navigation service providers and other stakeholders with the objective of implementing progressive national and regional performance improvements. The ASBUs outline the evolution of air and ground equipment over time targeting all segments of ANS network and operations as illustrated in the following figure.



2.2.4 The ASBUs focuses on four performance improvement areas: airport operations; global interoperable systems and data; optimum capacity and flexible flights; and efficient flightpaths. Work-streams are organized into 'threads' and 'elements', under three headings, that together will, over time, deliver the targeted performance improvements. The ASBU threads are organized under the following three functional categories:

- **Information** – covering the deployment of new air traffic navigation systems, tools, with enhanced automation to improve connectivity into the network and increase information-sharing on flights and traffic flows. This thread includes a series of ASBU elements related to aeronautical information, aeronautical meteorology, Flight and Flow Information (FF-ICE) and System-Wide Information Management (SWIM).

- **Operational** covering the evolution of ground, operators, and users capabilities and airspace management for high-altitude and low/urban airspace operations over time. This thread includes a series of ASBU elements related to flexible access to airspace, Free Route Airspace and trajectory-based operations.

- **Technology** – covering the deployment of new technologies for Communications, Navigation and Surveillance infrastructure to support the use of space-based operations; and to provide robust contingency arrangements by using combination of ground-based infrastructure and multi-frequency, multi-constellation capabilities which will strength the resilience against any vulnerabilities or threats. A summary on ICAO ASBU threads and elements are provided in Appendix B to this WP.

2.2.5 Therefore, RANP/NANP Task force should consider developing guidance on structure of the development plans considering the ASBU functional categories, and operational improvements using an adapted ICAO PBA as discussed under §2.1 of this WP.

2.3. Proposal for NANP Contents

2.2.6 The development of a common and standardized template for the structure of the NANP is one of the essential guidance material that may be developed by RANP/NANP Task force. It will unify the planning and development of NANP between MID States.

2.2.7 As discussed in §2.1 and §2.2 of this WP, an adapted "ICAO PBA" should be defined and the regional ASBU threads and elements should be considered in the template for the NANP.

2.2.8 As the NANP is a master document for the modernization of ANS aiming to meet national needs and to be aligned with GANP and ICAO MID ANP, therefore, it is proposed to divide the document into six parts as shown in Appendix C to this WP.

3. CONCLUSION

3.1 The development of NANP requires leadership (Robust Governance), close engagement of stakeholders, and resources. It should be aligned with GANP, MID ANP, and MID-Air Navigation Strategy. To effectively support MID States, the RANP/NANP Task force should follow a process-oriented methodology, define practical guidance, and typical use cases based on the experience gained by MID States in the deployment of operational improvements.

3.2 The adoption of an "adapted ICAO PBA" and a common template for NANP are considered the main pillars for alignment and harmonization of ANS modernization in the MID Region.

3.3 The initial work program of RANP/NANP Task force should focus on updating the status of implementation of the regional ASBU threads and elements which will support information gathering of implemented operational improvements, lessons learned, and an initial identification of typical use cases and guidance to MID States in the development of NANP and progress the implementation of regional ASBUs.

4. ACTION BY THE METING

4.1 The RANP/NANP Task force is invited to:

a) note the information provided in this WP and the need for adopting process-based methodology to support the development of NANPs;

b) discuss the process-based methodology provided in Appendix A to this WP and adopt a methodology to be part of the guidance for the development of NANP;

c) discuss the NANP contents provided in Appendix C to this WP and amend it as necessary;

d) adopt the structure of NANP to be included as part of the guidance material on the development of the plan.

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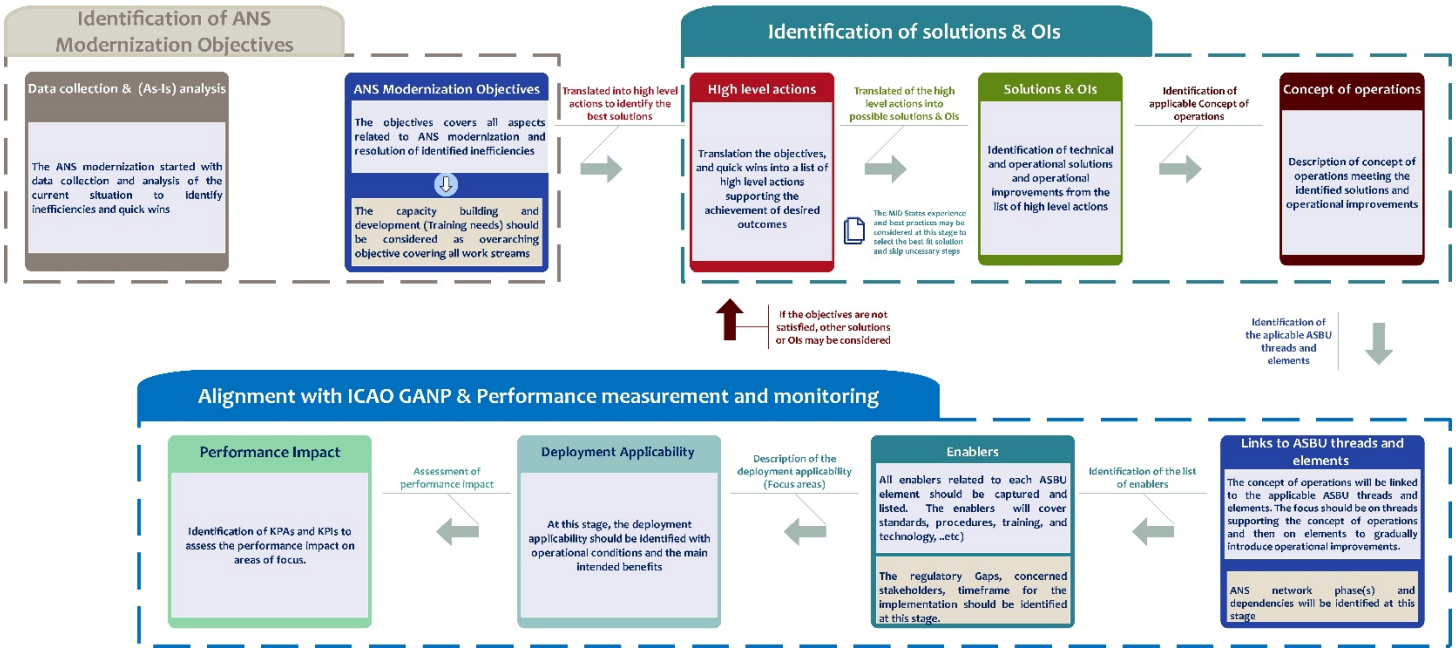
APPENDIX A

PROPOSAL FOR METHODOLOGY TO DEFINE OPERATIONAL IMPROVEMENTS UNDER NANP



APPENDIX B
ILLUSTRATION ON ICAO ASBU THREADS AND ELEMENTS

ICAO ASBU Threads & Elements

Information – covering the deployment of new air traffic navigation systems, tools, with enhanced automation to improve connectivity into the network and increase information-sharing on flights and traffic flows. This thread includes a series of ASBU elements related to aeronautical information, aeronautical meteorology, Flight and Flow Information (FF-ICE) and System-Wide Information Management (SWIM).

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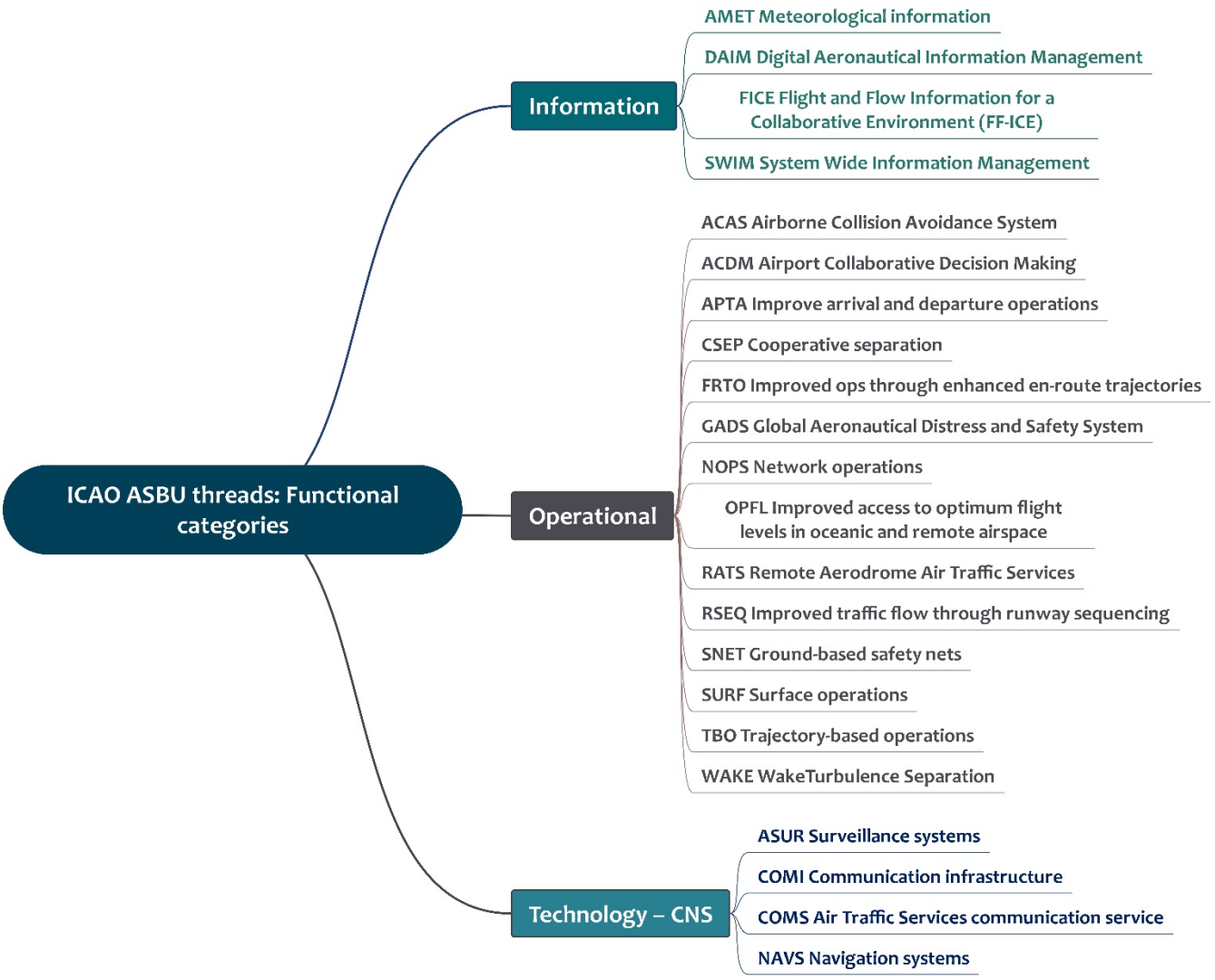

APPENDIX C
PROPOSAL FOR NANP CONTENTS

Topic	Summary on the contents
Contents	*The table of contents of NANP*
Executive summary	*Overview of NANP contents with statement(s) from the DG or President of Civil Aviation Authority having authority to approve the NANP.*
Part 1: Description of Air Navigation system in the State a) ANS regulatory framework and Safety oversight b) Civil Aviation governance and organization c) Overview on ANS network, infrastructure, and services d) Summary on the size and complexity of the civil aviation sector e) Key challenges and areas of improvements f) On-going and planned operational improvements	*This part provides an overview on ANS organization, regulatory framework, safety oversight and a description of the ANS network, infrastructure, and services of the MID State. The details may be attached as an Appendix to NANP. It also provides key information on the size and complexity of the civil aviation sector, key challenges, and ANS short and medium terms operational improvements*
Part 2: ANS modernization strategy, objectives & Governance a) ANS modernization strategy, b) Digital transformation, innovation, and new entrants c) Performance based approach for ANS modernization d) NANP Objectives, and benefits e) NANP Governance, assessment, and maintenance processes	*This part defines the ANS modernization strategy to adopt digital transformation, innovation, and accommodate new entrants in MID State using performance based-approach. It also describes the NANP objectives, benefits, governance, assessment, and maintenance. The processes, checklists, and forms to be used for assessment and maintenance of NANP may be attached as appendices.*
Part 3: Alignment with ICAO GANP and MID frameworks a) Overview on ICAO GANP, GASP and GASecP, b) MID ANP and Air Navigation Strategy c) Alignment with GANP and MID frameworks	*This part provides an overview of the applicable elements of GANP, GASP, and GASecP to the NANP. It also captures the MID ANP and Strategy applicable to the MID State.*
Part 4: Main ANS Work streams & Areas of focus a) Airport operations and terminal airspace, b) Network Management and integration c) Airspace management and data services d) Advanced CNS/ATM and flight operations e) High- and low-level airspace operations	*This part identifies the main ANS modernization work streams which must cover all applicable threads and elements that were identified under Part 3.*
Part 5: Deployment plans and roadmaps: For each ASBU element identified under ANS Work streams: a) Identification of the main stakeholders (Owner and supporting stakeholders) b) Summary of each ASBU element and concept of Operations, c) Cost-benefit analysis d) Technical and operational enablers e) Assessment of Regulatory framework, standards and specifications f) Performance measurements, monitoring, and reporting g) Stakeholders' engagement h) Required qualifications & Training i) Implementation roadmap	*This part describes the deployment plans and roadmaps. For Each ASBU element encompasses under the ANS work streams identified under Part 4, the NANP should cover all topics and sub-topics defined. the final objective is to have a development plan with clear roadmap for the implementation.*
Appendices:	*This part contains all information, templates, forms,*

Topic	Summary on the contents
a) Governance structure illustration: Roles and responsibilities b) Roadmap for regulatory framework updates to support ANS modernization, c) Mapping between ASBU threads and elements and identified Work streams d) Performance KPAs and KPIs adopted and the methods for collecting data and reporting on the performance including forms. e) Matrix on required qualifications and training needs f) NANP Assessment and maintenance process and checklists.	*and checklists defined under NANP. It also contains all complementary information.*

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