

ICAO-MID Workshop
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(GANP & NANP)

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ASBU Implementation Status

Saudi Arabia



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KPI 01 Overview.

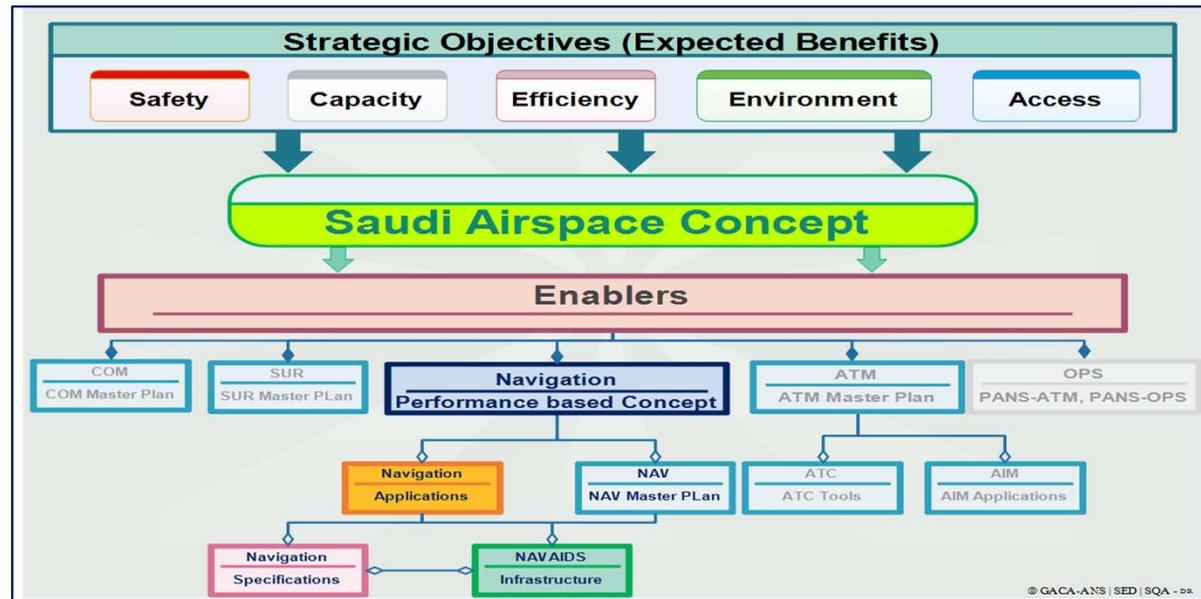
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Setting an implementation plan of ASBU elements at national level.

GLOBAL AIR NAVIGATION PLAN

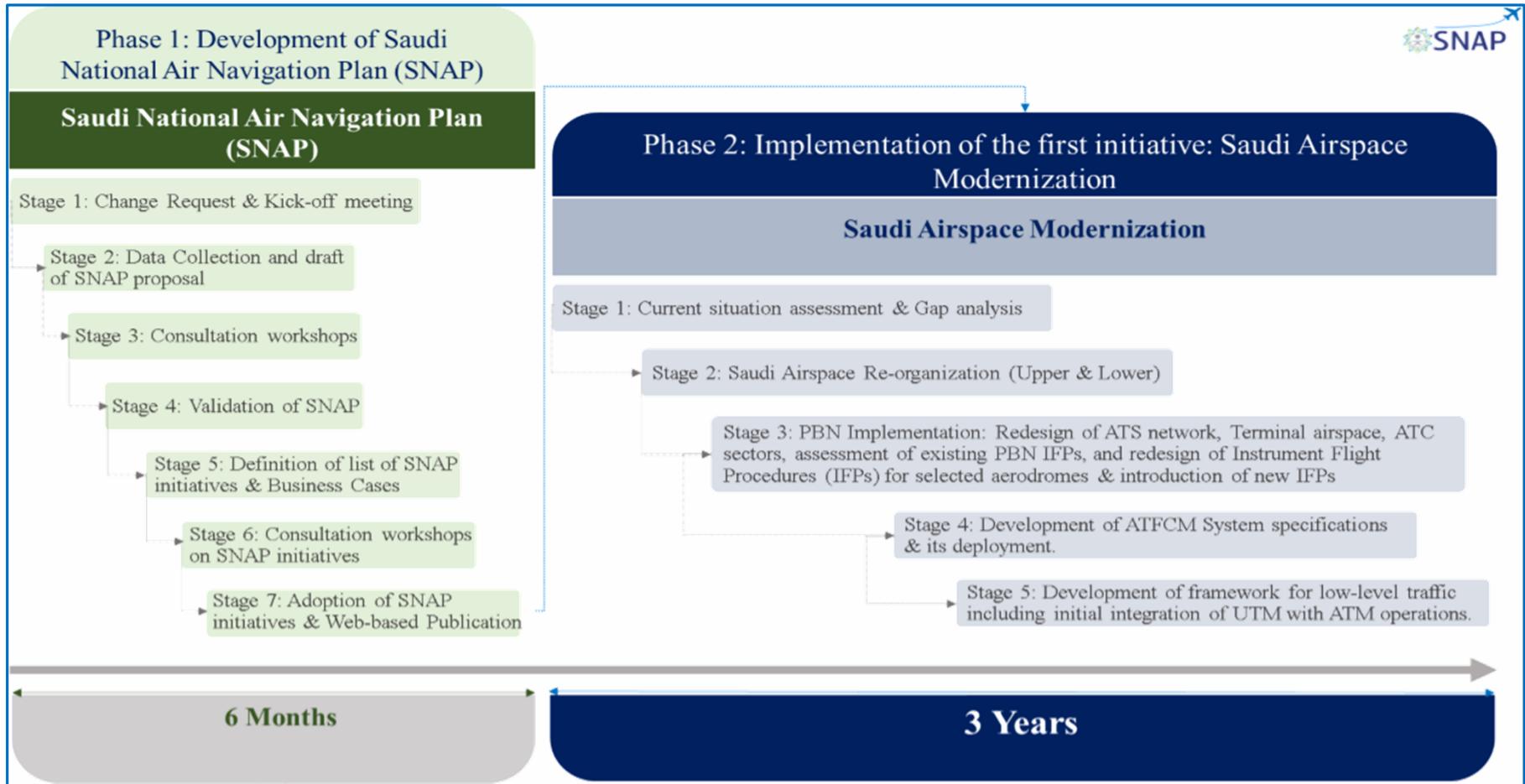


Setting an implementation plan of NANP is expected to be in alignment with GANP and RANP updates, however, giving priorities of any ASBU elements should be goals-based and respecting the enhancement or improvement of the safety, capacity, efficiency and eco-sustainability in the ANS area and should cover at least the Trajectory of flight where the CAAs, ANSPs and ADs usually provide a various of aviation services





Overview on NANP (SNAP) and modernization of KSA airspace





Overview on NANP (SNAP) and modernization of KSA airspace

Following the adoption of Civil Aviation Strategy by the Council of Ministers, GACA set keys and programs to ensure modernization of civil aviation in the Kingdom of Saudi Arabia (KSA).

The Civil Aviation Strategy is aiming to achieve and meet KSA vision 2030 which has set ambition targets for air transport and that can be summarized as follows:

- reach 330M passengers, 4.5M Tons of air cargo,
- increase direct international air connectivity of Saudi airports to +250 destinations,
- Transform Riyadh and Jeddah airports as global hubs for long/ultra-long-haul flights and air cargo,
- increase market-share of the national air carriers,
- Introduce massive infrastructure development,
- move from monopoly to fair competition and enable new business models.

Therefore, the size and complexity of the Saudi civil aviation sector is expected to triple by the end of the next decade.



Need for Saudi National Air Navigation Plan (SNAP)

To cope with the expected traffic growth and civil aviation developments, there is a need to set a **National Air Navigation Plan as the main planning and reference document for Air Navigation Services modernization in KSA**. The SNAP must define the development and deployment priorities needed to meet short, medium and long terms of civil aviation need and achieve the targets of KSA vision 2030. The structure of SNAP must allow easy and regular updating with clear and concrete steps on ways and means of coordination and collaboration between GACA and aviation stakeholders, in order to respond to the evolving aviation sector.





Overview on NANP (SNAP) and modernization of KSA airspace

Main considerations & factors

The current ANS systems and network can not accommodate the expected traffic growth and the new challenges without embracing innovation solutions. This endeavor is fully in line with the vision 2030 and GACA aviation strategy, which acknowledges that new technologies are key drivers of sustainable growth and modernization in air transport.

The delivery of GACA aviation strategy requires changes in the way technologies are selected and deployed, as well as in the way services are provided. This change in approach will be supported by the future structure and organization of KSA airspace. It is expected that SNAP will identify the requirements for airspace structure and re-organization to address the airspace capacity challenge in the medium and long terms by combining airspace configuration and design with ANS technologies to progressively increase the levels of collaboration and automation support.

In order to manage future traffic growth safely, the SNAP must:

- define a fully scalable traffic management system capable of handling growing air traffic both manned and unmanned.
- Support the development of aviation activities planned within Neom bay and the line project
- Support growth of air taxi and water aerodromes flying activities.
- consider the trajectory-based operations, which enable airspace users to fly their preferred flight trajectories as efficient as possible.
- define the digital transformation of the underlying infrastructure system, characterized by a significant increase in levels of automation and connectivity. The modularity of system infrastructure must be identified to allow certified air traffic services and data service providers to deploy this infrastructure and support wider range of services.
- define solutions to ensure that all KSA airports are fully integrated into the ANS/ATM network, which will facilitate and optimize airspace user operations.
- define roadmap for the regulatory framework evolution that meet and encourage innovation and support ANS modernization and timely deployment of initiatives.





Overview on NANP (SNAP) and modernization of KSA airspace

Emergence of new entrants and airspace users

The Unmanned Aircraft systems (UAS-Drones) flying activities are growing rapidly with major business opportunities, particularly in terms of service delivery, urban air mobility, various surveillance and agriculture applications and cargo delivery ...etc. Considering the wide variety of UAS and their level of automation, the SNAP must define:

- a framework for the development and deployment of a fully automated UAS management system, in particular for but not limited to very low-level airspace (below 1000FT).
- the levels of autonomy and connectivity in combination with emerging technologies considering the need to integrate large remotely piloted aircraft systems into manned traffic, with all safety related requirements.
- the best fit solutions for air traffic management and supporting air-ground systems to ensure safe integration of UAS; and
- The roadmap covering safe UAS integration into KSA airspace.

At the same time, the higher airspace activities (flights and operating aircraft at very high altitudes above FL 600) is also growing which need access to and from the stratosphere via airspace managed by Saudi Air Navigation Services (SANS), the only Air Navigation service provider in KSA. The SNAP must identify solutions to enable new forms of flight to and from the stratosphere and optimization of trajectories and how they can be efficiently managed to avoid delays and disruptions of air traffic.

Reduction of environment impact

With the growth in air traffic, the SNAP must define and prioritize solutions to gradually address the level of CO2 emissions and noise and define sustainable technical and operational solutions to reduce environmental inefficiencies due to the underlying aviation infrastructure and operating rules.





Overview on NANP (SNAP) and modernization of KSA airspace

Performance based approach

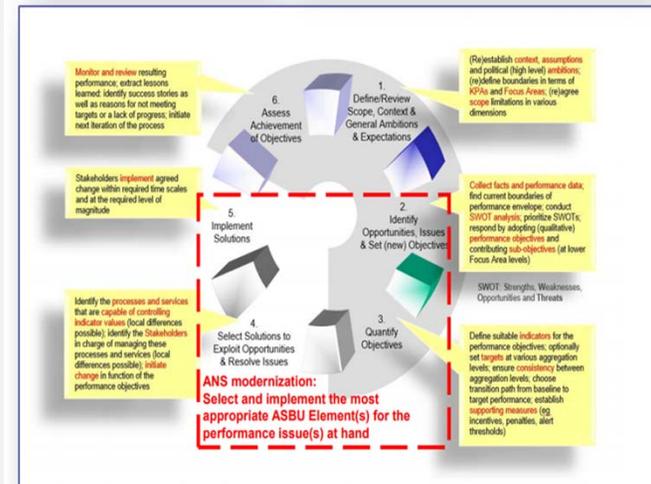
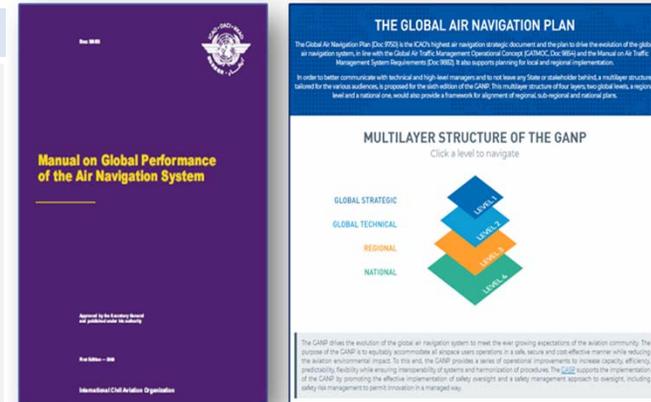
A performance-driven, innovative and state-of-the-art of ANS systems with high standards in terms of safety and performance are critical elements for achieving greater connectivity, as well as safe and predictable air traffic flow, while ensuring the environmental sustainability of the aviation sector in KSA. GACA is calling for a request for proposal to modernize ANS systems through the definition and development of Saudi National Air Navigation Plan (SNAP) and business case for the deployment of a new generation of innovative operational and technological solutions meeting KSA aviation and air transport strategy and taking due care of the human factors and performance.

The SNAP must define the vision, objectives, ways and means for ANS modernization and must be designed and developed as:

- a master document for ANS planning, development and deployment focusing initially on the period until the end of 2030.
- an evolving document intended to ensure that the priorities determined, and development and deployment activities remain strongly connected to KSA priorities and the development of aviation and air transport sector.

In addition, the SNAP must:

- be developed using ICAO Performance based approach (Six steps methodology) defined under ICAO Doc 9883 and the Global Air Navigation Plan (Doc 9750).
- define initiatives to deliver ANS systems capable of handling the growth and diversity of traffic safely and efficiently while improving environmental performance, thereby contributing to the achievement of KSA vision 2030.
- define an innovation cycle in support of aviation and air transport strategy. This cycle must describe the methodology and processes to be used to define, develop and deploy initiatives and solutions that meet pre-defined objectives and stakeholders' expectations.





Overview on NANP (SNAP) and modernization of KSA airspace

Phase One

address known ANS non-compliance and critical network performance deficiencies

Phase two

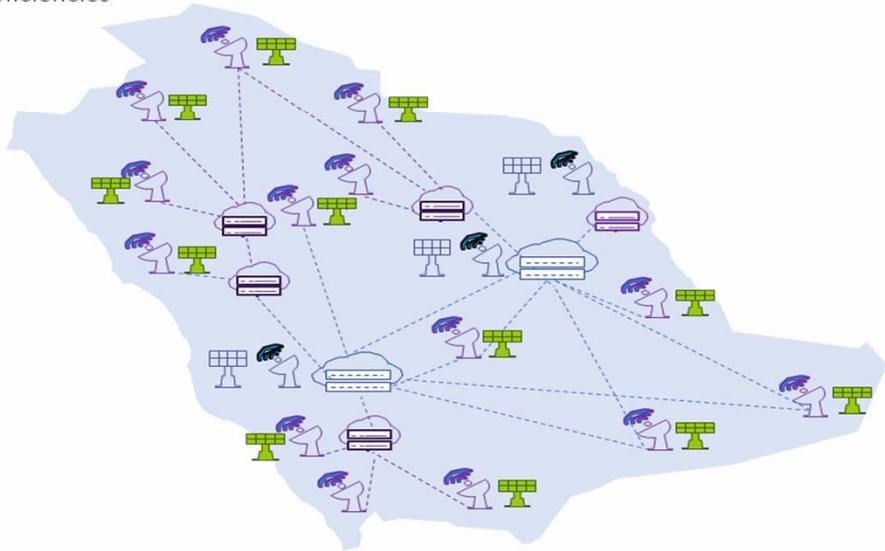
delivery of efficient services and infrastructure through ANS/ATM data exchange

Phase three

virtualization and dynamic airspace configuration and management,

Phase four

Integration and between manned and unmanned operations



CNS transformation

ADS-B surveillance

Alternative position, navigation and timing (A-PNT)

Precision approaches using Ground-Based Augmentation System (GBAS)

ATS datalink using satcom (satellite communications)

Dual-frequency multi-constellation (DFMC) GNSS

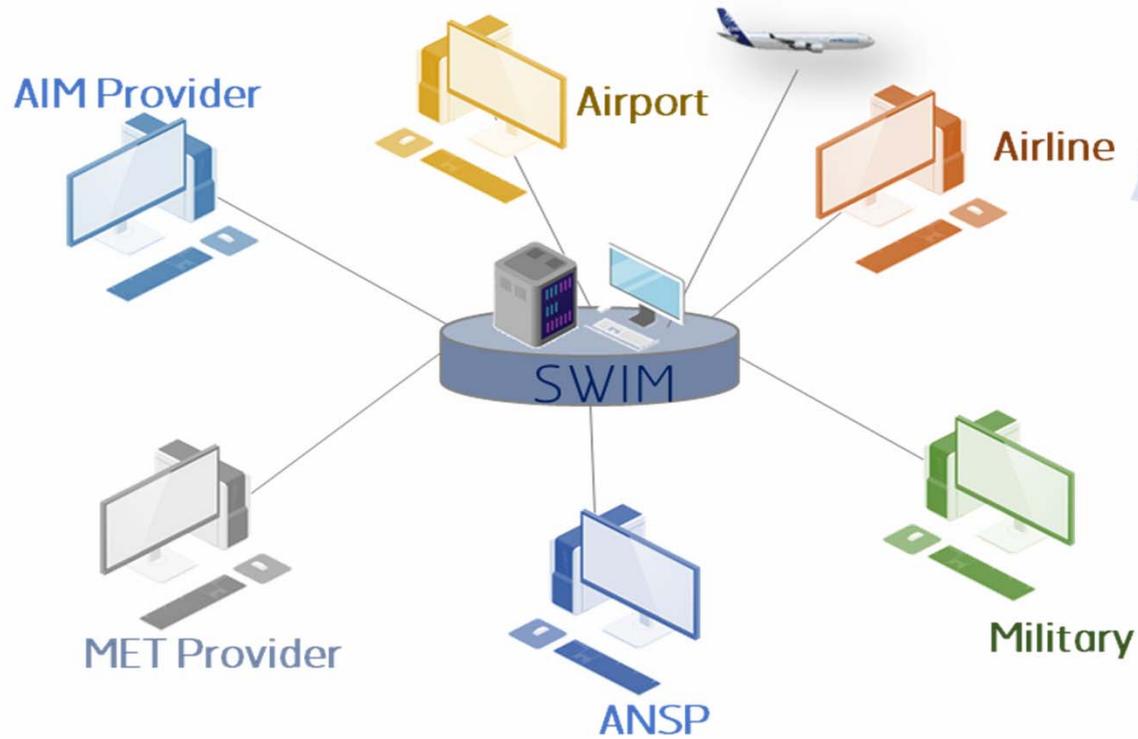
CNS transformation roadmap

CNS domains with conventional technology and low integration

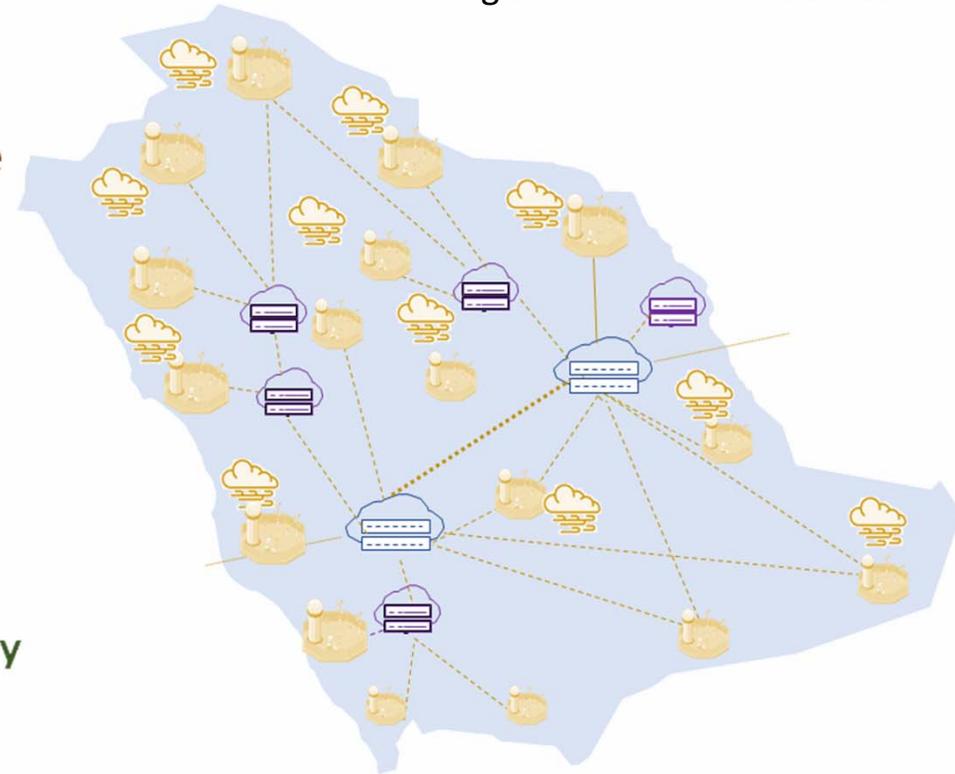




Overview on NANP (SNAP) and modernization of KSA airspace



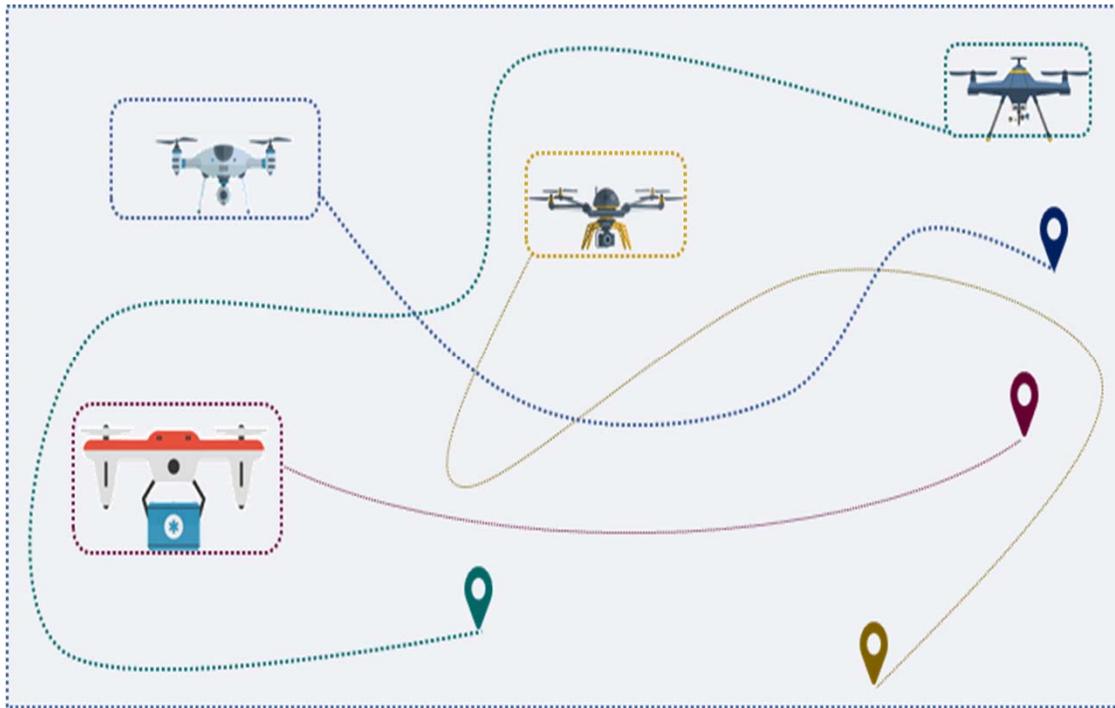
Digital AIM and MET services



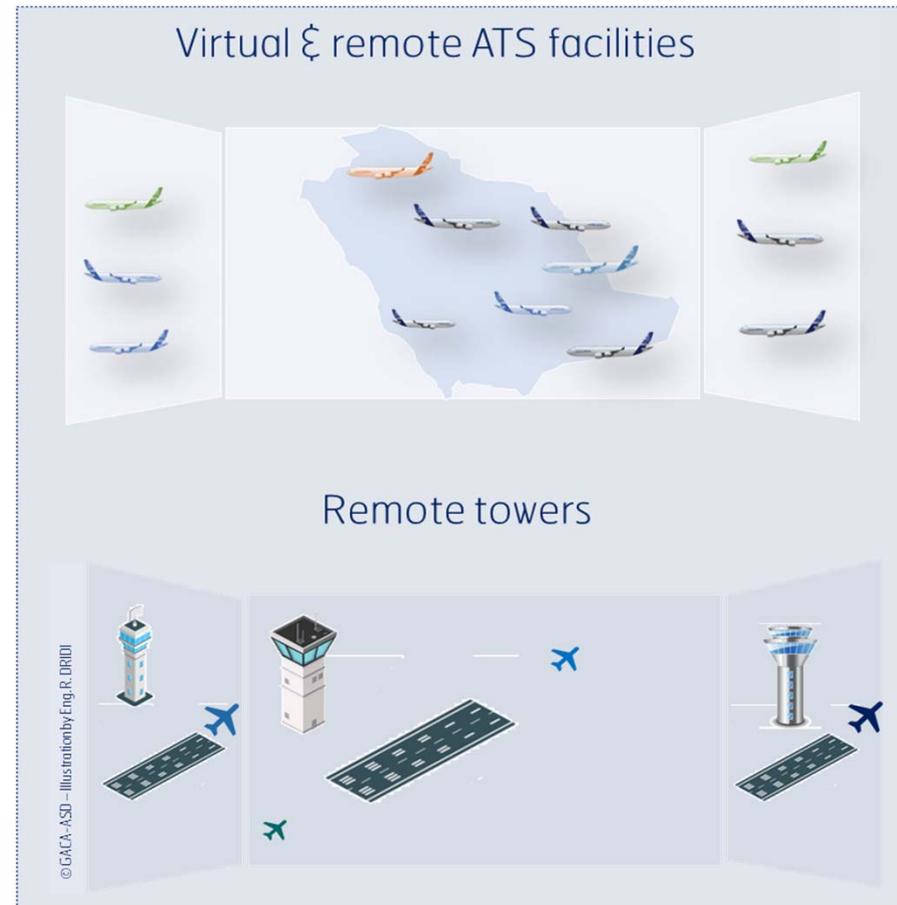


Overview on NANP (SNAP) and modernization of KSA airspace

UAS operations & services

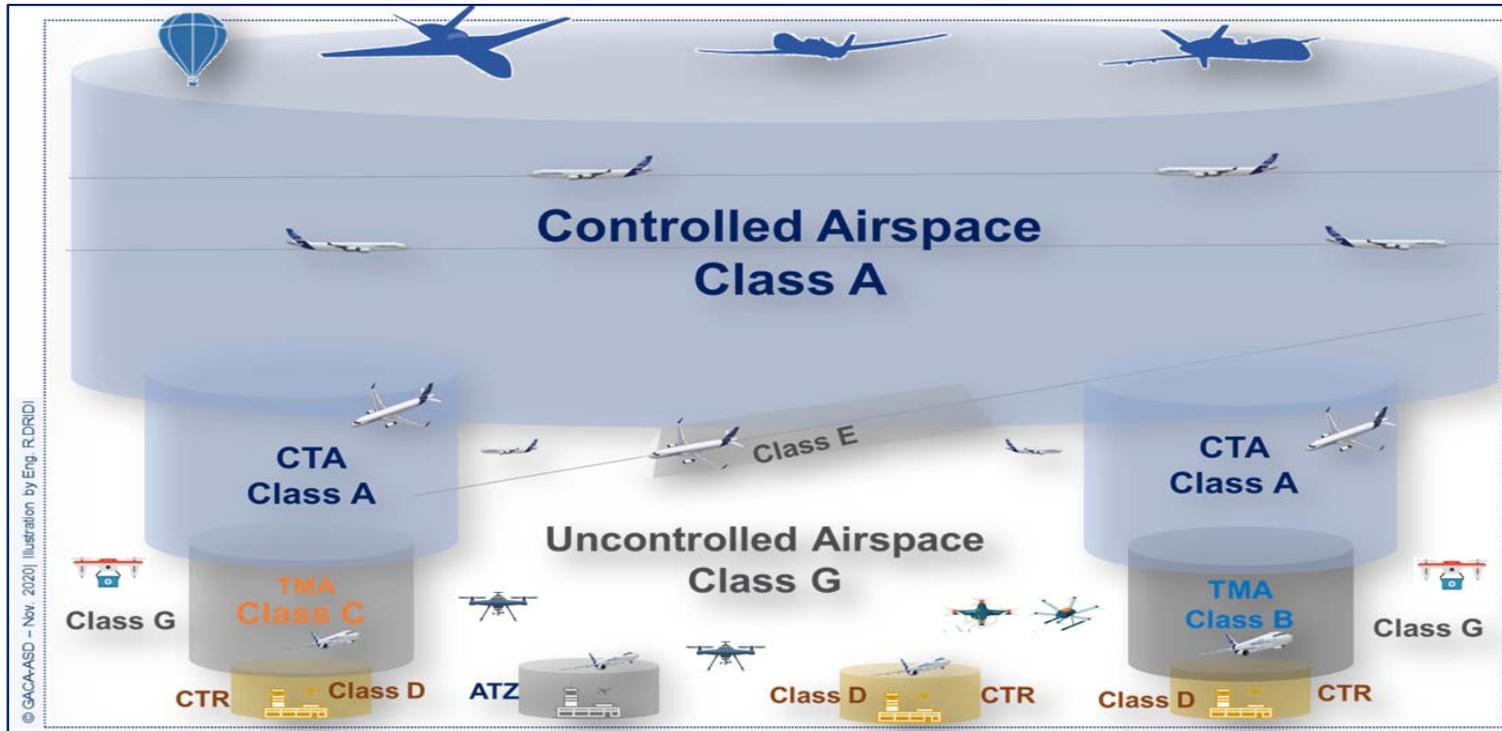


Virtual & remote ATS facilities



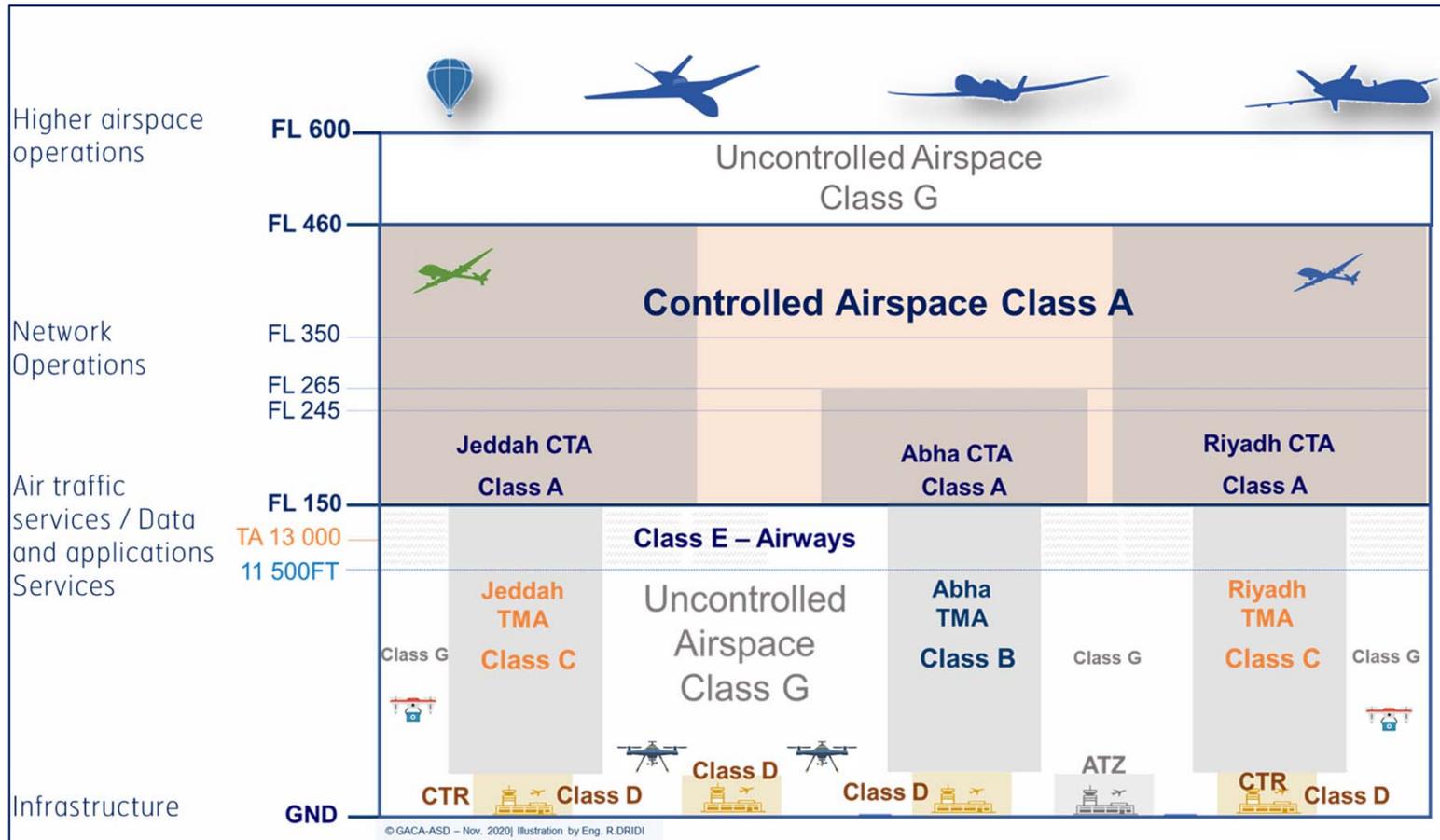


Overview on NANP (SNAP) and modernization of KSA airspace





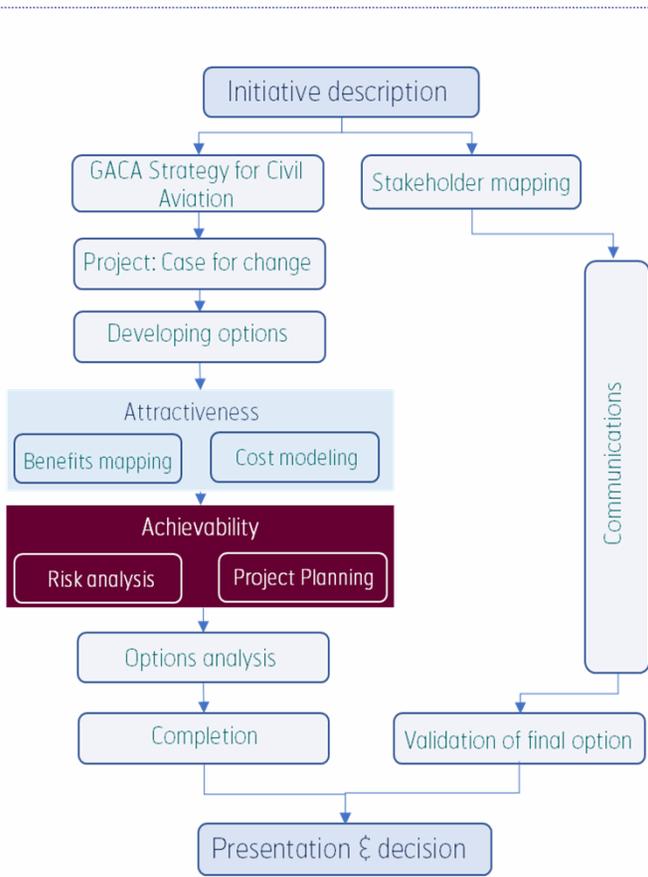
Overview on NANP (SNAP) and modernization of KSA airspace



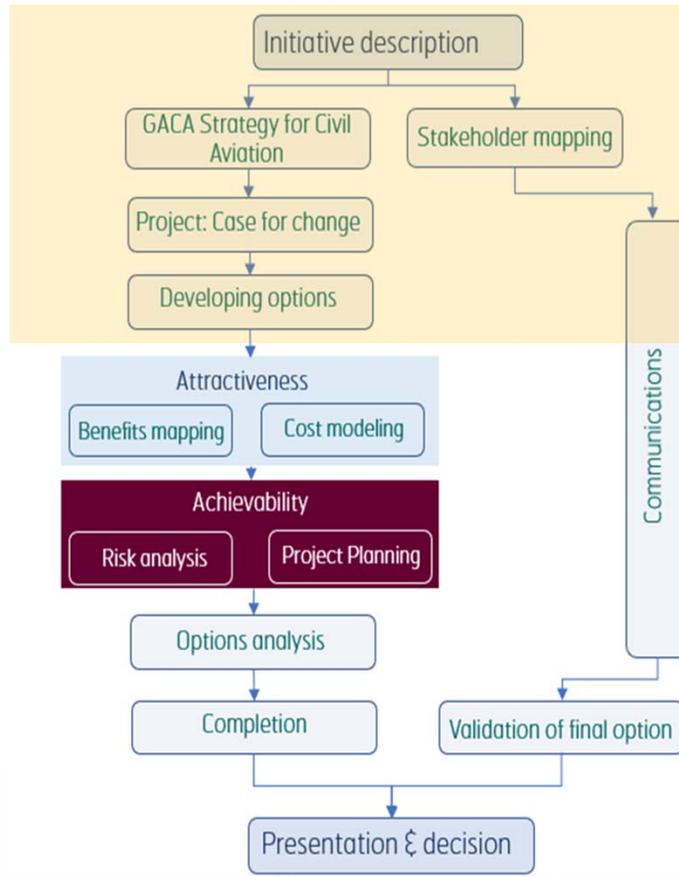


Overview on NANP (SNAP) and modernization of KSA airspace

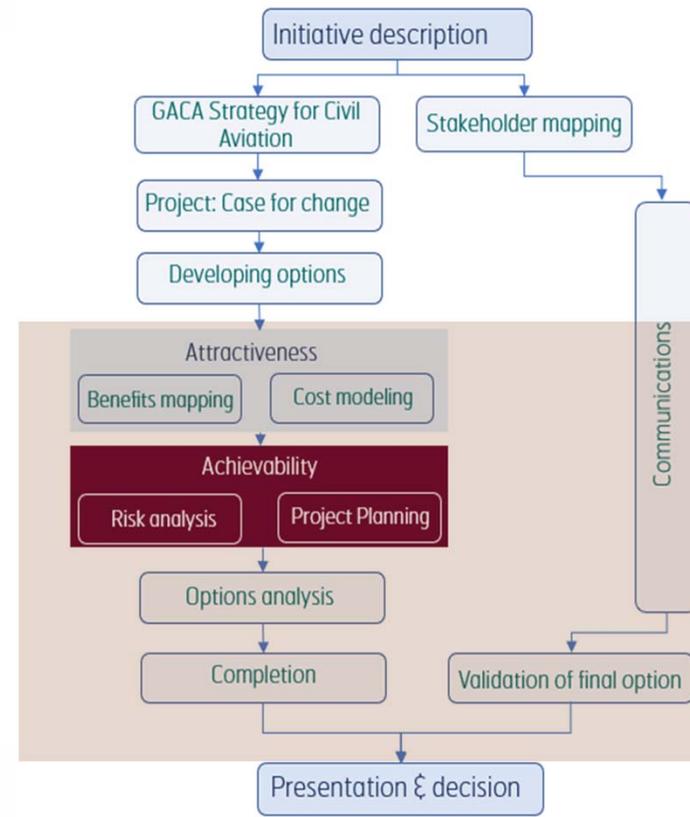
SNAP initiatives



Business Case – Flow of activities



Business Case – Flow of activities





Update on implementation of information threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia	
Information Threads			Implemented	Planel but not on process	
DAIM			Planel and on process	Not Implemented	
DAIM	B1/1		Provision of quality-assured aeronautical data and information	1	Certification ISO 9000/2015 since 3 April 2015. The AIS provider is certified in accordance with GACAR Part 175 (Annex 15 SARPs and 10066 PANS-AIM)
	B1/2		Provision of digital Aeronautical Information Publication (AIP) data sets	2	The digital Aeronautical Information Publication (AIP) data sets is available for all international aerodrome as defined under ICAO MID eANP Volume IIII
	B1/3		Provision of digital terrain data sets	1	The digital terrain data sets is available for all international aerodrome as defined under ICAO MID eANP Volume IIII. An update of the dataset for OEJN is on-going and will be finalized by Q2-2023
	B1/4		Provision of digital obstacle data sets	1	The digital terrain data sets is available for all international aerodrome as defined under ICAO MID eANP Volume IIII. An update of the dataset for OEJN is on-going and will be finalized by Q2-2023
	B1/5		Provision of digital aerodrome mapping data sets	2	GACA is working with other government agencies on the development of digital mapping data sets which include aerodrome.
	B1/6		Provision of digital instrument flight procedure data sets	2	The certified AIS provider (SANS) is in the final stage of implementing new AIM system (AIXM 5) last revision by the end of June 2023. Under this project, only XML files structured in accordance with the AIXM 5 will exchanged between various applications.
	B1/7		NOTAM improvements	2	A large NOTAM improvement program is set to ensure that the rules related to NOTAMs management are strictly applied. In addition, digital NOTAMs will be introduced with the new AIM system





Update on implementation of information threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Information Threads				Implemented
				Planned but not on process
AMET				Planned and on process
				Not Implemented
AMET	B0/1	Meteorological observations products	1	The National Centre for Meteorology (MET provider) is producing all Meteorological observations products in accordance with GACAR Part 179 (Annex 3 SARPs) and ICAO MID eANP. This Centre is also designated as an operational meteorological center (OPMET) for the Middle East.
	B0/2	Meteorological forecast and warning products	1	The National Centre for Meteorology (MET provider) is producing all Meteorological forecast and warning products in accordance with GACAR Part 179 (Annex 3 SARPs) and ICAO MID eANP. This Centre is also designated as an operational meteorological center (OPMET) for the Middle East.
	B0/3	Climatological and historical meteorological products	1	The National Centre for Meteorology (MET provider) is producing Climatological and historical meteorological products in accordance with GACAR Part 179 (Annex 3 SARPs). This Centre is also designated as an operational meteorological center (OPMET) for the Middle East.
	B0/4	Dissemination of meteorological products	1	The National Centre for Meteorology (MET provider) disseminates meteorological products in accordance with GACAR Part 179 (Annex 3 SARPs) using AFTN (for TAC format) and AMHS (for IWXXM) pre-defined connections. The description of MET services and products at each aerodrome is published under KSA AIP AD 2.11. This Centre is also designated as an operational meteorological center (OPMET) for the Middle East.
	B1/1	Meteorological observations information	2	The National Centre for Meteorology - NCM (MET provider) is making meteorological observations information available in IWXXM format (XML files) covering all required elements. The NCM has signed an agreement with Saudi Air Navigation Services (SANS) and national airlines to automatically transfer MET information using IWXXM format. The transfer of MET information between NCM and SANS was implemented in 2022 and the ATM and ATIS systems are fed, in automatic manner, and reports are used for the provision of ATS services. With respect to the automatic exchange of MET information with airlines work still in progress.





Update on implementation of information threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Information Threads				
			Implemented	Planed but not on process
AMET			Planed and on process	Not Implemented
AMET	B1/2	Meteorological forecast and warning information	2	The National Centre for Meteorology - NCM (MET provider) is making meteorological forecast and warning information available in IWXXM format (XML files), gridded, and graphical covering all required elements. The NCM has signed an agreement with Saudi Air Navigation Services (SANS) and national airlines to automatically transfer MET information using IWXXM format. The transfer of MET information between NCM and SANS was implemented in 2022 and the ATM and ATIS systems are fed, in automatic manner, and MET forecast and warning reports are used for the provision of ATS services. With respect to the automatic exchange of MET information with airlines work still in progress.
	B1/3	Climatological and historical meteorological information	2	The National Centre for Meteorology - NCM (MET provider) is making Climatological and historical meteorological information available in IWXXM format (XML files) covering all required elements. The NCM can provide the information in digital format on request.
	B1/4	Dissemination of meteorological information	2	The National Centre for Meteorology (MET provider) disseminates meteorological information in accordance with GACAR Part 179 (Annex 3 SARPs) using AFTN (for TAC format) and AMHS (for IWXXM) pre-defined connections. The use of digital format (XML files) is already implemented between NCM, SANS, and still under progress with airlines.





Update on implementation of information threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Information Threads				 Implemented  Planned but not on process
FICE				 Planned and on process  Not Implemented
FICE	Bo/1	Automated basic inter facility data exchange (AIDC)	1	The new ATM system has the capability of AIDC/OLDI data exchange and the required protocols are already implemented between ATC Centers using the ATM system (Riyadh, Jeddah ACCs, Dammam and Abha APPs). Regarding the exchange of data with adjacent ANPs, it is expected that Saudi Air Navigation Services (SANS) will implement OLDI with Egypt, UAE, OMAN, Qatar, and Bahrain during 2023.





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Operational Threads				Implemented Planned but not on process
APTA				Planned and on process Not Implemented
APTA	B0/1	PBN Approaches (with basic capabilities)	1	Implemented for all RWYs at International airports. LNAV and LNAV/VNAV IAPs are effective at International airports as described under ICAO MID eANP Volume III. The IAPs are published under eAIP.
	B0/2	PBN SID and STAR procedures (with basic capabilities)	1	PBN SIDs/STARs are implemented at International airports as per ICAO MID eANP as described under ICAO MID eANP Volume III. The IFPs are published under KSA eAIP.
	B0/3	SBAS/GBAS CAT I precision approach procedures	2	Under SNAP, the need for SBAS/GBAS CAT I will be defined and this category of IAPs may be introduced in medium term 2026 and beyond.
	B0/4	CDO (Basic)	1	CDO already implemented at international airports. as described under ICAO MID eANP Volume III
	B0/5	CCO (Basic)	1	CCO already implemented at international airports. as described under ICAO MID eANP Volume III
	B0/6	PBN Helicopter Point in Space (PinS) Operations	2	Under SNAP, the need for PBN Helicopter Point in Space (PinS) Operations will be defined and may be introduced by 2025.





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>				Implemented Planed but not on process
<i>APTA</i>				Planed and on process Not Implemented
APTA	B0/7	Performance based aerodrome operating minima – Advanced aircraft	1	GACA Regulatory framework authorizes Performance based aerodrome operating minima for Advanced aircraft (Ref: GACAR Part 91 §91.403 and the process and procedures for operational approval are also defined).
	B0/8	Performance based aerodrome operating minima – Basic aircraft	2	GACA Regulatory framework authorizes Performance based aerodrome operating minima for basic aircraft (Ref: GACAR Part 91 and the process and procedures for operational approval are also defined).
	B1/1	PBN Approaches (with advanced capabilities)	1	GACA Regulatory framework authorizes PBN Approaches with advanced capabilities (Ref: GACAR Part 91 and the process and procedures for operational approval are also defined).
	B1/2	PBN SID and STAR procedures (with advanced capabilities)	2	GACA Regulatory framework authorizes PBN SID and STAR procedures with advanced capabilities (Ref: GACAR Part 91 and the process and procedures for operational approval are also defined).
	B1/4	CDO (Advanced)	2	GACA Regulatory framework authorizes CDO advanced operations (Ref: GACAR Part 91 and the process and procedures for operational approval are also defined).
	B1/5	CCO (Advanced)	2	GACA Regulatory framework authorizes CCO advanced operations (Ref: GACAR Part 91 and the process and procedures for operational approval are also defined).



Based on need





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>			Implemented	Planed but not on process
FRTO			Planed and on process	Not Implemented
FRTO	B0/1	Direct routing (DCT)	2	Already implemented and the Integrated Flight Plan Management and ATM systems used by the certified ANSP (Saudi Air Navigation Services) have the capabilities to manage DCT routing
	B0/2	Airspace planning and Flexible Use of Airspace (FUA)	1	Airspace planning and Flexible Use of Airspace (FUA) already defined for Riyadh and Jeddah ACCs and agreements and working arrangements were signed
		Level 1 Strategic	1	The certified ANSP (Saudi Air Navigation Services) signed agreement (Strategic) with RSAF for airspace reservation; management and usage of regulated areas (R, & D) where those areas can be released for civil traffic when there are not activated. The next step will be a dynamic usage of regulated areas (R&D) which will be introduced in the near future.
		Airspace planning and Flexible Use of Airspace (FUA) Level 2	1	All agreements and working arrangements for airspace reservation at tactical level were established. A pre-tactical tool was defined by the certified ANSP and it is expected that real-time visualization of airspace reservation will be available during Q2-2023.
	B0/3	Pre-validated and coordinated ATS routes to support flight and flow	2	The certified ANSP (Saudi Air Navigation Services) has defined a set of ATS routes that can be activated to support traffic flow management during normal and abnormal situations (e.g. World cup, traffic flow, through empty quarter, and north sector).
	B0/4	Basic conflict detection and conformance monitoring	1	The new ATM system deployed by the certified ANSP (Saudi Air Navigation Services) has the capabilities to detect conflict between traffic through (Medium Term Conflict Detection – MTCD) and STCA) and to monitor the traffic through various features i.e. CLAM, RAM, APW.
	B1/1	Free Route Airspace (FRA)	2	The SNAP and modernization of airspace will identify the volume of airspace where free routing will be offered to airspace users.

Based on need





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia	
<i>Operational Threads</i>				Implemented Planned but not on process	
FRTO				Planned and on process Not Implemented	
FRTO	B1/2		Required Navigation Performance (RNP) routes	2	The empty quarter is subject of RNP capabilities. This information is published in KSA AIP GEN 1.5 since 2014.
	B1/3		Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	2	The SNAP and modernization of airspace will identify rules for Advanced Flexible Use of Airspace (FUA) and management of real time airspace data. A specific module of airspace management developed under the digitalization of aeronautical information in KSA i.e. new AIM system will support the implementation of this capability.
	B1/4		Dynamic sectorization	2	The SNAP and modernization of airspace will identify rules for dynamic sectorization.
	B1/5		Enhanced Conflict Detection Tools and Conformance Monitoring	2	The new ATM system deployed by the certified ANSP (Saudi Air Navigation Services) has the capabilities to detect conflict between traffic through (Medium Term Conflict Detection – MTCD) and STCA) and to monitor the traffic through various features i.e. CLAM, RAM, APW.
	B1/6		Multi-Sector Planning	2	The new ATM system has the capability for Multi-Sector Planning. The modernization of airspace will identify the rules.
	B1/7		Trajectory Options Set (TOS)	2	The SNAP and modernization of airspace will focus on trajectory-based elements.





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>				Implemented
				Planned but not on process
NOPS				Planned and on process
				Not Implemented
NOPS	B0/1	Initial integration of collaborative airspace management with air traffic flow management	1	The new ATM system deployed by the certified ANSP has the capability to visualize the current and expected traffic based on ATS messages (FPLs). The ATC supervisor can visualize a predication of expected capacity at each ATC sector and take the required measures. The certified ANSP has defined the airspace capacity for each ATC sector and for RWYs.
	B0/2	Collaborative Network Flight Updates	2	A new Integrated Flight Planning system was deployed to support airspace users in submitting FPLs using terminals. This system has an interface with the ATM system and the flight data is updated automatically. The SNAP and modernization of airspace project will identify all required interfaces to automatically exchange the flight data for the whole network.
	B0/3	Network Operation Planning basic features	2	A new Integrated Flight Planning system was deployed to support airspace users in submitting FPLs using terminals. This system has an interface with the ATM system and the flight data is updated automatically. The SNAP and modernization of airspace project will identify all required interfaces to automatically exchange the flight data for the whole network.
	B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	2	The SNAP and modernization of airspace project will identify ATFM applications between all stakeholders.
	B0/5	Dynamic ATFM slot allocation	2	The SNAP and modernization of airspace project will define the dynamic ATFM slot allocation applications to increase efficiency and capacity.
	B1/1	Short Term ATFM measures	2	The SNAP and modernization of airspace project will identify ATFM measures and their applicability.
	B1/2	Enhanced Network Operations Planning	2	The SNAP and modernization of airspace project will identify the capabilities for Enhanced Network Operations Planning
	B1/3	Enhanced integration of Airport operations planning with network operations planning	2	The SNAP and modernization of airspace project will identify the capabilities for Enhanced integration of Airport operations planning with network operations planning





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Operational Threads				Implemented
				Planned but not on process
NOPS				Planned and on process
				Not Implemented
NOPS	B1/4	Dynamic Traffic Complexity Management	2	This capability is already available in the new ATM system and its use will be defined under the modernization of airspace.
	B1/5	Full integration of airspace management with air traffic flow management	2	The modernization of airspace project is covering full integration of airspace management with air traffic flow management.
	B1/6	Initial Dynamic Airspace configurations	2	This capability is already available in the new ATM system and its use will be defined under the modernization of airspace.
	B1/7	Enhanced ATFM slot swapping	2	The modernization of airspace project is covering use of enhanced ATFM slot swapping
	B1/8	Extended Arrival Management supported by the ATM Network function	2	The modernization of airspace project is usage of Extended Arrival Management supported by the ATM Network function.
	B1/9	Target Times for ATFM purposes	2	The modernization of airspace project will identify ATFM applications including Target Times for ATFM purposes
	B1/10	Collaborative Trajectory Options Program (CTOP)	2	The modernization of airspace project will identify requirements for Collaborative Trajectory Options Program.





Update on implementation of Operational threads – Block 0 & 1

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>				Implemented Planed but not on process
ACAS				Planed and on process Not Implemented
ACAS	B1/1	ACAS Improvements	1	Already implemented and the carriage of ACAS (TACS V7.1) is mandatory within Jeddah FIR. The mandate is defined under GACAR Part 121 §121.221(h) & §121.513(p) & GACAR Part 91 Appendix C

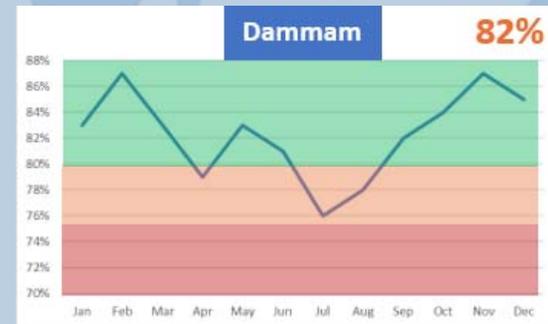
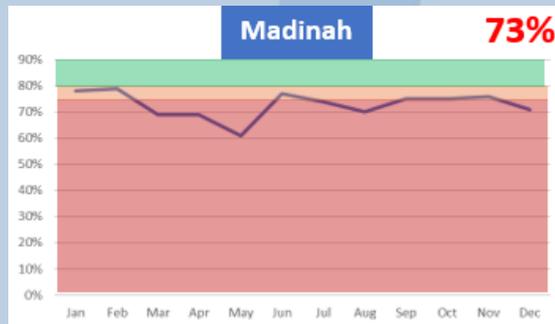
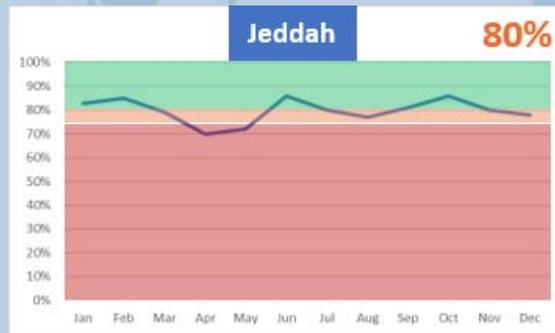
Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>				
SNET				
SNET	B0/1	Short Term Conflict Alert (STCA)	1	Already implemented for all ATS Units where ATS surveillance is used for air traffic management i.e. Jeddah, Riyadh ACCs, Madinah, Dammam, Abha, Jazan, Gassim, and Hail APPs
	B0/2	Minimum Safe Altitude Warning (MSAW)	1	Already implemented for all ATS Units where ATS surveillance is used for air traffic management i.e. Jeddah, Riyadh ACCs, Madinah, Dammam, Abha, Jazan, Gassim, and Hail APPs
	B0/3	Area Proximity Warning (APW)	1	Already implemented for all ATS Units where ATS surveillance is used for air traffic management i.e. Jeddah, Riyadh ACCs, Madinah, Dammam, Abha, Jazan, Gassim, and Hail APPs
	B0/4	Approach Path Monitoring (APM)	2	The feature is available in the ATM system and planned be used with the updates of the eTOD data stating from 2023.
	B1/1	Enhanced STCA with aircraft parameters	2	The feature is available in the ATM system, and planned to be activated with the implementation of ADS-B surveillance network (Already started), and will be completed by the end of 2023.
	B1/2	Enhanced STCA in complex TMA	2	The feature is available in the ATM system, and planned to be activated with the implementation of ADS-B surveillance network and ASMGCS (Already started), and will be completed by the end of 2025.

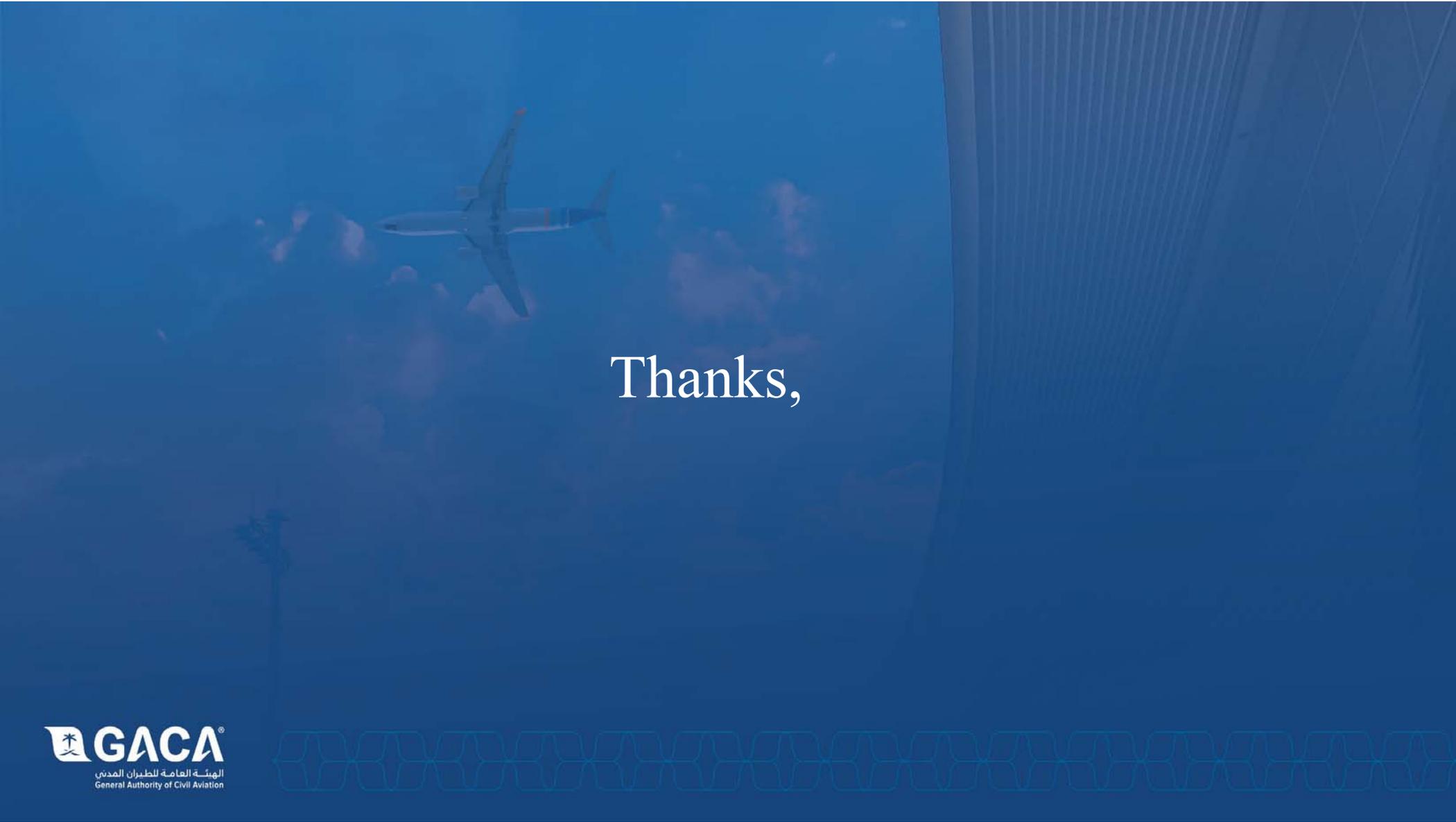




KPI 01 - % of Departure Punctuality – Main Airports

As a required KPI by ICAO, the implementation process to calculate the percentage of Departure Punctuality started in January 2022 in the four main airports. JED, RUH, DMM, and MAD using a variant of ± 15 minutes. A follow-up committee was established to enhance the recorded scores in 2023.





Thanks,