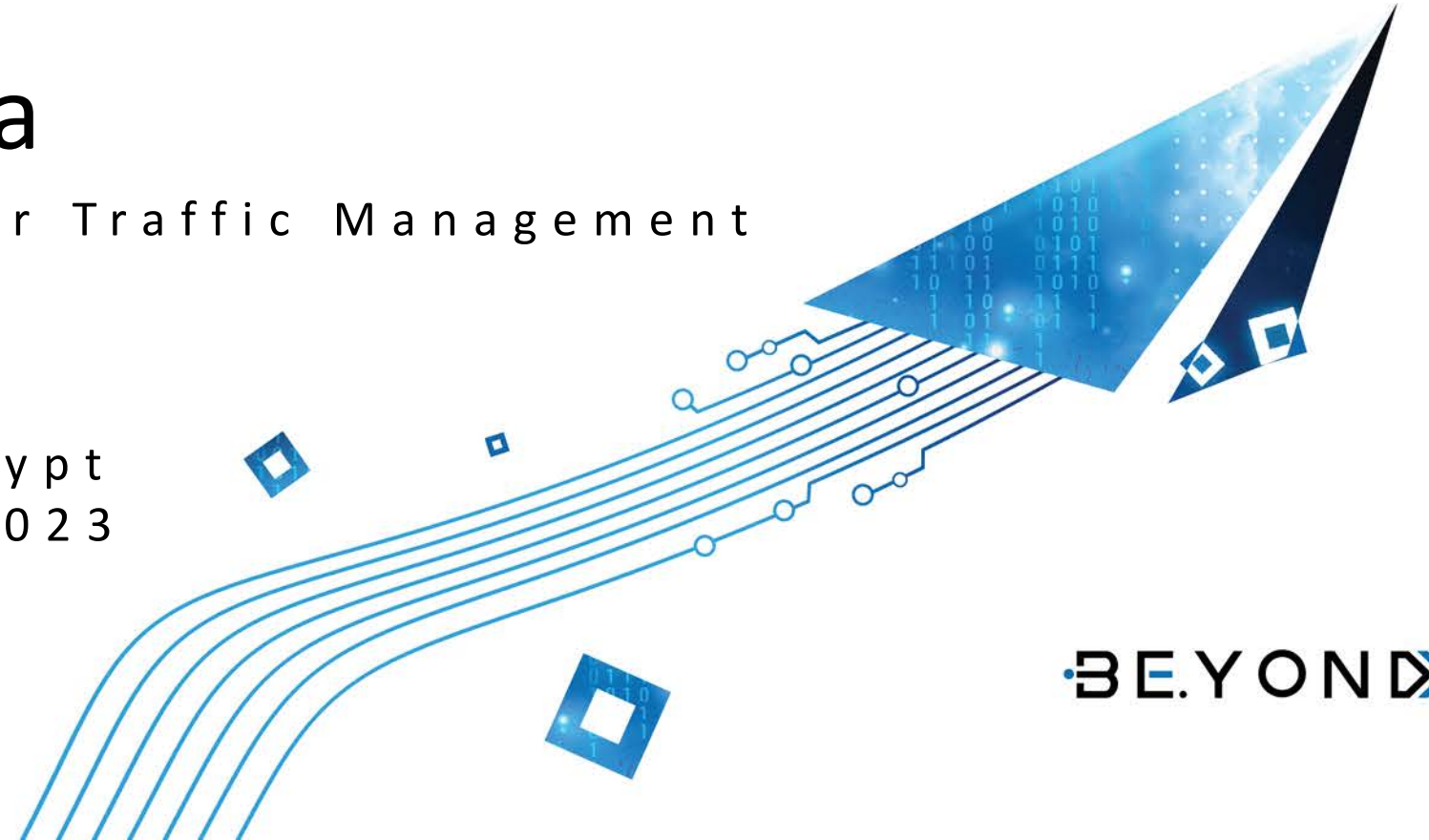




Saudi Arabia

Ninth MIDANPIRG Air Traffic Management
Sub-Group Meeting

ATM SG/9
Sharm El Sheikh, Egypt
14 – 16 November 2023



BEYOND»

Updates from Saudi Arabia on ATM/SAR Implementation

- MIDANPIRG conclusions related to ATM/SAR
- Airspace and ATM enhancements projects within Saudi Arabia
 - OLDI/AIDC
 - Airspace Projects
 - Reduction of longitudinal separation

- Status of SAR implementation update
- ASBU
- SANS - Dashboards
- SNAP / SFAC



MIDANPIRG conclusions related to ATM/SAR

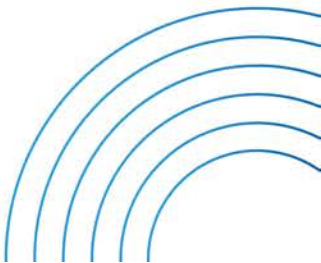
Updates from Saudi Arabia on ATM/SAR Implementation

MIDANPIRG CONCLUSION 20/13:

MIDANPIRG CONCLUSION 20/13: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME I, TABLES ATM I-1 MID REGION FLIGHT INFORMATION REGIONS (FIRS)/UPPER INFORMATION REGIONS (UIRS) AND SAR I-1 MID REGION SEARCH AND RESCUE REGIONS (SRRS).

ATM deficiencies: update on the contingency agreements with adjacent ACCs (ATM SG/8-WP/20, 3/11/2022:

AGREEMENT SIGNED WITH QATAR, REMAINING ARE IRAQ AND SUDAN

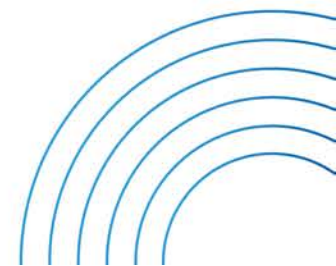


Airspace and ATM enhancements projects within Saudi Arabia

OLDI (Online Data Interchange)

SANS Plan is to connect OLDI with all adjacent FIRs according to the neighboring country systems reliability :

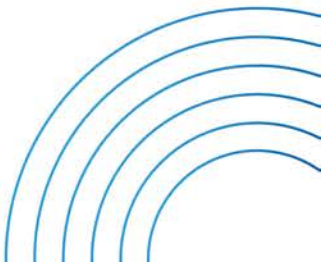
		Bahrain OLDI to Jeddah Simulator (Sep 2023 Trials)
		UAE OLDI to Jeddah Simulator (Oct 2023 trials)
		Oman OLDI to Jeddah Simulator (Nov 2023 trials)
		Qatar OLDI to Jeddah Simulator (Nov 2023 trials) – Technical
		Jordan AIDC to Jeddah Simulator (Sep 2023 trials)
		Cairo AIDC to Jeddah Simulator (Sep 2023 trials) – Technical



Reduction of longitudinal Separation

Application of minimum longitudinal radar separation with following FIRs:

		Bahrain FIR 10NM
		UAE FIR from 20NM to 10NM
		Muscat FIR from 5 Minutes to 20NM (<u>10NM</u>)
		Doha FIR from 10 Minutes to 10NM
		Amman FIR 10NM
		Cairo FIR from 20NM to 15NM



Reduction of longitudinal Separation IN JED FIR

Phase I: CTAs

10 > 5 NM

Jeddah CTAs

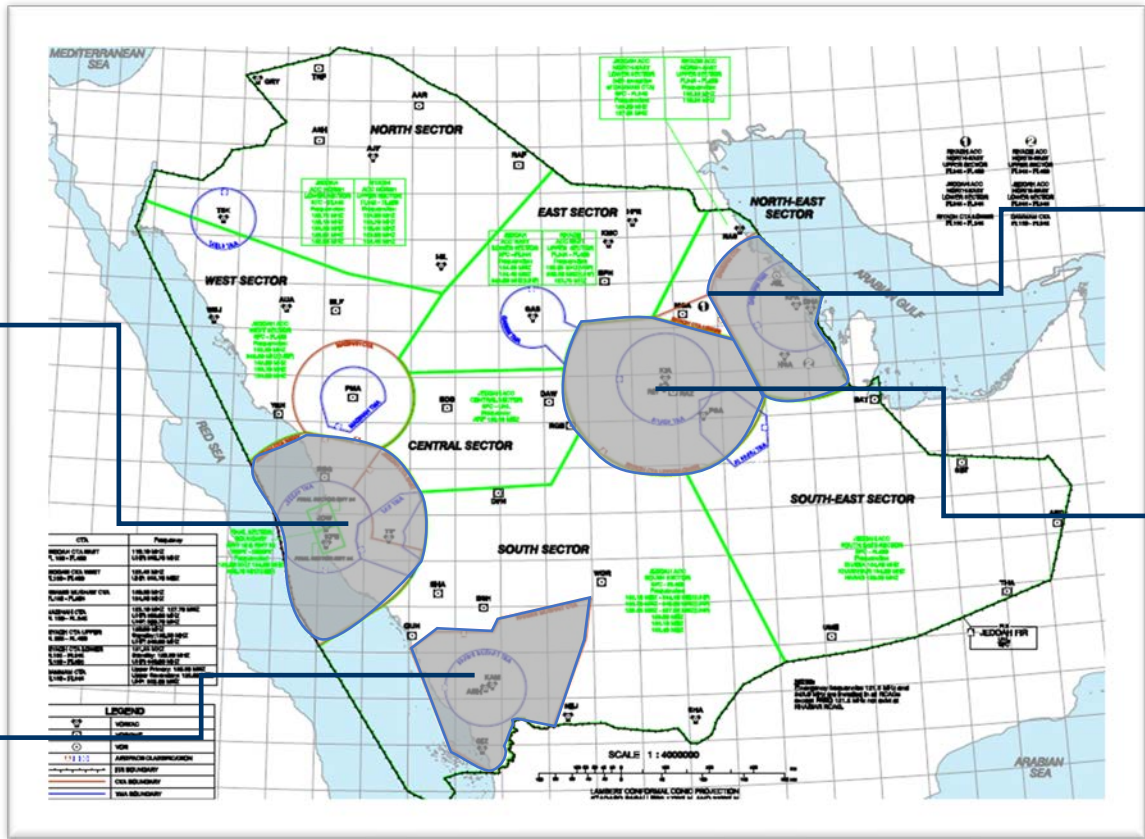
(Implemented on 09 May 2022)

Dammam CTA

(Implemented on 20 MAY 2021)

Riyadh CTA

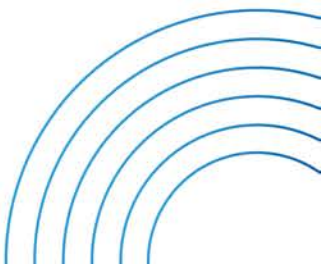
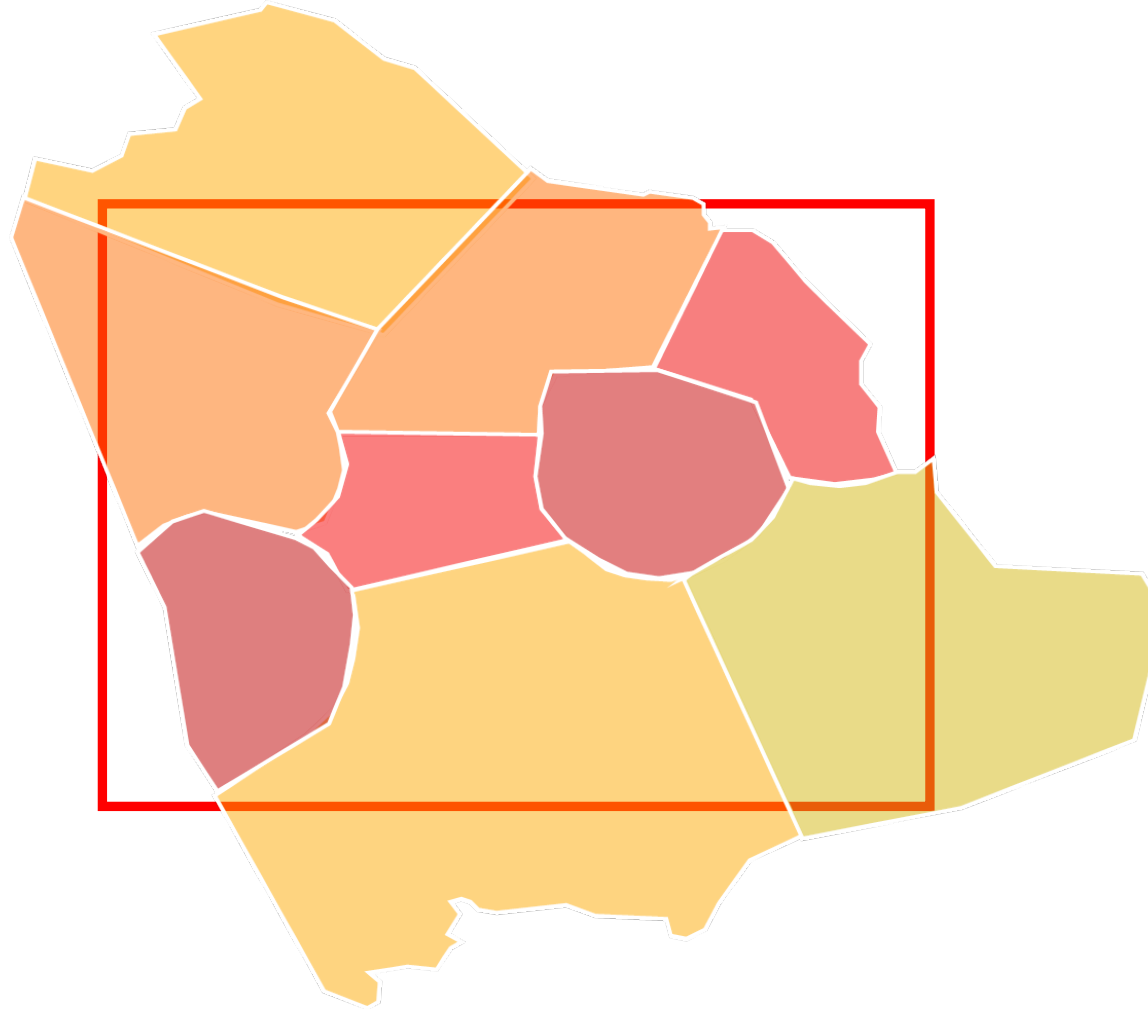
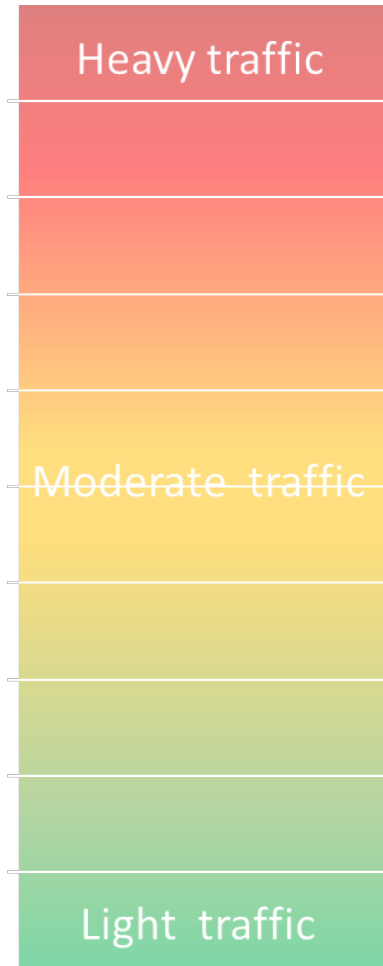
(Implemented on 15 FEB 2023)



Abha CTA

(Implemented on 26 June 2022)

Applying 5NM in Northeast Sector



Applying 5NM in Sectors

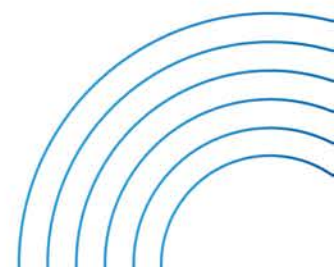
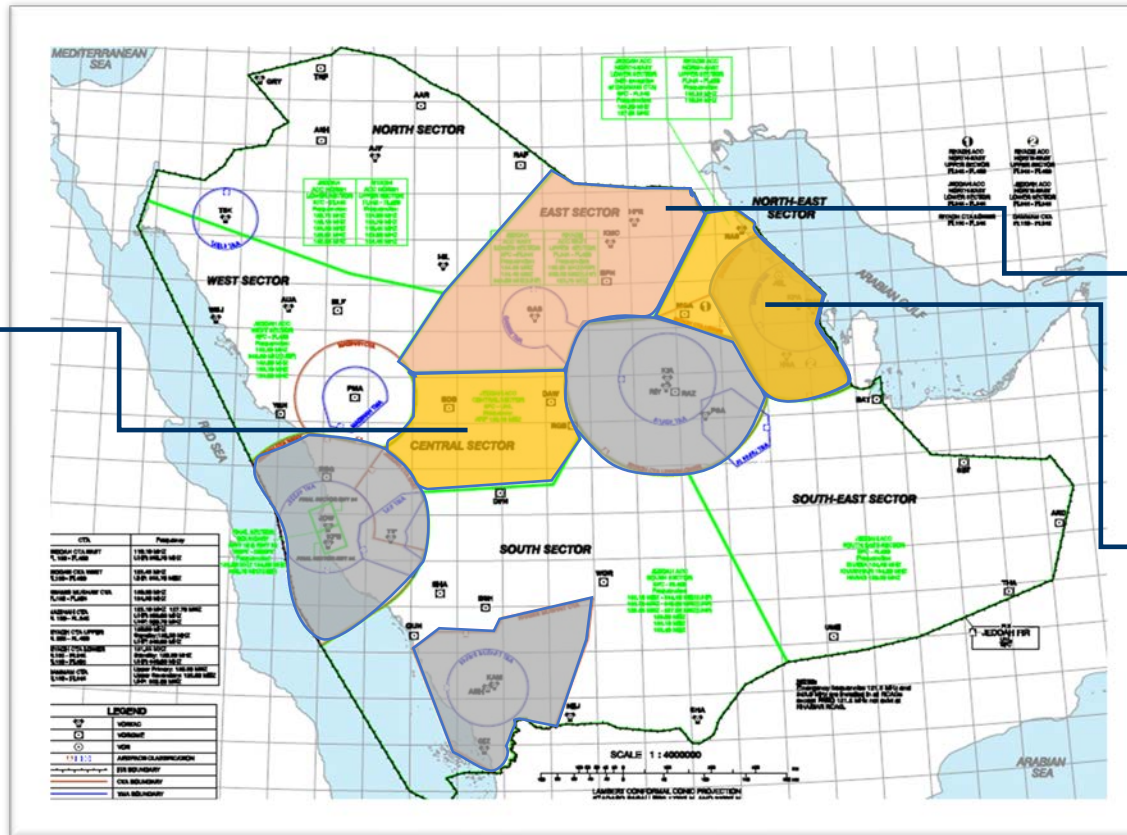
Phase II:
Sectors

10 > 5 NM

Central Sector
(Planned on 2024)

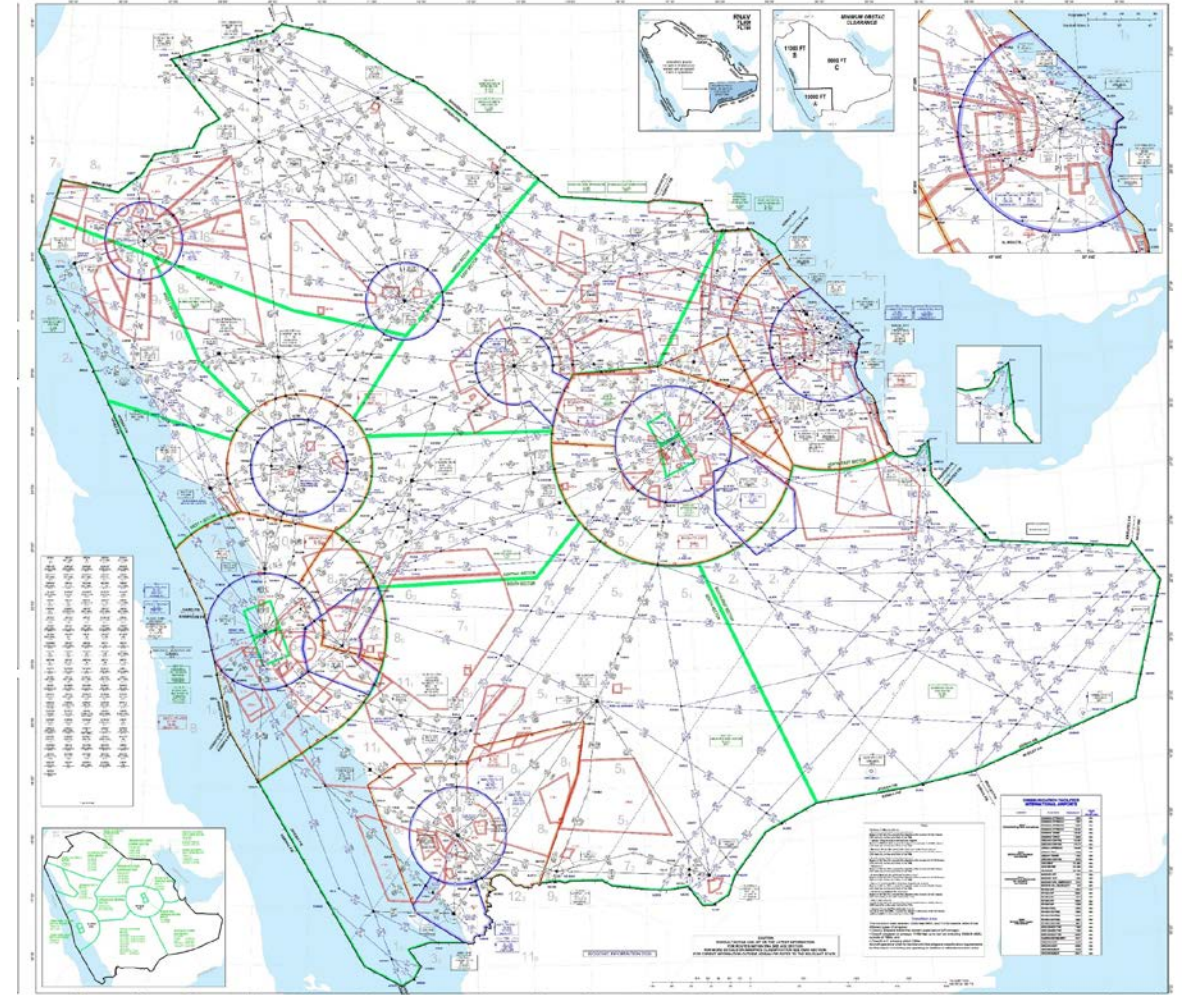
East Sector
(Planned)

Northeast Sector
(Planned on 2024)

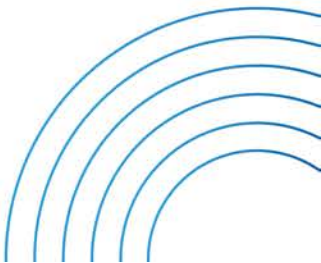
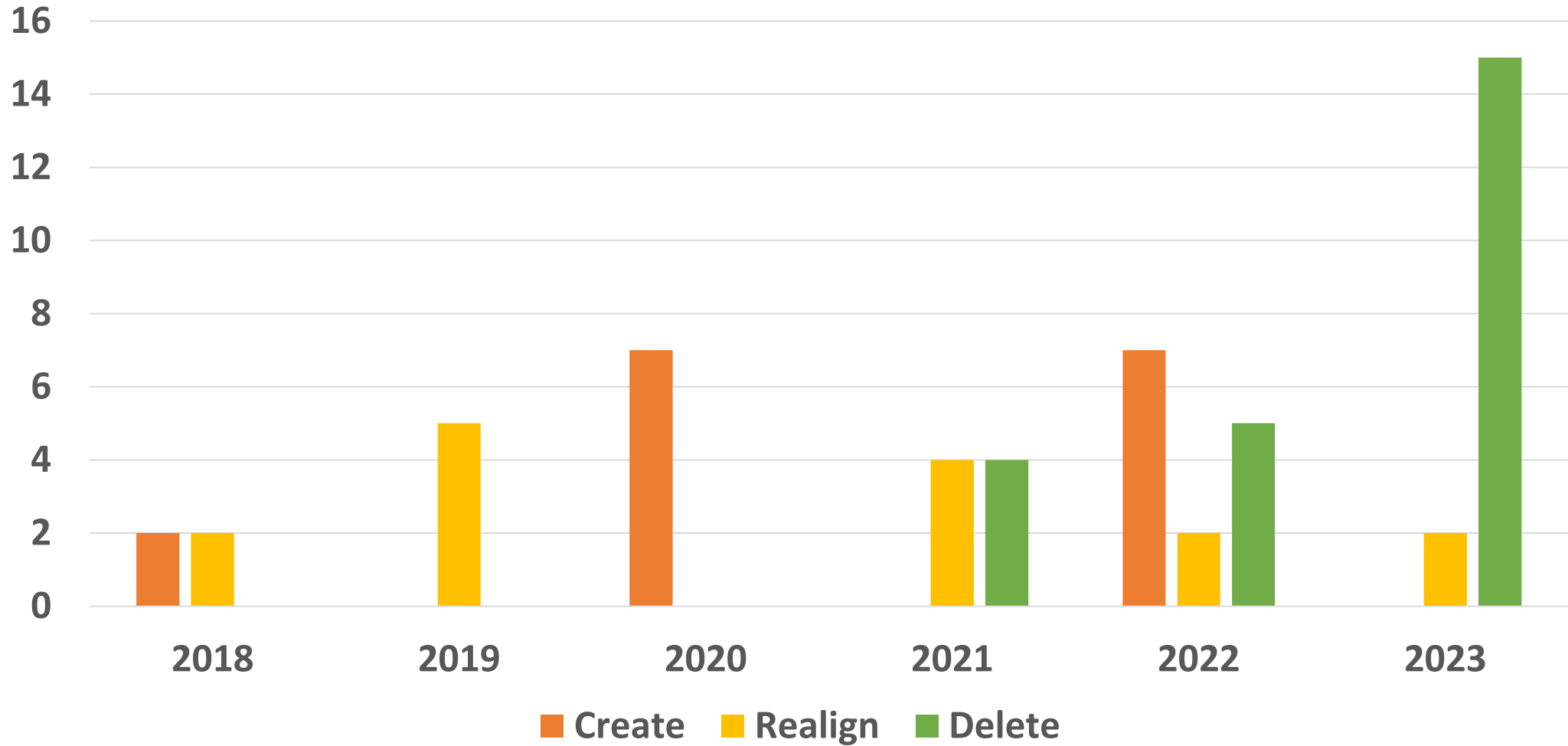


FL460 to FL600

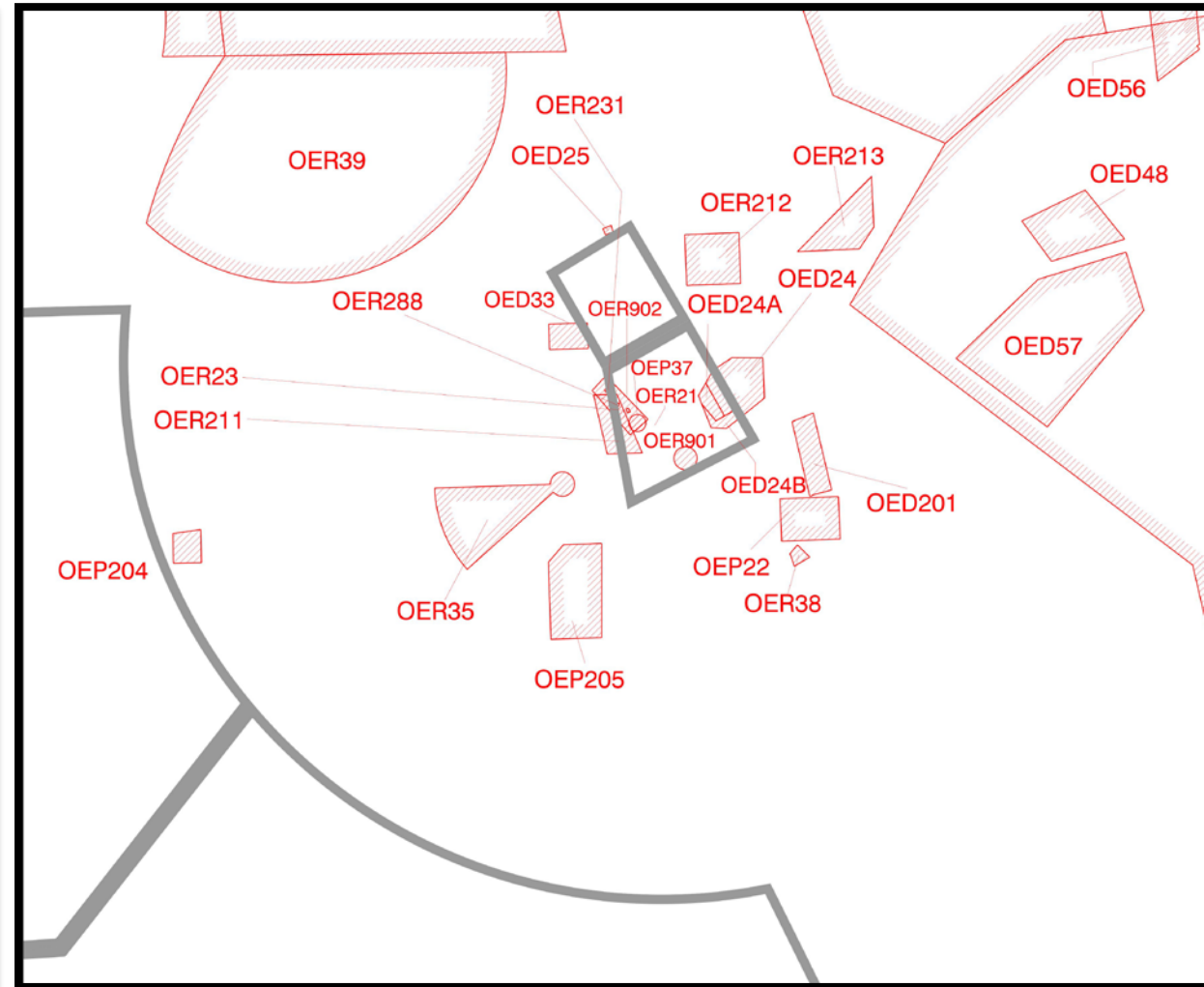
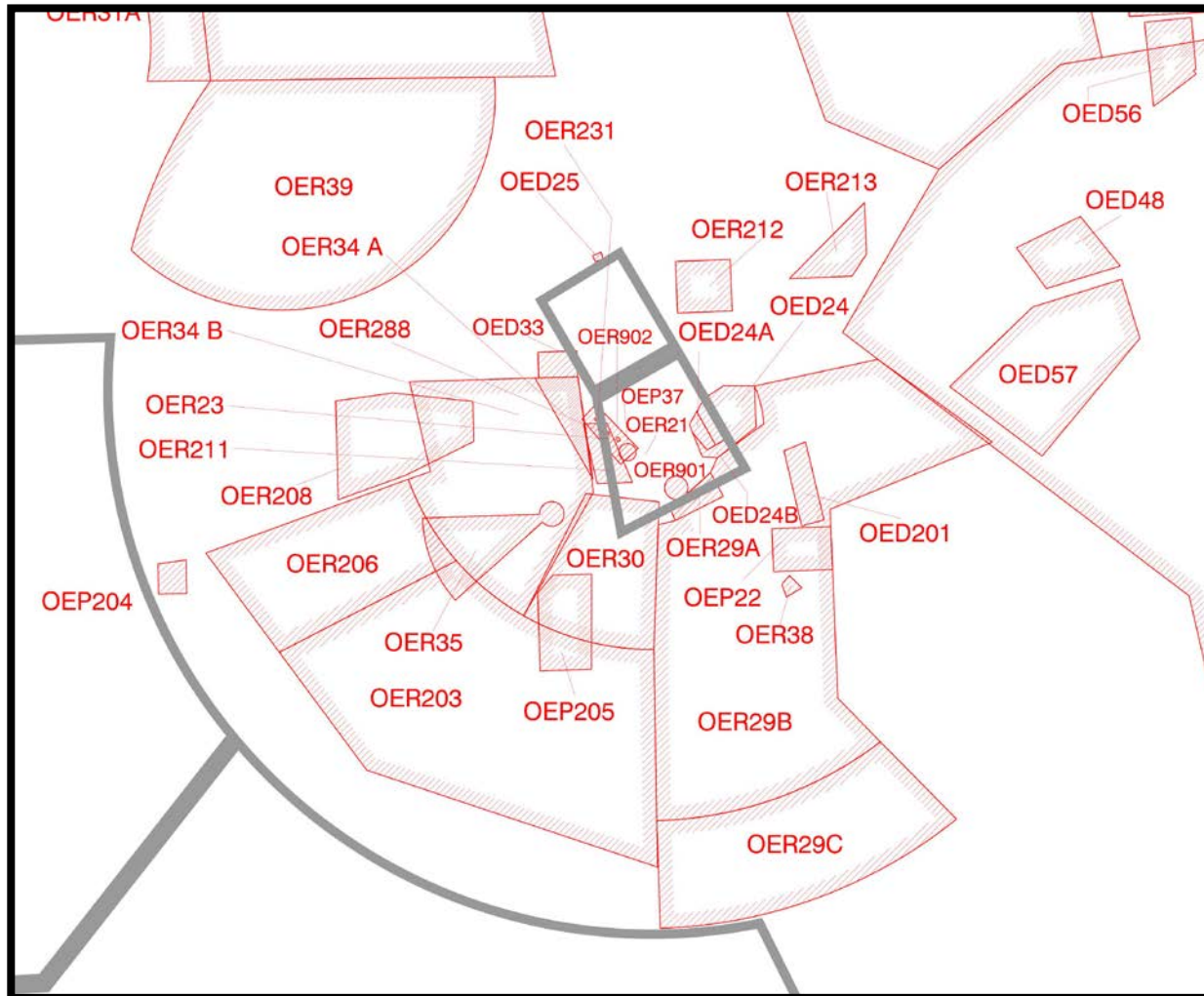
Under the modernization of KSA airspace and based on the objectives of Vision 2030 for air transport, the class (A) airspace upper limit extended from FL 460 up to FL 600.
Effective 23 MAR 2023



Civil Military Cooperation



Civil Military Cooperation



Civil Military Cooperation

- Collect Airspace reservation Requests (AIM Portal Integration)
- Automated impact analysis of requests against the airspace structure, the other active reservations, NOTAMs
- Pre-fill NOTAM proposals (CRONOS integration)

The screenshot displays two views of the AirNav system. The top view shows a detailed impact analysis for a specific request (CR Code 8567, TSA DES) against an existing reservation (R-DEK20). It includes a 3D visualization of the overlapping volumes and a table of parameters.

CR Code	Asp. Code	From	To	Lower	Upper	Geometry
8567	TSA DES	2020-10-07 10:00 +00:00	2020-10-07 11:00 +00:00	3000	35000	[Icons]

The bottom view shows a calendar for September 2020, with colored dots indicating reservation activity for each day. A sidebar on the left provides navigation options like Home, Tasks, Data Origination, and Airspace Coordination.

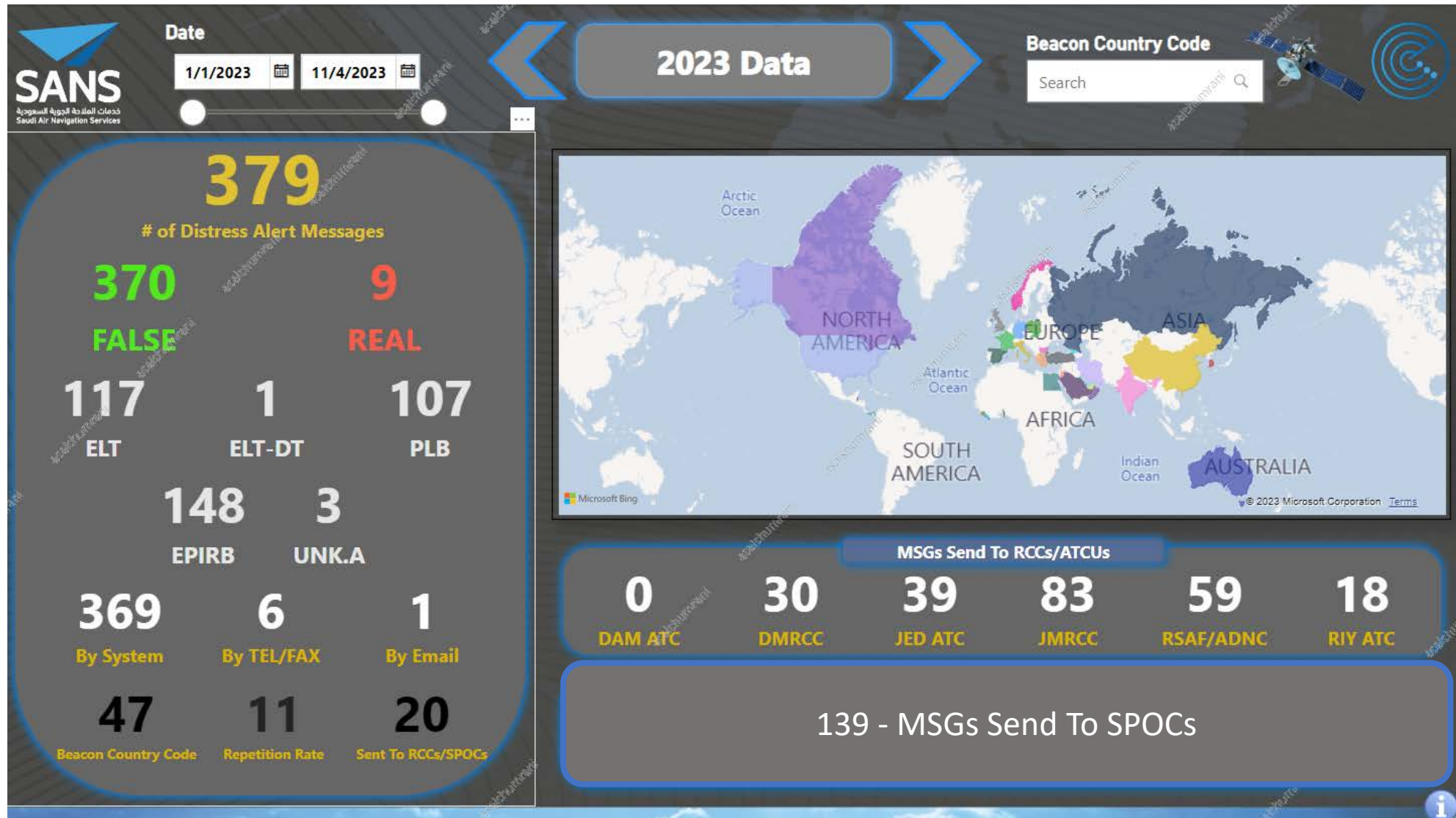
Status of SAR implementation

SAR implementation update

- Implementation of GADS Concept ELT(DT)
- SAMCC FOC LGM Deceleration (27 October 2023)
- Respond to 9 Real Distress saving 23 persons
- Lunch SANS Distress Beacons Database



SAR implementation update



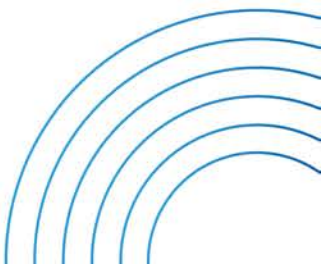
ASBU/Air Navigation Strategy



BEYOND»

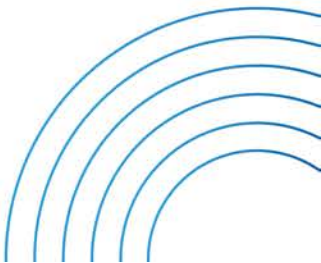
ASBU/Air Navigation Strategy

	ACAS	ASUR	FICE	APTA	NOPS	ACDM	FRTO
B1/1	Green		Yellow				
B0/1		Green		Green	Green	Green	Green
B0/2		Green		Green		Red	Green
B0/3		Green					Green
B0/4				Green			Green
B0/5				Green			
B0/7				Green			



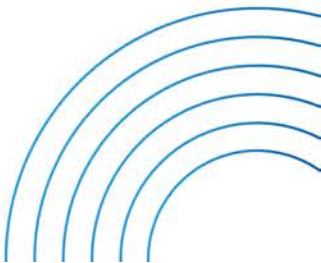
ASBU/Air Navigation Strategy

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Information Threads</i>				
FICE				
FICE	B0/1	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 2024.



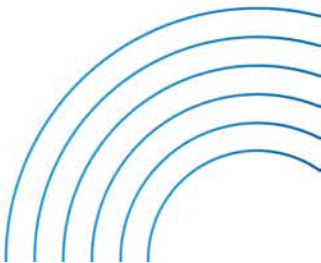
ASBU/Air Navigation Strategy

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
<i>Operational Threads</i>				
<i>APTA</i>				
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.
	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).



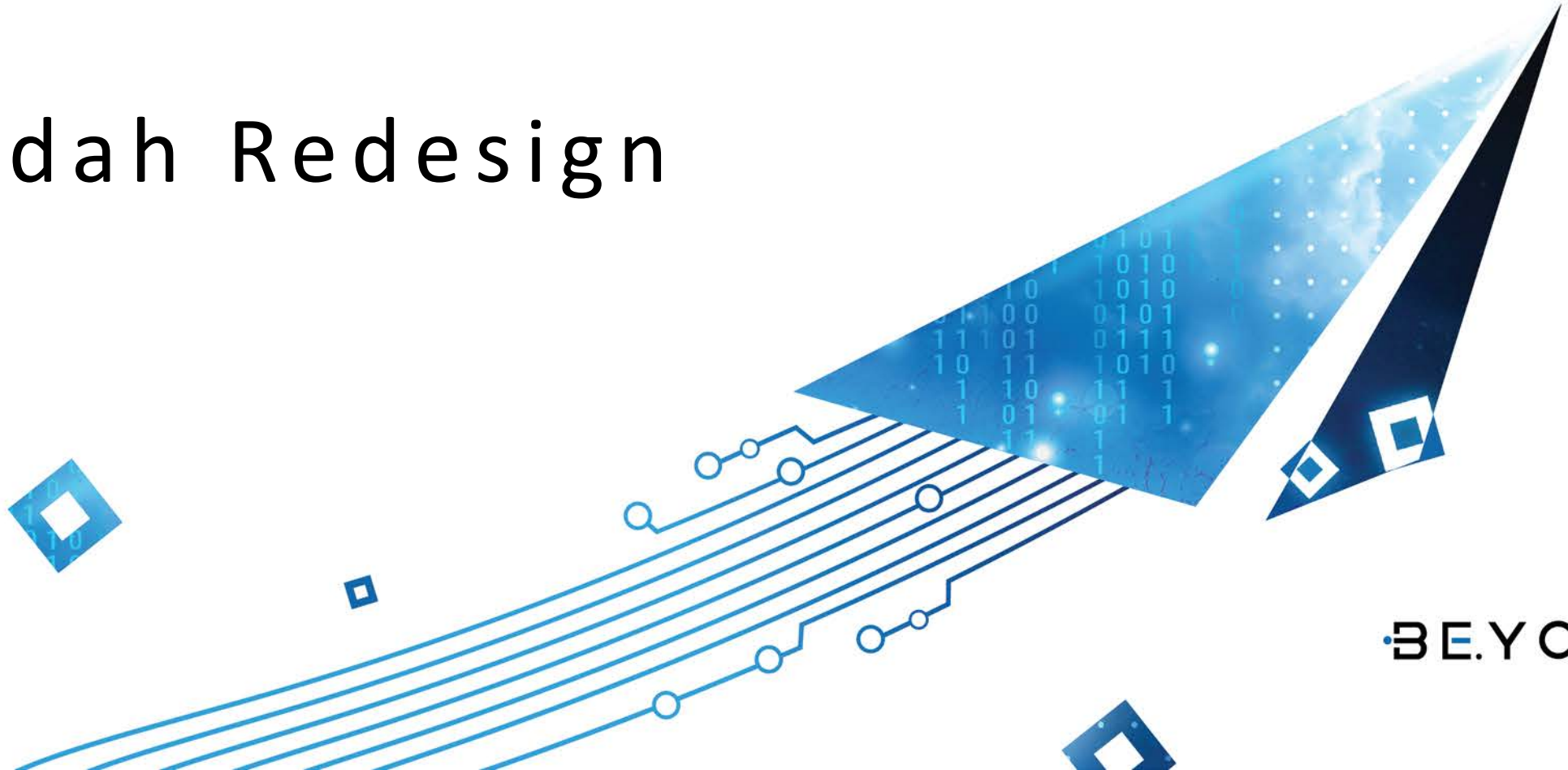
ASBU/Air Navigation Strategy

Thread	Element code	Title	Priority	Status of implementation in Saudi Arabia
Operational Threads				
FRTO				
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 Q2-2024.
	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.
	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.





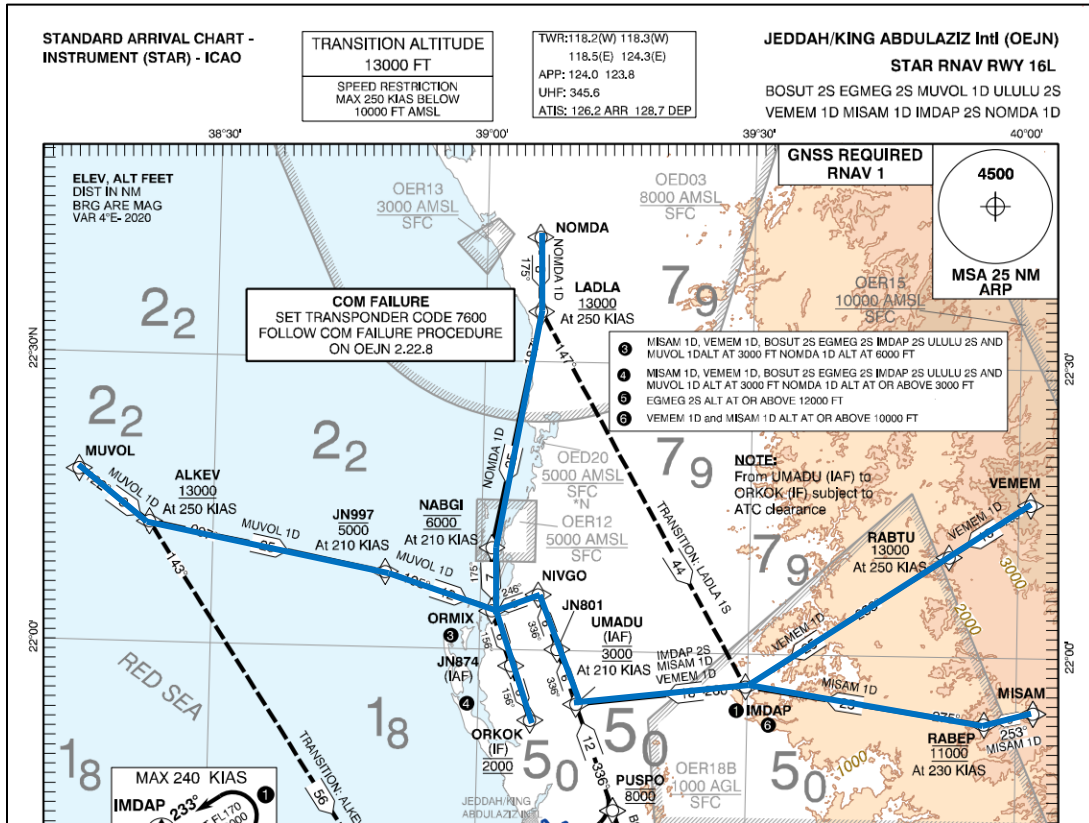
Jeddah Redesign



BEYOND»

Design Process

Implementation of new Direct STARs from NOMDA, VEMEM, MISAM and MUVOL.

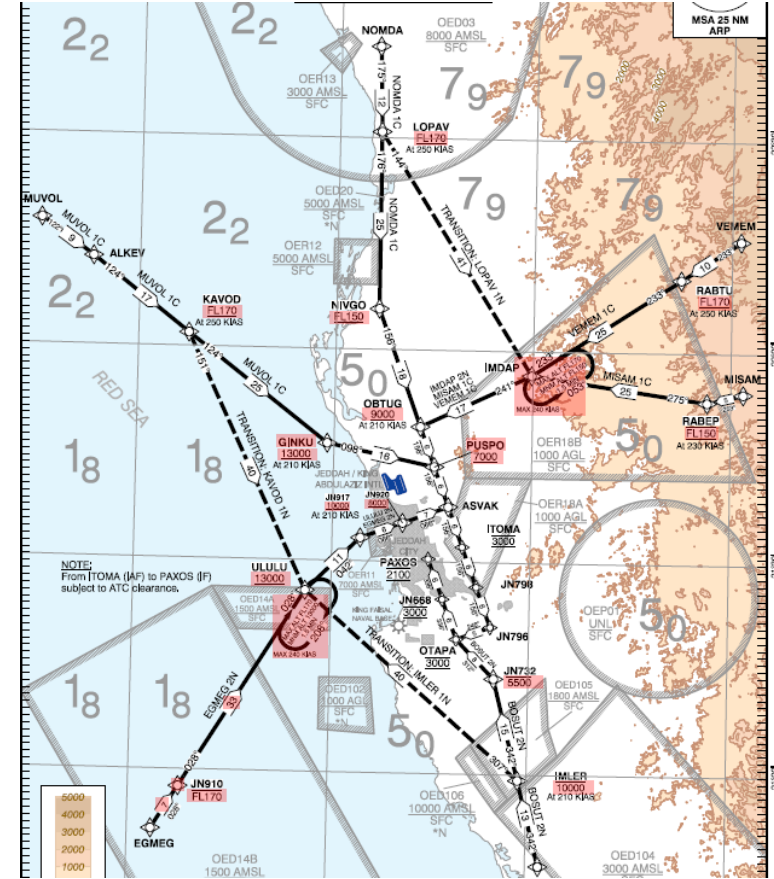
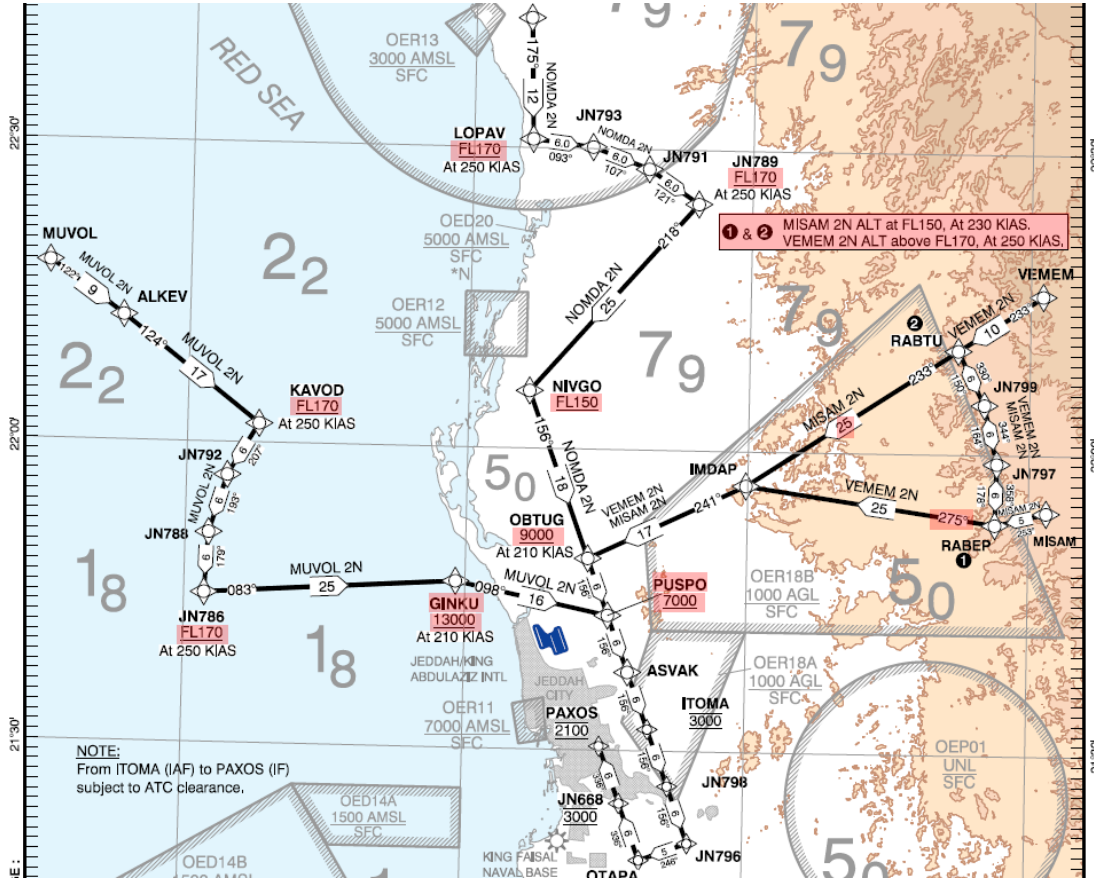


RWY	NEW STARs
34L	VEMEM 1A MISAM 1A MUVOL1A NOMDA 1A
34C	VEMEM 1B MISAM 1B MUVOL1B NOMDA 1B
34R	VEMEM 1C MISAM 1C MUVOL1C NOMDA 1C
16L	VEMEM 1D MISAM 1D MUVOL1D NOMDA 1D
16C	VEMEM 1E MISAM 1E MUVOL1E NOMDA 1E
16R	VEMEM 1F MISAM 1F MUVOL1F NOMDA 1F

24 new STARs

Design Process

Change restriction altitude (@) to “at or above” or “at or below” in current RNAV STARs



Benefits of the STAR and SID Redesign

- Environmental Benefits :
Lower fuel consumption and emissions due to optimized descent profiles.
- Costs Saving :
Lower operational costs for airlines due to reduced fuel consumption.
- Better CDO implementation:
Facilitates CDO operation & Minimizes unnecessary altitude restriction.
- Improved Air traffic management:
Enhanced predictability of the routes & Decrease pilot and ATC workload by minimizing unnecessary vectoring.



Dashboards



BEYOND»

SNAP / SFAC



BEYOND»



THANK YOU

