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MID Region Considerations and Challenges

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Abu Dhabi, 9-12 December 2019



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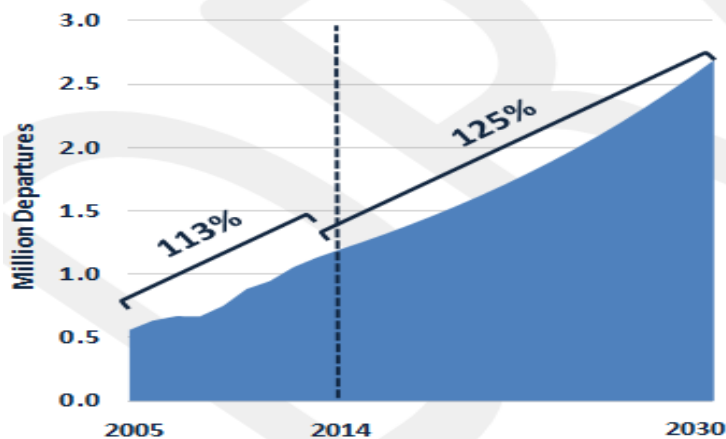
Outline

- Growth of traffic
- Airspace Management Challenges
- MID Region Initiatives
- SAR in MID Region
- SAR and CIV-MIL
- Outcome of CIV/MIL Algeria Workshop



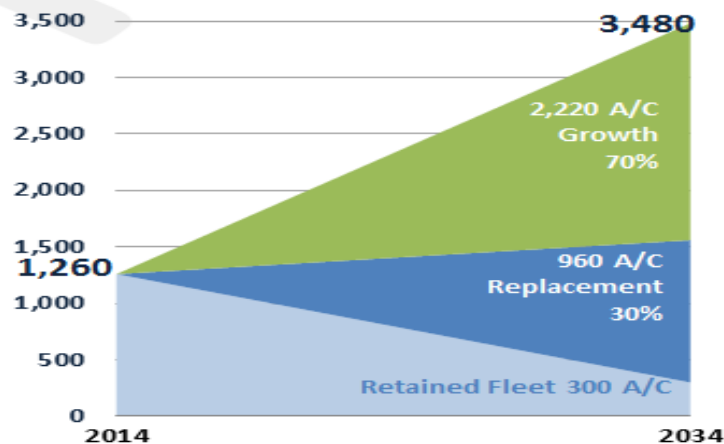
Growth in the MID Region

Middle East Aircraft Movements & Growth



Source: ICAO

Middle East Commercial Aircraft Deliveries



Source: Boeing Co.

The Middle East Region moved **14 per cent** of world Revenue Passenger-Kilometers (RPK) and recorded the highest annual growth of **12.1 per cent** in 2015

The total number of departures reached **36.7 million** in 2017, with an increase of **3.1%** compared to 2016.



Airspace Management Challenges



- Non- optimized ATS Route Network
- Airspace Capacity
- Significant unused airspace
- Contingency
- No regional ATFM solution
- Traffic flow measures
- Civil/Military Cooperation
- GNSS Interference
- Outdated ATS LoAs



Why civil-military cooperation is needed?

- To provide for the increase of capacity through the establishment of additional ATS routes through the segregated currently airspaces (not available for civilian air transport). The MID Region is running out of airspace capacity, which has impact on:
 - **Safety**
 - Risk on the Growth of Civil Aviation Sector
 - **Risk on the contribution to national economies**
 - **Environmental Footprint**
- The need to **Enhance Inter-State Coordination** to Ensure **Seamless Operations** and Optimal sharing the use of the airspace by all users (CIV and MIL)



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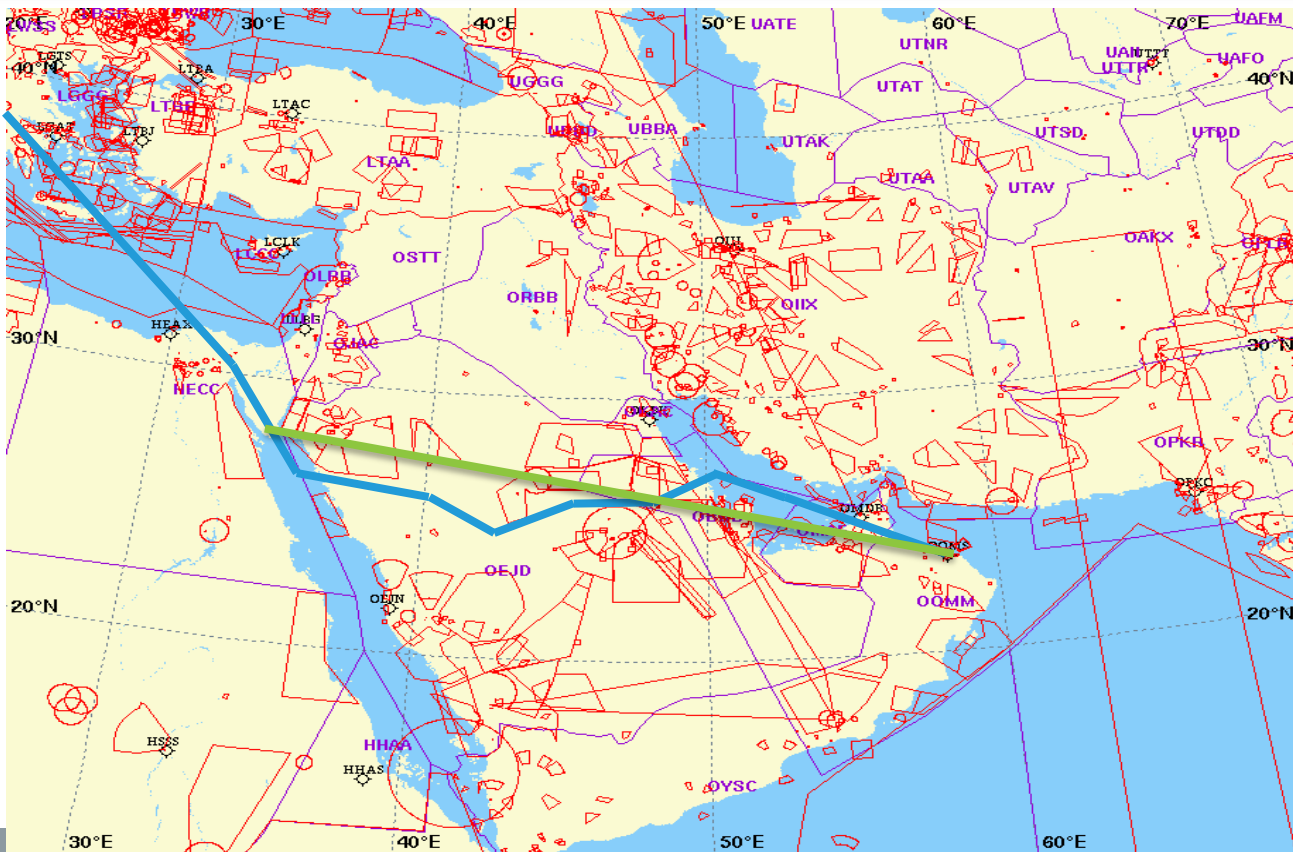
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Why the
Zig-Zag?

Instead of
Direct?





Points for consideration

- To achieve the vision of **optimized** ATS Route Network (**User Preferred Routes**, **Unidirectional Parallel Routes**, **Free Route Concept**); national and bilateral efforts should be incorporated into a regional framework.
- **Civil/Military Cooperation** will lead to a better approach in **sharing the airspace** supported by the implementation of the **Flexible Use of Airspace (FUA)** Concept, which would **increase** significantly capacity
- **ATFM** will be the optimal solution for **balancing Demand** and **Capacity**, which supports enhancing **efficiency and maximizing** the use of the available airspace



Main MID Region Initiatives addressing ASM issues

- **ATS Route Network Optimization Project (ARNOP)**
- **MID Route Development Working Group (MID RDWG)**
- **Advanced Inter-regional ATS Route Development Task Force (AIRARD TF)/ APAC/EUR/MID**
- **Asia Pacific, AFI and MID and ATM Special Coordination meetings (AAMA)**
- **MID Region Civil/Military Support Team to foster FUA implementation in the MID Region through the conduct of Workshops on Civil/Military Cooperation and FUA at National level based on State request**
- **MID Region Flight Procedure Programme (MID FPP)**
- **ATFM project**
- **MID Region ATM Contingency Plan**
- **MID Region SAR Plan**
- **MID Region PBN Implementation Plan**



Main Objectives of the Initiatives

With the support of Civil-Military cooperation/FUA:

- Improve the Regional **ATS Route Network with the aim to:**
 - ✓ Enhance **Safety** and **Efficiency** and
 - ✓ Increase Airspace **Capacity**
- Fostering Cooperation between States to Deliver a Seamless Air Traffic Management Provisions in the Region,
- Respond to crisis and contingency situation in an effective manner



The proposed solution was through ARNOP

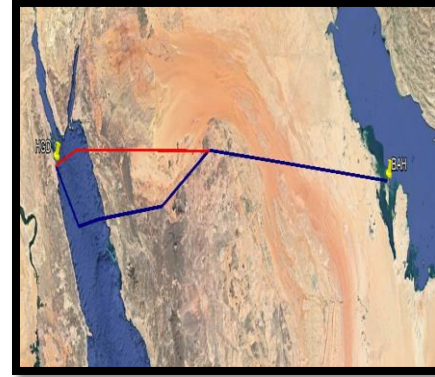
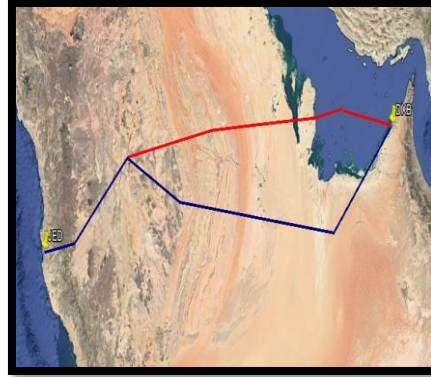
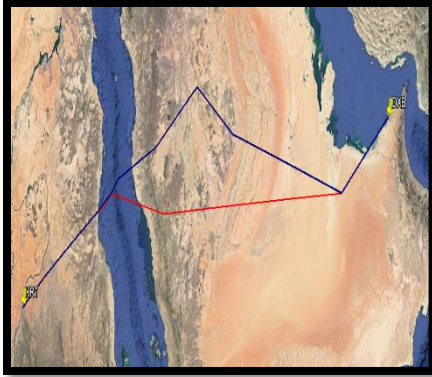
The ATS Route Network Optimization Project (**ARNOP**), endorsed by the General Ministerial Aviation Summit (Riyadh, Saudi Arabia, 29-31 August 2016) as one of the air navigation priority **project**, had not been initiated due to many challenges such as:

- ❖ No **Budget** allocation
- ❖ Current focus on **local solutions** and **quick wins**
- ❖ No **vision** for long term **optimum** solution
- ❖ Difficulties affecting cross border solutions
- ❖ Etc.



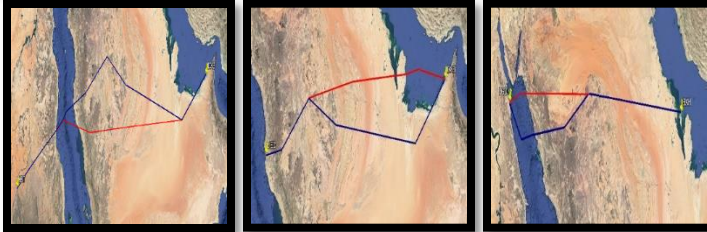


Some Quick Wins & Savings





Savings



Estimated Savings Per Flight

- 47 Minutes of Flight Time
- 17 Tons of CO₂ Emissions



Estimated Savings Per YEAR

- 300,000 Minutes of Flight Time
- 137 Thousand Tons of CO₂ Emissions

Estimated Savings of ARNOP per YEAR Over Current Situation

- 2.7 Million Minutes of Flight Time
- 35 Million Tons of CO₂ Emissions



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MID REGION GUIDANCE MATERIAL ON CIVIL/MILITARY COOPERATION AND IMPLEMENTATION OF FUA CONCEPT





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Taking into consideration the increased number of interception occurrences that took place during the last years, MIDANPIRG/17 through Conclusion 17/21 agreed that the ATM Sub Group is tasked to develop guidance material related to Civil/Military Cooperation and implementation of FUA Concept, including State aircraft operations under Due Regard in particular over the high seas.

The ATM SG/5 meeting (Aqaba, Jordan, 1-4 December 2019) agreed that an the Action Group composed of experts from Bahrain, Egypt, Iraq, Jordan, Oman, Qatar, Saudi Arabia and UAE be established to draft by 30 April 2020 guidance material related to Civil/Military Cooperation and implementation of FUA Concept, including State aircraft operations under Due Regard in particular over the high seas



SAR Development and Challenges in the MID Region





Accidents

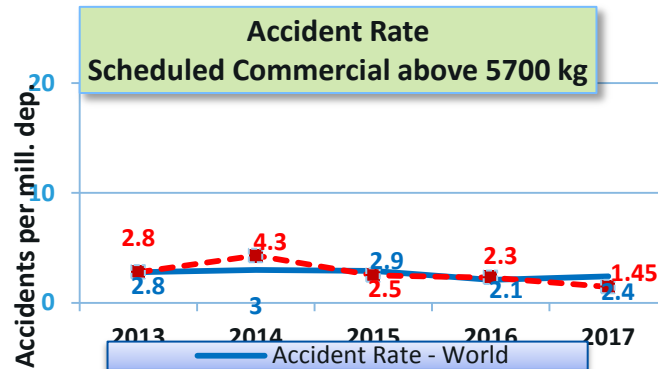
Safety Indicator
Number of accidents per million departures

Safety Target
Reduce/Maintain the regional average rate of accidents to be in line with the global average rate by 2016

Average 2013-2017

Average MID
2.67

Average Global
2.64



Official ICAO accident statistics, used for the development of the ICAO safety reports
Scheduled commercial operations involving aircraft with MTOW above 5700 kg



Fatal Accidents

Safety Indicator

Number of fatal accidents per million departures

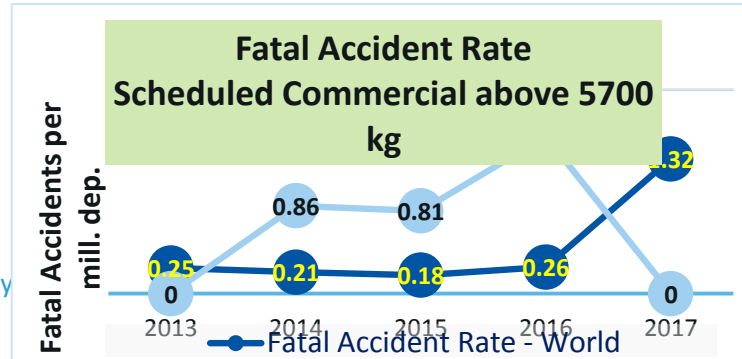
Safety Target

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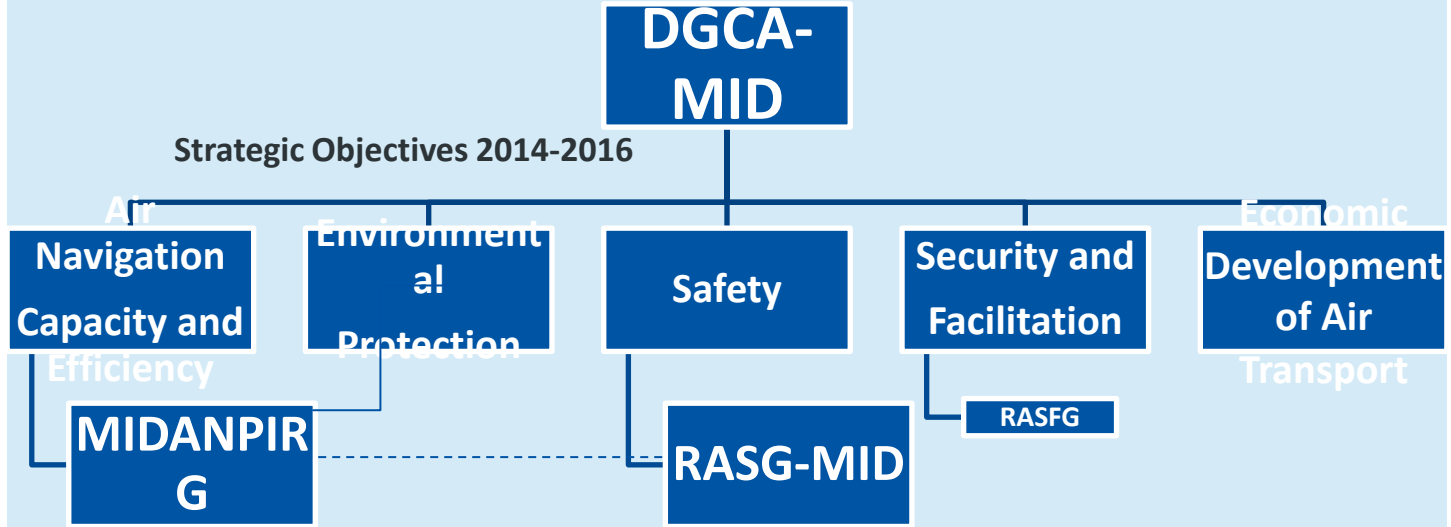
Average 2013-2017

Average MID
0.64

Average Global
0.44



Official ICAO accident statistics, used for the development of the ICAO safety reports
Scheduled commercial operations involving aircraft with MTOW above 5700 kg





ICAO Strategic Objectives



GASP

GANP

GASeP

All

Safety Strategy

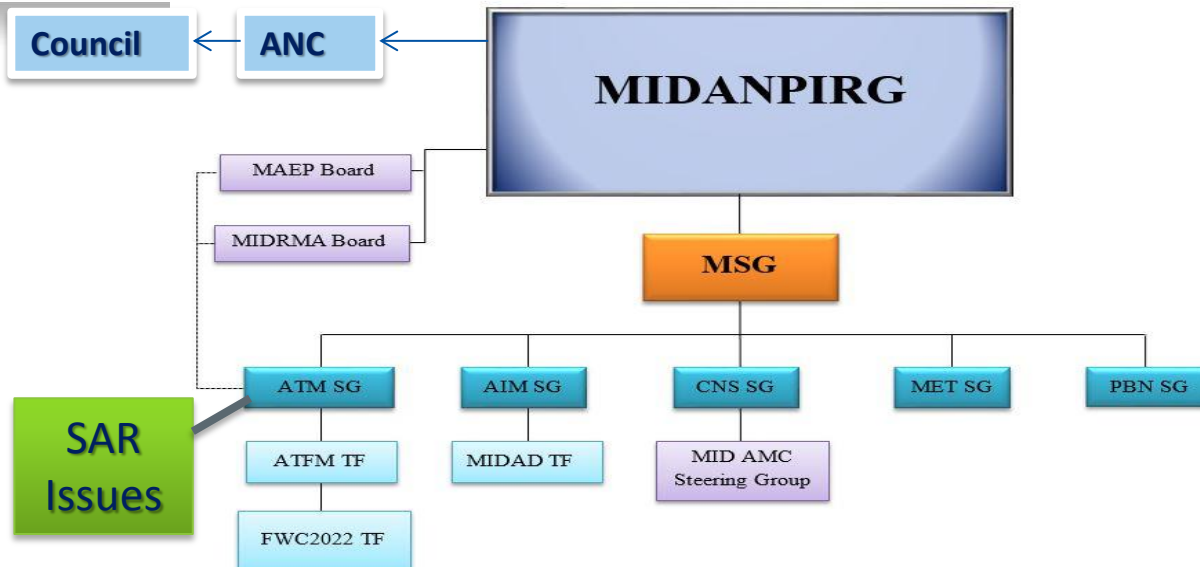
ANP & AN Strategy

AVSEC/FAL Strategy

MIDANPIRG

RASG-MID

MID-RASFG



MSG	MIDANPIRG Steering Group	ATFM TF	Air Traffic Flow Management Task Force
AIM SG	Aeronautical Information Management Sub-Group	FWC2022 TF	FIFA World Cup 2022 Task Force
ATM SG	Air Traffic Management Sub-Group	MIDAD TF	MID Region AIS Database Task-Force
CNS SG	Communication Navigation Surveillance Sub-Group	MID AMC Steering Group	MID Region ATS Message Management Centre Steering Group
MET SG	Meteorology Sub-Group	MAEP Board	MID Region ATM Enhancement Programme Board



MID electronic Air Navigation Plan (MID eANP) ICAO Doc 9708

- The MID eANP (3 Volumes) approved and available on the MID Office website.
- SAR provisions are included in Volume I and II



PART 0 – TOC, INTRO



PART I – GENERAL



PART II – AOP



PART III – CNS



PART IV – ATM



PART V – MET



PART VI – SAR



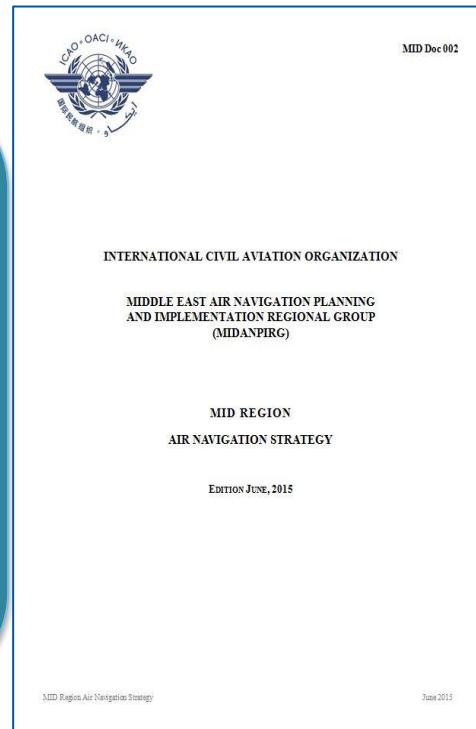
PART VII – AIM



Air Navigation Strategy

MID Doc 002

- In line with the Global Air Navigation Plan (GANP)
- Regional Priorities identified (11 ASBU B0-Modules)
- Endorsed by MSG/4 (24-26 Nov. 2014) and revised by MIDANPIRG/15 (Bahrain, 8-11 June 2015)





Performance Improvement Areas (PIA)	Module	Priority	Module Name
PIA 1: Airport Operations	APTA	1	Optimization of Approach Procedures including vertical guidance
	WAKE	2	Increased Runway Throughput through Optimized Wake Turbulence Separation
	RSEQ	2	Improved Traffic Flow through Sequencing (AMAN/DMAN)
	SURF	1	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)
	ACDM	1	Improved Airport Operations through Airport-CDM
PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management	FICE	1	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration
	DATM	1	Service Improvement through Digital Aeronautical Information Management
	AMET	1	Meteorological information supporting enhanced operational efficiency and safety
PIA 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM	FRTO	1	Improved Operations through Enhanced En-Route Trajectories
	NOPS	1	Improved Flow Performance through Planning based on a Network-Wide view
	ASUR	2	Initial Capability for Ground Surveillance
	ASEP	2	Air Traffic Situational Awareness (ATSA)
	OPFL	2	Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B
	ACAS	1	ACAS Improvements
	SNET	2	Increased Effectiveness of Ground-based Safety Nets
PIA 4: Efficient Flight Path – Through Trajectory-based Operations	CDO	1	Improved Flexibility and Efficiency in Descent Profiles (CDO)
	TBO	2	Improved Safety and Efficiency through the initial application of Data Link En-Route
	CCO	1	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)



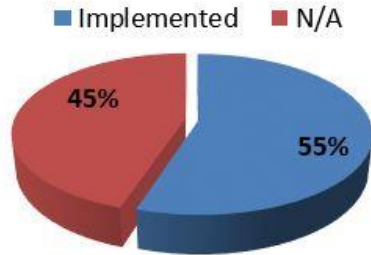
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	GRS	2	Initial Capability for Ground Surveillance
	ATSA	2	Air Traffic Situational Awareness (ATSA)
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NO Focus on SAR



SAR deficiencies in the MID Region

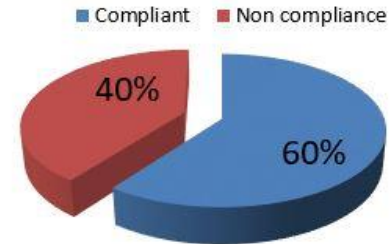
Lack of Provisions



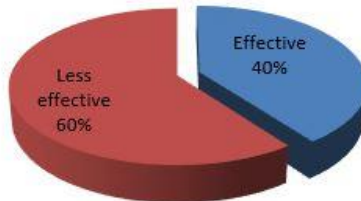
SAREX



ELTs



Effective SAR Oversight



Signatures of SAR Agreements



SPOC





The main Challenges are related to lack of:

- Implementation of the Regional SAR Plan and
- Lack of Comprehensive National SAR Plans
- Local cooperation among stakeholders involved in SAR
- SAR is more retro-active rather than pro-active approach
- English Language Proficiency for RCC radio operators;
- Appropriate training programmes/plans of SAR experts;
- lack of signature of SAR agreements;
- lack of plans of operations for the conduct of SAR operations and SAR exercises;
- lack of provision of required SAR services; and
- non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.



Supporting States through the MID Region NCLB Strategy/Plan

Aligned with the ICAO NCLB campaign and Regional priorities and specific to the MID States

Based on USOAP-CMA Effective Implementation (EI)

States in the MID Region **could** be classified into four groups:

$0 \leq EI \leq 60$

$60 < EI \leq 70$

$70 < EI \leq 85$

$85 < EI \leq 100$



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MIDANPIRG and DGCA-MID have been encouraging MID States to:

- take necessary measures to foster their SAR services;
- enter into agreements with their adjacent States;
- organize joint SAREX;
- conduct SAR Workshops and Seminars at the national level;
- support the coordination and collaboration with the adjacent ICAO Regions and all SAR Stakeholders to ensure harmonization in the SAR developments; and
- implement the global and regional SAR requirements.





MIDANPIRG/14 tasked the ATM SG to develop:

1. a simplified template for SAR Bi-Lateral arrangements that addresses the CAA and ATS responsibilities and
2. A regional implementation Plan for SAR.





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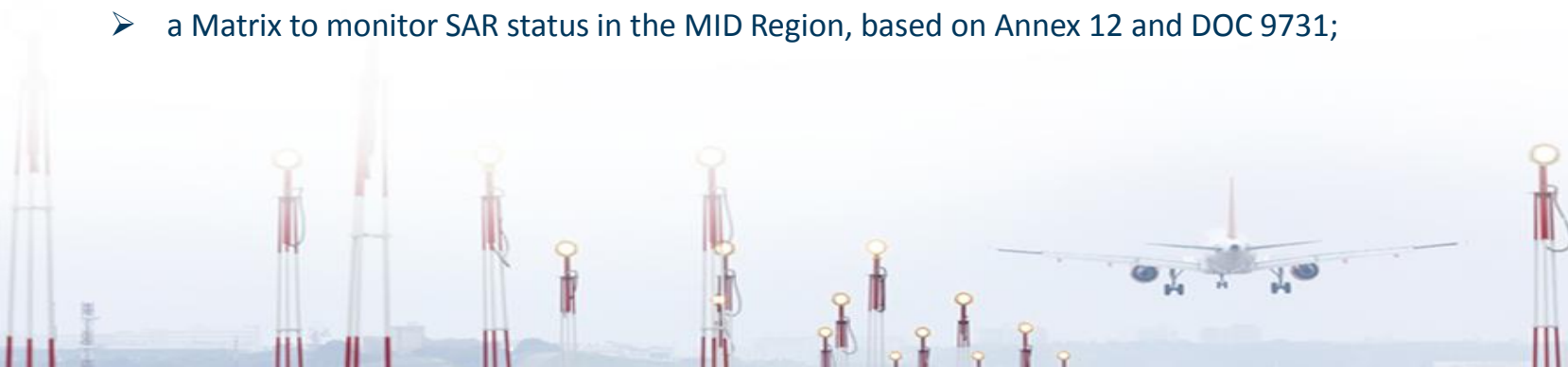
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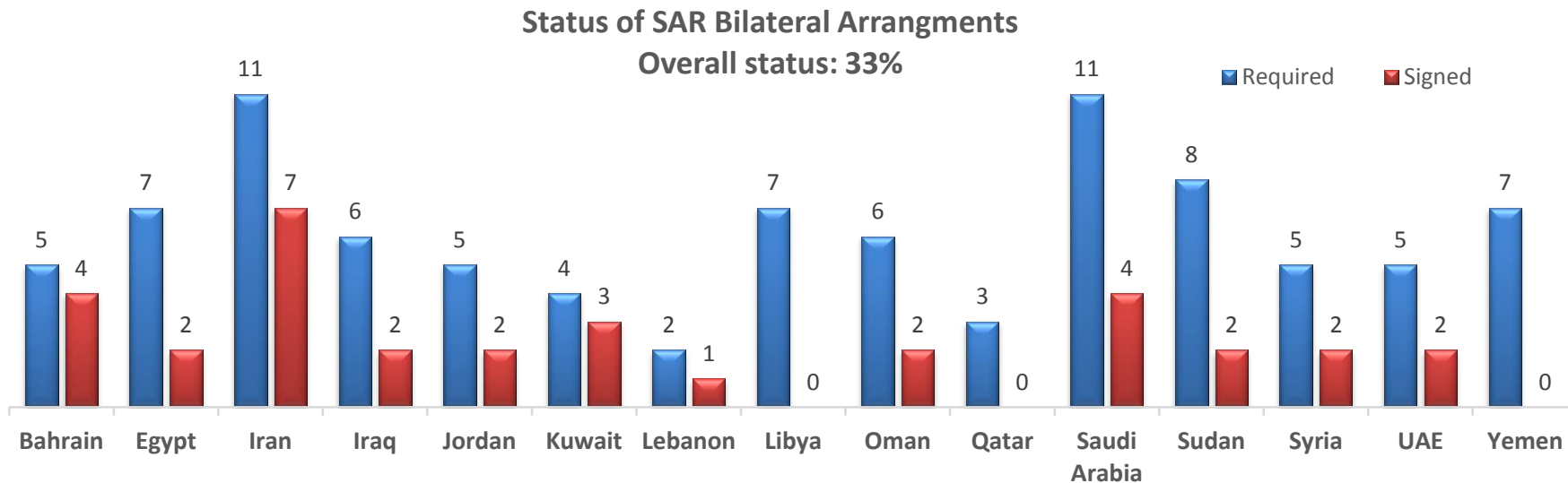
The ATM SG established a SAR Action Group composed of SAR experts from Bahrain, Egypt, Iran, Saudi Arabia, UAE and supported by the ICAO MID Office to:

- ✦ *carry out a Gap Analysis related to the status of implementation of SAR services in the MID Region; and*
- ✦ *develop:*
 - *a SAR Plan for the MID Region based on the Asia/Pacific experience;*
 - *an action plan for the conduct of regional/sub-regional SAR exercises;*
 - *a Template for SAR Bi-lateral arrangements as an Appendix to the MID Region ACC LoA Template; and*
 - *a Matrix to monitor SAR status in the MID Region, based on Annex 12 and DOC 9731;*





A Template for SAR Bi-lateral arrangements was developed and endorsed by MIDANPIRG/15 (Bahrain, 8-11 June 2015), which will ensure proper alerting and coordination procedures are in place between adjacent ACCs, awaiting for the signature of the States' SAR Agreement.





- a Matrix to monitor SAR status in the MID Region, was also developed.
- The MID Region SAR Plan was developed and endorsed by MSG/6 meeting (3-5 December 2018).
- States have been urged to ensure that their SPOC sign the MCC/SPOC model agreement with their relevant MCC
- MID SAR issues were addressed in global, regional and inter-regional events such as the:
 - ICAO/IMO Search and Rescue-Global Maritime Distress and Safety System (ICAO/IMO SAR GMDSS Conference, Bahrain 21-22 October 2014)
 - General Ministerial Aviation Summit (Riyadh, 29-31 August 2016);
 - Inter-regional SAR Workshop (Seychelles, 19 - 22 July 2016);
 - Inter-regional SAR Workshop (Salalah, Oman, 26 – 29 August 2019); and
 - others



SAR and CIV-MIL

Tragedy Incidents such as AF 447 in 2009, Malaysia MH 370 in 2014, etc. would happen again anytime and anywhere. So, States should be READY.

- Need to plan ahead and learn from previous incidents
- Some common aspects:
 - Media interest
 - Foreign governments interest and involvement
 - Next of kin of the victims (save lives, recover victims)
 - Quick reaction – who to call, effective response
 - Cooperation – neighboring States, civil-military
 - Maritime drift – objects drift differently



SAR and CIV-MIL

For effective SAR System the following should be addressed:

- ✓ How is the cooperation and coordination between your:
 - Aeronautical and Maritime SAR agencies?
 - (or Land or Local authorities)
 - Civil and Military authorities?

- ✓ Most States rely upon the military to do SAR
 - Who has the search planning experts
 - Who has the rescue resources

- ✓ Lessons learned from Air France 447, Malaysia Flight 370, and other incidents around the world



SAR and CIV-MIL

- ✓ **If you rely on your military to do SAR...**
 - How does it fit into the civil SAR system?
 - How good is its cooperation and coordination within your government?
 - Does it have trust and cooperation with neighboring States?
 - How responsive are the arrangements for the military to share your national airspace?
- ✓ **Who manages your national airspace – civil aviation authority or military?**
- ✓ **National airspace is a national resource:**
- ✓ **Accommodate military, security, etc.**
- ✓ **Confine hazardous activity (segregate) from other airspace users**
- ✓ **Commercial and public use**
- ✓ **International airspace (beyond territorial sea)**

A National SAR Committee and SAR Agreements enable to maintain a **balanced** perspective that includes SAR.



Key points

Taking into consideration that the main objective of SAR is saving lives and support in preventing future accidents through lessons learned, the DGCA-MID/5 meeting agreed that SAR should be given high priority through the allocation of adequate resources. Accordingly, the meeting urged States to ensure:

- a) the allocation of adequate resources to SAR;
- b) effective and efficient cooperation between all concerned authorities at national level (SAR Plan); and with their Adjacent and neighboring States;
- c) that SAR services are provided by qualified and well trained SAR experts; and
- d) cross-border collaboration for sharing of resources through bilateral or multilateral agreements.

High level commitment and support is vital



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Main outcomes of the ACAO/ICAO (EUR/NAT and MID) Civil/Military Workshop

(Algiers, Algeria, 26 – 28 March 2018)



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- The Workshop emphasized the need to manage the airspace in a flexible and dynamic manner that should be shared between civil and military airspace users to cope with economic development as well as security and air defence aspects.
- The Workshop encouraged States to take necessary measures to implement the ICAO provisions related to civil/military cooperation ensuring the effective implementation of the flexible use of airspace concept.





States were encouraged to:

- a) Establish necessary national legislative/regulatory framework for civil/military cooperation at the highest level
- b) Develop National civil/military cooperation policy/principles and practices supported by national high-level commitment.
- c) Establish a high-level policy body, and the necessary civil/military committees and working groups of subject matters experts to address, among other things: identification of shared goals, airspace management principles, collaboration processes and procedures, technical considerations, sharing of information, and human factors, etc.
- d) review national provisions related to airspace management to accommodate the requirements of all airspace users (civil and military) to enhance major traffic flows and accommodate expected future growth of traffic
- e) develop/update and implementation of a National FUA Plan with clear procedures related to the application of the three FUA levels (strategic, pre-tactical and tactical) with due consideration to mutual understanding, trust and communication



- f) develop integrated plan for the use of technology in support of civil/military cooperation ensuring systems interoperability, effective data exchange, while addressing associated cyber security issues in a proactive manner
- g) establish key performance indicators to measure the performance/efficiency of the FUA implementation, where applicable
- h) organize workshops, seminars, meetings at national level related to civil/military cooperation and FUA (with the support of ICAO, ACAC and International Organizations)
- i) share experience and best practices related to civil/military cooperation and FUA implementation
- j) participate in cross border initiatives to enhance the regional ATS route network, airspace management and Search and Rescue at regional and inter-regional levels
- k) use the ICAO EUR Doc 032 (Interim Guidance material on Civil/Military Cooperation In ATM) in particular the guidance related to FUA over the high seas and the example for State aircraft operations under Due-Regard.



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