AIR NAVIGATION REPORT

ICAO Middle East Region

2019

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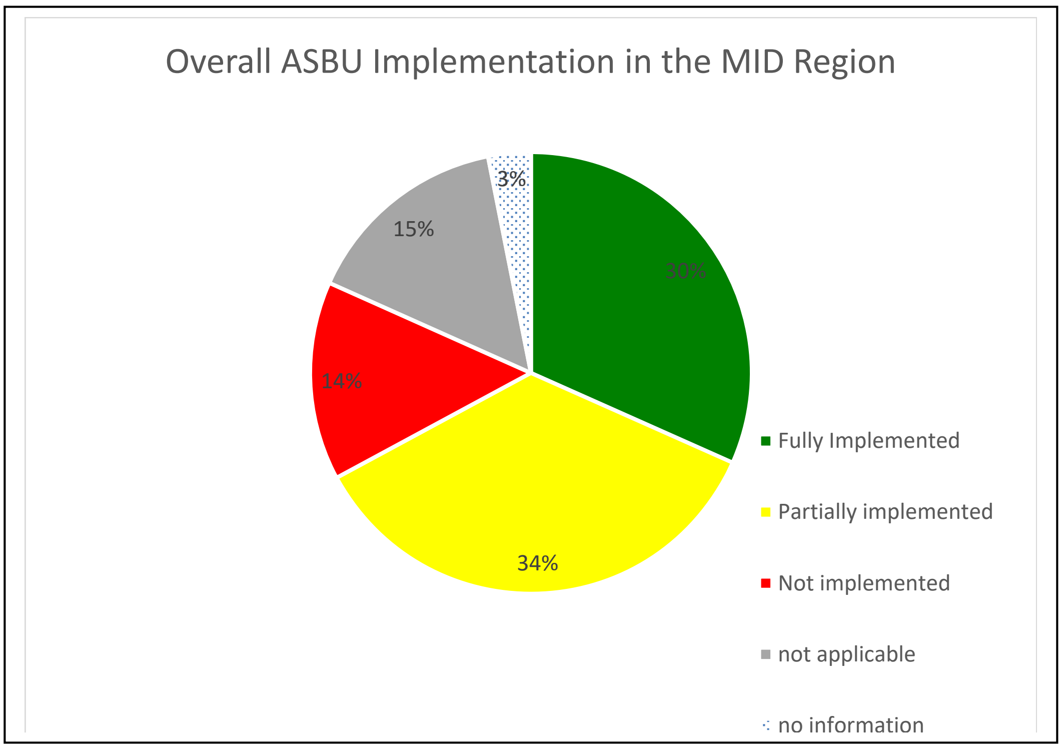
EXECUTIVE SUMMARY

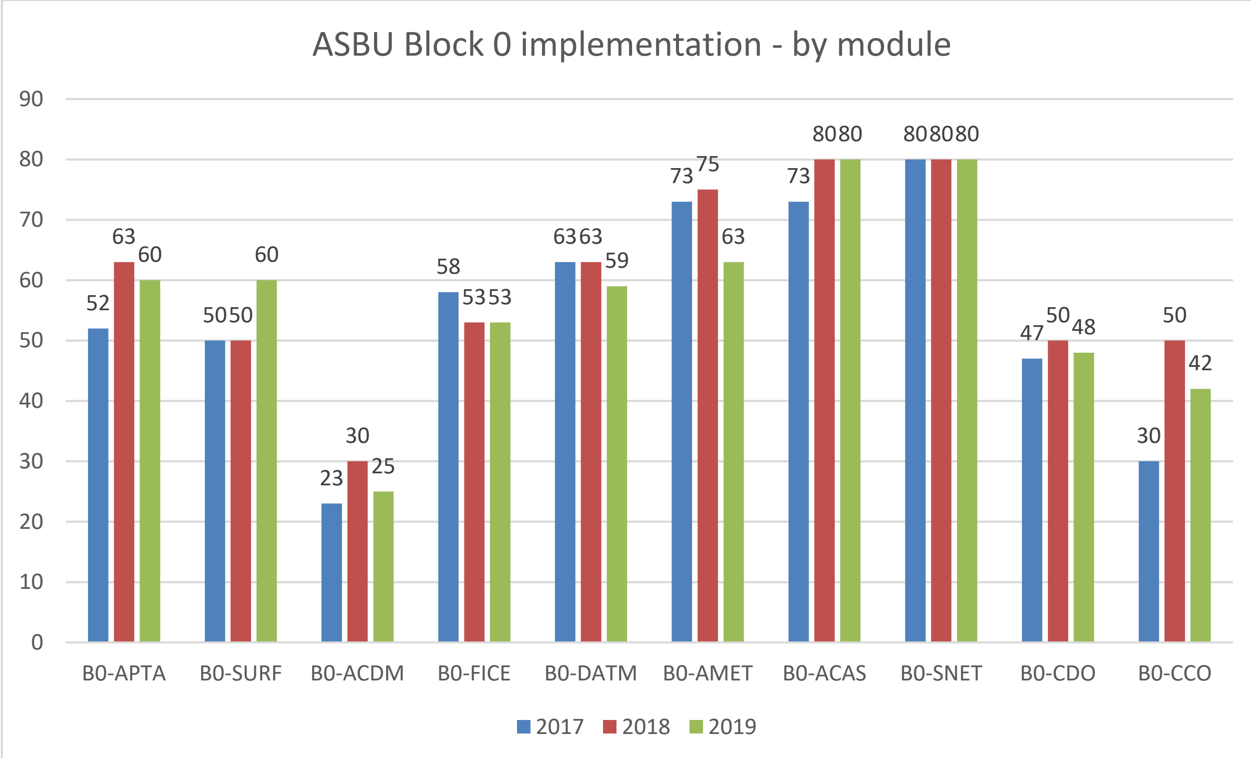
The Fourth Edition of the ICAO MID Air Navigation Report (2019) provides an overview of the status of implementation of the Priority 1 ASBU Block 0 Modules in the MID Region as well as the progress achieved by MID States compared to the Third Edition of the MID Air Navigation Report (2018).

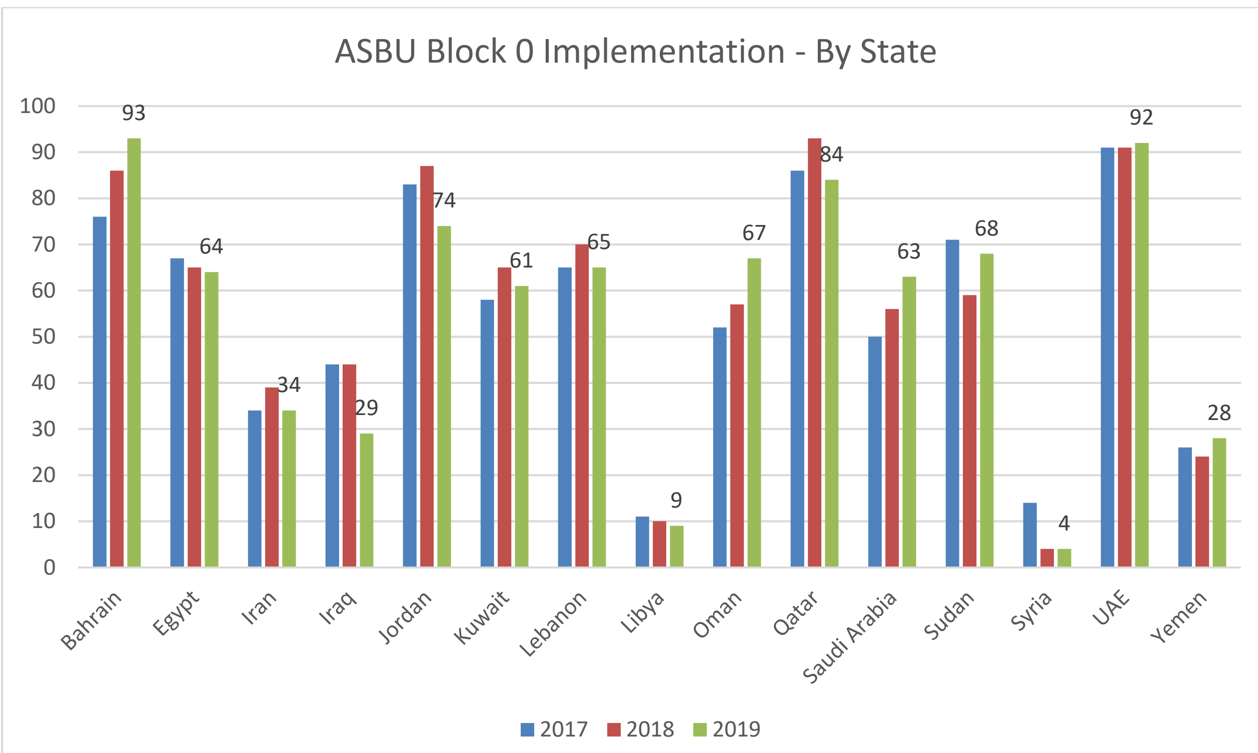
The main part of the document includes Section 2, which provides the status of implementation and the Regional Dashboard for the Priority 1 ASBU Block 0 Modules in the MID Region through different statistical maps and charts.

This Section will be complemented by providing the environmental protection matters in Section 3. Section 4 provides some best practices/success story.

To summarize the implementation status and progress of ASBU Block 0 Modules, the following ASBU Block 0 Implementation Dashboards present status and progress achieved in the implementation of each Module and by State. Detailed status is provided in Section 2.







Note 1 – utmost care was taken in the calculation of percentages, figures and numbers, however the statistics and graphs in this report should be considered as approximate amounts.

1. INTRODUCTION

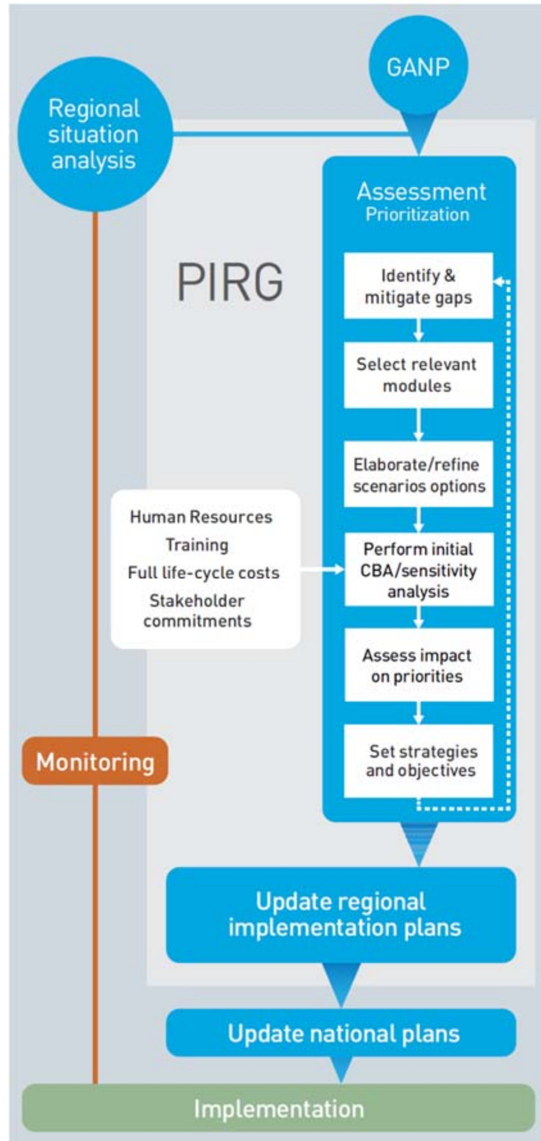
1.1 Objectives

The Fourth edition of the ICAO MID Region Air Navigation Report presents an overview of the planning and implementation progress for the Priority 1 ASBU Block 0 Modules (and its detailed elements) within the ICAO MID Region during the reporting period January till December 2019.

The implementation status data covers the fifteen (15) ICAO MID States.

GANP states that the regional national planning process should be aligned and used to identify those Modules which best provide solutions to the operational needs identified. Depending on implementation parameters such as the complexity of the operating environment, the constraints and the resources available, regional and national implementation plans will be developed in alignment with the GANP. Such planning requires interaction between stakeholders including regulators, users of the aviation system, the air navigation service providers (ANSPs), aerodrome operators and supply industry, in order to obtain commitments to implementation.

Accordingly, deployments on a global, regional and sub-regional basis and ultimately at State level should be considered as an integral part of the global and regional planning process through the Planning and Implementation Regional Groups (i.e. MIDANPIRG). The PIRG process will further ensure that all required supporting procedures, regulatory approvals and training capabilities are set in place. These supporting requirements will be reflected in regional online Air Navigation Plan (MID eANPs) developed by MIDANPIRG, ensuring strategic transparency, coordinated progress and certainty of investment. In this way, deployment arrangements including applicability dates can also be agreed and collectively applied by all stakeholders involved in the Region. The MID Region Air Navigation Report which contains all information on the implementation process of the Priority 1 ASBU Modules of the MID Region Air Navigation Strategy (MID Doc 002) is the key document for MIDANPIRG and its Subsidiary Bodies to monitor and analyze the implementation within the MID Region.



Regional Planning

1.2 Background

Following the discussions and recommendations from the Twelfth Air Navigation Conference (AN-Conf/12), the Fourth Edition of the Global Air Navigation Plan (GANP) based on the Aviation Systems Block Upgrades (ASBU) approach was endorsed by the 38th Assembly of ICAO in October 2013. The Assembly Resolution 38-02 which agreed, amongst others, to call upon States, planning and implementation regional groups (PIRGs), and the aviation industry to provide timely information to ICAO (and to each other) regarding the implementation status of the GANP, including the lessons learned from the implementation of its provisions and to invite PIRGs to use ICAO standardized tools or adequate regional tools to monitor and (in collaboration with ICAO) analyze the implementation status of air navigation systems.

The Seventeenth meeting of the MIDANPIRG Group (MIDANPIRG/17) which was held in Cairo, Egypt in April 2019 endorsed the revised version of the MID Region Air Navigation Strategy - MID Doc 002.

MIDANPIRG and its Subsidiary Bodies monitor the progress and the status of implementation of the ASBU Block 0 Modules in the MID Region.

Doha Declaration, which was endorsed by the third meeting of Directors General of Civil Aviation (DGCA-MID/3) (Doha, Qatar, 27-29 April 2015), has set five Targets for the Air Navigation Capacity and Efficiency, as follows:

1- *Optimization of Approach Procedures including vertical guidance (PBN):* Implement PBN approach procedures with vertical guidance, for all runways ends at international aerodromes, either as the primary approach or as a back-up for the precision approaches by 2017

2- *Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration:* 11 States to implement AIDC/OLDI between their ACCs and at least one adjacent ACC by 2017

3- *Service Improvement through Digital Aeronautical Information Management:* All States to complete implementation of Phase I of the transition from AIS to AIM by 2017

4- *Meteorological information supporting enhanced operational efficiency and safety:* 12 States to complete the implementation of QMS for MET by 2017

5- *ACAS Improvement:* All States require carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons by 2017

The MID Region Air Navigation Report is an integral part of the air navigation planning and implementation process in the MID Region; and the main tool for the monitoring and assessing the implementation of Air Navigation Systems and ASBUs in the MID Region.

1.3 Scope

This MID Air Navigation Report addresses the implementation status of the priority 1 ASBU Block 0 Modules for the reference period January 2019 to December 2019.

The Report covers the fifteen (15) ICAO MID States:

Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syria, United Arab Emirates and Yemen.

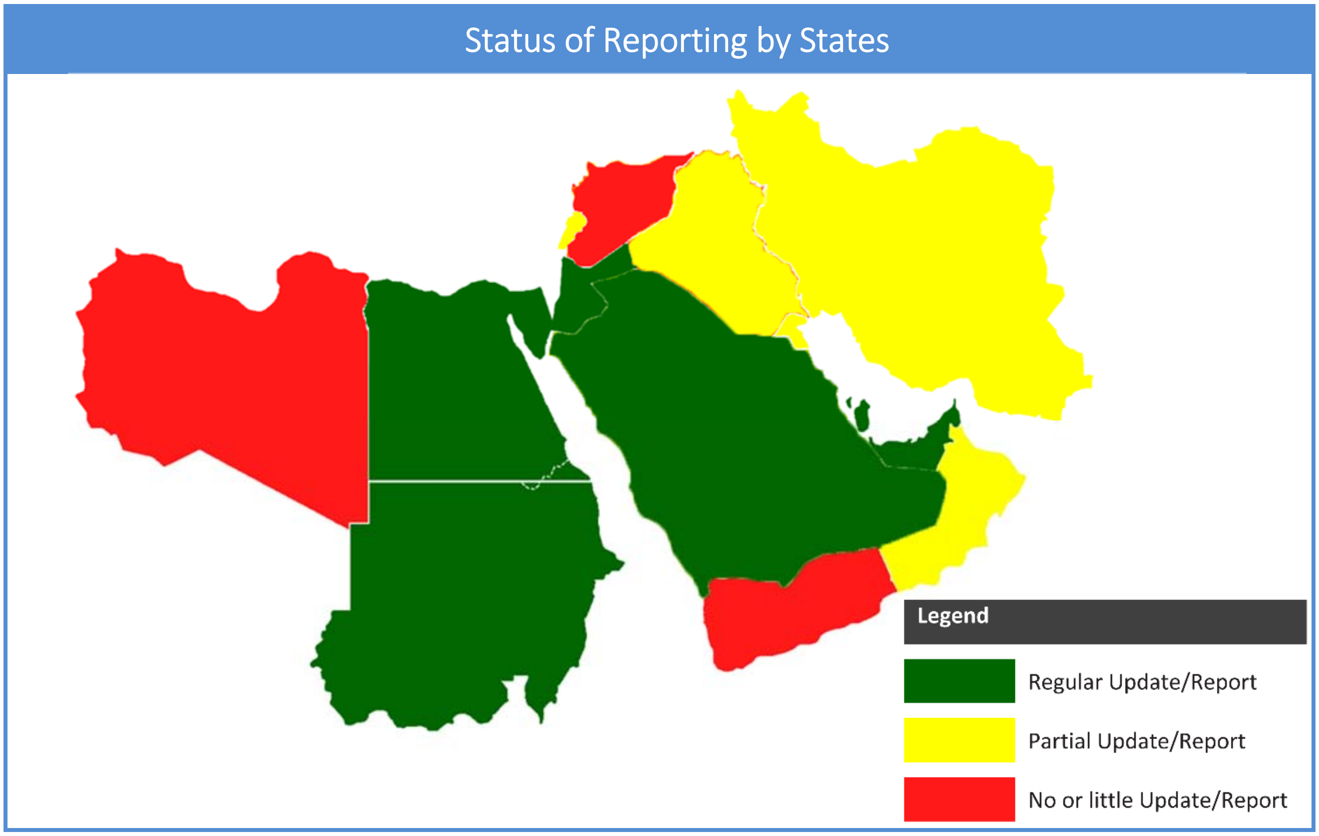
ICAO MID Region

1.4 Collection of Data

For the purpose of collecting necessary data for the MID Air Navigation Report-2019, a State Letter Ref.: AN 1/7 – 20/008 was issued on 9 January 2020, to follow-up on the MIDANPIRG Conclusion 17/10, which urged States to provide the relevant data necessary for the development of the MID Region Air Navigation Report-2019. However, some States did not respond to the State Letter. The status of reporting by States is shown in the following map.

Data collected from States was complemented by some updates provided mainly through the MIDANPIRG Subsidiary Bodies and the MID eANP Volume III.

Where the required data was not provided, it is indicated in the Report by color coding (Missing Data).



1.5 Structure of the Report

Executive Summary provides an overall review of the ASBU Block 0 implementation in the MID Region.

Section 1 (Introduction) presents the objective and background of the report as well as the scope covered and method of data collection.

Section 2 lists the priority 1 ASBU Block 0 Modules in the MID Region and presents the status of their implementation and their progress in graphical and numeric form.

Section 3 provides an update on the State's CO2 action plans and presents an estimation of environmental benefits, in terms of CO2 emissions reduction, accrued from the implementation of some ASBU Block 0 Modules in the MID Region.

Section 4 concludes the Report by providing a brief analysis on the status of implementation and the progress of the different priority 1 ASBU Block 0 Modules.

Appendix A provides detailed status of the implementation of Priority 1 Block 0 Modules and their associated Elements for the MID States.

2. STATUS AND PROGRESS OF ASBU IMPLEMENTATION

The ICAO Block Upgrades refer to the target availability timelines for a group of operational improvements (technologies and procedures) that will eventually realize a fully-harmonized global Air Navigation System. The technologies and procedures for each Block have been organized into unique Modules which have been determined and cross-referenced based on the specific Performance Improvement Area to which they relate.

Block 0 Modules are characterized by operational improvements which have already been developed and implemented in many parts of the world. It therefore has a near-term implementation period of 2013–2018, whereby 2013 refers to the availability of all components of its particular performance modules and 2018 refers to the target implementation deadline. ICAO has been working with its Member States to help each determine exactly which capabilities they should have in place based on their unique operational requirements.

This chapter of the report gives an overview of the status of implementation for each of the Priority 1 ASBU Block 0 Modules for the MID States. The status of implementation of each Module versus its target(s) is also provided for each priority 1 ASBU Block 0 Module.

The following color scheme is used for illustrating the status of implementation:

Legend
Completed
Partially Completed (50%+)
Partially Completed/Late (50%-)
Not Started/Not Implemented
Not Applicable
Missing Data

Note – Missing data is excluded in the calculation of the average regional status of implementation.

2.1 MID Region ASBU Block 0 Modules Prioritization

This report covers twelve (out of eighteen) ASBU Block 0 Modules that have been determined by MIDANPIRG/17 as priority 1 for the MID Region (MID Doc 002 Edition April 2019, refers).

Module Code	Module Title	Priority	Start Date	Monitoring		Remarks
				Main	Supporting	
Performance Improvement Areas (PIA) 1: Airport Operations						
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	2014	PBN SG	ATM SG, AIM SG, CNS SG	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	2				
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	2				
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	1	2014	ANSIG	CNS SG	Coordination with RGS WG
B0-ACDM	Improved Airport Operations through Airport-CDM	1	2014	ANSIG	CNS SG, AIM SG, ATM SG	Coordination with RGS WG
Performance Improvement Areas (PIA) 2 Globally Interoperable Systems and Data Through Globally Interoperable System Wide Information Management						
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1	2014	CNS SG	AIM SG, ATM SG	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	1	2014	AIM SG		
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	1	2014	MET SG		
Performance Improvement Areas (PIA) 3 Optimum Capacity and Flexible Flights – Through Global Collaborative ATM						
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	1	2014	ATM SG		
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	1	2014			
B0-ASUR	Initial capability for ground surveillance	2				

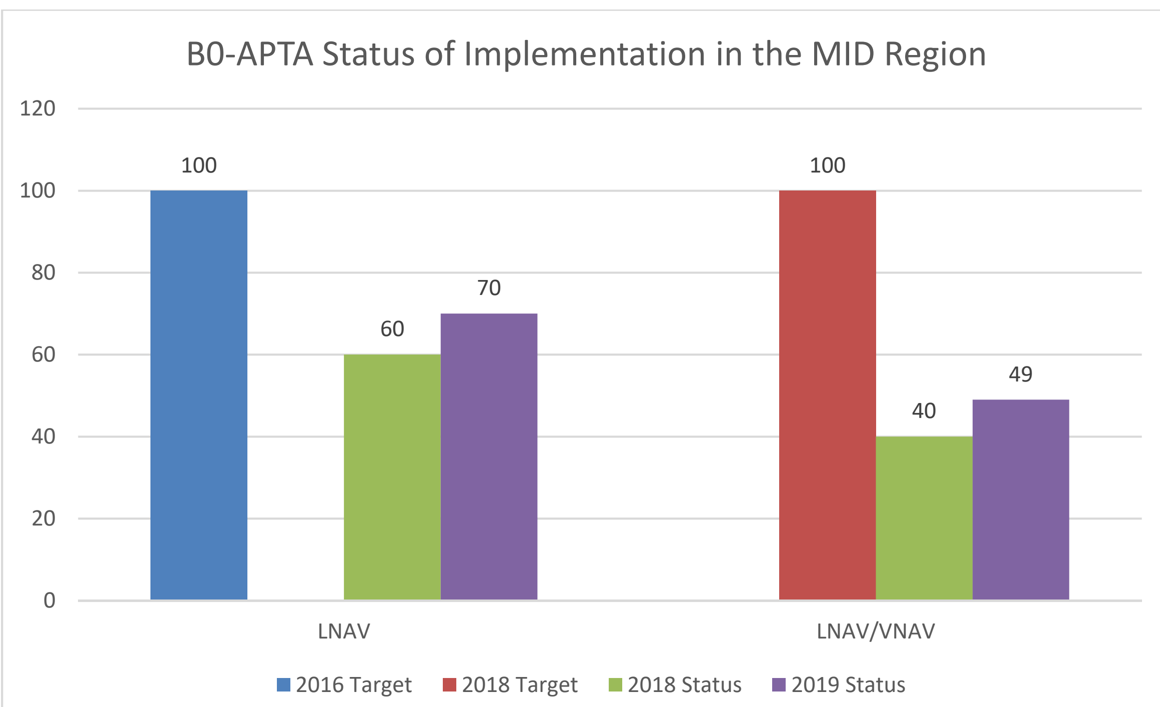
B0-ASEP	Air Traffic Situational Awareness (ATSA)	2				
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	2				
B0-ACAS	ACAS Improvements	1	2014	CNS SG		
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	1	2017	ATM SG		
Performance Improvement Areas (PIA) 4 Efficient Flight Path – Through Trajectory-based Operations						
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	1	2014	PBN SG		
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2		ATM SG	CNS SG	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	1	2014	PBN SG		

2.2 ASBU Implementation Status and Progress in the MID Region

2.2.1 B0-APTA

The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures will enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of Basic global navigation satellite system (GNSS), Baro vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

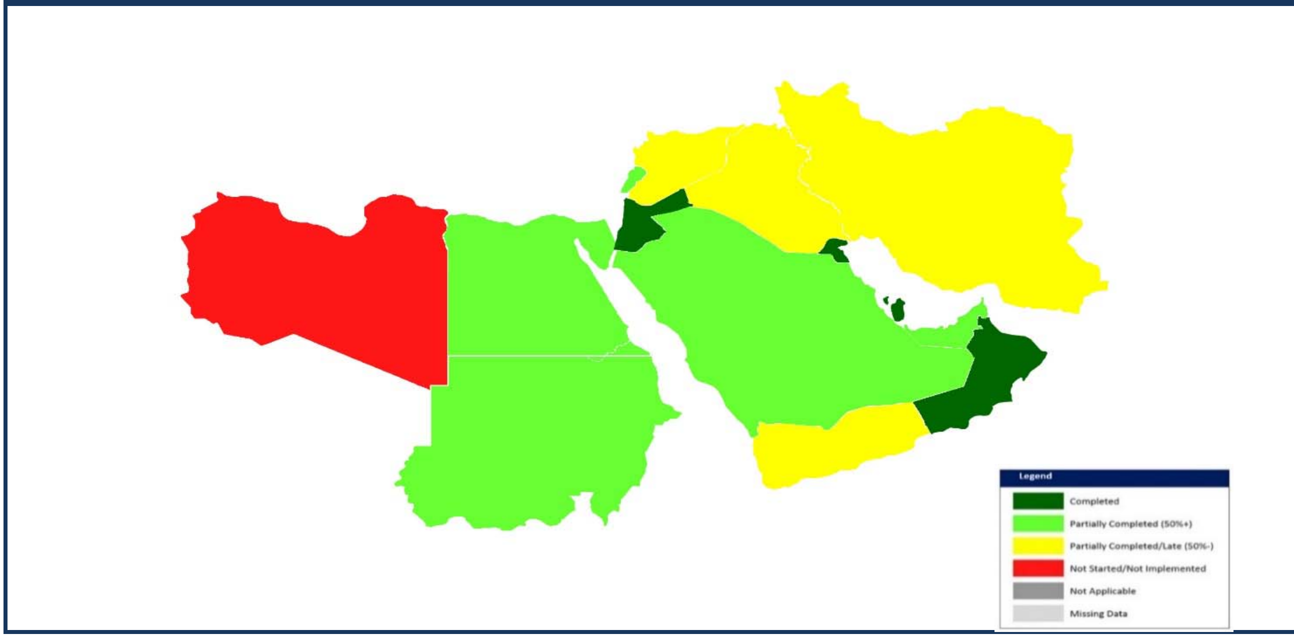
B0 – APTA: Optimization of Approach Procedures including vertical guidance				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
LNAV	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes with RNAV(GNSS) Approach Procedures (LNAV) Supporting metric: Number of runway ends at international aerodromes with RNAV (GNSS) Approach Procedures (LNAV)	100% (All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches)	Dec. 2016
LNAV/VNAV	All RWYs ENDs at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV) Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	100% (All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches)	Dec. 2017



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-APTA	LNAV															
	LNAV/VNAV															

The progress for B0-APTA is <u>good</u> (with approximately 60 % implementation).

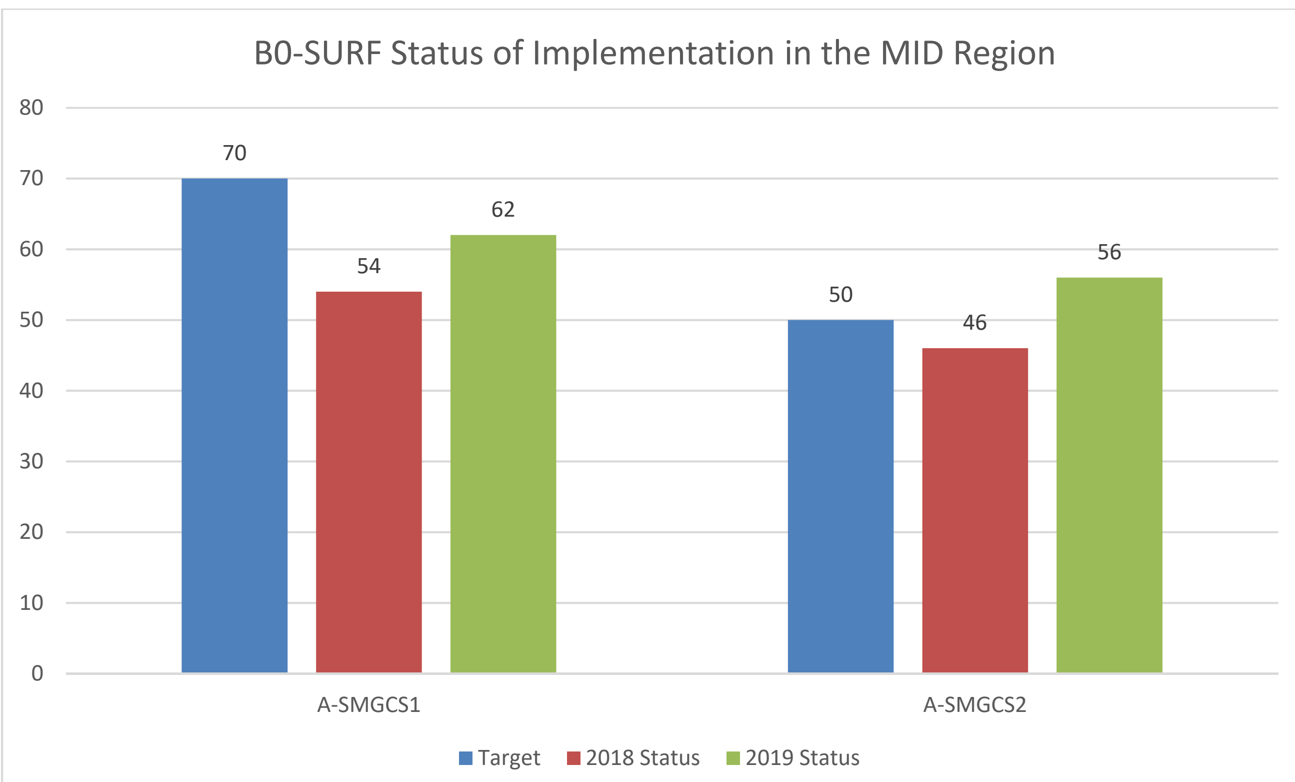
B0-APTA Status of implementation in the MID Region



2.2.2 B0-SURF

Basic A-SMGCS provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety. ADS-B information is used when available (ADS-B APT).

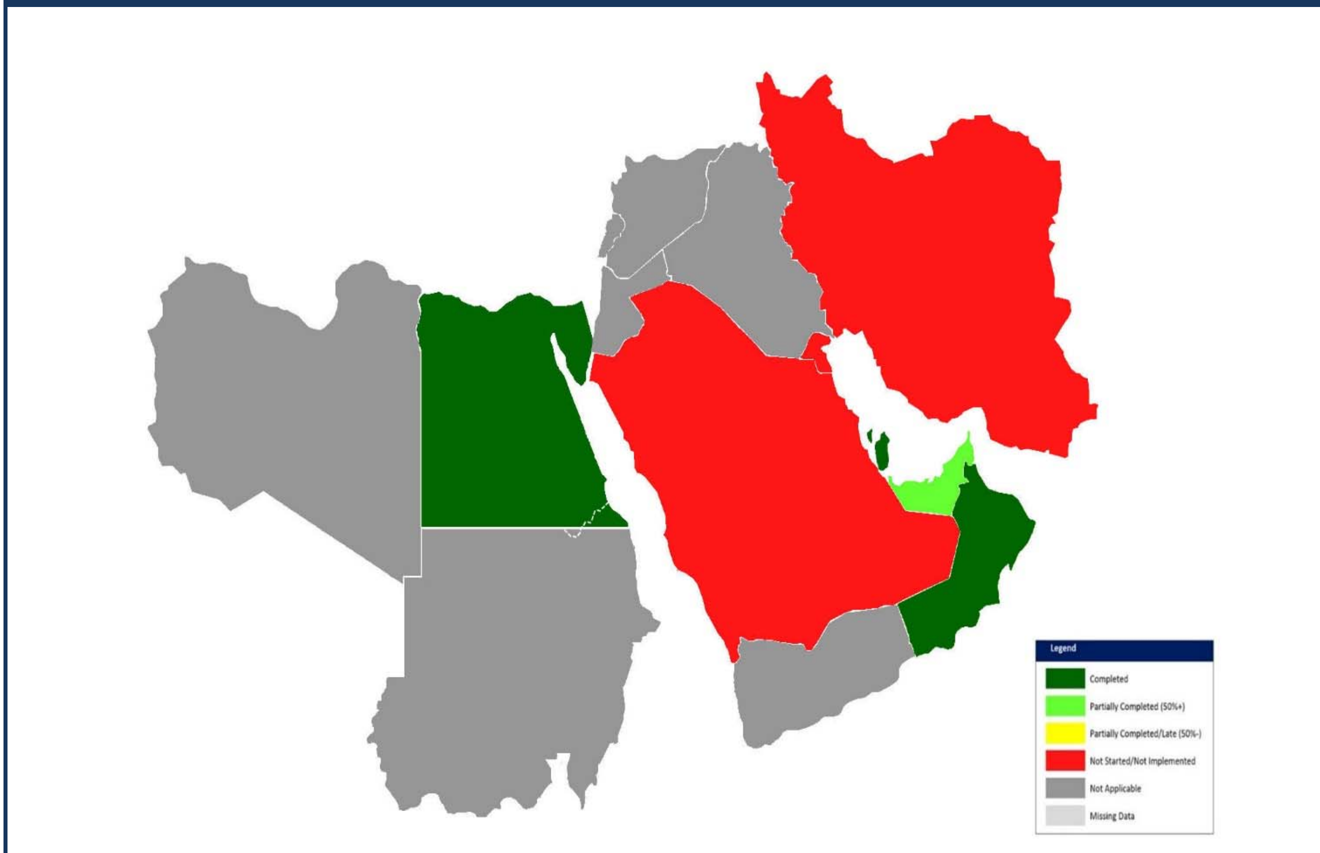
B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 1 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 1	70%	Dec. 2017
A-SMGCS Level 2*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 2 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 2	50%	Dec. 2017



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-SURF	A-SMGCS Level 1															
	A-SMGCS Level 2															

The progress for B0-SURF is <u>good</u> (with approximately 59% implementation). B0-SURF is not applicable for 7 States.

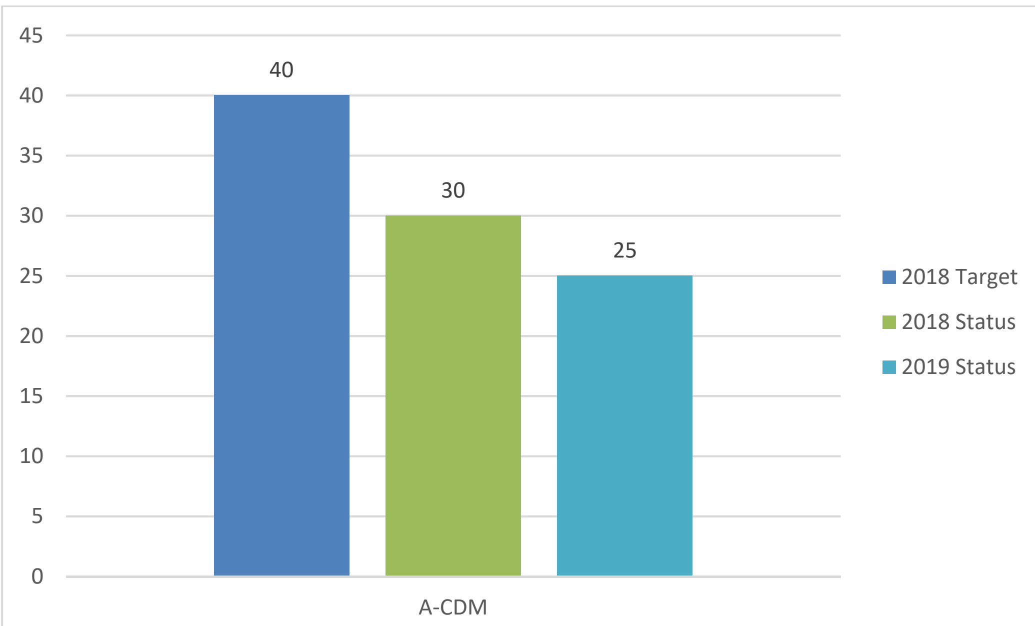
B0-SURF Status of implementation in the MID Region



2.2.3 B0-ACDM

To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and maneuvering areas and enhance safety, efficiency and situational awareness.

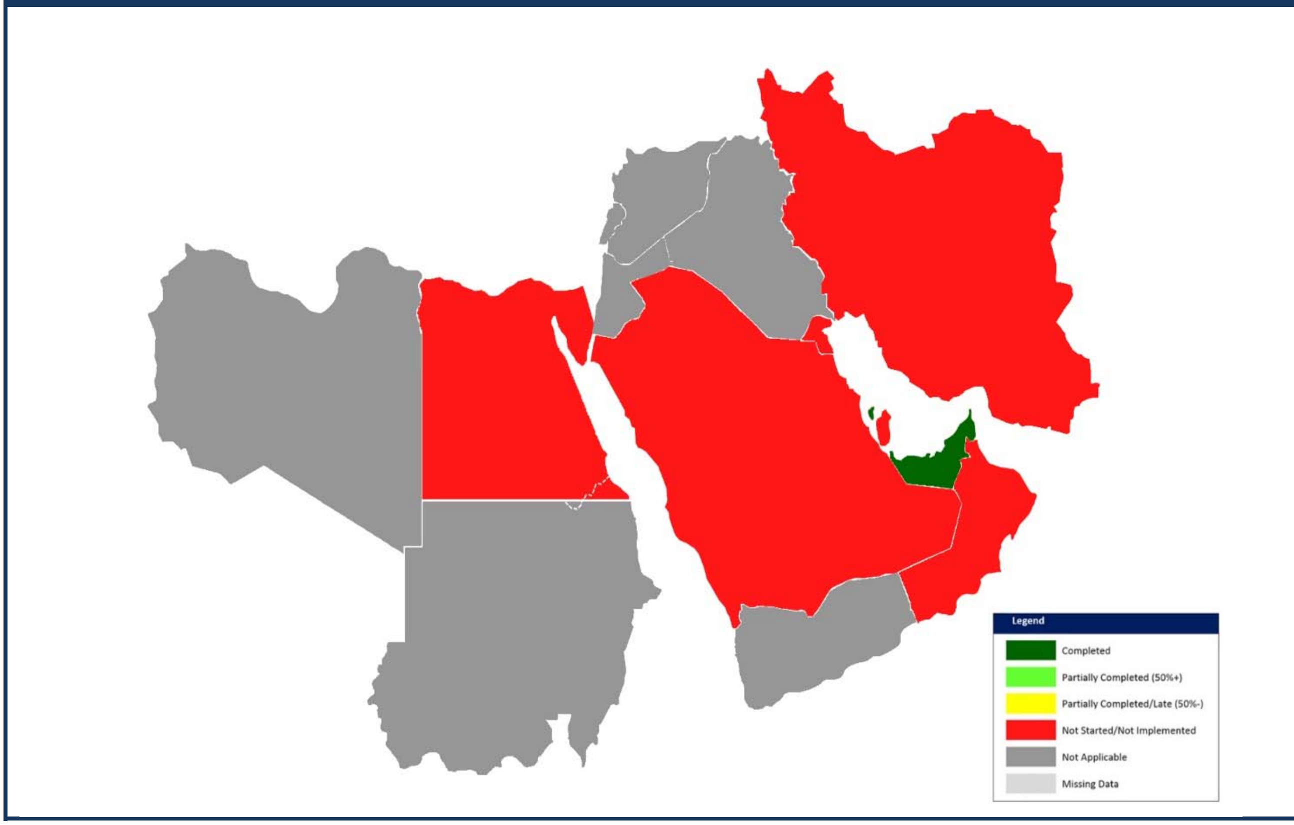
B0 – ACDM: Improved Airport Operations through Airport-CDM				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA	Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDM	50%	Dec. 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-ACDM	A-CDM															

The progress for B0-ACDM is <u>very slow</u> (with approximately 25% implementation. Nevertheless, implementation is ongoing in some States.

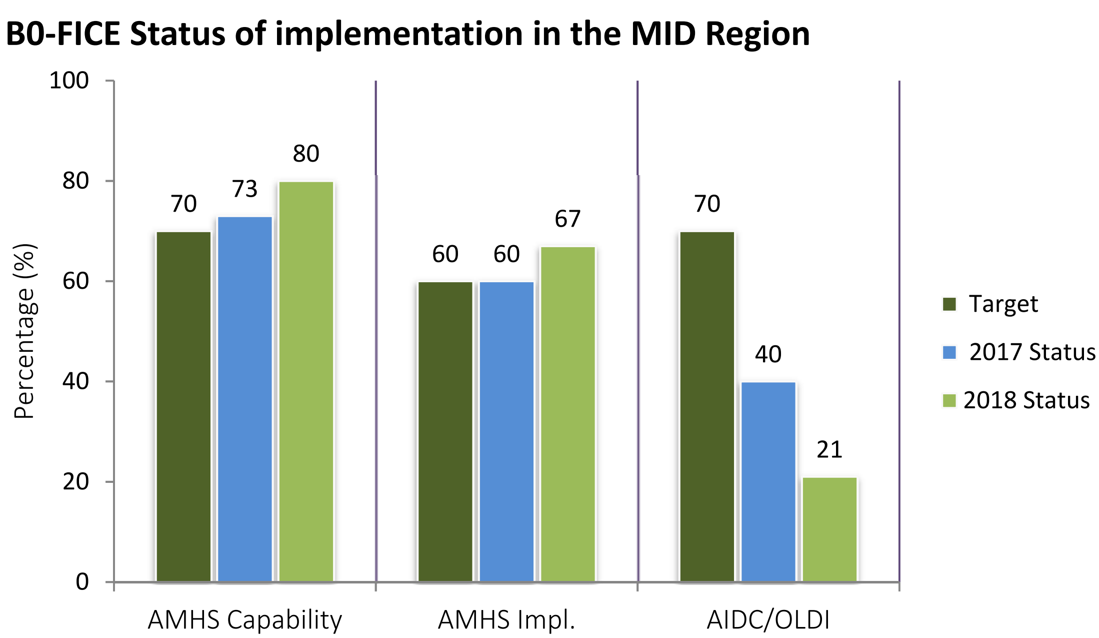
B0-ACDM Status of implementation in the MID Region



2.2.4 B0-FICE

To improve coordination between air traffic service units (ATSUs) by using ATS Interfacility Data Communication (AIDC) defined by the ICAO *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.

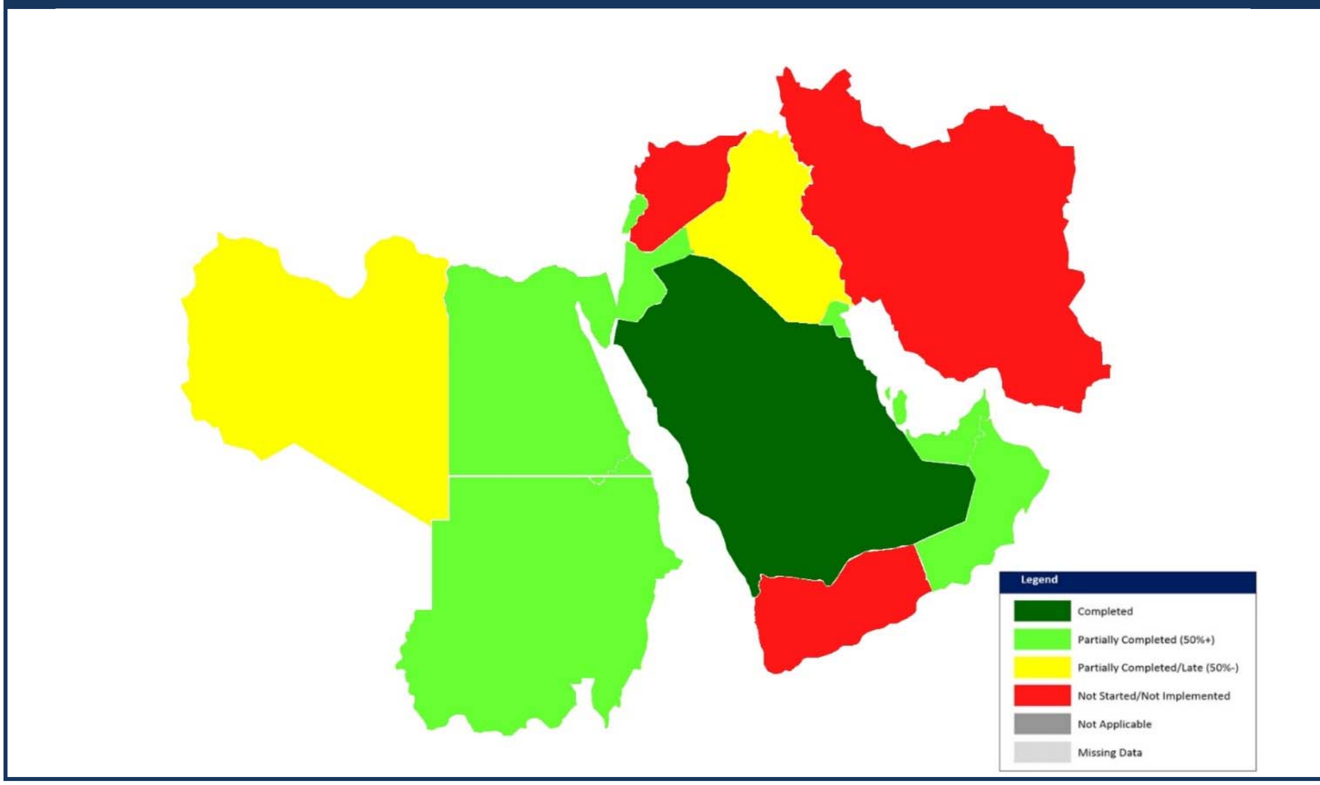
B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
AMHS capability	All States	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70%	Dec. 2017
AMHS implementation /interconnection	All States	Indicator: % of States with AMHS implemented (interconnected with other States AMHS) Supporting metric: Number of States with AMHS implemented (interconnections with other States AMHS)	60%	Dec. 2017
Implementation of AIDC/OLDI between adjacent ACCs	As per the AIDC/OLDI Applicability Table*	Indicator: % of priority 1 AIDC/OLDI Interconnection have been implemented Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70%	Dec. 2020



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-FICE	AMHS capability															
	AMHS impl. /interconnection															
	Implementation of AIDC/OLDI between adjacent ACCs															

The progress for B0-FICE is reasonable (with approximately 53% implementation). However, the AIDC/OLDI implementation in 2019 decreased due to definition of new applicability area as agreed in MSG/6 meeting (3-5 December 2018, Egypt).

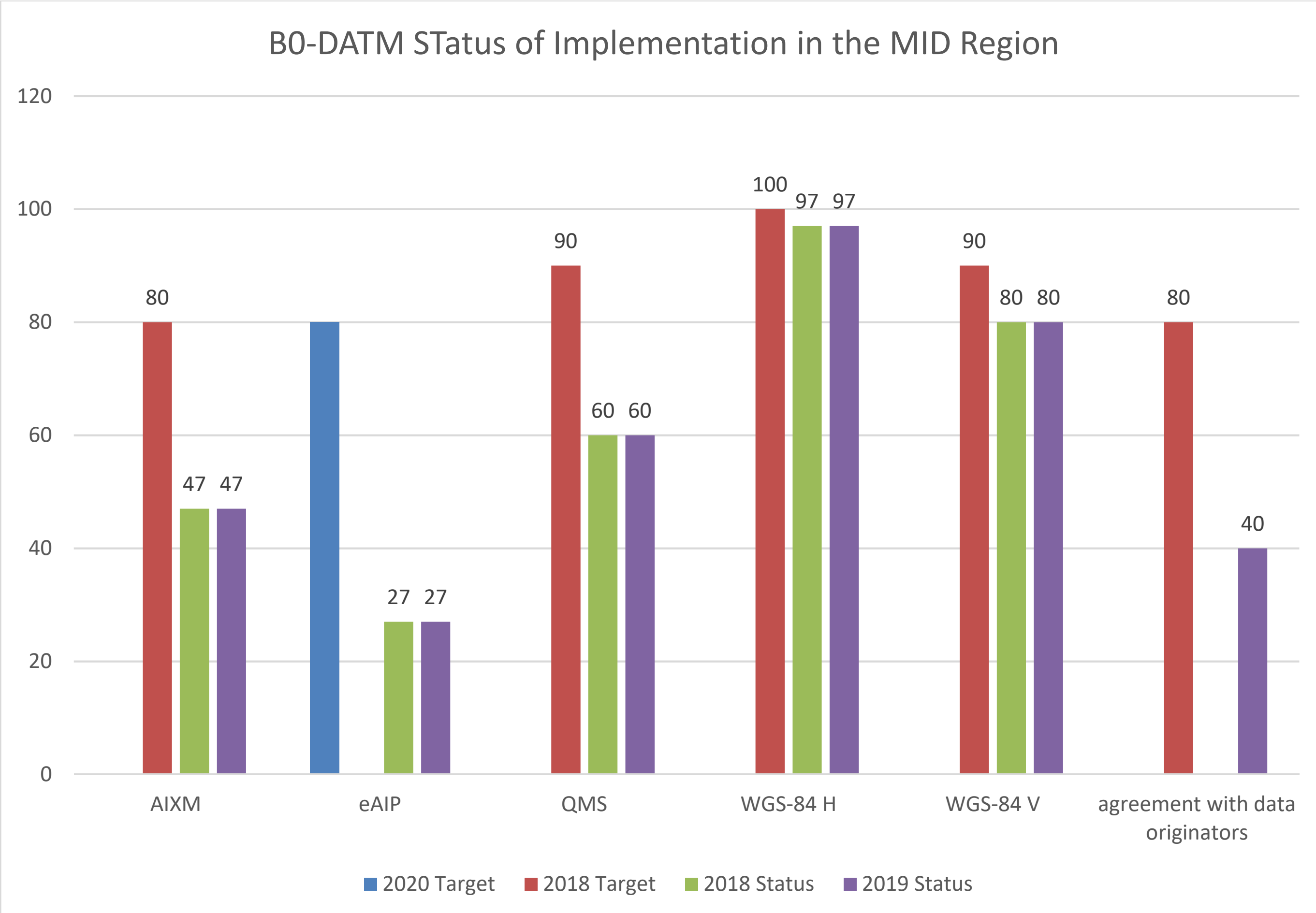
B0-FICE Status of implementation in the MID Region



2.2.5 B0-DATM

The initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical information exchange model (AIXM), migration to electronic aeronautical information publication (AIP) and better quality and availability of data.

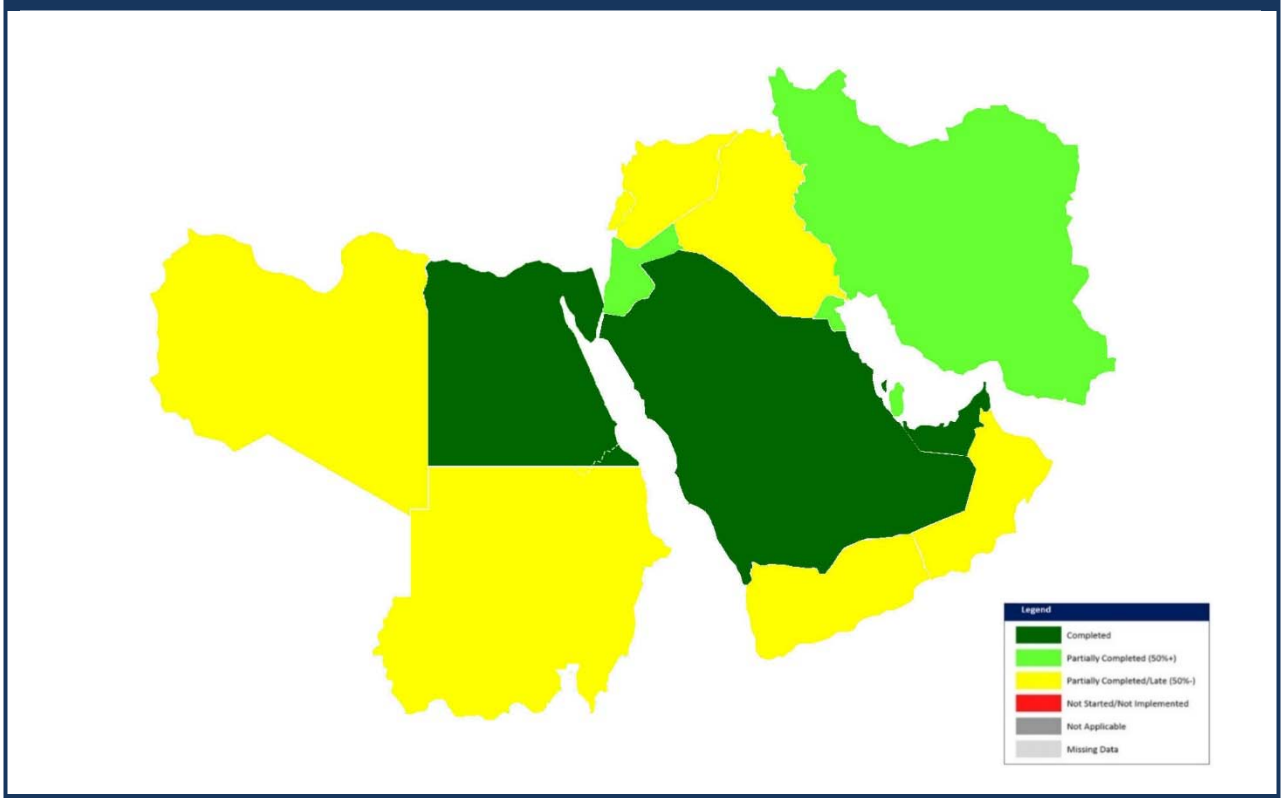
B0 – DATM: Service Improvement through Digital Aeronautical Information Management				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
AIXM	All States	Indicator: % of States that have implemented an AIXM-based AIS database Supporting Metric: Number of States that have implemented an AIXM-based AIS database	80%	Dec. 2018
eAIP	All States	Indicator: % of States that have implemented an IAID driven AIP Production (eAIP) Supporting Metric: Number of States that have implemented an IAID driven AIP Production (eAIP)	80%	Dec. 2020
QMS	All States	Indicator: % of States that have implemented QMS for AIS/AIM Supporting Metric: Number of States that have implemented QMS for AIS/AIM	90%	Dec. 2018
WGS-84	All States	Indicator: % of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Supporting Metric: Number of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Indicator: % of States that have implemented WGS-84 Geoid Undulation Supporting Metric: Number of States that have implemented WGS-84 Geoid Undulation	Horizontal: 100% Vertical: 90%	Dec. 2018 Dec. 2018
Agreement with data originators	All States	Indicator: % of States that have signed Service Level Agreements (SLA) with at least 50% of their AIS data originators Supporting Metric: Number of States that have signed Service Level Agreements (SLA) with at least 50% of their AIS data originators	80%	Dec. 2020


B0-DATM STatus of Implementation in the MID Region
120
100
80
60
40
20
0
80
47 47
27 27
90
60 60
100
97 97
90
80 80
80
40
AIXM
eAIP
QMS
WGS-84 H
WGS-84 V
agreement with data originators
2020 Target
2018 Target
2018 Status
2019 Status

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-DATM	AIXM															
	eAIP															
	QMS															
	WGS-84 – H															
	WGS-84 – V															
	Agreement with data originators															

The progress for B0-DATM is <u>good</u> (with approximately 59% implementation). However, DATM implementation decreased due to adding new element of having agreement with data originators.

B0-DATM Status of implementation in the MID Region



2.2.6 B0-AMET

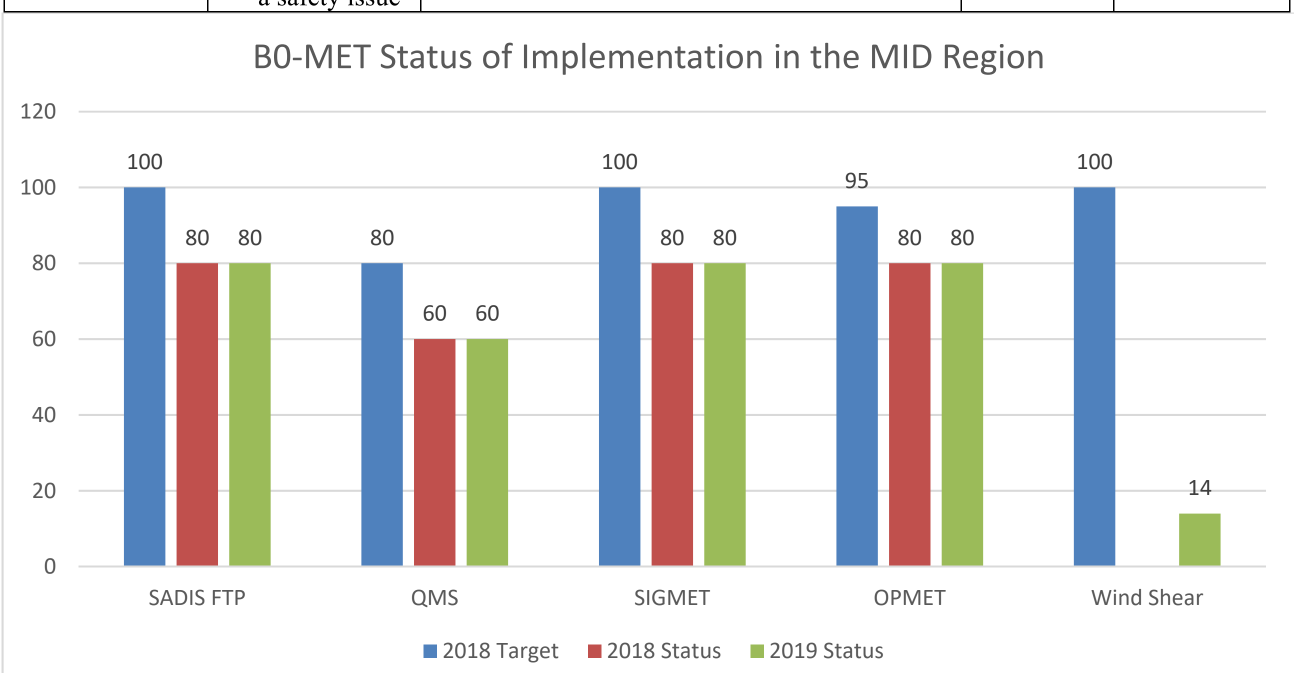
Global, regional and local meteorological information:

a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC);

b) aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including wind shear; and

c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

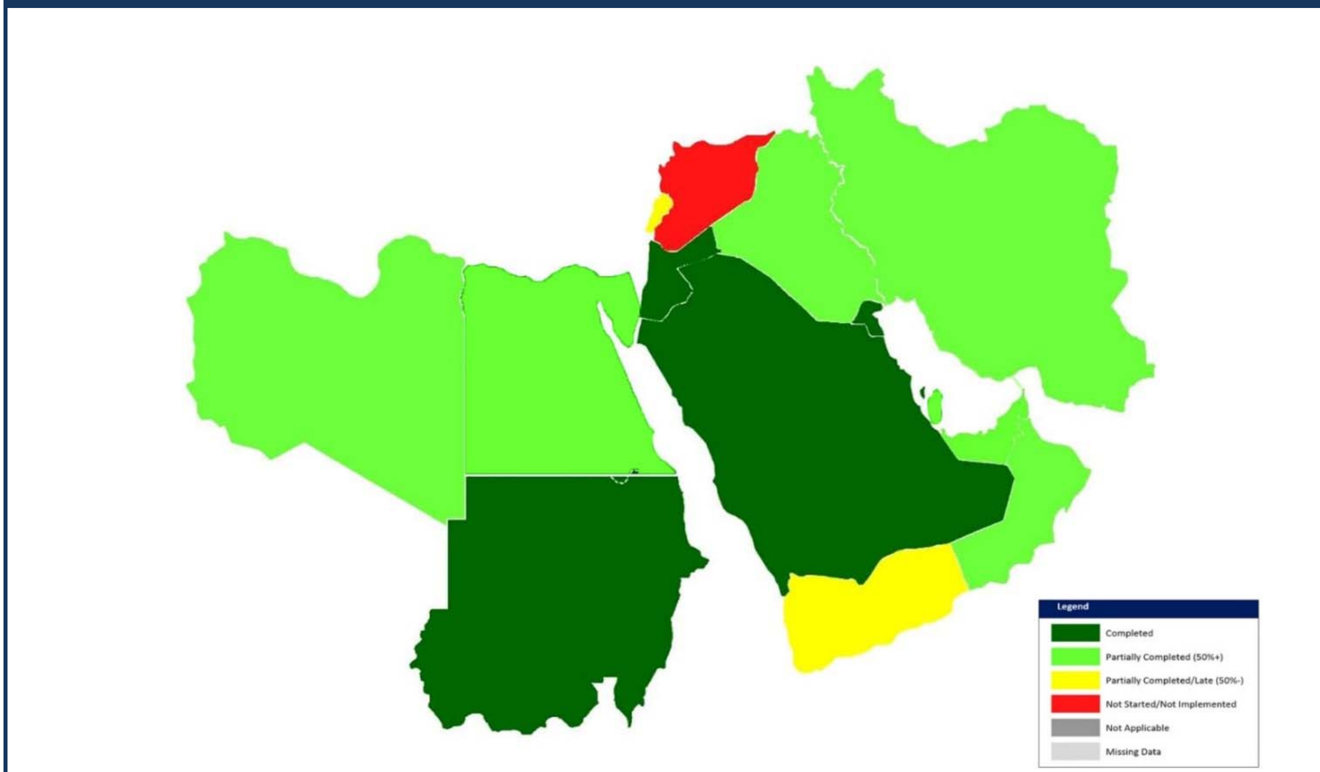
B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
SADIS FTP	All States	Indicator: % of States having implemented SADIS FTP service Supporting Metric: Number of States having implemented SADIS FTP service	100%	Dec. 2018
QMS	All States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	80%	Dec. 2018
SIGMET	All States with MWOs in MID Region	Indicator: % of States having implemented SIGMET Supporting metric: number of States having implemented SIGMET	100%	Dec. 2018
OPMET	All States	Indicator: % of States having implemented METAR and TAF Supporting metric: number of States having implemented METAR and TAF	95%	Dec. 2018
WIND SHEAR	List of Aerodrome where wind shear reports a safety issue	Indicator: Availability of wind shear automated system Supporting metric: TBD	TBD	TBD



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-AMET	SADIS FTP															
	QMS															
	SIGMET															
	OPMET															
	Wind Shear															

The progress for B0-AMET is good (with approximately 63% implementation). The implementation of AMET decreased due to adding new element "wind shear".

B0-AMET Status of implementation in the MID Region



2.2.7 B0-FRTO

To allow the use of airspace which would otherwise be segregated (i.e. special use airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight length and fuel burn.

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Flexible Use of Airspace (FUA) Level 1 Strategic	All States	Indicator: % of States that have implemented FUA Level 1 Supporting metric*: number of States that have implemented FUA Level 1	50%	Dec. 2019
FUA Level 2 Pre-tactical	All States	Indicator: % of States that have implemented FUA Level 2 Supporting metric*: number of States that have implemented FUA Level 2	60%	Dec. 2020
FUA Level 3 Tactical	All States	Indicator: % of States that have implemented FUA Level 3 Supporting metric*: number of States that have implemented FUA Level 3	60%	Dec. 2022

** Implementation should be based on the published aeronautical information*

Module	**Elements**	**Bahrain**	**Egypt**	**Iran**	**Iraq**	**Jordan**	**Kuwait**	**Lebanon**	**Libya**	**Oman**	**Qatar**	**Saudi**	**Sudan**	**Syria**	**UAE**	**Yemen**
B0-FRTO	Flexible Use of Airspace (FUA) Level 1 Strategic															
	FUA Level 2 Pre-tactical															
	FUA Level 3 Tactical															

Note – B0-FRTO implementation data will be further collected during the ATM SG/6 meeting planned in 2021.

2.2.8 B0-NOPS

Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or Flight Information Region (FIR)/sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

Experience clearly shows the benefits related to managing flows consistently and collaboratively over an area of a sufficient geographical size to take into account sufficiently well the network effects. The concept for ATFM and demand and capacity balancing (DCB) should be further exploited wherever possible. System improvements are also about better procedures in these domains, and creating instruments to allow collaboration among the different actors**.**

B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
ATFM Measures implemented in collaborative manner	All States	Indicator: % of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision Supporting metric: number of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision	100%	Dec. 2018
ATFM Structure	All States	Indicator: % of States that have established an ATFM Structure Supporting metric: number of States that have established an ATFM Structure	100 %	Dec. 2019

.

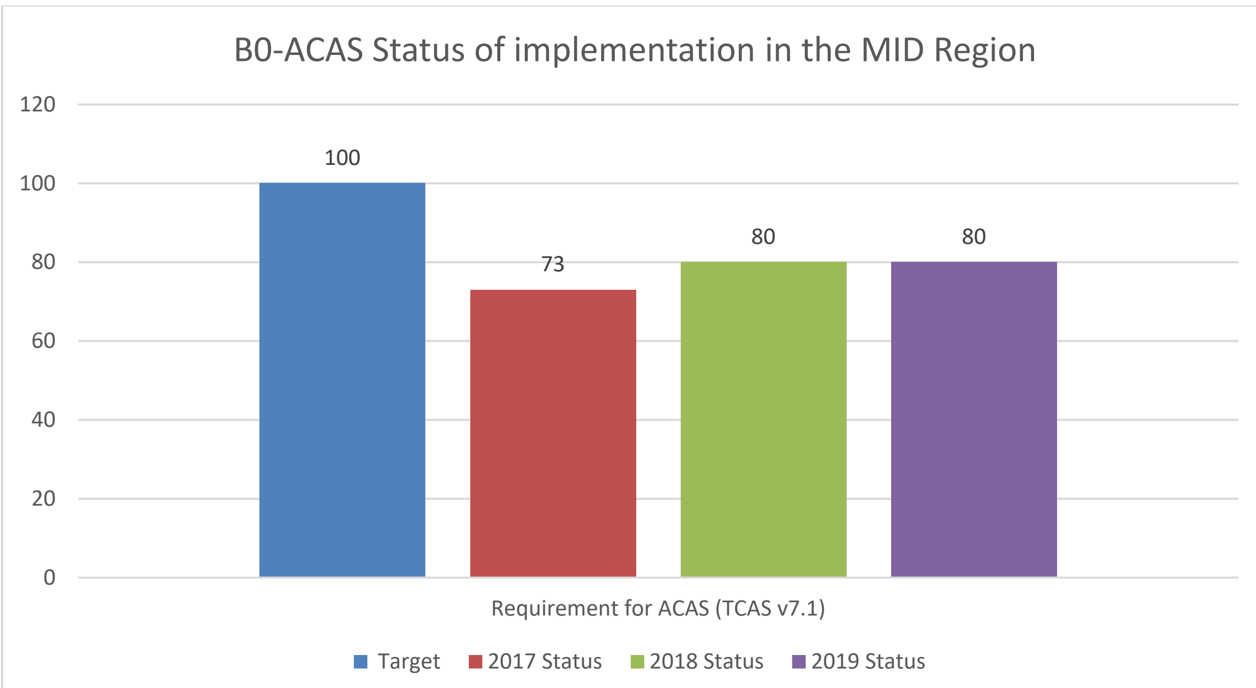
Module	**Elements**	**Bahrain**	**Egypt**	**Iran**	**Iraq**	**Jordan**	**Kuwait**	**Lebanon**	**Libya**	**Oman**	**Qatar**	**Saudi**	**Sudan**	**Syria**	**UAE**	**Yemen**
B0-NOPS	ATFM Measures implemented in collaborative manner															
	ATFM Structure															

Note – B0-NOPS implementation data will be further collected during the ATFM TF/4 meeting planned in September 2020.

2.2.9 B0-ACAS

To provide short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.

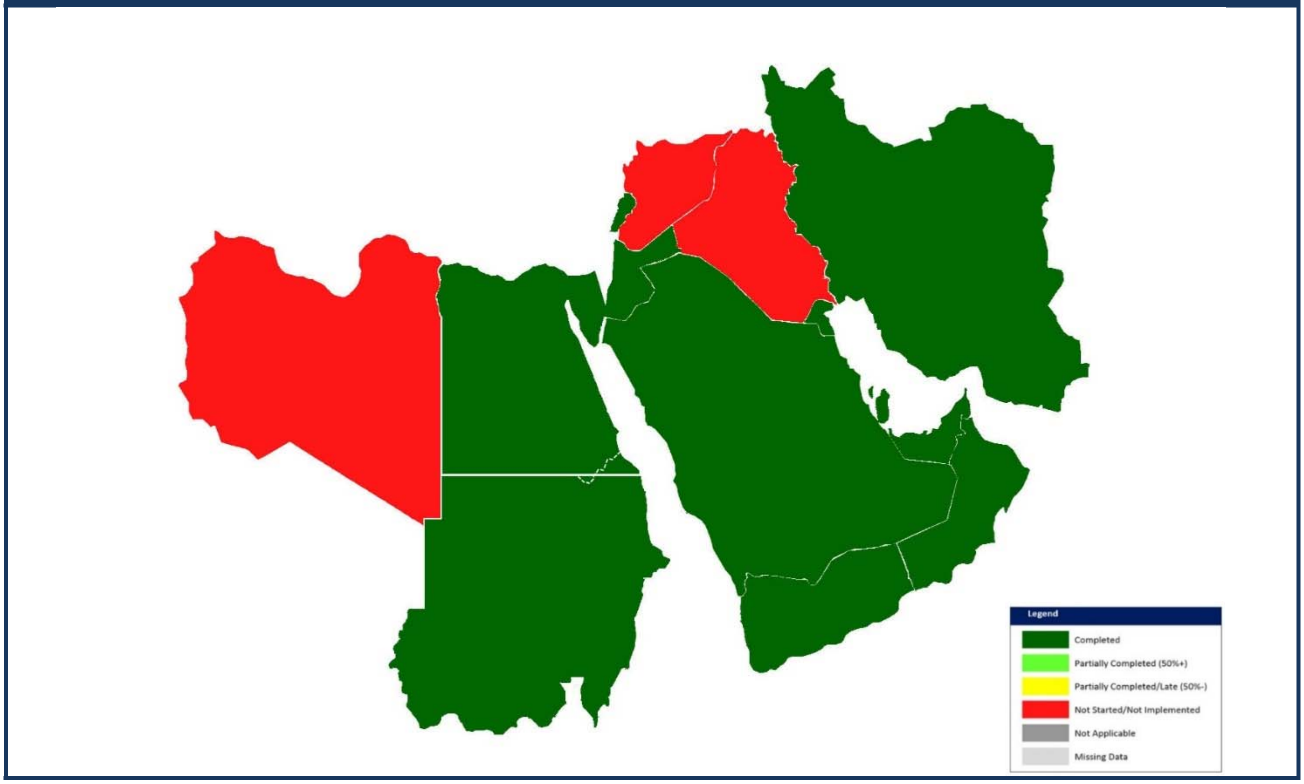
B0 – ACAS: ACAS Improvements				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Avionics (TCAS V7.1)	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	100%	Dec. 2017



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-ACAS	ACAS (TCAS V7.1)															

The progress for B0-ACAS is <u>very good</u> (with approximately 80% implementation).

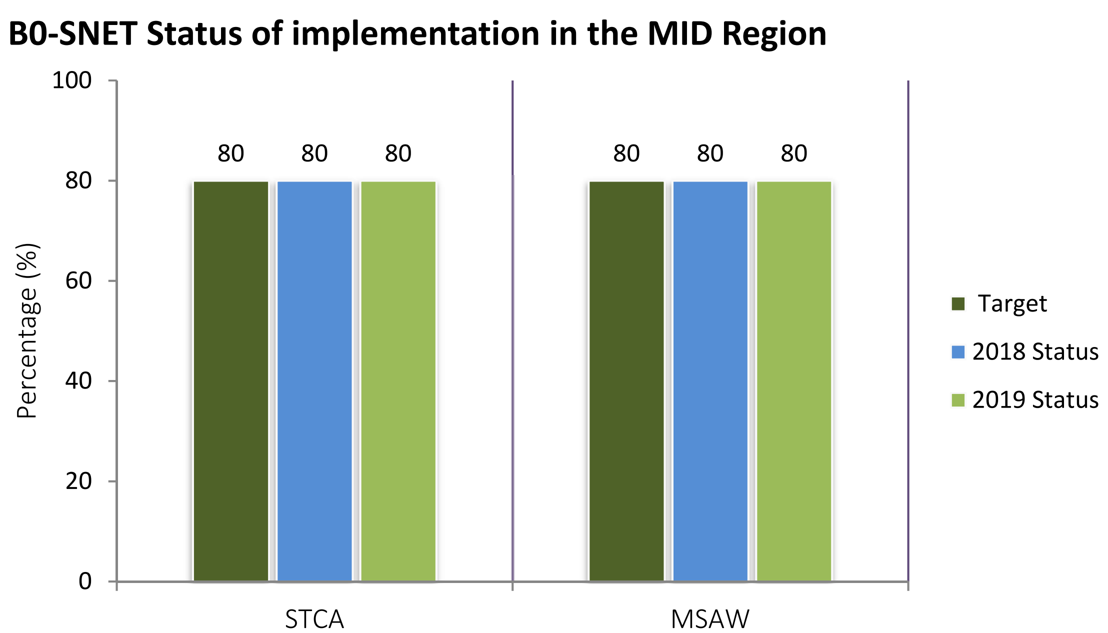
B0-ACAS Status of implementation in the MID Region



2.2.10 B0-SNET

To enable monitoring of flights while airborne to provide timely alerts to air traffic controllers of potential risks to flight safety. Alerts from short-term conflict alert (STCA), area proximity warnings (APW) and minimum safe altitude warnings (MSAW) are proposed. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human centered.

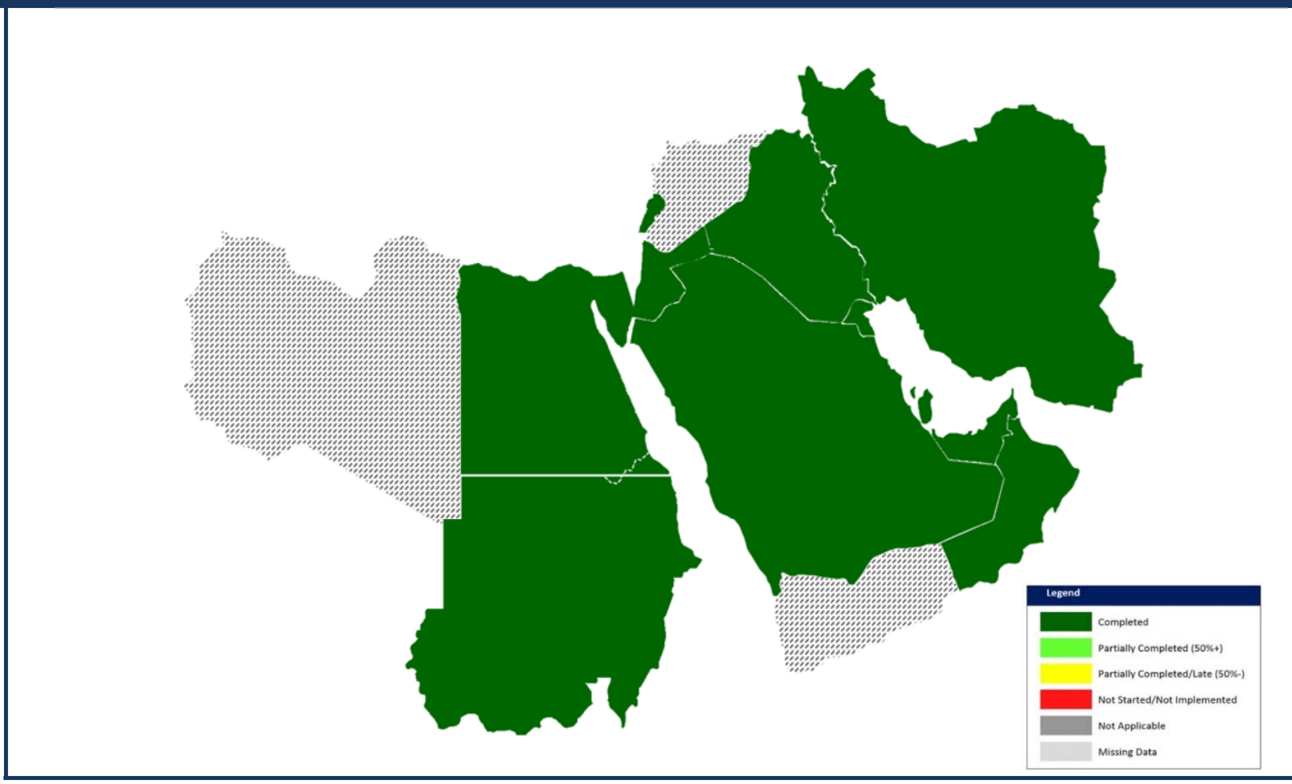
B0 – SNET: Increased Effectiveness of Ground-based Safety Nets				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Short-Term Conflict Alert (STCA)	All States	Indicator: % of States that have implemented Short-term conflict alert (STCA) Supporting metric*: number of States that have implemented Short-term conflict alert (STCA)	80 %	Dec. 2018
Minimum Safe Altitude Warning (MSAW)	All States	Indicator: % of States that have implemented Minimum safe altitude warning (MSAW) Supporting metric*: number of States that have implemented Minimum safe altitude warning (MSAW)	80 %	Dec. 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-SNET	Short-term conflict alert (STCA)															
	Minimum safe altitude warning (MSAW)															

The progress for B0-SNET is very good (with approximately 80% implementation).

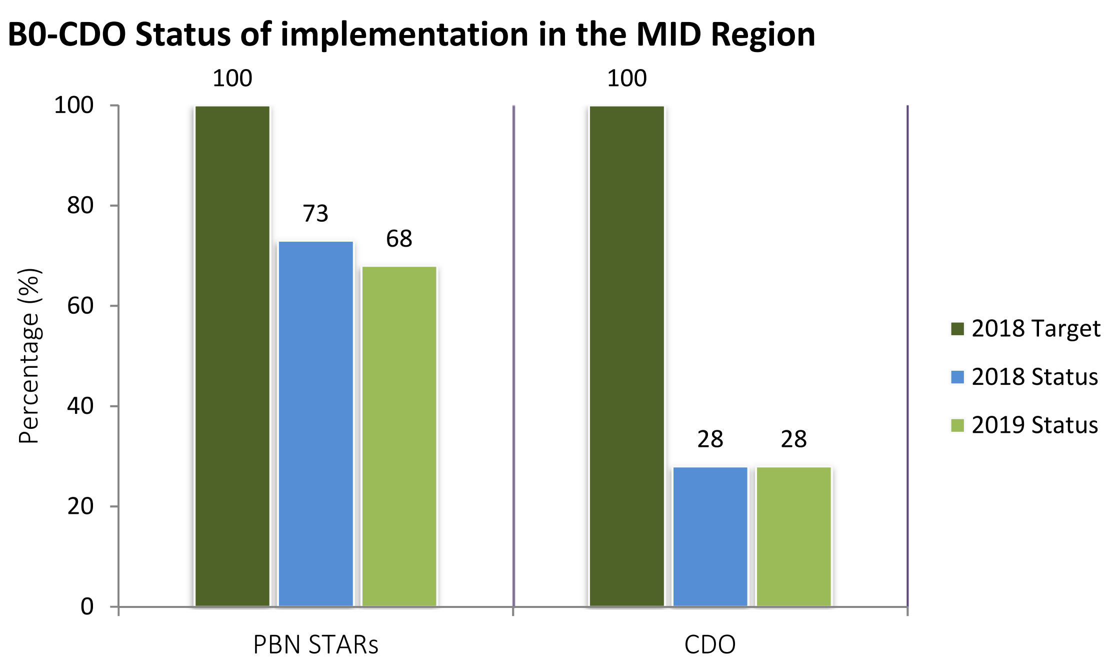
B0-SNET Status of implementation in the MID Region



2.2.11 B0-CDO

To use performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas.

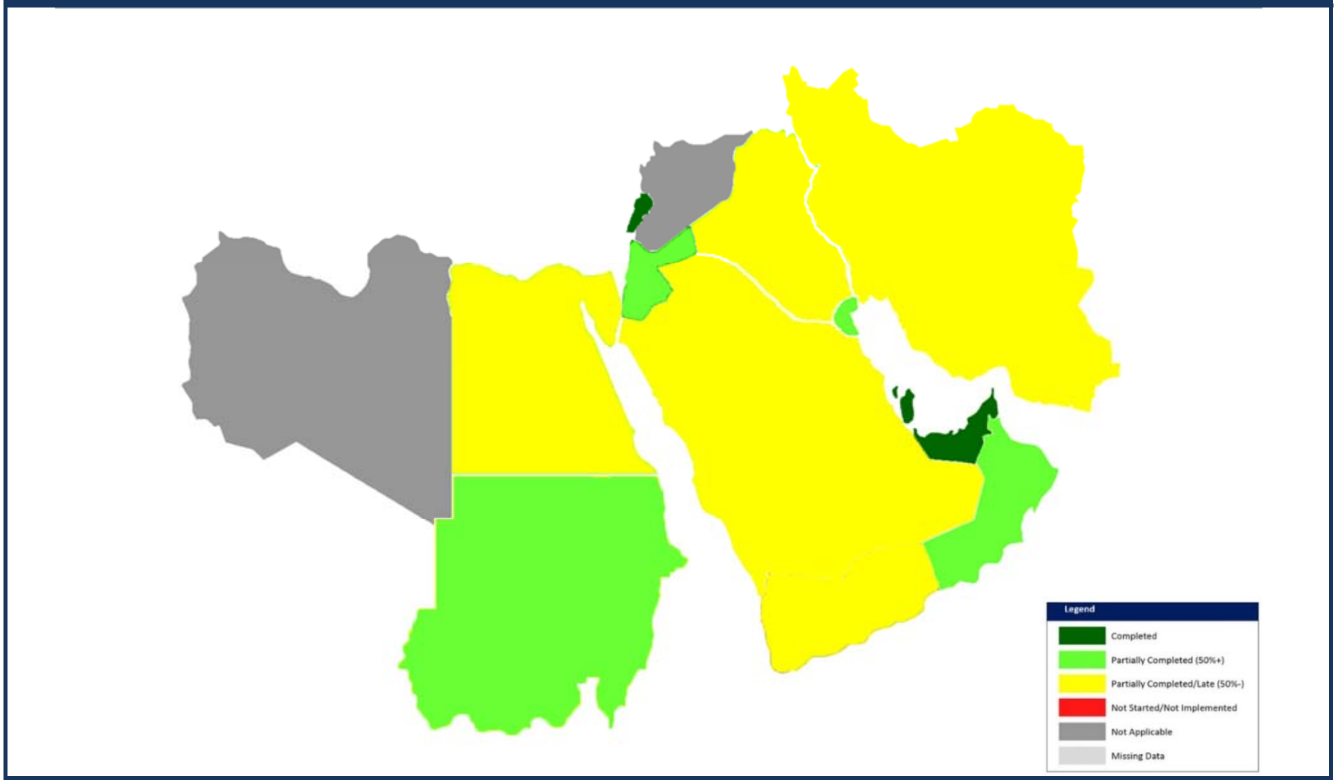
B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
PBN STARs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMAD, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with PBN STAR implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with PBN STAR implemented as required.	100% (for the identified Aerodromes/TMAs)	Dec. 2018
International aerodromes/TMAs with CDO	OBBI, HESH, HEMA, HEGN, OIIE, OIKB, OIFM, OJAI, OJAQ, OKBK, OLBA, OOMS, OTHH, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% (by for the identified Aerodromes/TMAs)	Dec. 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-CDO	PBN STARs															
	International aerodromes/TMAs with CDO															

The progress for B0-CDO is <u>acceptable</u> (with approximately 48% implementation).

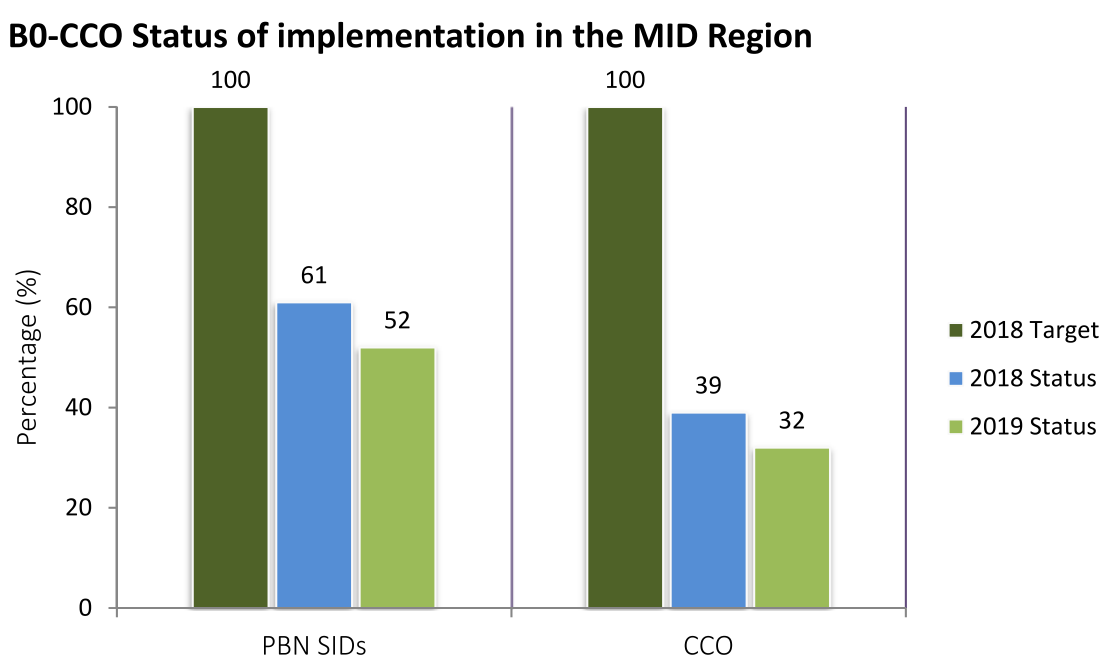
B0-CDO Status of implementation in the MID Region



2.2.12 B0-CCO

To implement continuous climb operations in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles and increase capacity at congested terminal areas.

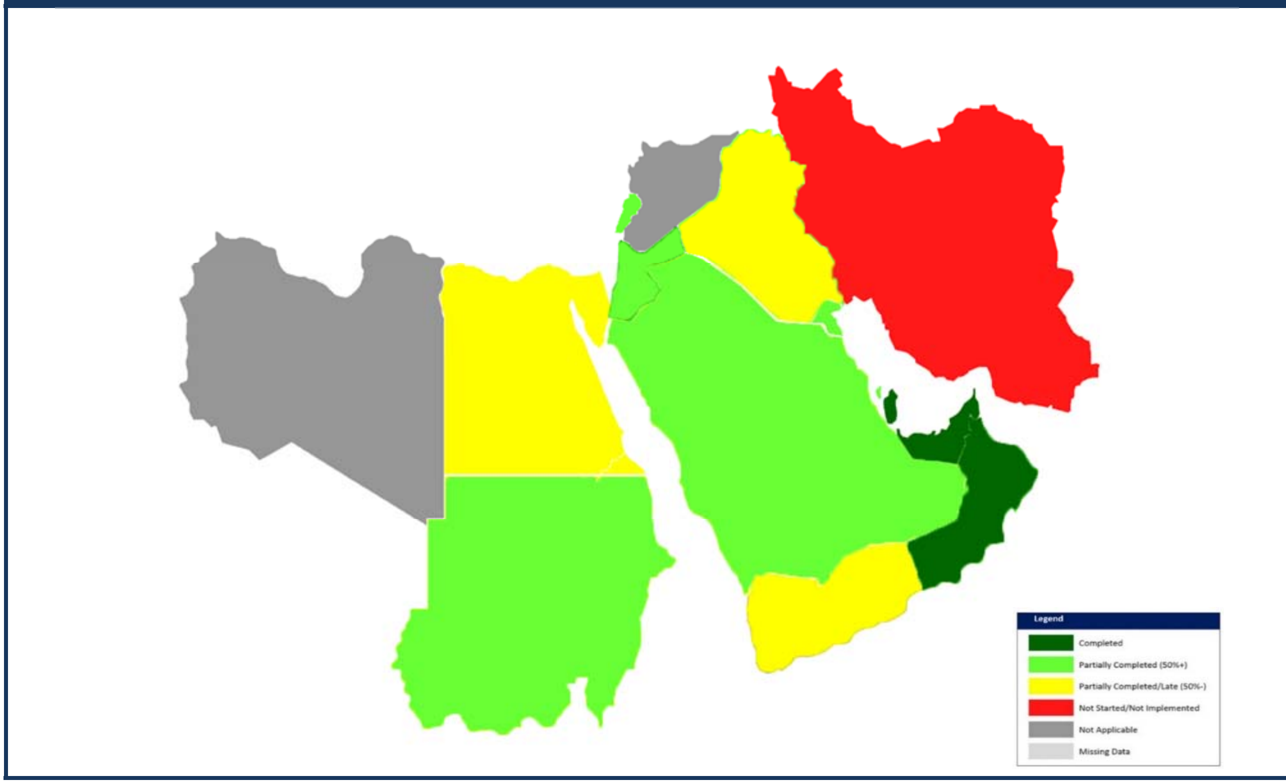
B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
PBN SIDs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMAD, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with PBN SID implemented as required. Supporting Metric: Number of International Aerodromes/ TMAs with PBN SID implemented as required.	100% (for the identified Aerodromes/TMAs)	Dec. 2018
International aerodromes/TMAs with CCO	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OIKB, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with CCO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CCO implemented as required.	100% (for the identified Aerodromes/TMAs)	Dec. 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi	Sudan	Syria	UAE	Yemen
B0-CCO	PBN SIDs															
	Intl ADs/TMAs with CCO															

The progress for B0-CCO is <u>low</u> (with approximately 42% implementation).

B0-CCO Status of implementation in the MID Region



3. ENVIRONMENTAL PROTECTION

3.1 Introduction

Environmental Protection, to minimize the adverse environmental effects of civil aviation activities, is one of the five strategic objectives of ICAO. With a view to minimizing the adverse effects of international civil aviation on the environment, ICAO formulates policies, develops and updates Standards and Recommended Practices (SARPs) on aircraft noise and aircraft engine emissions, and conducts outreach activities. Information related to the ICAO activities on environmental protection is available on the ICAO website at: https://www.icao.int/environmental-protection/Pages/default.aspx

This section provides an update on the States' Action Plans on CO2 Emissions Reduction; and presents an estimation of environmental benefits, in terms of fuel saving / CO2 emissions reduction, accrued from the implementation of some ASBU Block 0 Modules in the MID Region.

3.2 States' Action Plans on CO2 Emissions Reduction

The ICAO Assembly 38 (24 September to 4 October 2013) endorsed the Resolution 38-18 Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate Change which encouraged States to voluntarily prepare and submit Action Plans on CO2 emission reduction to ICAO. An ambitious work programme was further laid down for capacity building and assistance to States in the development and implementation of their Action Plans to reduce emissions, which States were initially invited to submit by the 37th Session of the ICAO Assembly in October 2010.

ICAO Assembly 39 (Montreal, Canada, 27 September – 6 October 2016) encouraged States, through Assembly Resolution 39-2 Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change, to submit voluntary Action Plans outlining respective policies and actions, and annual reporting on international aviation CO2 emissions to ICAO.

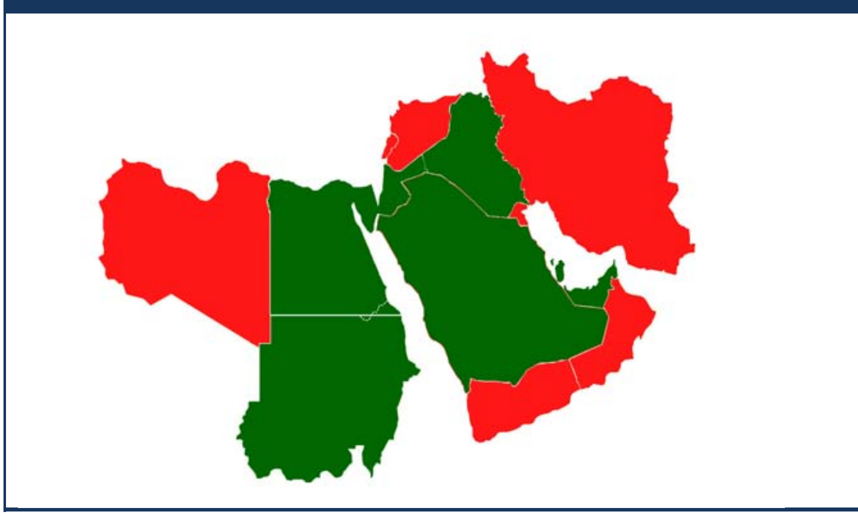
The MIDANPIRG/16 meeting (Kuwait, 13 - 16 February 2017) invited States to develop/update their Action Plans for CO2 emissions reduction and submit them to ICAO through the APER website or the ICAO MID Regional Office.

An Action Plan is a means for States to communicate to ICAO information on activities to address CO2 emissions from international aviation. The level of information contained in an action plan should be sufficient to demonstrate the effectiveness of actions and to enable ICAO to measure progress towards meeting the global goals set by Assembly Resolution A38-18. Action plans give States the ability to: establish partnerships; promote cooperation and capacity building; facilitate technology transfer; and provide assistance.

The Status of the provision of Action Plans on CO2 emission in the MID Region is as follows:

State	Action Plans
Bahrain	June 2015
Egypt	July 2016
Iran	-
Iraq	June 2012
Jordan	September 2013
Kuwait	-
Lebanon	-
Libya	-
Oman	-
Qatar	March 2020
Saudi Arabia	April 2018
Sudan	January 2015
Syria	-
UAE	June 2012 (update May 2018)
Yemen	-

Status of States' Action Plans



3.3 Estimation of the Environmental Benefits accrued from implementation of ASBU Block 0 Modules

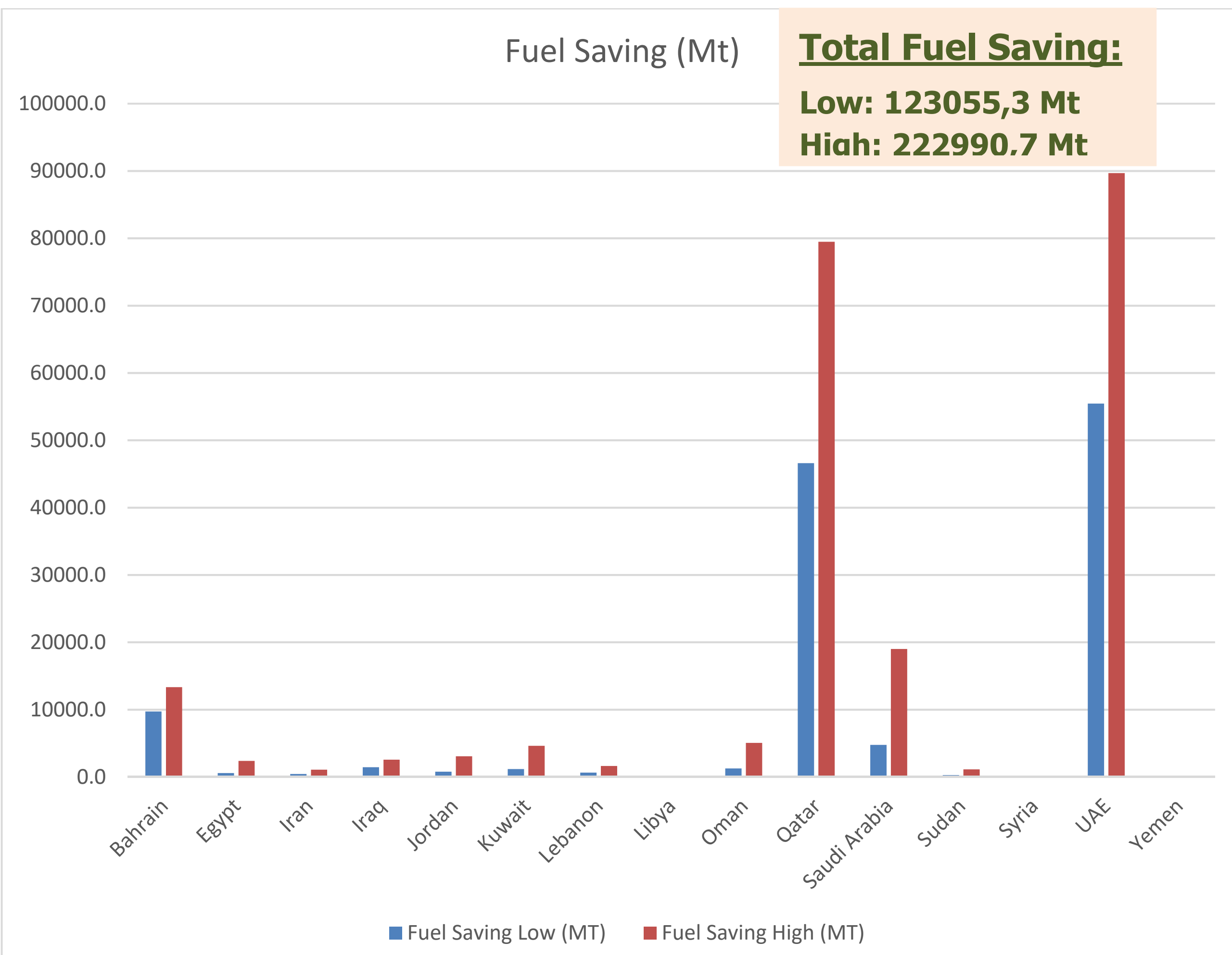
CAEP/10 conducted an assessment of the potential environmental benefits (fuel savings / CO2) for the period between the start of implementation of ASBU Block 0 modules in 2013 and the planned implementation of such modules in 2018 (end of Block 0). In order to accomplish this task, CAEP developed sets of Rules-of-Thumb for each studied module with the overall intent to provide a conservative estimate of ASBU Block 0 fuel saving benefits. Rules-of-Thumb were developed using existing, publically available data, literature, and assumptions, together with the professional judgment of the analysts. A total of twenty-three (23) rules of thumb have been developed for thirteen (13) ASBU Block 0 Modules.

The results of the ASBU Block 0 analysis conducted by CAEP highlight a potential reduction in fuel consumption by 2018 due to the implementation of ASBU Block 0 modules when compared to the 2013 baseline. The results show that the following Block 0 Modules (operational improvements) would have the biggest contribution to fuel saving in the MID Region:

- **CCO 1 (CCO)**
- **CDO 1 (CDO)**
- ACDM
- **CDO 2 (PBN STARs)**
- ASUR (ADS-B Surveillance)
- **CCO 2 (PBN SIDs)**
- **APTA 1 (Radius to Fix)**

As the status of implementation of B0-ACDM and B0-ASUR is still low in the MID Region, a Methodology for the Estimation of environmental benefits accrued from the implementation of priority 1 Block 0 Modules in the MID Region has been developed for B0-APTA, CCO and CDO, based on the Rules of Thumb and the available traffic data.

The estimation has shown a **total of 123055.3 to 222990.7 Mt** of fuel saving in the MID Region (**383,933 to 695730,9 Tonnes of CO2**), as a result of the implementation of the selected Block 0 Modules (APTA, CDO and CCO), as shown below:



4. SUCCESS STORIES/BEST PRACTICES

4.1 IRAN: IAC Cyber Security Experiences and Countermeasures

Introduction

Several years ago, for the first time Iran Airports and Air Navigation Company (IAC) encountered cyber security threats face to face. A number of our systems, like flight planning and flight information systems, were breached. Since it was the first experience, and IAC had many problems to resolve the issues. So, it was determined to prepare for such situations and work on the security of our systems. That was very cumbersome job as IAC hadn't any clue where we should start. So, IAC started by consulting with authorities and organizations in Iran which worked with companies on cyber security. Also, they used the views of private companies in our country whom had worked in this domain. So, the journey was begun.

Challenges

The first thing IAC did was to analyze the attack chains that was experienced and to familiarize themselves with the attack vector they had in their hand in the network.

Lack of strict policies for using internet in operational stations and networks was one of our weak places. Also, IAC did have a diverse and geographically dispersed network across the country, which made their attack vector very large. Actually, IAC didn't have a bird's-eye view about what was happening in our network. IAC also had some issues about trained staff in cyber security. Using legacy systems in operational units which weren't updated and patched was also another issue. These were some of IAC challenges that should be addressed and resolved. So, the work was begun.

Action Plan

IAC set up a security committee and started to prioritize what we should do. IAC held meetings regularly with different parties and stakeholders. The committee tried to grasp the attention of senior management on the cyber security issues. By publishing instructions and guidelines, it was tried to improve cyber security awareness in all airports. One of the first steps they agreed on, was to move toward a solution for detection of cyber security incidents. This would give them an edge in addressing cyber security incidents. IAC wanted to be the first one who knows what is happening in their network. So, they started the Security Operation Centre (SOC) project.

The first step was to collect logs from all devices and servers in order to detect incidents by analyzing these logs. IAC came up with a thorough plan to deploy a distributed solution for SIEM across the country which support all our airports. The committee gave a special attention to the security of business-critical and operational systems and made decisions in use the principle of least privilege and need to know access control policies to improve their security.

Current Situation

IAC finished deployment of our plan about SIEMs. So, right now they have a universal view about what is happening in all airports with respect to assets.

This improved its visibility about what is happening in network. Regarding the operational networks like AFTN, FIDS, and etc., this new visibility helped them in the process of isolating these networks and taking measures which lead to more secure networks. Actually, this is the current project in our hand. IAC is going to harden whole systems and networks which consist of operational data in our network.

Future

IAC is going to enhance capabilities in post-detection steps of security incidents, will work in responses to the detected security incidents in the form of CERT. IAC is going to equip the SOC with software and solutions for improving the capabilities about incident handling. The other part IAC is trying to achieve is including other operational systems and networks in watch. Beside works it was planned to do detection and analysis of security incidents, IAC have some plans about prevention aspects of cyber security incidents. IAC is going to implement a thorough and evolved firewalling plan for the communications of our airports and systems used in our operational environment.

Conclusion

After couple of incidents IAC had in the past, spending time and money on cyber security is paying off by having a more secure and hardened network which is monitored continuously in 7 x 27 style. But security is not an absolute thing, so IAC is planning to extend scope and improving its capabilities. Also, they are planning to invest on completing the cycle of handling security incidents and resolution of them.

4.2 SAUDI ARABIA: Saudi Air Navigation Services Company (SANS) 2019 Achievements

Since the corporatization of the Saudi Air Navigation Services Company (SANS), the winds of transformation have been uplifting the company to new levels of operational excellence; a new strategic direction, culture change, organizational optimization, and human resource development have all supported in building a solid foundation on which the re-envisioned company has been growing.

SANS Maintenance Control Center

As part of the ongoing efforts to support the company vision of becoming a regional & global industry leader, SANS achieved a new milestone in the continuous journey towards excellence; the implementation & launch of the new Maintenance Control Center (for navigation equipment).
CEO – Eng. Ryyan Tarabzoni – along with the leadership team - inaugurated the newly established Maintenance Control Center that is fully equipped and operational with the latest equipment and systems, making it one of the most modern global centers in the field of real-time monitoring and control for the maintenance of navigational systems worldwide.

Online Customer Center

One of the strategic pillars at SANS is focused on forging & maintaining strategic partnerships with all external stakeholders, customers, and partners. Therefore, the Customer Relationship Management (CRM) Dept. pioneered the Regions first online Customer Center. This platform offers web-based services that make interaction with SANS quicker, easier, and more efficient by providing simple access to a range of services including Pilot Briefing, Complaints/Inquire/Suggestions (as well a history of your communications), and Search & Rescue. In addition to the aforementioned services, a Billing System will be added to the Customer Center that will allow customers to manage their billing requirements more efficiently.

SANS Safety Management System (SMS) & Just Culture

There are a number of mandated objectives by both ICAO & GACA (General Authority for Civil Aviation – KSA), as such the SMS & Just Culture were implemented at SANS with the objective of not only ensuring compliance with requirements but to also effectively manage safety risks in order to enhance safety performance of air navigation services. Shortly after the implementation, SANS received the Level 1 & 2 acceptance from GACA and proceeded to focus on SMS process & procedures for day-to-day activities by utilizing on-going coaching, safety awareness & specialized SMS trainings for all concerned staff. SMS audits were conducted to further ensure full implementation from all directorates was achieved.

In June 2019, SANS SMS was fully accepted by GACA (level 4) and full implementation throughout the company was achieved by the end of the year. One of the critical components of the SMS implementation was to design and roll-out a positive safety culture within the organization. To achieve this milestone, SANS adopted a Just Culture policy (the cornerstone to building a firm safety culture within the organization) based on best practices from EUROCONTROL which clearly defines the approach of the company to encourage employees to provide essential safety information via reporting. SANS Just Culture Policy provided a clear message on how the company will support a fair culture in which front-line operators and others are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated. In addition to the Just Culture Policy, a Just Culture Handbook and Just Culture Assessment Tool were also developed to explain and provide guidelines about the implementation of Just Culture within SANS. Through numerous communications activities supported by the Corporate Communications Directorate, a common understanding of Just Culture has been created in which it covers all levels of SANS staff. These communications activities support the enhancement and implementation of the SMS process in addition to raising internal awareness of the policies and encouraging open reporting which in turn supports the creation of performance safety indicators. The successful implementation of this initiative further reinforces SANS position as a regional industry leader.

EANSP – ATM System Project

Continuous improvements and implementing new technologies is vital to the contribution of sustainability and growth in a company such as SANS. Therefore, the Engineering Services Directorate have always been hard at work to optimize the technologies utilized by SANS to ensure the readiness of all locations. The enhancement of air navigation services & procedures project incorporated the implementation of new ATM systems that provide effective air traffic management in numerous international airports in KSA, including 12 remote towers. The ATM systems in both King Abdulaziz International Airport (Jeddah) and King Khalid International Airport (Riyadh) have been integrated to provide En-route traffic back-up for each other in case required. The new systems have helped to resolve a number of previous limitations such as:

- Automatic Coordination (If flight trajectory crosses the ATS sector boundary vertically / outside a fixed point)
- SNET Nuisance Alerts (STCA nuisance alerts due to garbling effect / for diversion tracks / duplicate cases due to track splits / MSAW nuisance alerts for arrival flight on final)
- Playback (Capability of the CWP recording in open video format file / limited functionality in interaction playback mode / absence of synchronization between video and voice recording during playback and the statistical tool on current ATM system)
- Missed Tower Operational Roles (tower / ground / delivery / apron)
- Statistical Tools (absence of the statistical tool on current ATM system / RMA report for whole KSA airspace / centralized merged data to billing)

New functions include:

- Arrival / Departure manager (AMAN / DMAN)
  - Improve sequencing and metering of arrival/departure aircraft in selected TMAs and airports.
  - Information exchange mechanisms, tools and procedures in support of AMAN operations in adjacent ACCs and/or subjacent TMAs.
- Airspace Management (ASM)
  - Collaborative civil-military airspace planning to ensure that airspace is used more flexibly, capacity is better balanced, and predictability is enhanced through greater adherence to planned activities.
- Datalink (Controller-Pilot Data Link Communications (CPDLC) / ADS-C / Departure Clearance) (DCL)
  - Silent interaction between ATCO and Aircraft Pilot for routing tactical commands
- 4D trajectory prediction
- Medium Term Conflict Detection
  - Advanced conflict detection based on active flight plan information
  - Free Route Airspace needs to be supported by Conflict Detection Tools
- Monitoring Aids (SSR code monitoring / callsign monitoring / Heading monitoring / Non-Transgression Zone (NTZ) monitoring)
  - Runway Management
- Dynamic ACC & Tower Sectorization
- Traffic flow prediction
- Tower electronic flight strips
- Weather presentation

All the enhancements, implementations, and improvements not only support the safety and effectiveness of SANS operations, but they also contribute to increasing the capacity of air traffic within Saudi airspace, as well we have a positive impact on emissions reduction due to more efficient procedures.

4.3 UAE: ANS Safety Integrated Management (ASIM) Automating a Safety Management System

The development of the Safety Management System (SMS) at Sheikh Zayed Air Navigation Centre (SZC) involved a journey of discovery as the organization documented the safety resources, processes, training and controls. Most SMS are created manually using spreadsheets across many departments. SZC was no different to any other organization. Whilst spreadsheets can be a powerful tool, they lacked the function of showing how an overall system was required to make safety management effective.

Sheikh Zayed Air Navigation Centre started documenting their first SMS in early 2010. This was a very complex process as the system needed to be applied across multiple certificate holders of Air Traffic Management (ATM), Communications Navigation & Surveillance (CNS), Aeronautical Information Management (AIM) and Instrument Flight Procedure Design (IFPD) within the centre. Over the years, a comprehensive set of data was managed. As with any manually managed system there were numerous challenges met especially when trying to link hazards across departments and displaying risk ownership.

In 2017, the efficiency of manual processes was reviewed and an evaluation of which direction to take for the next evolution of the SZC Safety Management system was conducted. The decision was to proceed with automation.

SZC first looked at what components to automate. It was clear that there would be a benefit in automating Safety Risk Management as well as Safety Assurance. SZC saw this system as protecting the organization in its day-to-day activities, this then brought the idea of the name ASIM. Asim in Arabic is a name meaning guardian or defender.

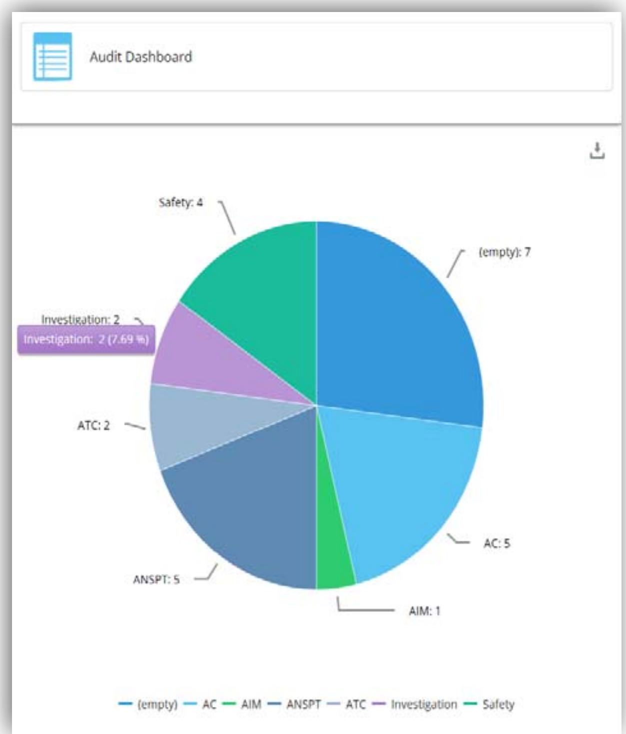
Developing ASIM for hazard identification and safety risk assessment introduced a transparent workflow, which helped to monitor and track hazards across multiple departments. The Management of Change Process was also chosen to help create a more efficient workflow.

The process of building the workflows laid the foundations of each element. These workflows were built to have a closed loop functionality to ensure that there was always feedback in the system to the originator as well as displaying clearly, where any process was at any point in time and with whom the responsibility lays. Once the workflows were drawn up, the test bed was created to ensure that any gaps were identified before putting them into service. It was very clear at that point that there was a chance to create a dynamic link between all safety elements including risk identification, change management as well as mandatory and voluntary reporting systems.

SZC found ASIM easy to use during the testing and decided to integrated it with the Mandatory Occurrence Reporting system (ROSI) used by the Competent Authority. This allowed easy reporting for the ATCOs and gave the Investigation Team a myriad of data and statistics extraction within the organization, providing feedback and identifying "hotspots" and possible areas for improvement to aviation safety.

The key to the success of automating any IT Platform is user access. By designing the workflows across multiple user levels SZC created a more open SMS, which in turn, helped foster a more open reporting culture.

All SZC staff have a defined access level. The level of access depends on the role and responsibilities within each department. In general, all users, irrespective of position held, have access to the internal Voluntary Reporting module, the “Let’s Improve” Module as well as the “Task & Action” Module as a minimum. Staff can then see real time suggestions along with any open reporting of safety concerns. Safety Ambassadors and Safety Team members have access to their respective departmental Hazard & Risks module as well as the Management of Change module. Department Directors have access to all modules both within their department and across departmental functions when required. Finally, Quality and Safety have oversight across all departments along with the Accountable Executive, which ensures that all SMS activities can be tracked in real-time.



Since going live with the system, there has been a 67% increase of risk identification. We have had a 200% increase in identified and managed changes as well. Safety recommendations are transparent and distributed for actions with a defined timescale in order to improve the efficiency as well as safety. Feedback is automatically sent via email to the initiator of the Mandatory Occurrence Report. As reports are generated, ASIM has the ability to display/reveal statistics and potential "hot spots" which greatly contributes to a proactive approach by helping us to discover trends and identify areas of improvement more easily.

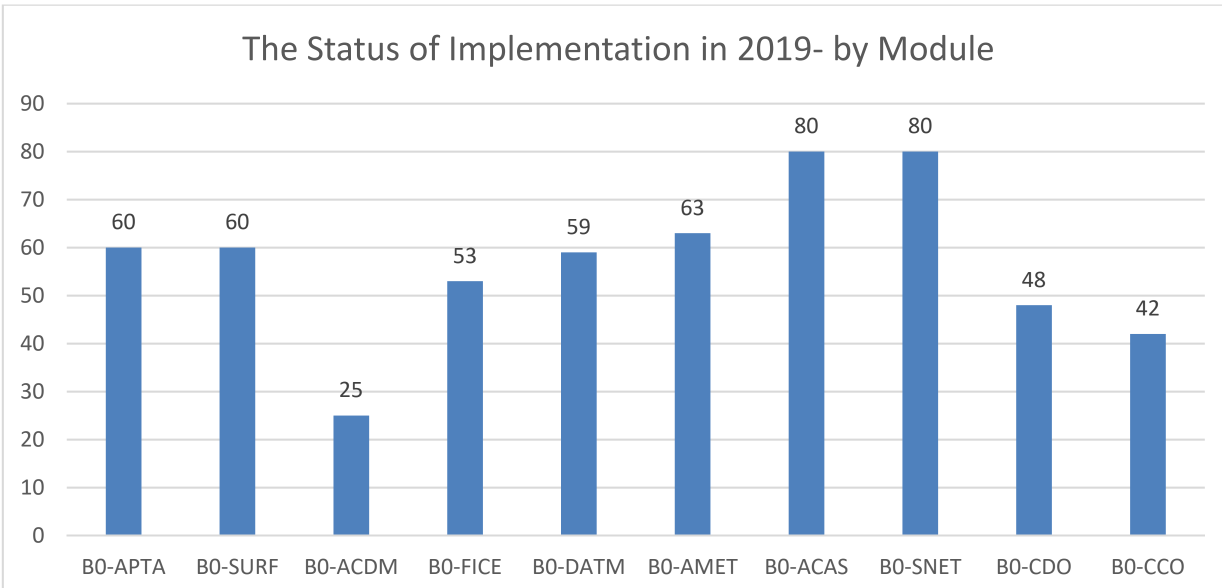
The use of ASIM has improved the process of investigation and implementation of safety recommendations by enabling effective interaction between departments across all certificate holders. It has also given personnel easy access to a system that they are an inherent part of. ASIM has been designed to grow and expand in the future in order to continue to improve the safety record and the efficiency of the SMS. SZC is already planning updates to the present system modules to streamline processes and improve procedures. It is expected that the future development of ASIM will bring SZC closer to a true Just Culture environment putting personnel at the center of true Data Driven Decision making. This unique system placed SZC at the forefront in terms of automating the implementation and effectiveness of the safety management system.

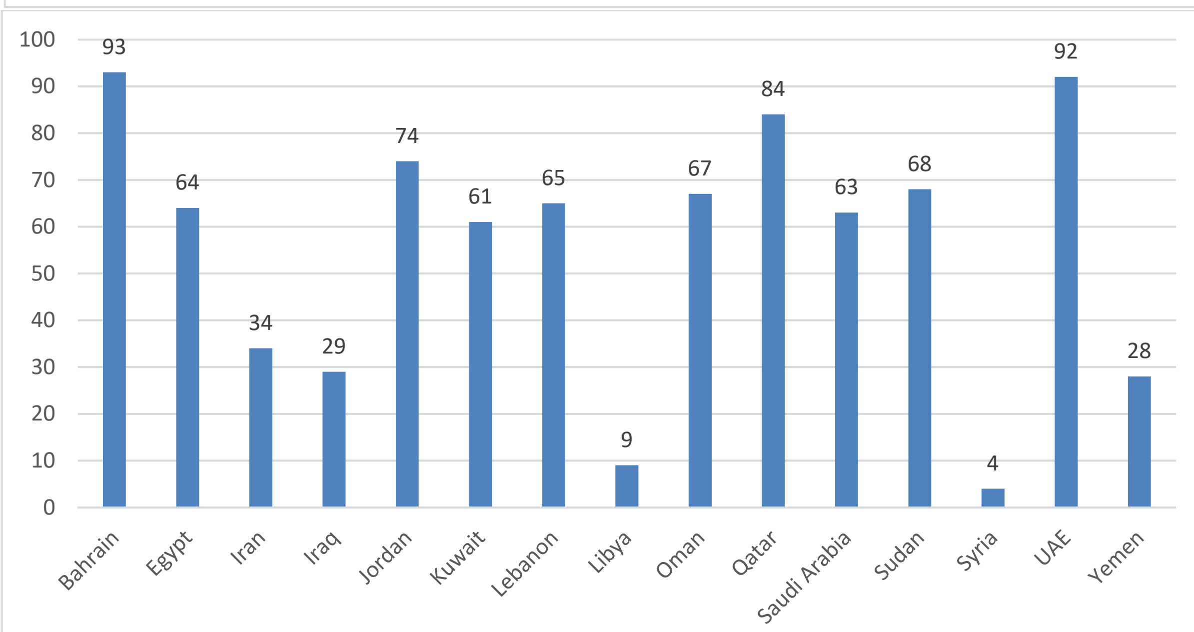
5. CONCLUSION

The overall implementation of priority 1 ASBU Block 0 Modules in the MID Region is around 56% compared to 58% in 2018. The implementation of some modules has been acceptable/good; such as B0-ACAS, B0-AMET and B0-SNET. Nevertheless, some States are still facing challenges to implement the majority of the Block 0 Modules.

The status of implementation of the ASBU Block 0 Modules also shows that Bahrain, Jordan, Qatar and UAE made a good progress in the implementation of the priority 1 ASBU Block 0 Modules.

An estimated amount of **118,159** to **201,169** Mt of fuel (total of **123055.3** to **222990.7** Mt Tonnes of CO2) has been saved in the MID Region in 2019, as a result of the implementation of the selected Block 0 Modules (APTA, CDO and CCO).





Status of implementation of Doha Declaration Targets:

Doha Declaration was endorsed by the third meeting of Directors General of Civil Aviation (DGCA-MID/3) in Doha, Qatar from 27 to 29 April 2015. Doha Declaration set five Targets for the Air Navigation Capacity and Efficiency, as follows:

1- Optimization of Approach Procedures including vertical guidance (PBN): Implement PBN approach procedures with vertical guidance, for all runways ends at international aerodromes, either as the primary approach or as a back-up for the precision approaches by 2017

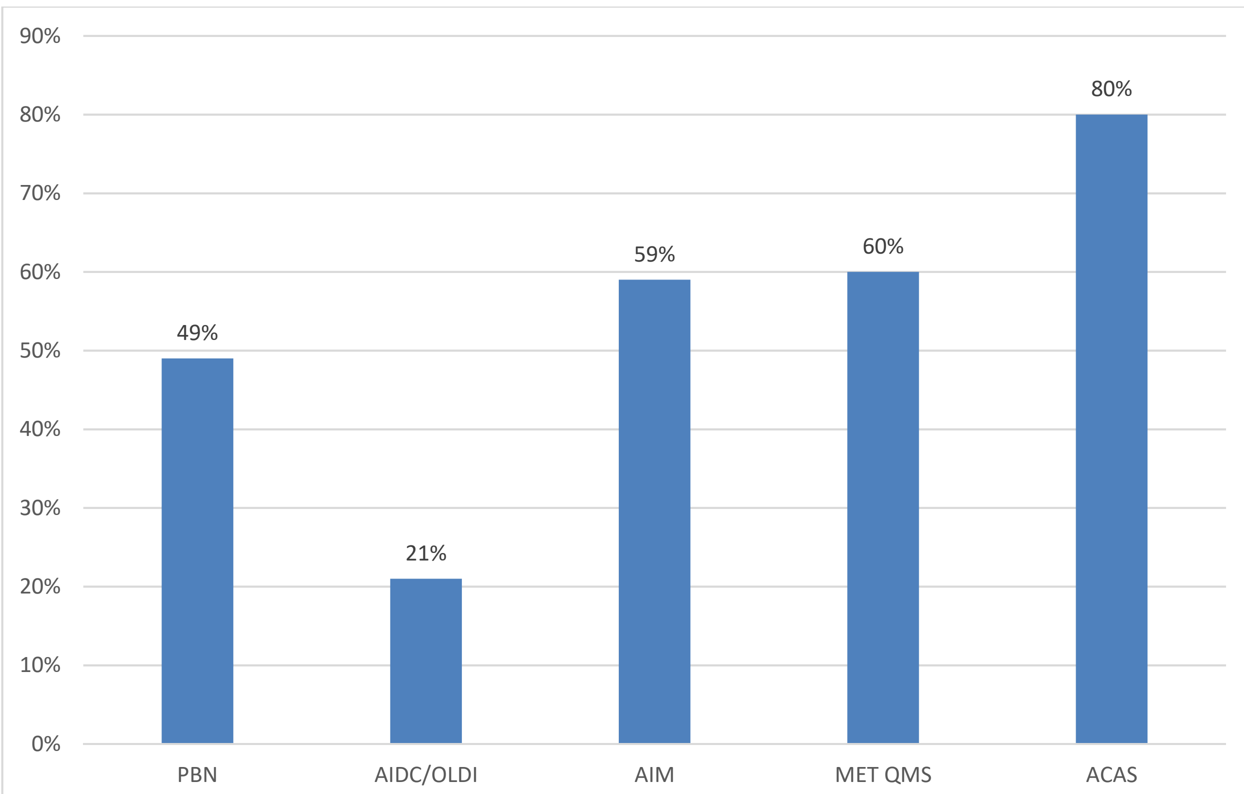
2- Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration: 11 States to implement AIDC/OLDI between their ACCs and at least one adjacent ACC by 2017

3- Service Improvement through Digital Aeronautical Information Management: All States to complete implementation of Phase I of the transition from AIS to AIM by 2017

4- Meteorological information supporting enhanced operational efficiency and safety: 12 States to complete the implementation of QMS for MET by 2017

5- ACAS Improvement: All States require carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons by 2017

Status of implementation by States related to the Targets of the Doha Declaration is as follows:



Status of implementation of Doha Declaration Targets

APPENDIX A: STATUS OF ASBU BLOCK 0 MODULES

	APTA	SURF	ACDM	FICE	DATM	DMET	ACAS	SNET	CDO	CCO	Average Module Implementation
Bahrain											
Egypt											
Iran											
Iraq											
Jordan											
Kuwait											
Lebanon											
Libya											
Oman											
Qatar											
Saudi Arabia											
Sudan											
Syria											
UAE											
Yemen											
Average regional implementation											

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