International Civil Aviation Organization

MIDANPIRG STEERING GROUP

Sixth Meeting (MSG/6)
(Cairo, Egypt, 3 - 5 December 2018)

Agenda Item 5.2: MID Region Air Navigation Priorities and Targets

ASBU IMPLEMENTATION MONITORING: MID AIR NAVIGATION REPORTS

(Presented by the Secretariat)

SUMMARY

This paper presents updates on the MID eANP Volume III and the Second Edition of the MID Air Navigation Report (2017), for endorsement.

Action by the meeting is at paragraph 3.

REFERENCES

- ANSIG/3 Report
- MIDANPIRG/16 Report
- MID eANP Vol III

1. INTRODUCTION

1.1 The MIDANPIRG/16 meeting (Kuwait, 13-16 February 2017), through MIDANPIRG Conclusion 16/4, approved updated version of the MID eANP Volume III.

1.2 The MIDANPIRG/16 meeting, through MIDANPIRG Conclusion 16/7, endorsed the First Edition of the MID Air Navigation Report-2016. The MID Air Navigation Report-2016 is available on the ICAO MID Office website at:

https://www.icao.int/MID/Documents/1/MIDANReport2016.pdf

2. DISCUSSION

MID eANP Volume III

2.1 The ANSIG/3 meeting (Cairo, Egypt, 3-5 July 2018) agreed with the changes to the MID eANP Vol III proposed by the AIM SG/4, ATM SG/4, CNS SG/8 and MET SG/7 meetings (Tables B0-ACDM, B0-DATM, B0-FICE, B0-FRTO, B0-NOPS, B0-ACAS, B0-SNET and B0-AMET), as at **Appendix A**. Accordingly, the following Draft MSG Conclusion is proposed:

DRAFT MSG CONCLUSION 6/X: AMENDMENT TO THE MID eANP VOLUME III

That, the amendment to the MID eANP Volume III at ***Appendix A*** *is approved.*

Second Edition of the MID Air Navigation Report (2017)

2.2 The meeting may wish to recall that the MIDANPIRG/16 meeting, through Conclusion 16/8, agreed that States should provide the ICAO MID Office, with relevant data necessary for the development of the Second Edition MID Region Air Navigation Report, by 1 November 2017.

2.3 The ANSIG/3 meeting reviewed a draft version of the Second Edition of the MID Air Navigation report and, through Draft Conclusion 3/5, urged States to provide necessary inputs/updates to the ICAO MID Office before 31 August 2018, in order to consolidate the Final version of the Report.

2.4 The ANSIG/3 meeting agreed that the Draft Methodology for the estimation of environmental benefits accrued from the implementation of priority 1 Block 0 Modules in the MID Region, at **Appendix B**, be used for the estimation and reporting of environmental benefits in the Second Edition of the MID Air Navigation Report (2017). Additional Details about the Methodology (explanation of assumptions, calculations, etc.) is at **Appendix C**.

2.5 A consolidated version of the Second Edition of the MID Region Air Navigation Report (2017) is at **Appendix D**.

2.6 The meeting may wish to note that Bahrain, Egypt, Jordan, Lebanon, Qatar, Sudan and UAE made a good progress in the implementation of the priority 1 ASBU Block 0 Modules. From a regional perspective, the progress for the implementation of B0-SNET, B0-AMET and B0-ACAS is very good. However, the progress for the implementation of B0-ACDM, B0-CDO and B0-CCO is far below expectation.

2.7 Based on the above, the following Draft MSG Conclusion is proposed:

DRAFT MSG CONCLUSION 6/X: SECOND EDITION OF THE MID REGION AIR NAVIGATION REPORT (2017)

That, the Second Edition of the MID Region Air Navigation Report (2017) at **Appendix D** *is endorsed.*

Third Edition of the MID Region Air Navigation Report (2018)

2.8 The meeting may wish to agree that the ICAO MID Office start the development of the Third Edition of the MID Region Air Navigation Report (2018), beginning of 2019. Therefore, States should provide the ICAO MID Office, with necessary data by **15 February 2019**. Accordingly, the meeting is invited to agree on the following Draft MSG Conclusion:

DRAFT MSG CONCLUSION 6/X: MID REGION AIR NAVIGATION REPORT (2018)

That, MID States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the Third Edition of the MID Region Air Navigation Report (2018), ***by 15 February 2019****.*

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review and update, as deemed necessary, the Second Edition of the MID Air Navigation Report, at **Appendix D**; and

b) endorse the proposed Draft MSG Conclusions.

APPENDIX A

Table B0-ACDM 3-1

EXPLANATION OF THE TABLE

Column:

1- Name of the State

2- Aerodrome and Location Indicator

3 & 4 Fundamental ACDM Elements

3-Information Sharing:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 1- Information Sharing is essential since it forms the foundation for all the other subsequent elements.

4-The Milestones Approach (Turn- Round Process)
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 2- The Milestones Approach (Turn- Round Process) aims to achieve common situational awareness by tracking the progress of a flight from the initial planning to the take off.

5 – 8 Other ACDM Elements

5- Variable Taxi Time
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 3- Variable Taxi Time is the key to predictability of accurate take-off in block times especially at complex airports.

6-Collaborative Management of Flight Updates
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 4- Collaborative Management of Flight Updates enhances the quality of arrival and departure information exchanges between the Network Operations and the CDM airports.

7-Collaborative Pre-departure Sequence
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 5- (Collaborative) Pre-departure Sequence establishes an off-block sequence taking into account operators preferences and operational constraints.

8-ACDM in Adverse Conditions

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

Note 6- ACDM in Adverse Conditions achieves collaborative management of a ACDM during periods of predicted or unpredicted reductions of capacity.

9- Action Plan — short description of the State's Action Plan with regard to ACDM Implementation, especially for items with a "PI" or "NI" status, including planned date(s) of full compliance, as appropriate.

10- Remarks — additional information, including detail of "PI" or "N", as appropriate.

Table B0-ACDM 3-1

State	Aerodrome Location Indicator	ACDM IMPLEMENTATIOM ELEMENTS							
		Fundamental ACDM Elements		Other ACDM Elements				Action Plan	Remarks
		Information Sharing	Milestones Approach	Variable Taxi Time	Collaborative Management of Flight Updates	Collaborative Pre-departure Sequence	ACDM in Adverse Conditions		
1	2	3	4	5	6	7	8	9	10
Bahrain	OBBI								
Egypt	HECA								
Iran	OIII								
Kuwait	OKBK								
Oman	OOMS								
Qatar	OTBD								
	OTHH								
Saudi Arabia	OEJN								
	OERK								
UAE	OMDB								
	OMAA								

TABLE B0-FICE
EXPLANATION OF THE TABLE

Column

1 Name of the State

2,3,4 Status of AMHS Capability and Interconnection and AIDC/OLDI Capability, where:

Y – Fully Implemented

N – Not Implemented

5 ~~Status~~ Number of required AIDC/OLDI Interconnections~~implementation, where:~~

~~Y – If AIDC/OLDI is implemented at least with one neighbouring ACC~~

~~N – Not Implemented~~

6 Number of implemented AIDC/OLDI Interconnection~~Action plan – short description of the State's Action Plan with regard to the implementation of B0-FICE~~.

7 Remarks

State	AMHS Capability	AMHS Interconnection	AIDC/OLDI Capability	Required AIDC/OLDI Interconnections~~Implementation~~	~~Action Plan~~AIDC/OLDI Implementation	Remarks
1	*2*	*3*	*4*	*5**	*6*	*7*
Bahrain	Y	Y	Y	5~~Y~~	1	connection with ABU Dhabi
Egypt	Y	Y	Y	4~~Y~~	1	
Iran	N	N	Y	4~~N~~	0	Contract signed for AMHS
Iraq	N	N	N	2~~N~~	0	Thales Topsky ATM system
Jordan	Y	Y	Y	2~~N~~	0	
Kuwait	Y	Y	Y	2~~N~~	0	
Lebanon	Y	Y	Y	1~~Y~~	0	
Libya	Y	N	Y	0~~N~~	0	0Contract signed for AMHS
Oman	Y	Y	Y	4~~N~~	1	
Qatar	Y	Y	Y	2~~Y~~	1	local implementation for OLDI
Saudi Arabia	Y	Y	Y	7~~Y~~	2	local implementation for AIDC
Sudan	Y	Y	Y	4~~N~~	0	

Syria	N	N	N	0~~N~~	0	
UAE	Y	Y	Y	4~~Y~~	3	
Yemen	N	N	N	0~~N~~	0	Contract signed for AMHS
Total Percentage/ Number	**73%**	**67%**	**80%**	**4~~140%~~**	**9 (22%)**	

B0-DATM Enablers/Tables

In order to assist States in the planning for the transition from AIS to AIM in an expeditious manner, the following Tables, which provide more details than the standard ANRF, should be used:

1- **Table B0-DATM 3-1** sets out the requirements for the Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID). It reflects the transition from the current product centric AIS to data centric AIM. For the future digital environment it is important that the authoritative databases are clearly designated and such designation must be published for the users. This is achieved with the concept of the Integrated Aeronautical Information Database (IAID), a single access point for one or more authoritative databases (~~AIS~~AIP, Terrain, Obstacles, AMDB, etc) for which the State is responsible. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to elements Nr. 1 and 2 of the Module B0-DATM.

2- **Table B0-DATM 3-2** sets out the requirements for aeronautical data quality. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 3 of the Module B0-DATM.

3- **Table B0-DATM 3-3** sets out the requirements for the implementation of the World Geodetic System – 1984 (WGS-84).The requirement to use a common geodetic system remains essential to facilitate the exchange of data between different systems. The expression of all coordinates in the AIP and charts using WGS-84 is an important first step for the transition to AIM. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 4 of the Module B0-DATM.

4- **Table B0-DATM 3-4-1** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 1 and Area 4. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

5- **Table B0-DATM 3-4-2** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 2. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

6- **Table B0-DATM 3-4-3** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 3 and implementation of Airport Mapping Databases (AMDB). It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

Table B0-DATM 3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which the provision of AIS/AIM products and services based on the IAID is required.

2 Requirement for the implementation and designation of the authoritative IAID, shown by:
FI – Fully Implemented
~~PI – Partially Implemented~~
NI – Not Implemented
Note 1 — The IAID of a State is a single access point for one or more databases (~~AIS~~AIP, Terrain, Obstacles, AMDB, etc). The minimum set of databases which should be integrated is defined in Annex 15.
~~*Note 2 — Information providing detail of "PI" should be given in the Remarks column (the implemented components of the IAID).*~~
Note ~~3~~ 2 — The information related to the designation of the authoritative IAID should be published in the AIP (GEN 3.1)

3 Requirement for an IAID driven AIP production, shown by:
FI – Fully Implemented (eAIP: Text, Tables and Charts)
PI – Partially Implemented
NI – Not Implemented
Note ~~4~~ 3 — AIP production includes, production of AIP, AIP Amendments and AIP Supplements
Note 4 — Charts' GIS-based database should be interoperable with AIP database

4 Requirement for an IAID driven NOTAM production, shown by:
FC – Fully Compliant
NC – Not Compliant

5 Requirement for an IAID driven SNOWTAM ~~production~~processing, shown by:
~~FC~~ FI – Fully Implemented~~Compliant~~
~~NC~~ NI – Not Implemented~~compliant~~

6 Requirement for an IAID driven PIB production, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

~~7 Requirement for Charting systems to be interoperable with the IAID, shown by:~~
~~FC – Fully compliant~~
~~PC – Partially compliant~~
~~NC – Not compliant~~

~~8~~7 Requirement for Procedure design systems to be interoperable with the IAID, shown by:
FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

Note 5 — full implementation includes the use of the IAID for the design of the procedures and for the storage of the encoded procedures in the IAID

~~9~~8 Requirement for ATS systems to be interoperable with the IAID, shown by:

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

~~10~~9 Action Plan — short description of the State's Action Plan with regard to the provision of AIM products and services based on the IAID, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

~~11~~10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

State	IAID	AIP	NOTAM	SNOWTAM	PIB	~~Charting~~	Procedure Design	ATS	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*~~7~~*	*~~8~~7*	*~~9~~8*	*~~10~~9*	*~~11~~10*
BAHARAIN	~~PI~~FI	FI	FC	~~FC~~FI	FC	~~FC~~	PI	FI	National AIM Roadmap-~~2015~~2016	**AIXM:** ~~4.5~~ 5.1 ~~by end 2015~~
EGYPT	FI	PI	~~NC~~FC	~~NC~~FI	FC	~~NC~~	NI	PI	National AIM Roadmap-~~2015~~2017	**AIXM:** 5.1 3 and 7 by ~~2015, 4 9 by 2016~~2018
IRAN, ISLAMIC REPUBLIC OF	NI	NI	NC	NI~~C~~	NC	~~NC~~	NI	NI	National AIM Roadmap-~~2015~~2016	**AIXM:** NI Separate semi-automated NOTAM/SNOWTAM system is operative
IRAQ	NI	NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	National AIM Roadmap-~~2014~~2015	**AIXM:** NI
JORDAN	~~PI~~NI	NI	FC	~~FC~~NI	FC	~~PC~~	NI	NI	National AIM Roadmap-~~2014~~2017	**AIXM:** database through EAD
KUWAIT	~~PI~~NI	NI	FC	~~NC~~NI	PC	~~NC~~	NI	NI	National AIM Roadmap-~~2015~~2016	**AIXM:** NI (5.1 in progress)
LEBANON	NI	~~FI~~ NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	National AIM Roadmap-~~2014~~2016	**AIXM:** 4.5
LIBYA	NI	NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	No Action Plan	**AIXM:** NI
OMAN	NI	NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	National AIM Roadmap-~~2014~~2016	**AIXM:** NI (5.1 in progress)
QATAR	~~PI~~NI	PI	FC	~~PC~~NI	FC	~~PC~~	PI	NI	National AIM Roadmap-~~2015~~2016	**AIXM:** 5.1 Q4/2017 – Data Integration (AIP, Terrain, Obstacle, Procedure Design and AMDB datasets)
SAUDI ARABIA	FI	FI	~~FC~~NC	~~FC~~NI	~~FC~~P C	~~FC~~	FI	FI	National AIM Roadmap-~~2014~~2017	**AIXM:** 4.5
SUDAN	~~PI~~NI	NI	FC	NI~~NC~~	FC	~~PC~~	PI	PI	National AIM Roadmap-~~2015~~2017	~~1.AIS DB integrated with MET & ATM~~ ~~2. Contract Signed for eAIP, AIXM connected with Charting SYS.~~ ~~7. Contract signed.~~ ~~8. Ongoing project~~ **AIXM:** NI (5.1 in progress) AIS Automation Project is

State	IAID	AIP	NOTAM	SNOWTAM	PIB	~~Charting~~	Procedure Design	ATS	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*~~7~~*	*~~8~~7*	*~~9~~8*	*~~10~~9*	*~~11~~10*
										ongoing
SYRIAN ARAB REPUBLIC	NI	NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	No Action Plan	**AIXM:** NI
UNITED ARAB EMIRATES	~~PI~~NI	FI	NC	~~NC~~NI	PC	~~PC~~	NI	PI	National AIM Roadmap-~~2014~~2017	**AIXM:** 5.1 AMDB: 2016-2021; PIB: AVBL at OMAA, OMDB, OMDW, OMFJ, other ADs 2020; Charting system upgrade is planned for 2017; Procedure Design 2020; ATS: ACC AVBL, ADs 2020 Digital NOTAM: 2016-2021 ~~AMDB: 2016-2021~~ ~~eTOD integration: 2016~~ ~~PIB: AVBL at OMMA, OMDB, OMDW; other ADs 2020~~ ~~Charing: 2016~~ ~~Procedure Design 2020~~ ~~ATS: ACC AVBL, ADs 2020~~ ~~Digital NOTAM 2016-2021~~
YEMEN	NI	NI	NC	~~NC~~NI	NC	~~NC~~	NI	NI	No Action Plan	**AIXM:** NI

Table B0-DATM-3-2
Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:

FC – Fully compliant

NC – Not compliant

3 Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

4 Implementation of digital data exchange with originators, shown by:

FI – Implemented

PI – Partially Implemented

NI – Not implemented

Note 1 — Information providing detail of "PI" and "NI" should be given in the Remarks column (percentage of implementation).

5 Compliance with the requirement for metadata, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

6 Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

7 Compliance with the requirements related to aeronautical data integrity monitoring, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

8 Compliance with the requirements related to the AIRAC adherence, shown by:

FC – Fully compliant

NC – Not compliant

9 Action Plan — short description of the State's Action Plan with regard to aeronautical data quality requirements implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-2
Aeronautical Data Quality

State	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
1	2	3	4	5	6	7	8	9	10
BAHARAIN	FC	~~FC~~PC	PI	~~PC~~FC	~~PC~~FC	~~PC~~FC	FC	National AIM Roadmap-~~2015~~2016	
EGYPT	FC	PC	PI	FC	PC	PC	FC	National AIM Roadmap-~~2015~~2017	3, 4, 6 and 7 by ~~2016~~2018
IRAN, ISLAMIC REPUBLIC OF	FC	PC	NI	NC	~~NC~~FC	~~NC~~FC	FC	National AIM Roadmap-~~2015~~2016	
IRAQ	NC	NC	NI	NC	NC	NC	FC	National AIM Roadmap-~~2014~~2015	
JORDAN	FC	~~NC~~PC	NI	~~PC~~FC	FC	FC	FC	National AIM Roadmap-~~2014~~2017	
KUWAIT	FC	PC	NI	NC	NC	NC	FC	National AIM Roadmap-~~2015~~2016	
LEBANON	NC	~~NC~~PC	NI	~~NC~~PC	~~NC~~PC	~~NC~~PC	FC	National AIM Roadmap-~~2014~~2016	
LIBYA	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
OMAN	NC	NC	NI	NC	~~NC~~PC	~~NC~~PC	FC	National AIM Roadmap-~~2014~~2016	
QATAR	FC	~~FC~~PC	PI	FC	PC	PC	FC	National AIM Roadmap-~~2015~~2016	~~SLA with MIL in progress~~
SAUDI ARABIA	FC	~~PC~~FC	NI	FC	FC	FC	FC	National AIM Roadmap-~~2014~~2017	~~SLA will be completed end 2015~~
SUDAN	FC	FC	NI	NC	FC	FC	FC	National AIM Roadmap-~~2015~~2017	
SYRIAN ARAB REPUBLIC	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	PC	~~NI~~PI	FC	FC	FC	FC	National AIM Roadmap-~~2014~~2017	SLA initiated with MIL-ongoing Digital data exchange with originator: planned (2016-2021)

									CAAP 56 details of agreements
YEMEN	NC	NC	NI	PC	NC	NC	NC	No Action Plan	

Table B0-DATM-3-3

World Geodetic System-1984 (WGS-84)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which implementation of WGS-84 is required.

2 Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

3 Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

4 Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

5 Compliance with the requirements for implementation of Geoid Undulation, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

6 Action Plan — short description of the State's Action Plan with regard to WGS-84 implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

7 Remarks — additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-3
World Geodetic System-1984 (WGS-84)

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	2	3	4	5	6	7
BAHARAIN	FC	FC	FC	FC		~~Plan to be updated by 2016~~
EGYPT	FC	FC	FC	FC		
IRAN, ISLAMIC REPUBLIC OF	FC	FC	FC	FC		
IRAQ	~~PC~~FC	~~PC~~FC	~~PC~~FC	NC	National AIM Roadmap ~~2014~~2015	
JORDAN	FC	FC	FC	FC		
KUWAIT	FC	FC	FC	FC		Last survey FEB 2015
LEBANON	FC	FC	FC	~~NC~~FC	~~National AIM Roadmap 2014~~	
LIBYA	PC	PC	NC	NC	No Action Plan	
OMAN	FC	FC	FC	FC		
QATAR	FC	FC	FC	FC		Annual Validation/Survey Updates planned up to 2017
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	FC	FC	FC	FC		
SYRIAN ARAB REPUBLIC	FC	FC	FC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	FC	FC	FC		
YEMEN	FC	FC	FC	FC		

Table B0-DATM-3-4-1
Provision of Terrain and Obstacle data sets for Areas 1 and 4

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Areas 1 and 4 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant
N/A – Not Applicable

4 Compliance with requirement for the provision of Obstacle data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

5 Compliance with requirement for the provision of Obstacle data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant
N/A – Not Applicable

6 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Areas 1 and 4, especially for items with a "PC" or "NC" status, including planned date(s) of full compliance, as appropriate.

7 Remarks— additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

State	Terrain data sets		Obstacle data sets		Action Plan	Remarks
	Area 1	Area 4	Area 1	Area 4		
1	2	3	4	5	6	7
BAHARAIN	FC	FC	FC	FC		
EGYPT	FC	FC	~~PC~~NC	~~PC~~NC	National AIM Roadmap-~~2015~~2017	4 and 5 (HECA & HESH): 2019
IRAN, ISLAMIC REPUBLIC OF	FC	FC	FC	FC		
IRAQ	NC	NC	NC	NC	National AIM Roadmap-~~2014~~2015	
JORDAN	~~NC~~PC	~~NC~~FC	~~NC~~PC	~~NC~~FC	National AIM Roadmap-~~2014~~2017	
KUWAIT	FC	FC	FC	FC		
LEBANON	NC	N/A	NC	N/A	National AIM Roadmap-~~2014~~2016	
LIBYA	NC	N/A	NC	N/A	No Action Plan	
OMAN	NC	N/A	NC	N/A	National AIM Roadmap-~~2014~~2016	
QATAR	FC	FC	FC	FC		
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	NC	N/A	NC	N/A	National AIM Roadmap-~~2015~~2017	
SYRIAN ARAB REPUBLIC	NC	N/A	NC	N/A	No Action Plan	
UNITED ARAB EMIRATES	PC	FC	PC	FC	National AIM Roadmap-~~2014~~2017	A recurrent data acquisition eTOD Area 1 is planned
YEMEN	NC	N/A	NC	N/A	No Action Plan	

Table B0-DATM-3-4-2
Provision of Terrain and Obstacle data sets for Area 2

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 2 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 2a, shown by:
- FC – Fully Compliant
- PC – Partially Compliant
- NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 2b, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not implemented
- N/A – Not Applicable

4 Compliance with requirement for the provision of Terrain data sets for Area 2c, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

5 Compliance with requirement for the provision of Terrain data sets for Area 2d, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

6 Compliance with requirement for the provision of Obstacle data sets for Area 2a, shown by:
- FC – Fully Compliant
- PC – Partially Compliant
- NC – Not Compliant

7 Compliance with requirement for the provision of Obstacle data sets for Area 2b, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not implemented
- N/A – Not Applicable

8 Compliance with requirement for the provision of Obstacle data sets for Area 2c, shown by:
- FI – Fully Implemented

PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

9 Compliance with requirement for the provision of Obstacle data sets for Area 2d, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

10 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 2, especially for items with a "PC", "PI", "NC" or "NI" status.

11 Remarks— additional information, including detail of "PC", "PI" and "NC", "NI", as appropriate.

TABLE B0-DATM-3-4-2

Provision of Terrain and Obstacle data sets for Area 2

State	Terrain data sets				Obstacle data sets				Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	Area 2a	Area 2b	Area 2c	Area 2d		
1	2	3	4	5	6	7	8	9	10	11
BAHARAIN	NC	NI	NI	NI	~~NC~~FC	~~NI~~FI	~~NI~~FI	~~NI~~FI	National AIM Roadmap ~~2015~~2016	
EGYPT	PC	PI	PI	PI	NC	NI	NI	NI	National AIM Roadmap ~~2015~~2017	To be completed by 2020
IRAN, ISLAMIC REPUBLIC OF	~~NC~~FC	~~NI~~FI	~~NI~~FI	~~NI~~FI	~~NC~~FC	~~NI~~FI	~~NI~~FI	~~NI~~FI	~~National AIM Roadmap 2015~~	
IRAQ	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2014~~2015	
JORDAN	~~NC~~PC	~~NI~~PI	~~NI~~PI	NI	~~NC~~PC	~~NI~~PI	~~NI~~PI	NI	National AIM Roadmap ~~2014~~2017	Area 2a, 2b and 2c implemented for OJAI RWY 26R/08L
KUWAIT	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2015~~2016	
LEBANON	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2014~~2016	
LIBYA	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	
OMAN	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2014~~2016	
QATAR	FC	FI	FI	FI	FC	FI	FI	FI		
SAUDI ARABIA	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2014~~2017	
SUDAN	NC	NI	NI	NI	NC	NI	NI	NI	National AIM Roadmap ~~2015~~2017	
SYRIAN ARAB REPUBLIC	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	
UNITED ARAB EMIRATES	NC	NI	NI	P~~N~~I	~~NC~~FC	~~NI~~FI	~~NI~~FI	~~NI~~PI	National AIM Roadmap ~~2014~~2017	eTOD Area 2 (all sub-areas) survey & data acquisition through international airport service providers
YEMEN	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	

Table B0-DATM-3-4-3
Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 3 and AMDB are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

3 Compliance with requirement for the provision of Obstacle data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

4 Implementation of AMDB, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

5 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 3 and AMDB implementation, especially for items with a "PC", "PI", "NC" or "NI" status.

6 Remarks— additional information, including detail of "PI" and "NI", as appropriate.

TABLE B0-DATM-3-4-3

Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

State	Terrain data sets (Area 3)	Obstacle data sets (Area 3)	AMDB	Action Plan	Remarks
1	2	3	4	5	6
BAHARAIN	NI	~~NI~~FI	NI	National AIM Roadmap-~~2015~~2016	
EGYPT	NI	NI	NI	National AIM Roadmap-~~2015~~2017	A3: 2019; AMDB: 2020
IRAN, ISLAMIC REPUBLIC OF	~~NI~~FI	~~NI~~FI	NI	National AIM Roadmap-~~2015~~2016	
IRAQ	NI	NI	NI	National AIM Roadmap-~~2014~~2015	
JORDAN	~~NI~~PI	~~NI~~PI	NI	National AIM Roadmap-~~2014~~2017	Area 3 implemented for OJAI RWY 26R/08L
KUWAIT	FI	FI	NI	National AIM Roadmap-~~2015~~2016	
LEBANON	NI	NI	NI	National AIM Roadmap-~~2014~~2016	
LIBYA	NI	NI	NI	No Action Plan	
OMAN	NI	NI	NI	National AIM Roadmap-~~2014~~2016	
QATAR	~~NI~~FI	~~FI~~PI	~~NI~~PI	National AIM Roadmap-~~2015~~2016	Q4/2017 AMDB implementation~~AMDB to be implemented last quarter of 2015~~
SAUDI ARABIA	NI	NI	NI	National AIM Roadmap-~~2014~~2017	
SUDAN	NI	NI	NI	National AIM Roadmap-~~2015~~2017	
SYRIAN ARAB REPUBLIC	NI	NI	NI	No Action Plan	
UNITED ARAB EMIRATES	~~NI~~FI	~~NI~~FI	NI	National AIM Roadmap-~~2014~~2017	AMDB technical infrastructure (metadata, model) implemented in IAID, pending compatibility analysis AIXM 5.1 with revised AMDB model (RTCA DO-272D) when released.
YEMEN	NI	NI	NI	No Action Plan	

Table B0-AMET 3-1

SADIS FTP

EXPLANATION OF THE TABLE

Column

1 Name of the State
2 Status of implementation of SADIS FTP, where:
Y – Yes, implemented
N – No, not implemented
3 Action Plan
4 Remarks

State	Status	Action Plan	Remarks
1	2	3	4
BAHRAIN	Y		
EGYPT	Y		
IRAN (ISLAMIC REPUBLIC OF)	N	No Action Plan	
IRAQ	Y		
JORDAN	Y		
KUWAIT	Y		
LEBANON	N	No Action Plan	
LIBYA	Y		
OMAN	Y		
QATAR	Y		
SAUDI ARABIA	N	Coordinating with SADIS Provider	
SUDAN	Y		
SYRIAN ARAB REPUBLIC	N	No Action Plan	
UNITED ARAB EMIRATES	Y		
YEMEN	Y		

Table B0-AMET 3-2

Volcanic Ash Advisory Centers

Not Applicable

~~**EXPLANATION OF THE TABLE**~~

~~Column~~

~~1~~ ~~Name of the State responsible for the provision of a volcanic ash advisory centre (VAAC)~~

~~2~~ ~~Name of the VAAC~~

~~*Note: The name is extracted from the ICAO Location Indicators (Doc 7910).*~~

~~3~~ ~~ICAO location indicator of the VAAC~~

~~4~~ ~~Status of implementation of volcanic ash advisory information, where:~~

~~FC – Fully compliant~~

~~PC – Partially compliant~~

~~NC – Not compliant~~

~~5~~ ~~Status of implementation of volcanic ash advisory information in graphical format, where:~~

~~FC – Fully compliant~~

~~PC – Partially compliant~~

~~NC – Not compliant~~

~~State~~	~~Volcanic Ash Advisory Centre (VAAC)~~	~~ICAO Location Indicator~~	~~Status of Implementation~~	
			~~VAA~~	~~VAG~~
~~1~~	~~2~~	~~3~~	~~4~~	~~5~~
~~FRANCE~~	~~Toulouse~~	~~LFPW~~	~~FC~~	~~FC~~

Table B0-AMET 3-3

Tropical Cyclone Advisory Centers

Not Applicable

~~**EXPLANATION OF THE TABLE**~~

~~Column~~

~~1~~ ~~Name of the State responsible for the provision of a tropical cyclone advisory centre (TCAC)~~

~~2~~ ~~Name of the TCAC~~

~~*Note: The name is extracted from the ICAO Location Indicators (Doc 7910).*~~

~~3~~ ~~ICAO location indicator of the TCAC~~

~~4~~ ~~Status of implementation of tropical cyclone advisory information, where:~~

~~FC – Fully compliant~~

~~PC – Partially compliant~~

~~NC – Not compliant~~

~~5~~ ~~Status of implementation of tropical cyclone advisory information in graphical format, where:~~

~~FC – Fully compliant~~

~~PC – Partially compliant~~

~~NC – Not compliant~~

~~State~~	~~Tropical Cyclone Advisory Centre (TCAC)~~	~~ICAO Location Indicator~~	~~Status of Implementation~~	
			~~TCA~~	~~TCG~~
~~1~~	~~2~~	~~3~~	~~4~~	~~5~~
~~INDIA~~	~~New Delhi~~	~~VIDP~~	~~FC~~	~~FC~~

Table B0-AMET 3-4

Quality Management System

EXPLANATION OF THE TABLE

Column

1 Name of the State

2, 3, 4, 5 Status of implementation of Quality Management System of meteorological information – QMS: not started/ planning, ongoing/ partially implemented, Implemented/ISO 9001 Certified, Date of Certification.

6 Action Plan

7 Remarks

State	Not started/ planning	Ongoing/ partially implemented	Implemented/ ISO 9001 Certified		Action Plan	Remarks
			Status	Date of Certification		
1	2	3	4	5	6	7
BAHARAIN			√	2008		
EGYPT			√	23 May 2012		Recertification: May 2015
IRAN, ISLAMIC REPUBLIC OF			√	Oct 2015		
IRAQ	√				No Action Plan	
JORDAN			√	2 Apr 2014		Recertification: 14 April 2017
KUWAIT			√	23 Aug 2013		Recertification: 22 Aug 2016
LEBANON	√				No Action Plan	
LIBYA	√				No Action Plan	
OMAN		√			TBD	
QATAR			√	Dec 2011		
SAUDI ARABIA			√	Aug 2014		
SUDAN			√	5 June 2014		
SYRIAN ARAB REPUBLIC	√				No Action Plan	
UNITED ARAB EMIRATES			√	19 Dec 2012		Recertification: 18 Dec 2015
YEMEN	√				No Action Plan	

Table B0-AMET 3-5
SIGMET Availability

EXPLANATION OF THE TABLE

Column

1 Name of the State
2 Status of implementation of SIGMET, where:
Y – Yes, implemented (at least one SIGMET received within a 5 month monitoring period, or as required)
N – No, not implemented (no SIGMET received within a 5 month monitoring period)
3 Status of implementation of SIGMET format, where:
Y – Yes, implemented (at least 95% of received SIGMET messages reveal the correct format (TTAAii CCCC in accordance to the MID SIGMET Guide; ATSU, MWO, FIR and FIR name in accordance to ICAO Doc 7910) for the first two lines of SIGMET)
N – No, not implemented (less than 95% of received SIGMET messages reveal the correct format for the first two lines of SIGMET)
4 Action Plan
5 Remarks

State	Implementation		Action Plan	Remarks
	SIGMET Reception	SIGMET Format		
1	2	3	4	5
BAHRAIN	Y	Y		
EGYPT	Y	Y		
IRAN, ISLAMIC REPUBLIC OF	Y	Y		
IRAQ	Y	Y		Verify the header for Iraq is WSIQ01 ORBI for FIR ORBB – if so, update to MID Doc 009
JORDAN	Y	Y		
KUWAIT	Y	Y		
LEBANON	Y	Y		
LIBYA	Y	N		Indicators HLMC for MWO and HLLL for FIR are not defined in ICAO Doc 7910
OMAN	Y	Y		
QATAR	N/A	N/A		These fields are not applicable to Qatar
SAUDI ARABIA	Y	Y		
SUDAN	Y	Y		
SYRIAN ARAB REPUBLIC	N	N	No Action Plan	
UNITED ARAB EMIRATES	Y	Y		
YEMEN	N	N	No Action Plan	

Table B0-AMET 3-6
WIND SHEAR Availability

TBD

Draft Table B0-AMET 3-7

OPMET Availability (METAR and TAF)

EXPLANATION OF THE TABLE

Column

1 Name of the State
2, 3 Status of availability of METAR and TAF for AOP aerodromes, where:
Y – Yes, implemented (95% availability of required METAR within a State; 95% availability of required TAF within a State)
N – No, not implemented
4 Remarks

State	Implementation		Remarks
	METAR	TAF	
1	2	3	4
BAHRAIN	Y	Y	
EGYPT	Y	Y	
IRAN, ISLAMIC REPUBLIC OF	Y	Y	
IRAQ	N	N	MEAR and TAF needed for ORBM
JORDAN	Y	Y	
KUWAIT	Y	Y	
LEBANON	Y	Y	
LIBYA	Y	Y	
OMAN	Y	Y	
QATAR	Y	Y	
SAUDI ARABIA	Y	Y	
SUDAN	Y	Y	
SYRIAN ARAB REPUBLIC	N	N	METAR &TAF needed for OSAP
UNITED ARAB EMIRATES	Y	Y	
YEMEN	N	N	METAR & TAF needed for OYAA, OYHD, OYRN, OYSN and OYTZ

- END -

Table B0-FRTO

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of Flexible Use of Airspace (FUA) Level 1-Strategic.

3 Status of implementation of Flexible Use of Airspace (FUA) Level 2-Pre-tactical

4 Status of implementation of Flexible Use of Airspace (FUA) Level 3-Tactical

Implementation should be based on the published aeronautical information:

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

5 Remarks

Applicability State	FUA Level 1	FUA Level 2	FUA Level 3	Remarks
1	2	3	4	5
Bahrain				
Egypt				
Iran				
Iraq				
Jordan				
Lebanon				
Libya				
Kuwait				
Oman				
Qatar				
Saudi Arabia				
Sudan				
Syria				
Unite Arab Emirates				
Yemen				
Total				
Percentage				

Table B0-NOPS

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Mechanism for the implementation of ATFM Measures based on collaborative decision.

3 Reference to documentation related to the established mechanism for the implementation of ATFM Measures based on collaborative decision

4 Status of the establishment of ATFM Structure

5 Reference to documentation reflecting the establishment of the ATFM Structure

6 Remarks

Applicability State	Mechanism for the implementation of ATFM Measures based on collaborative decision	Reference	ATFM Structure	Reference	Remarks
1	2	3	4	5	6
Bahrain					
Egypt					
Iran					
Iraq					
Jordan					
Lebanon					
Libya					
Kuwait					
Oman					
Qatar					
Saudi Arabia					
Sudan					
Syria					
UAE					
Yemen					
Total					
Percentage					

ACAS V7.1 Status and regulation reference

State	Status	Regulation Reference	Effective Date	Remarks
1	2	3	4	5
Bahrain	Y	Aeronautical Circular AC/OPS/05/2015 dated 10th of March 2015		Air Navigation Technical Regulations (ANTR) updated to reflect Annex 10 (Volume IV) Reference needs to be provided http://www.mtt.gov.bh/content/caa-laws-and-regulations
Egypt	Y	ECAR Part 121.356 & ECAR Part 91.221		Egyptian Civil Aviation Regulation (ECAR) Parts 121 and 91 have been updated in accordance with the relevant provisions of ICAO Annex 10, Volume IV, Ch.4 http://www.civilaviation.gov.eg/Regulations/regulation.html
Iran	Y	Aeronautical Telecommunications bylaw, articles 3 and 4		According to articles 3 and 4 of Iran aeronautical telecommunications by law, ratified by board of ministers, Airborne collision avoidance systems are categorized as aeronautical telecommunications systems and should be manufactured, installed and maintained according to standards of Annex 10. -Since no difference to ICAO annex 10 is notified, ACAS V 7.1 is mandatory according to provisions of annex 10 amendment 85. -Airworthiness directives issued by FAA and EASA shall to be implemented by Iranian AOC holders.
Iraq	N			
Jordan	Y	JCAR-OPS.1 (1.668 airborne collision avoidance system)		
Kuwait	Y	Kuwait Civil Aviation Safety Regulations – Part 6 – Operation of		

State	Status	Regulation Reference	Effective Date	Remarks
1	2	3	4	5
		Aircraft, Para. 6.20.4		
Lebanon	Y			Regulation reference needs to be provided
Libya	N			
Oman	Y			Regulation reference needs to be provided
Qatar	Y	QCAR – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system QCAR Part 10 - Volume4 Chapter 4 Airborne Collision Avoidance System		References: http://www.caa.gov.qa/en/safety_regulations
Saudi Arabia	Y	GACAR PART 91 – Appendix C		
Sudan	Y	Amended Annex 10 (V4)- ANNESX 6 (V2)		According to adopted annexes to Sudan Regulations (SUCAR 10 V4 Par. 4.3.5.3.1 and SUCAR 6 V2 par 2.05.15)
Syria	N			
UAE	Y	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 and AIP 1.5.6.6		https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertD=CARs
Yemen	Y			Reference need to be provided

TABLE B0-SNET

EXPLANATION OF THE TABLE

Column

1 Name of the State and ATS Units within a State providing Enroute and Approach services

2 Enroute and Approach ATS Units providing Radar services "R"

3 Enroute and Approach ATS Units providing Procedural services "P"

4 Enroute and Approach ATS Units within a State providing radar services where Short-Term Conflict Alert (STCA) was implemented

5 Enroute and Approach ATS Units within a State providing radar services where Minimum Safe Altitude Warning (MSAW)was implemented

6 Action Plan for the implementation of STCA and MSAW

7 Status of implementation of STCA and MSAW (reference to column 2)

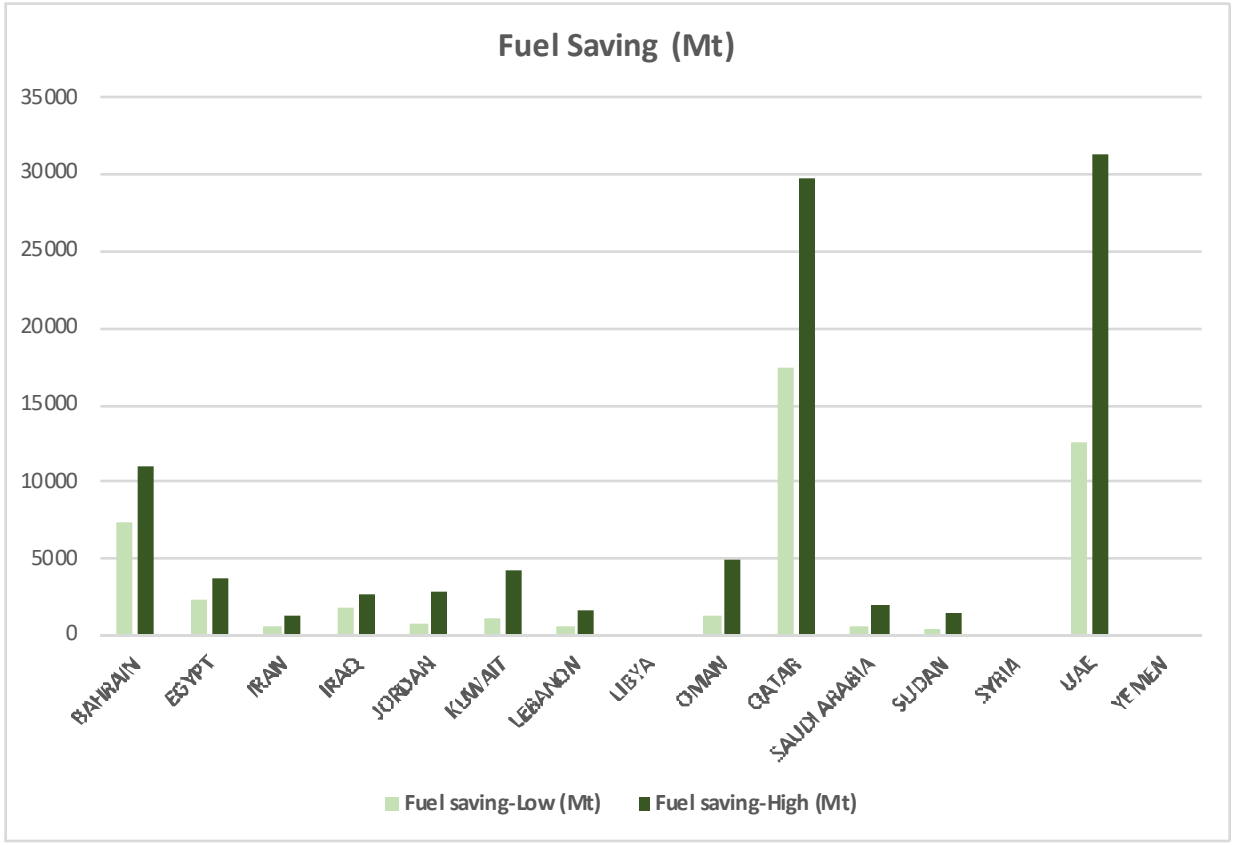
State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
	R	P				
1	*2*	*3*	*4*	*5*	*6*	*7*
Bahrain	**2**	**0**	**2**	**2**		**STCA 100%**
Bahrain ACC	R		Y	Y		**MSAW 100%**
Bahrain APP	R		Y	Y		
Egypt	**7**	**1**				
Cairo ACC	R		Y	Y		
Alex APP	R		Y	Y		
Aswan APP	R		Y	Y		**STCA 100%**
Cairo APP	R		Y	Y		**MSAW 100%**
Luxor APP	R		Y	Y		
Hurghada APP	R		Y	Y		
Marsa APP		P	N/A	N/A		
Sharm APP	R		Y	Y		
Iran	**5**	**2**				
Tehran ACC	R		Y	Y		
Bandar Abbas APP		P	N/A	N/A		
Esfahan APP	R		Y	Y		**STCA 100%**
Mashhad APP	R		Y	Y		**MSAW 100%**
Mehrabad APP	R		Y	Y		
Shiraz APP	R		Y	Y		
Tabriz APP		P	N/A	N/A		
Iraq	**2**	**0**				**STCA 100%**
Baghdad ACC	R		Y	Y		**MSAW 100%**
Baghdad APP	R		Y	Y		
Jordan	**2**	**1**				**STCA 100%**

State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
	R	P				
1	*2*	*3*	*4*	*5*	*6*	*7*
Amman ACC	R		Y	Y		**MSAW 100%**
Amman APP	R		Y	Y		
Aqaba APP		P	N/A	N/A		
Kuwait	**2**	**0**				**STCA 100%**
Kuwait ACC	R		Y	Y		
Kuwait APP	R		Y	Y		**MSAW 100%**
Lebanon	**2**	**0**				**STCA 100%**
Beirut ACC	R		Y	Y		
Beirut APP	R		Y	Y		**MSAW 100%**
Libya	**0**	**4**				
Tripoli ACC		P	N/A	N/A		**STCA 0%**
Tripoli APP		P	N/A	N/A		
Benghazi Centre		P	N/A	N/A		**MSAW 0%**
Benghazi APP		P	N/A	N/A		
Oman	**3**	**0**				
Muscat ACC	R		Y	Y		**STCA 100%**
Seeb APP	R		Y	Y		
Salalah APP	R		Y	Y		**MSAW 100%**
Qatar	**1**	**0**				**STCA 100%**
Doha Radar	R		Y	Y		**MSAW 100%**
Saudi Arabia	**6**	**0**				
Jeddah ACC	R		Y	Y		
Riyadh ACC	R		Y	Y		**STCA 100%**
Jeddah APP	R		Y	Y		
Riyadh APP	R		Y	Y		**MSAW 100%**
Madina APP	R		Y	Y		
Damam APP	R		Y	Y		
Sudan	**2**	**3**				
Khartoum ACC	R		Y	Y		
Khartoum APP	R		Y	Y		**STCA 100%**
Elobeid APP		P	N/A	N/A		**MSAW 100%**
Nyala APP		P	N/A	N/A		
Port Sudan APP		P	N/A	N/A		
Syria	**0**	**4**				**STCA 0%**

State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
	R	P				
1	*2*	*3*	*4*	*5*	*6*	*7*
Damascus ACC		P				**MSAW 0%**
Damascus ACC		P				
Aleppo APP		P				
Latakia APP		P				
UAE	**7**	**0**	**6**	**6**		
SZC	R		Y	Y		
Al Ain APP	R		Y	Y		
Abu Dhabi Radar	R		Y	Y		**STCA 86%**
Al Maktoum APP	R		Y	Y		**MSAW 86%**
Dubai Radar	R		Y	Y		
Fujairah APP	R		Y	Y		
RAS AL KHAIMAH	R		N	N		
Yemen		**3**				
Sana'a ACC		P	N/A	N/A		**STCA 0%**
Aden APP		P	N/A	N/A		**MSAW 0%**
Sana'a APP		P	N/A	N/A		
Total	**41**	**18**	**40 Y**	**40 Y**		**STCA 97%**
Percentage			**18 N/A**	**18 N/A**		**MSAW 97%**

State	Fuel saving-Low (Mt)	Fuel saving-High (Mt)
BAHRAIN	7332.8	10960.8
EGYPT	2220.3	3628.7
IRAN	525	1312.5
IRAQ	1761.6	2682.2
JORDAN	690.6	2762.3
KUWAIT	1053.6	4214.6
LEBANON	617.7	1544.2
LIBYA	0	0
OMAN	1236.1	4944.3
QATAR	17408.7	29697.2
SAUDI ARABIA	470.5	1881.9
SUDAN	365.2	1460.9
SYRIA	0	0
UAE	12515.9	31192.9
YEMEN	9.2	36.7

TOTAL	46207.2	96319.2



APPENDIX C

Description of the Methodology for the Estimation of environmental benefits accrued from the implementation of priority 1 Block 0 Modules in the MID Region

1 The methodology was developed based on the studies carried out by the Committee on Aviation Environmental Protection (CAEP) and the defined Rules of Thumb (RoTs) agreed and endorsed by CAEP.

2 The objective of the Methodology is to carry out estimation of the environmental benefits (fuel savings/CO_2) accrued from the implementation of priority 1 ASBU Block 0 Modules in in the MID Region.

3 The Methodology is focused on the Block 0 Priority 1 Modules that have shown the highest contribution to the environmental benefits in the MID Region and the implementation data for them is available. Accordingly, three (3) Modules (five RoTs) have been selected: B0-APTA, B0-CDO and B0-CCO.

Note 1 – CAEP studies have determined the contribution of each studied Block 0 Module at the Global and Regional Level, including those of the MID Region.

Note 2 – additional information on CAEP studies could be found in CAEP/10-WP/39. A summary of the studies is reflected in the ANSIG/3-WP/14.

4 Number of Departures were received from the traffic data available to the ICAO ATB. However, the traffic data for some International Airports was missing.

5 Percentage of traffic using APTA, CDO and CCO procedures represents percentage of the implementation of those procedures.

Note 3 – based on traffic data, around 70% of the traffic operated in the MID States' International Airports are Medium and 30% Heavy.

6 Fuel saving for each of the RoTs (elements) is based on a minimum and maximum estimate of the fuel saving (low to high). The following ranges have been applied, based on the CAEP studies on RoTs:

- APTA (APTA 1 – PBN-enabled Radius to Fix approach)
  - Light/Small Airplanes (7000kg or less): 11kg/flight
  - Medium Airplanes (7000kg to 136000kg): 62kg/flight
  - Heavy Airplanes (136000kg or more): 95kg/flight
- CCO (CCO1 – CCO)
  - Minimum saving (Low): 90kg/Departure
  - Maximum saving (High): 150kg/Departure
- CCO (CCO2 – PBN SIDs)
  - Minimum saving (Low): 0kg/Departure
  - Maximum saving (High): 30kg/Departure
- CDO (CDO1 – CDO)
  - Saving (Low): 60kg/Arrival
- CDO (CDO2 – PBN STARs)
  - Minimum saving (Low): 20kg/Arrival
  - Maximum saving (High): 50kg/Arrival

ICAO

CAPACITY & EFFICIENCY

MSG/6-WP/6
Appendix D

AIR NAVIGATION REPORT

ICAO Middle East Region

SECOND EDITION (REFERENCE PERIOD: January – December 2017)

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A Coordinated Approach to Regional Air Navigation Systems Implementation

Mohamed K. Rahma
Regional Director,
ICAO Middles East Office

The air transport industry plays a major role in world economic activity. It directly and indirectly supports 67.3 million jobs by aviation worldwide, contributes over $2.7 trillion to global Gross Domestic Product (GDP), and carries over 4.1 billion passengers and 53 million tonnes of freight annually.

This is illustrated by the fact that over half of the world's 1.2 billion tourists who travelled across international borders last year were transported by air, and that air transport now carries some 35% of world trade by value. Indeed, more than 90% of cross border Business-to-Consumer (B2C) e-commerce was carried by air transport.

Middle East has been the fastest growing Region for passenger and cargo traffic since 2011. In 2016, MID air carriers recorded 11.8% growth in Revenue Passenger-Kilometers (RPKs). Although this growth has declined to 6.9% in 2017, the Region carried 14% RPK share in the year 2017.

The continuing growth of traffic in the MID Region places increased demand on airspace capacity, which necessitates an optimum utilization of the available airspace and airports.

One of the key elements to maintaining the vitality of civil aviation is to ensure safe, secure, efficient and environmentally sustainable operations at the global, regional and national levels. In this respect, ICAO works constantly to address the expectations of the aviation community in all key performance areas through the following coordinated activities:

- Policy and Standardization initiatives;
- Implementing programmes to address performance issues;
- Monitoring of key performance trends and indicators; and
- Performance Analysis.

The GANP represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/ industry agreed operational objectives.

Its structured approach, organized in blocks of upgrades in non-overlapping six-year time increments starting in 2013 and continuing through 2031 and beyond, provides a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers.

The GANP also explores the need for more integrated aviation planning at both regional and national level and addresses required solutions through the consensus-driven Aviation System Block Upgrade (ASBU) systems engineering modernization strategy.

In all of its coordinated activities, ICAO always strives to achieve a balance between the need for increased capacity and efficiency while maintaining aviation safety and the impact on climate change at an acceptable level.

The regular review of implementation progress and the analysis of potential impediments will ultimately ensure the harmonious transition from one region to another following major traffic flows, as well as ease the continuous evolution towards the GANP's performance targets.

MID Air Navigation Report is the main tool for monitoring and reporting on the status of air navigation systems implementation in the MID Region.

This second edition of the Report provides update on the status and progress of the Priority 1 ASBU Block 0 Modules within the ICAO MID Region during the reporting period of January 2017 to December 2017.

TABLE OF CONTENTS

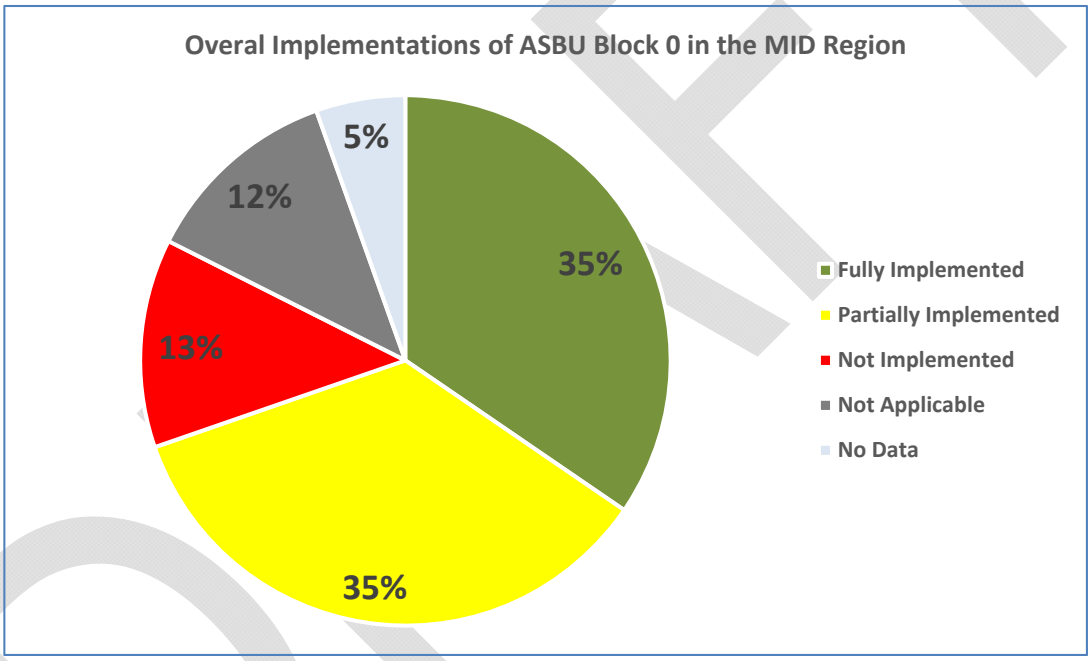
EXECUTIVE SUMMARY

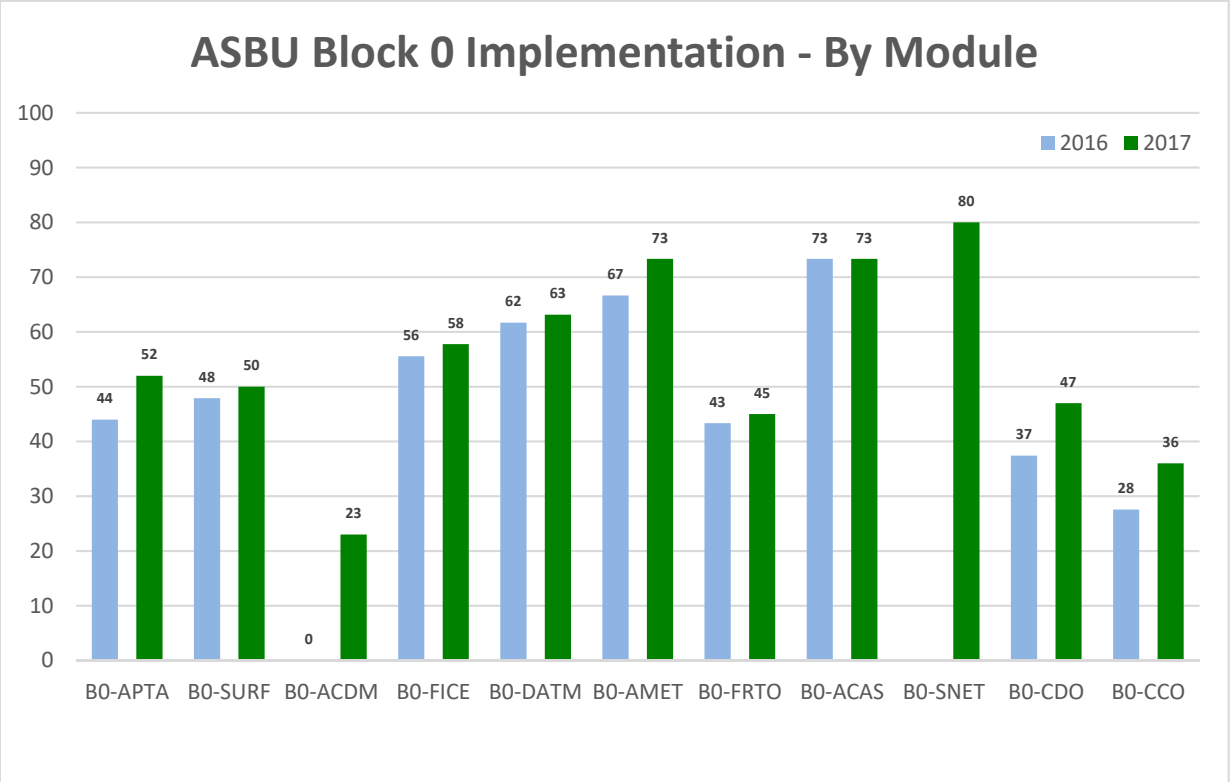
The Second Edition of the ICAO MID Air Navigation Report (2017) provides an overview of the status of implementation of the Priority 1 ASBU Block 0 Modules in the MID Region as well as the progress achieved by MID States from the first edition of the MID Air Navigation Report (2016).

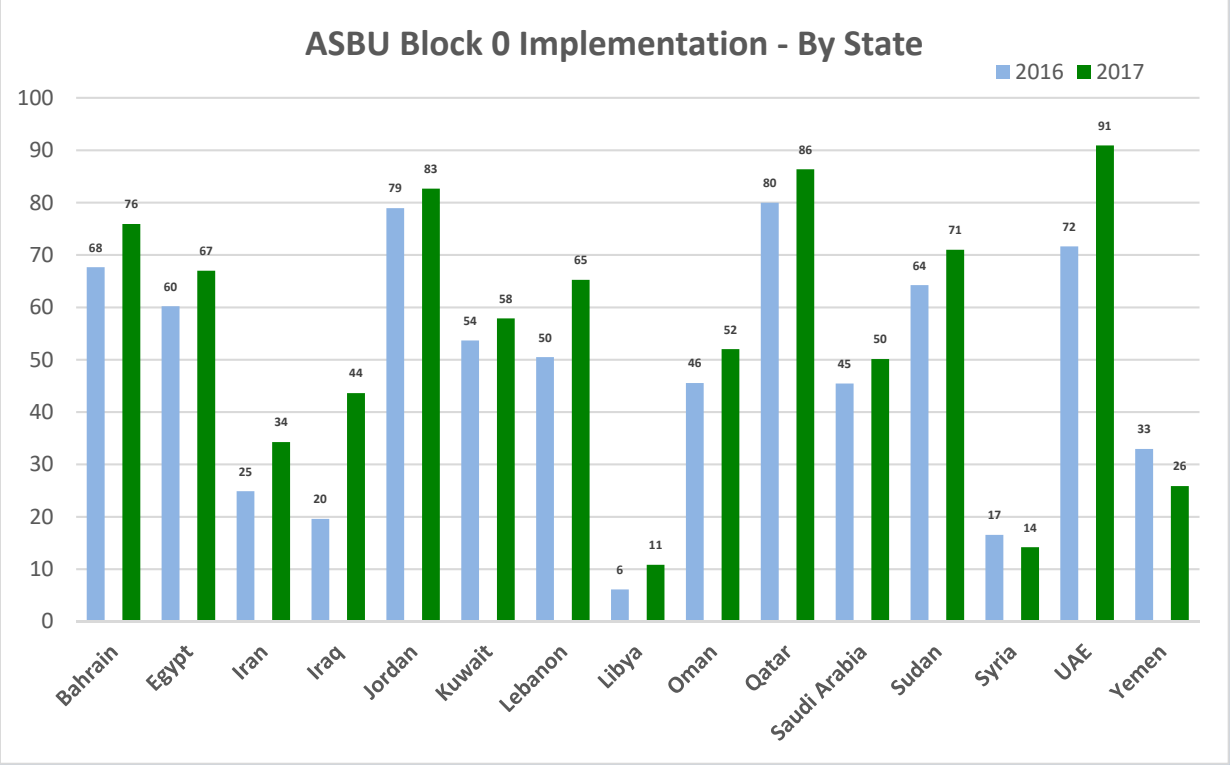
The main part of the document includes Section 2, which provides the status of implementation and the Regional Dashboard for the Priority 1 ASBU Block 0 Modules in the MID Region through different statistical maps and charts.

This Section will be complemented by providing the Outlook 2020 of the Region in Section 3 and environmental protection matters in Section 4. Section 5 provides some best practices/success stories of States in the implementation of ASBU Block 0 Modules.

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.
Note 2 – progress of States from 2016 to 2017 may be from the States implementation as well as some changes in the Modules structure (i.e. introduction of new element for B0-AMET, introduction of B0-SNET as a new Priority1 Module and definition of applicable aerodromes for B0-CDO and B0-CCO)

1. INTRODUCTION

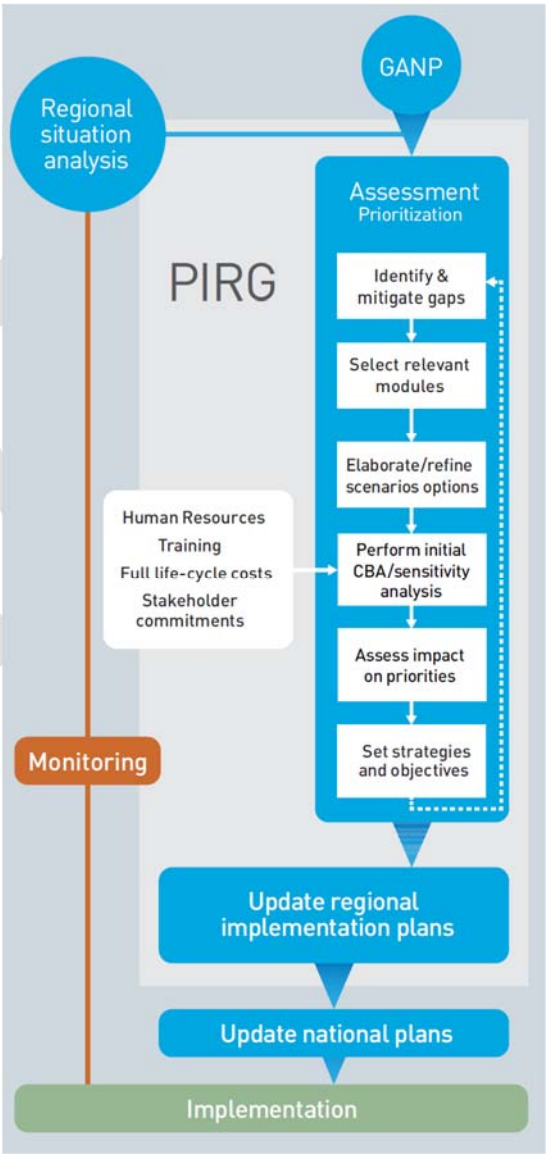
1.1 Objectives

The second 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 2017 till December 2017.

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 Fourth meeting of the MIDANPIRG Steering Group (MSG/4) which was held in Cairo, Egypt from 24 to 26

November 2014 endorsed the MID Region Air Navigation Strategy. The Strategy was later updated by MIDANPIRG/15 and 16 and published as MID Doc 002. The Strategy includes 12 priority 1 Block 0 Modules and their associated performance indicators and targets.

MIDANPIRG and its Subsidiary Bodies (in particular ANSIG) 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 2017 to December 2017.

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

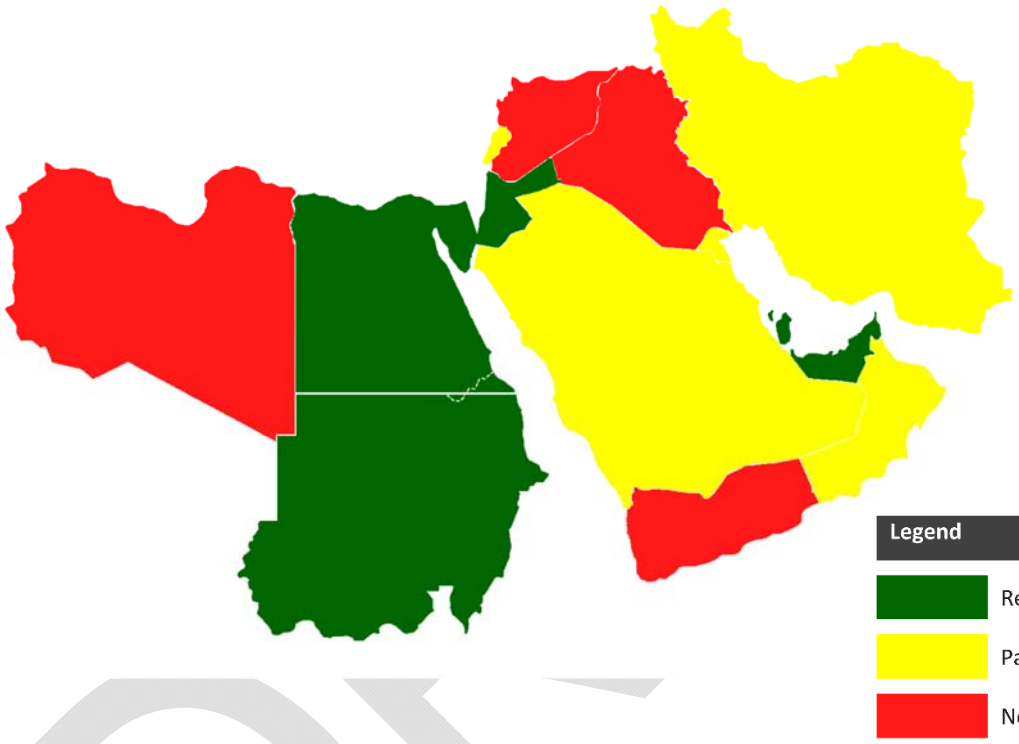
1.4 Collection of data

For the purpose of collecting necessary data for the MID Air Navigation Report-2017, a State Letter Ref.: AN 1/7 – 17/188 was issued on 2 July 2017, to follow-up on the MIDANPIRG Conclusion 16/8, which urged States to provide the relevant data necessary for the development of the MID Region Air Navigation Report-2017. However, some States did not respond to the State Letter. Status of States providing update 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).

Status of Reporting by States



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 presents the ASBU Block 0 implementation outlook for 2020 in the MID Region.

Section 4 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 5 includes some success stories related to the NCLB activities and implementation of ASBU Block 0 Modules, as well as their associated operational improvements and environmental benefits.

Section 6 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.

Appendix B illustrates the detailed status of implementation of ASBU Block 0 Modules in the MID States by 2020.

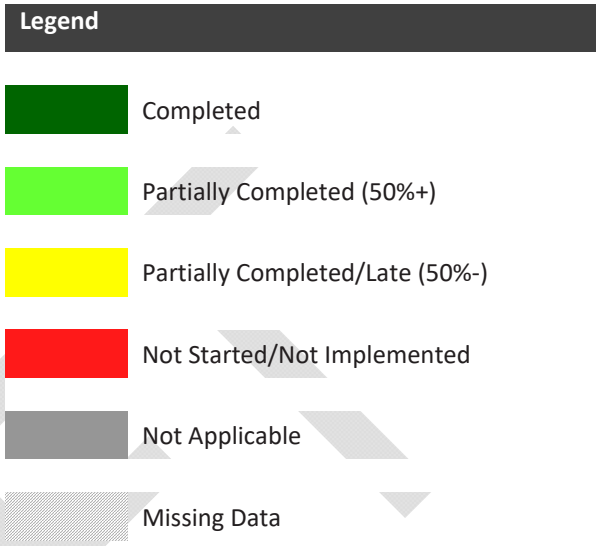
2. STATUS AND PROGRESS OF ASBU IMPLEMENTATION

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:



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/MSG as priority 1 for the MID Region (MID Doc 002 Edition February 2017, 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		

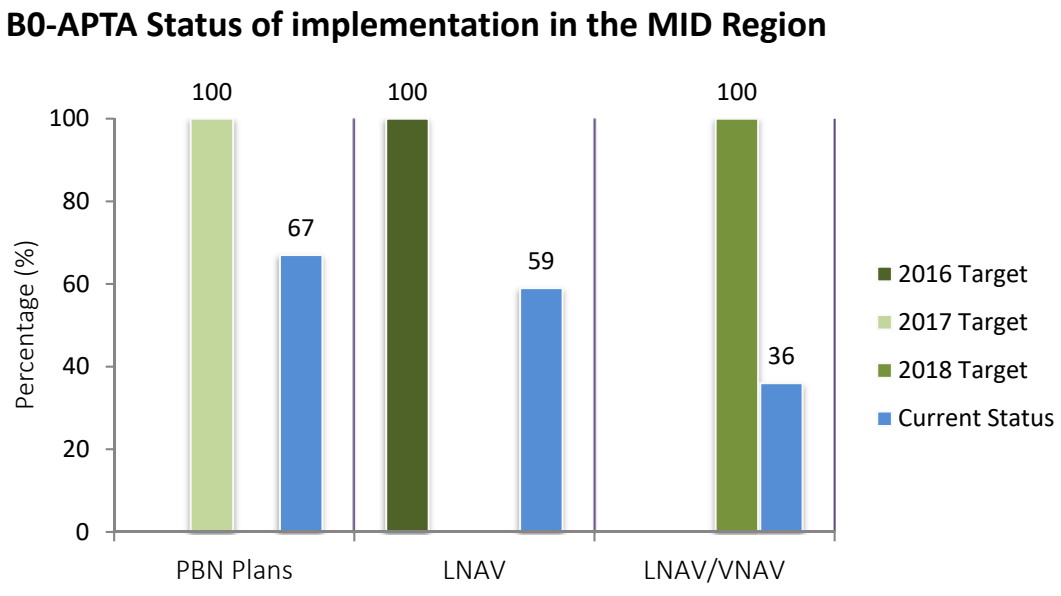
Performance Improvement Areas (PIA) 4 Efficient Flight Path – Through Trajectory-based Operations						
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	1	2014	PBN SG		
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2		ATM SG	CNS SG	
B0-CCO	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.

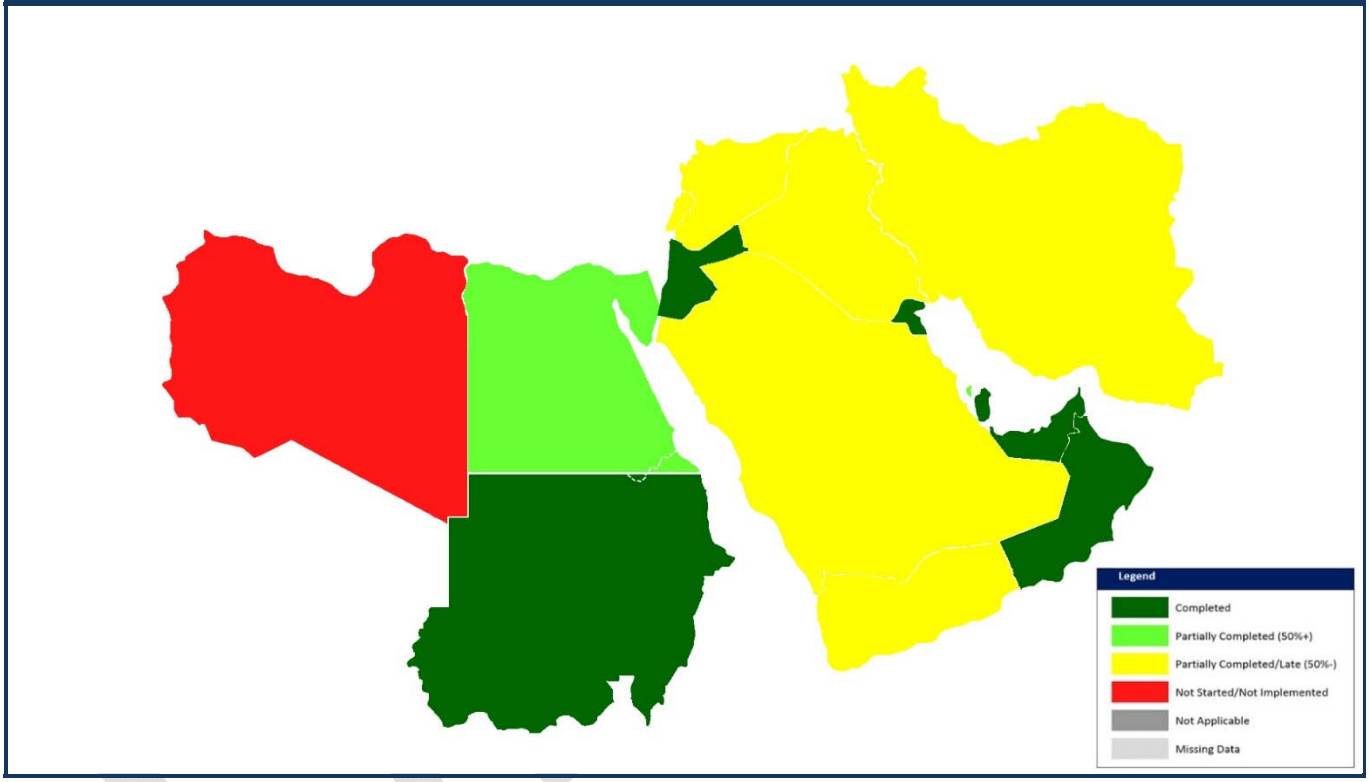
B0 – APTA: Optimization of Approach Procedures including vertical guidance			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
States' PBN Implementation Plans	All States	Indicator: % of States that provided updated PBN implementation Plan Supporting metric: Number of States that provided updated PBN implementation Plan	100% by Dec. 2018
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)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by 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)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2017



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

The progress for B0-APTA is good (with approximately 52% implementation).

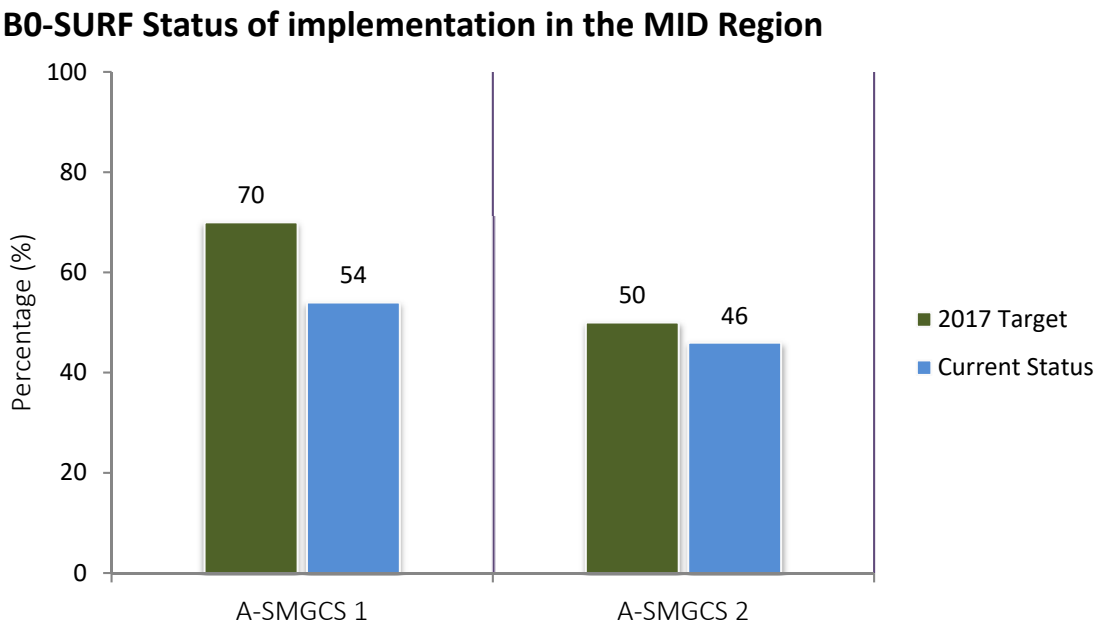
B0-APTA Status of implementation in the MID Region



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).

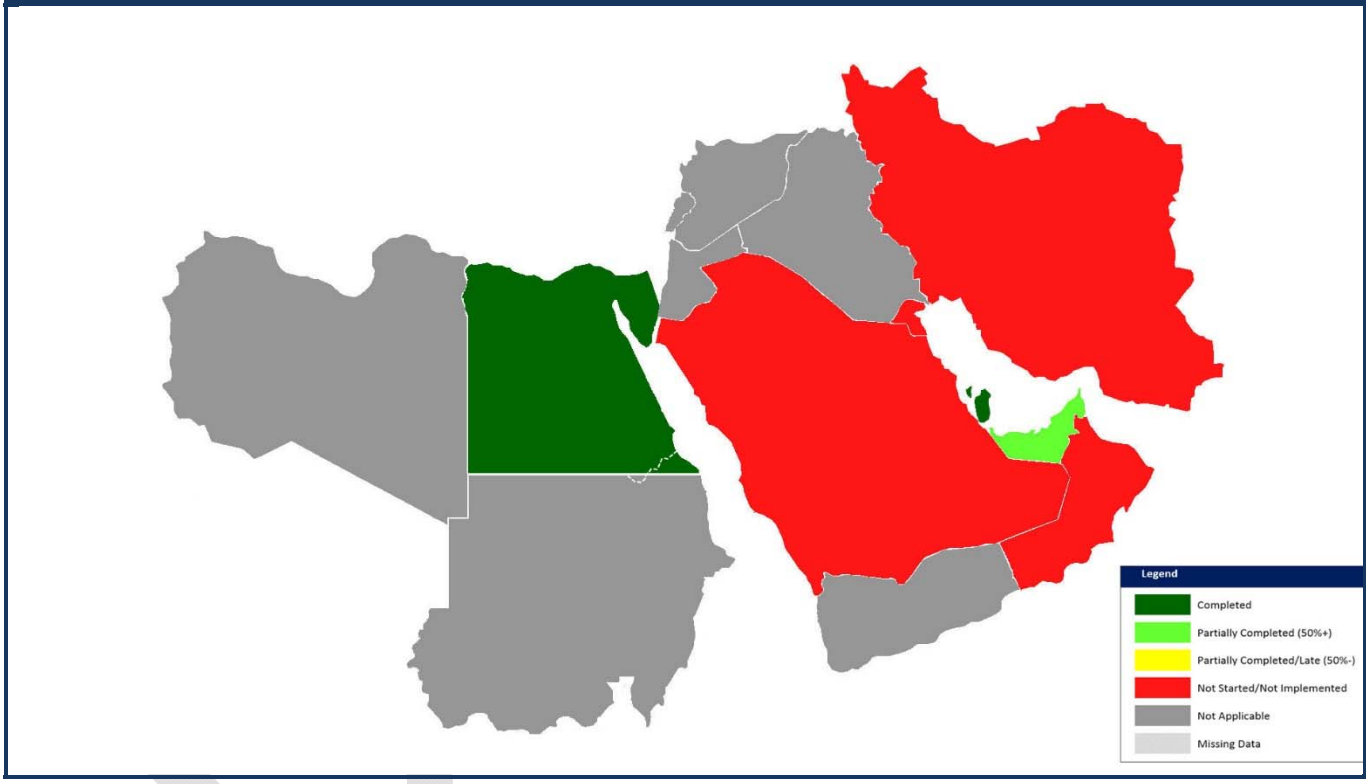
B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes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



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

The progress for B0-SURF is good (with approximately 50% implementation). B0-SURF is not applicable for 7 States.

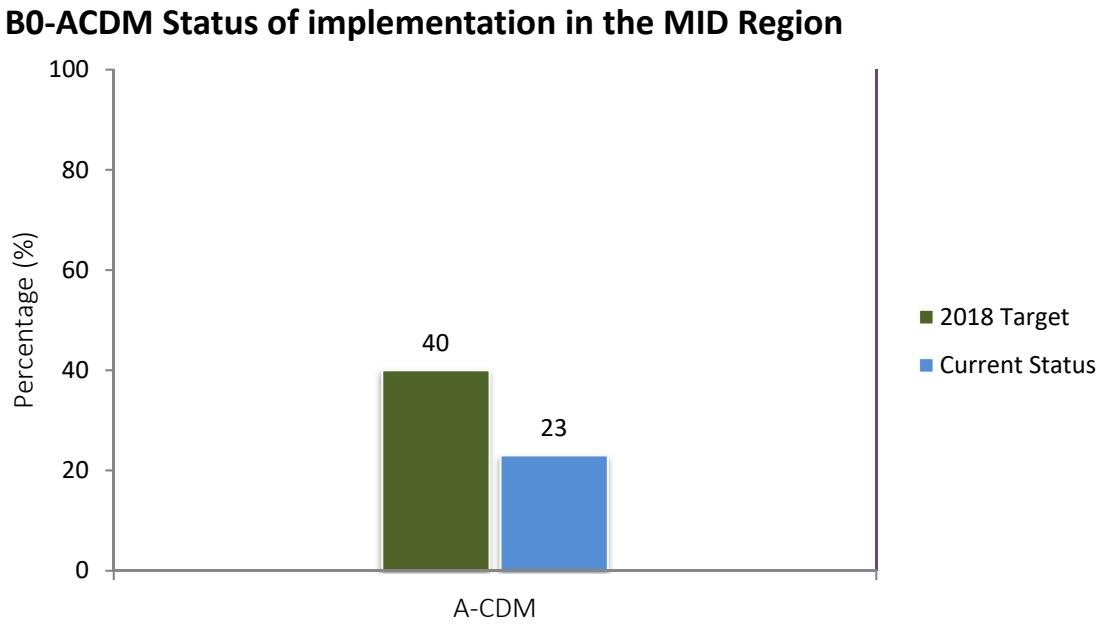
B0-SURF Status of implementation in the MID Region



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 manoeuvering areas and enhance safety, efficiency and situational awareness.

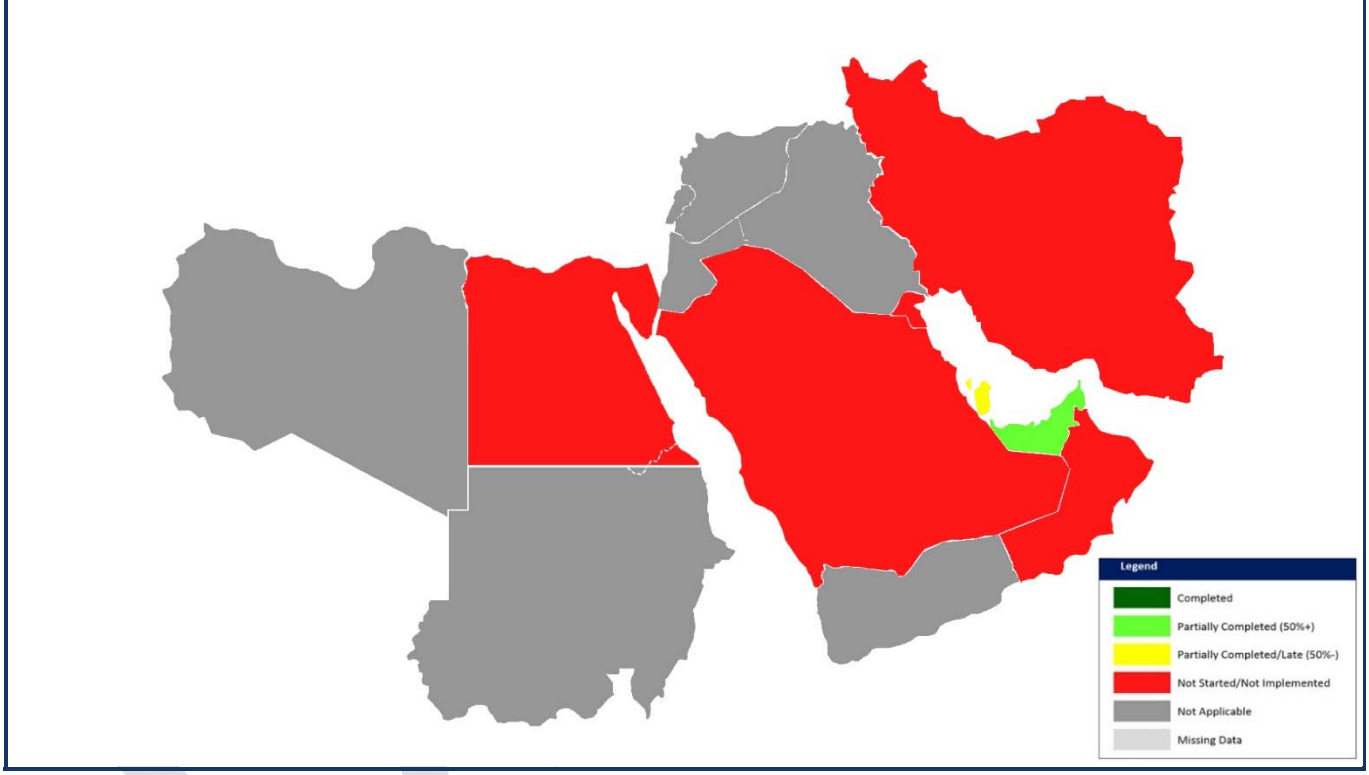
B0 – ACDM: Improved Airport Operations through Airport-CDM			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented improved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



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

The progress for B0-ACDM is very slow (with approximately 23% implementation. Nevertheless, implementation is ongoing in some States.

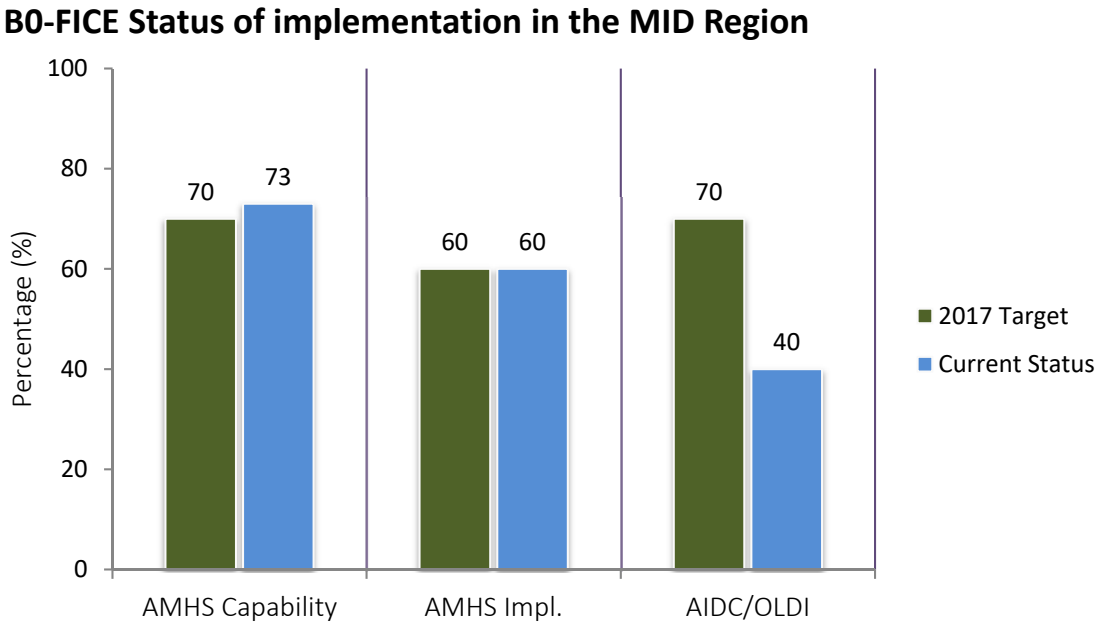
B0-ACDM Status of implementation in the MID Region



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.

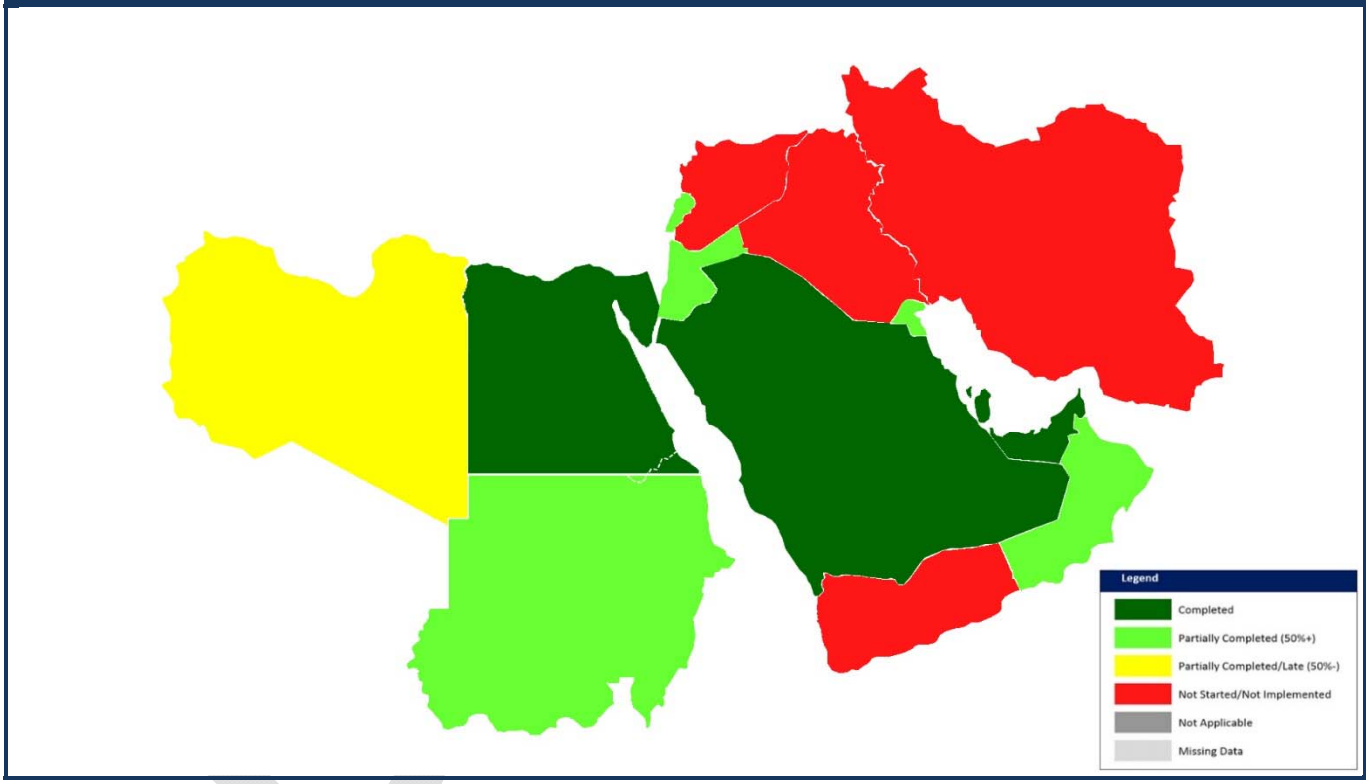
B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
AMHS capability	All States	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70% of States with AMHS capability by 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% of States with AMHS interconnected by Dec. 2017
Implementation of AIDC/OLDI between adjacent ACCs	All ACCs	Indicator: % of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with neighboring ACCs Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70% by Dec. 2017



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

The progress for B0-FICE is good (with approximately 58% implementation).

B0-FICE Status of implementation in the MID Region

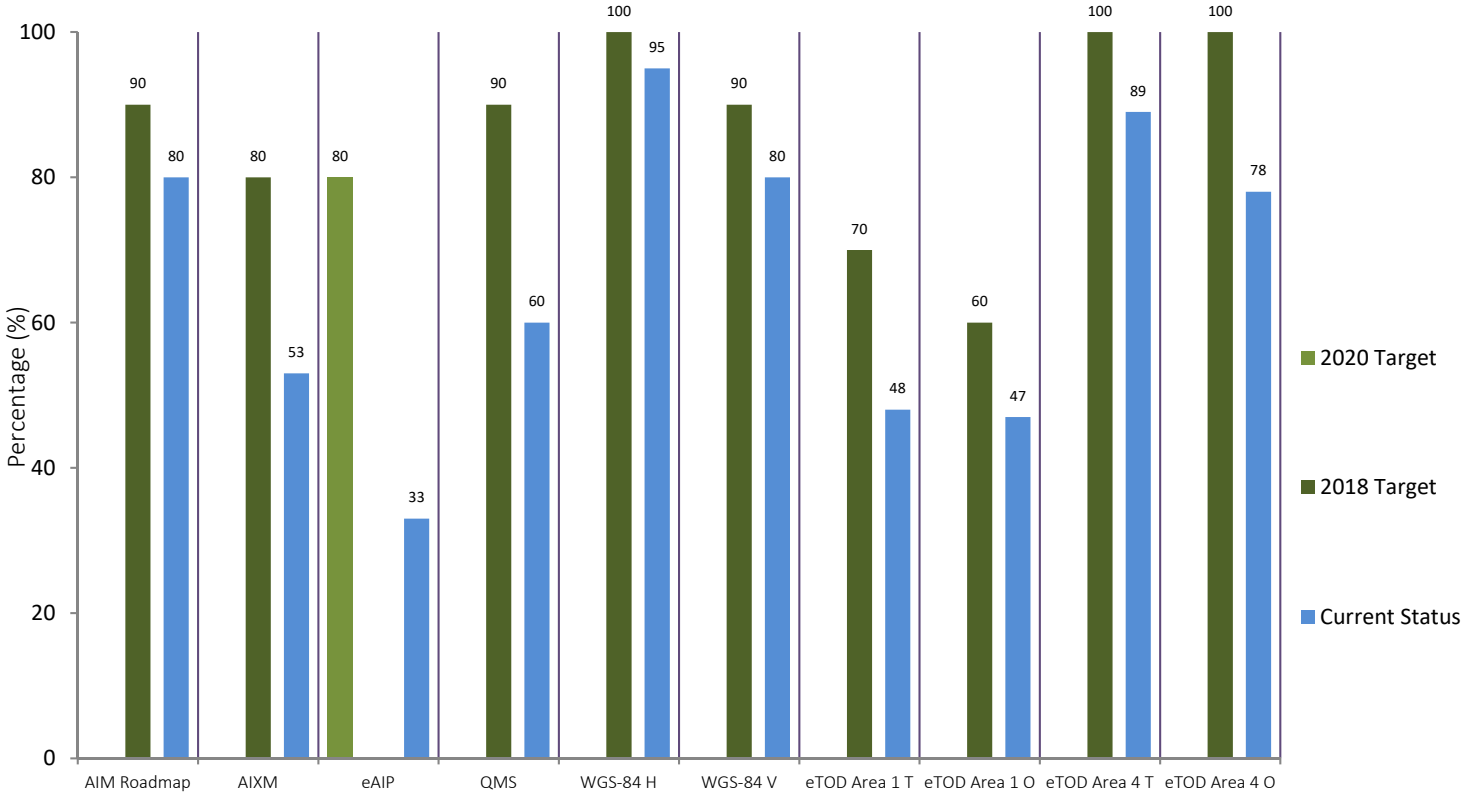


2.2.5 B0-DATM

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**
National AIM Implementation Plan/Roadmap	All States	Indicator: % of States that have National AIM Implementation Plan/Roadmap Supporting Metric: Number of States that have National AIM Implementation Plan/Roadmap	90% by Dec. 2018
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% by 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% by 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% by 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% by Dec. 2018 Vertical: 90% by Dec. 2018
eTOD	All States	Indicator: % of States that have implemented required Terrain datasets Supporting Metric: Number of States that have implemented required Terrain datasets Indicator: % of States that have implemented required Obstacle datasets Supporting Metric: Number of States that have implemented required Obstacle datasets	Area 1 : Terrain: 70% by Dec. 2018 Obstacles: 60% by Dec. 2018 Area 4: Terrain: 100% by Dec. 2018 Obstacles: 100% by Dec. 2018
Digital NOTAM*	All States	Indicator: % of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM Supporting Metric: Number of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM	90% by Dec. 2020

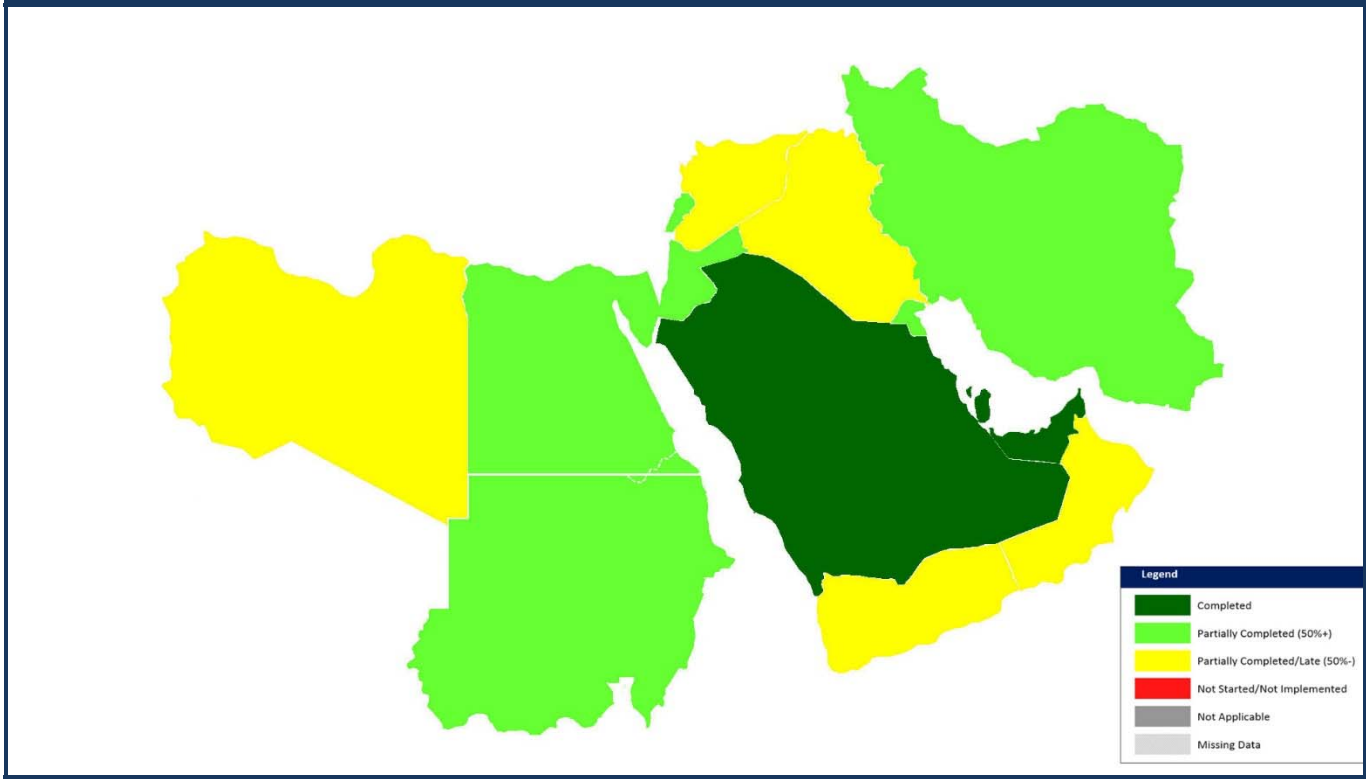
B0-DATM Status of implementation in the MID Region



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-DATM	National AIM Roadmap															
	AIXM															
	eAIP															
	QMS															
	WGS-84 – H															
	WGS-84 – V															
	eTOD Area 1 Terrain															
	eTOD Area 1 Obstacles															
	eTOD Area 4 Terrain															
	eTOD Area 4 Obstacles															

The progress for B0-DATM is good (with approximately 63% implementation). eTOD Area 4 is not applicable in 6 States.

B0-DATM Status of implementation in the MID Region



2.2.6 B0-AMET

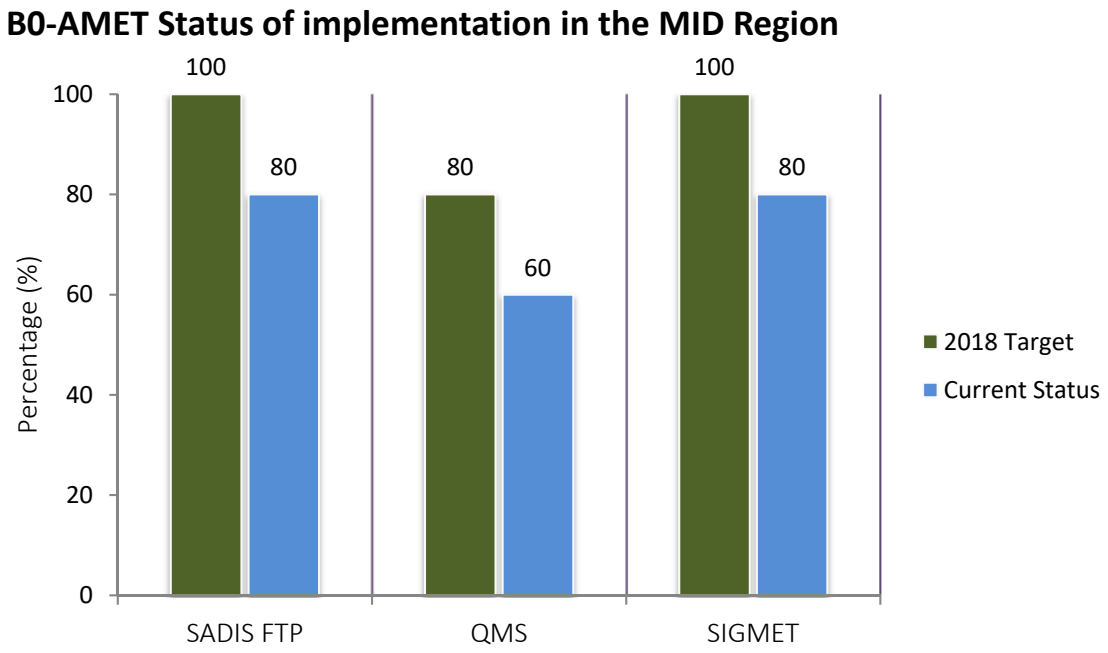
Global, regional and local meteorological information:

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.

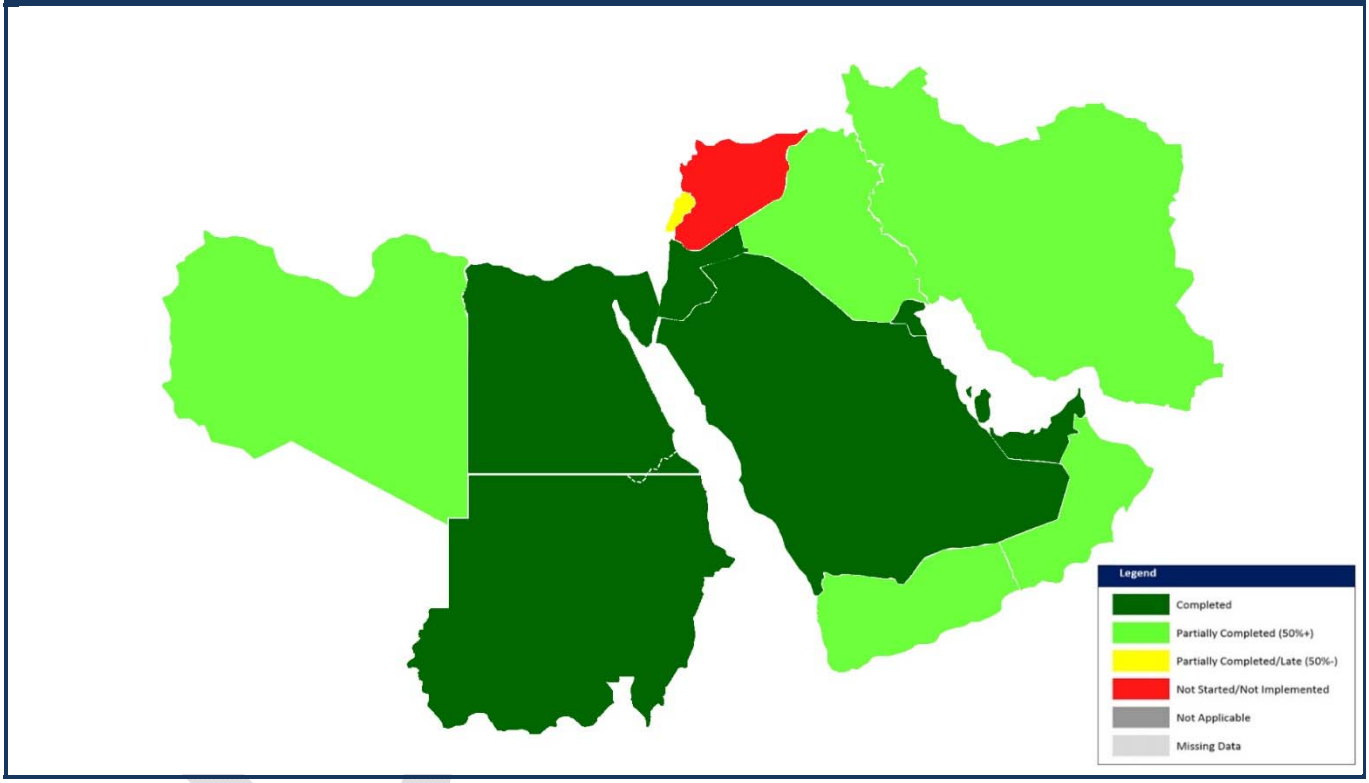
B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
SADIS FTP	All States	Indicator: % of States that have implemented SADIS FTP service Supporting Metric: Number of States that have implemented SADIS FTP service	100% by Dec. 2018
QMS	All States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	80% by Dec. 2018
SIGMET	All MWOs in MID Region	Indicator: % of FIRs in which SIGMET is implemented Supporting metric: number of FIRs SIGMET is implemented	100% by Dec. 2018



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

The progress for B0-AMET is good (with approximately 73% implementation).

B0-AMET Status of implementation in the MID Region

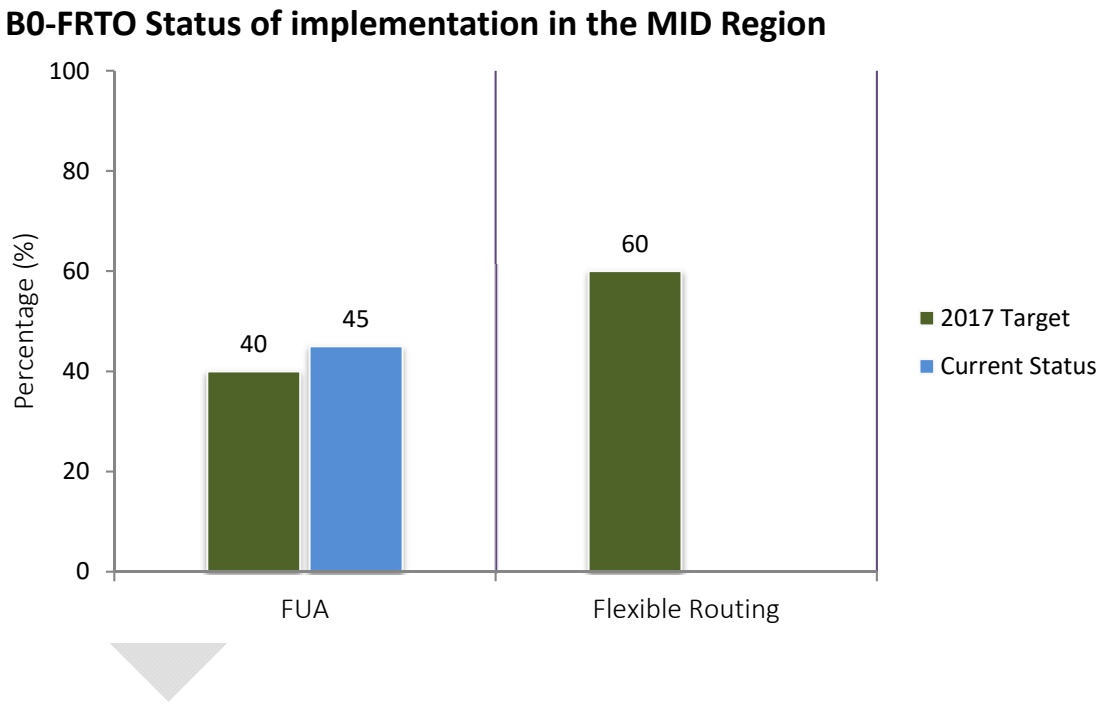


2.2.7 B0-FRTO

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**
Flexible use of airspace (FUA)	All States	Indicator: % of States that have implemented FUA Supporting metric*: number of States that have implemented FUA	40% by Dec. 2017
Flexible routing	All States	Indicator: % of required Routes that are not implemented due military restrictions (segregated areas) Supporting metric 1: total number of ATS Routes in the Mid Region Supporting metric 2*: number of required Routes that are not implemented due military restrictions (segregated areas)	60% by Dec. 2017

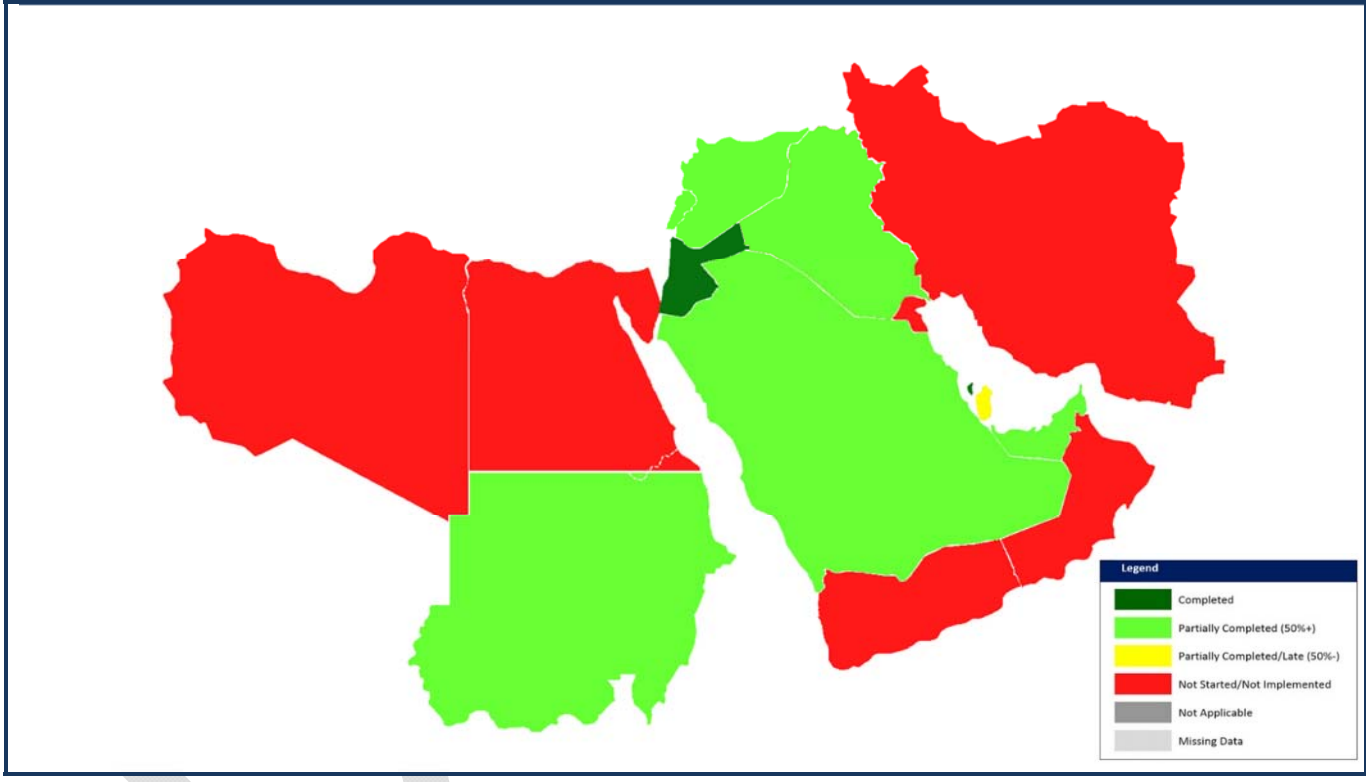
* *Implementation should be based on the published aeronautical information*



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-FRTO	Flexible use of airspace (FUA)															
	Flexible routing															

The progress for B0-FRTO (FUA) is acceptable (with approximately 45% implementation). The element "Flexible Routing" could not be monitored because of the lack of data.

B0-FRTO (FUA) Status of implementation in the MID Region



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**.**

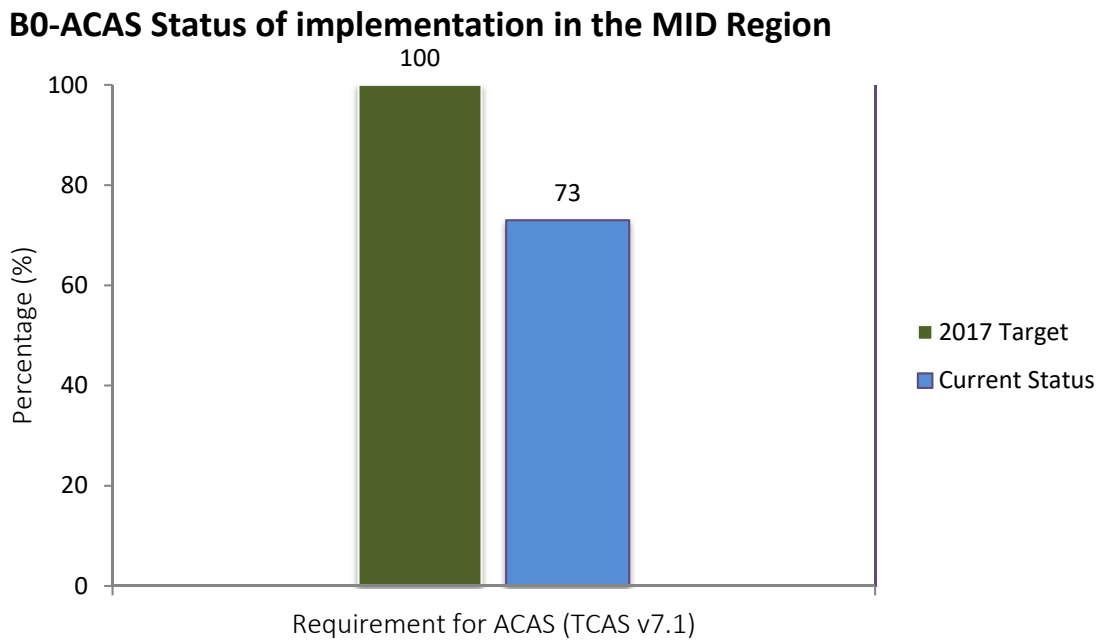
B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
ATFM Measures implemented in collaborative manner	All States	Indicator: % of States that have established a mechanism for the implementation 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% by Dec. 2017

Note – B0-NOPS could not be monitored because the elements and associated performance indicators and targets have not yet been agreed upon and are under development.

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.

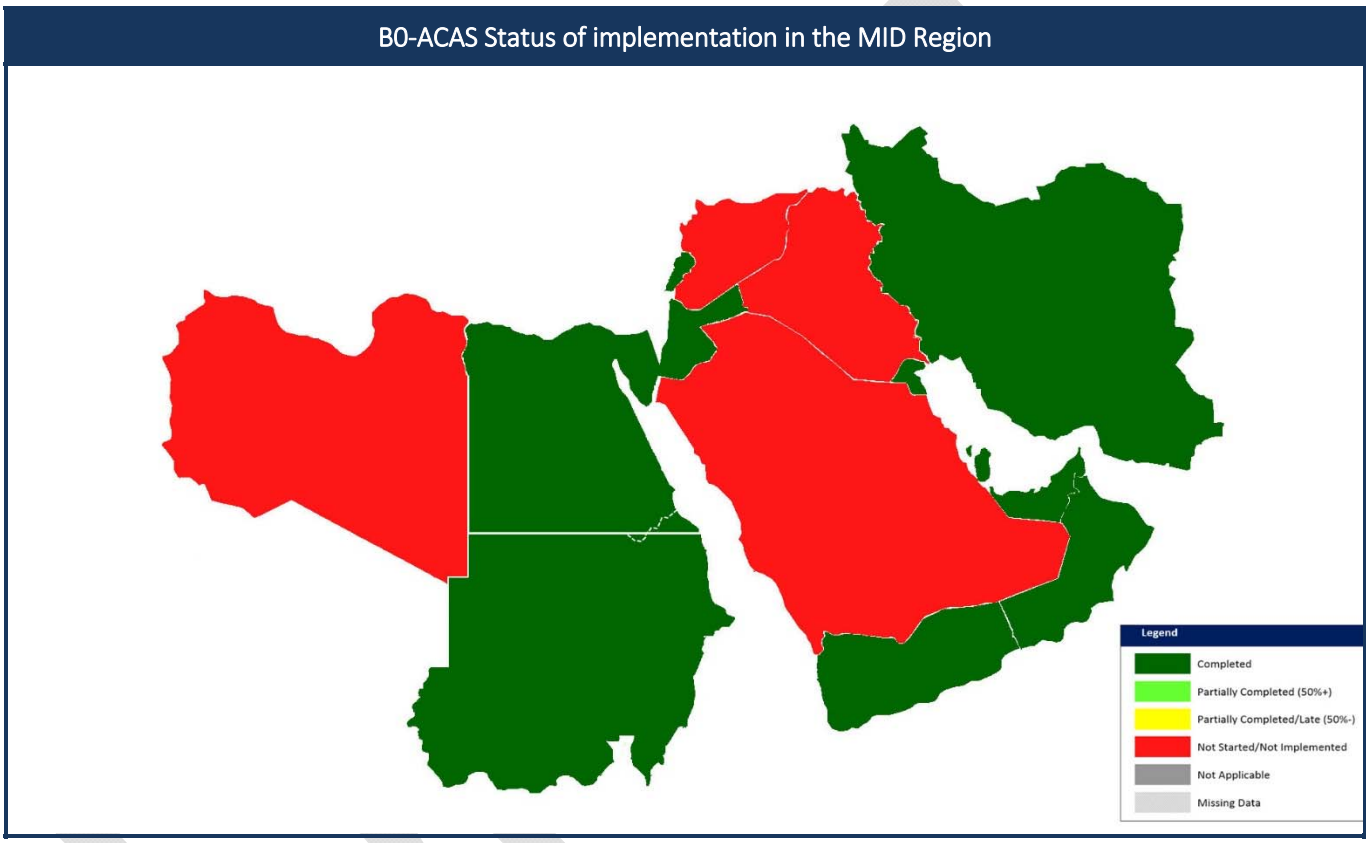
B0 – ACAS: ACAS Improvements			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
Avionics (TCAS V7.1)	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: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



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

The progress for B0-ACAS is <u>good</u> (with approximately 73% implementation).

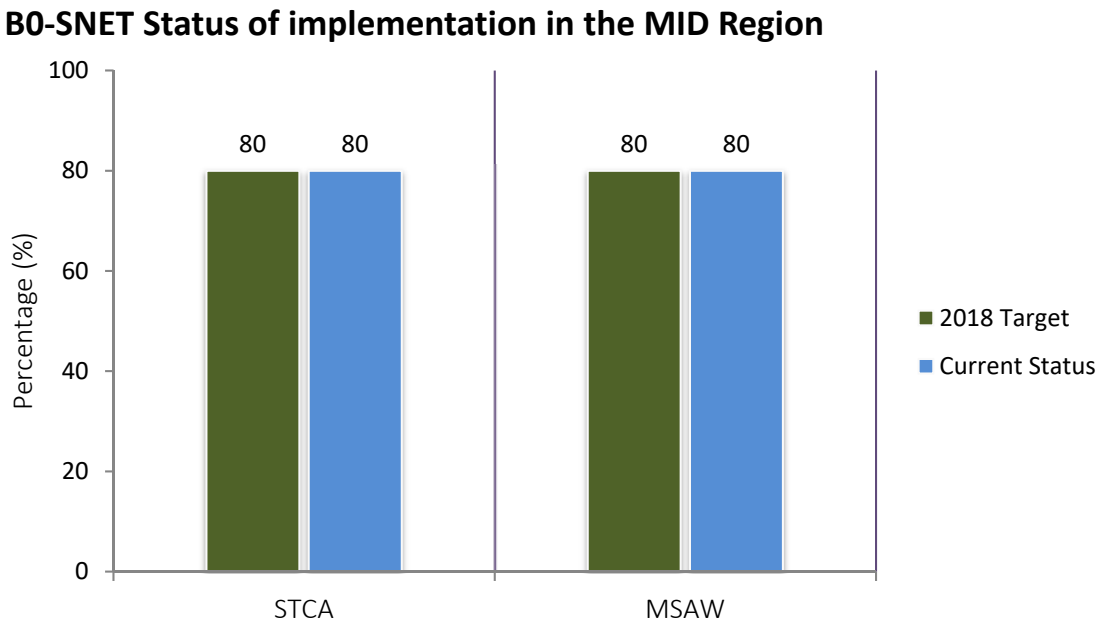
B0-ACAS Status of implementation in the MID Region



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.

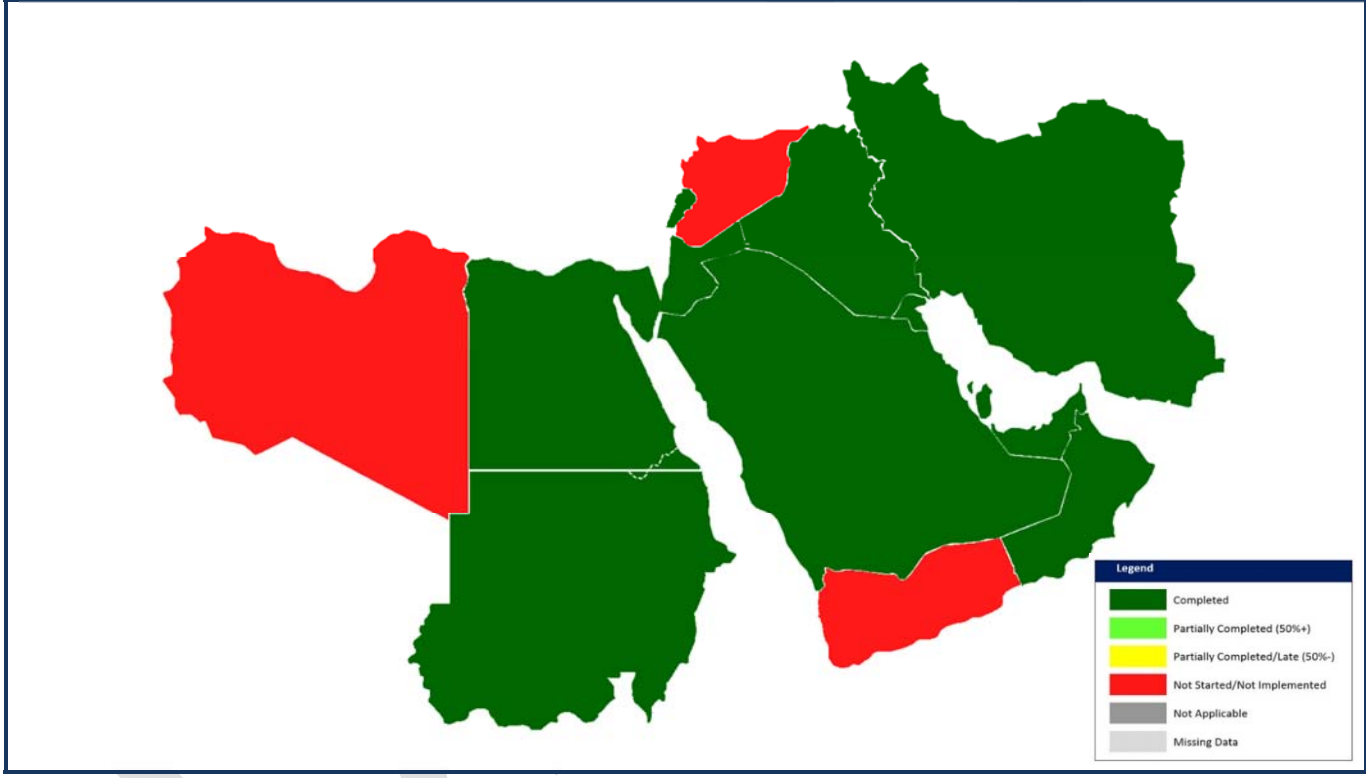
B0 – SNET: Increased Effectiveness of Ground-based Safety Nets			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
Short-term conflict alert (STCA)	All States	Indicator: % of States that have implemented Short-term conflict alert (STCA) Supporting metric*: number of States that have implemented Short-term conflict alert (STCA)	80 % by 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 % by 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	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).

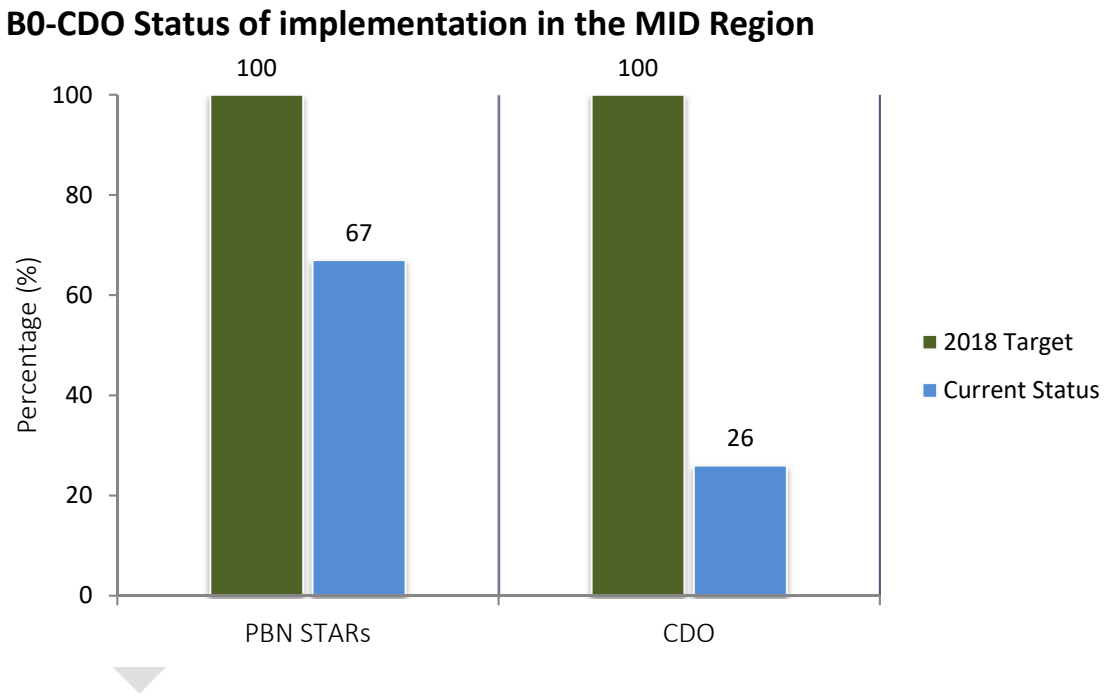
B0-SNET Status of implementation in the MID Region



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.

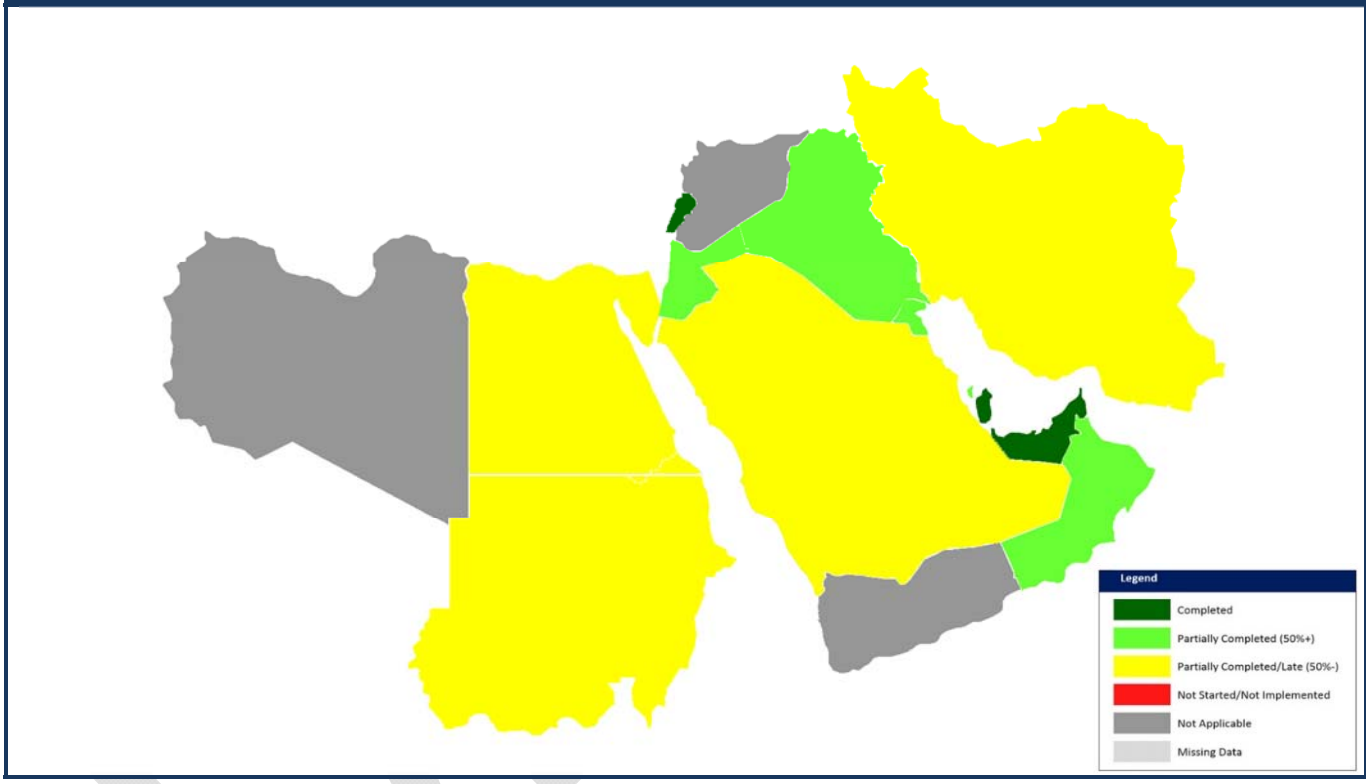
B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
PBN STARs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, 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% by Dec. 2018 for the identified Aerodromes/TMAs
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 Dec. 2018 for the identified Aerodromes/TMAs



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

The progress for B0-CDO is acceptable (with approximately 47% implementation).

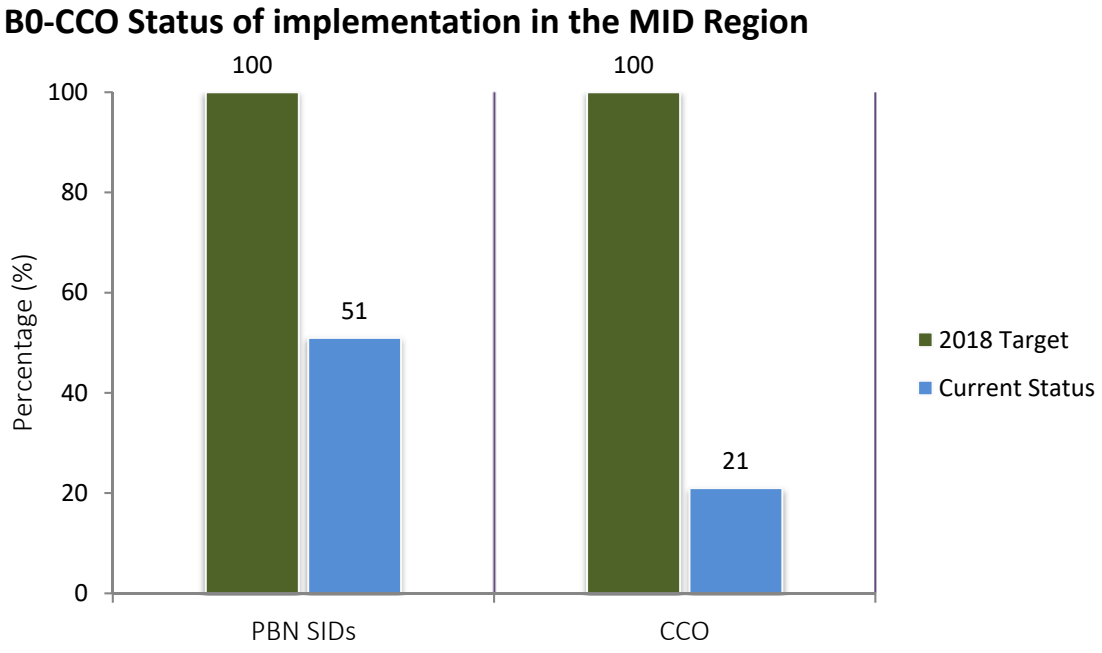
B0-CDO Status of implementation in the MID Region



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.

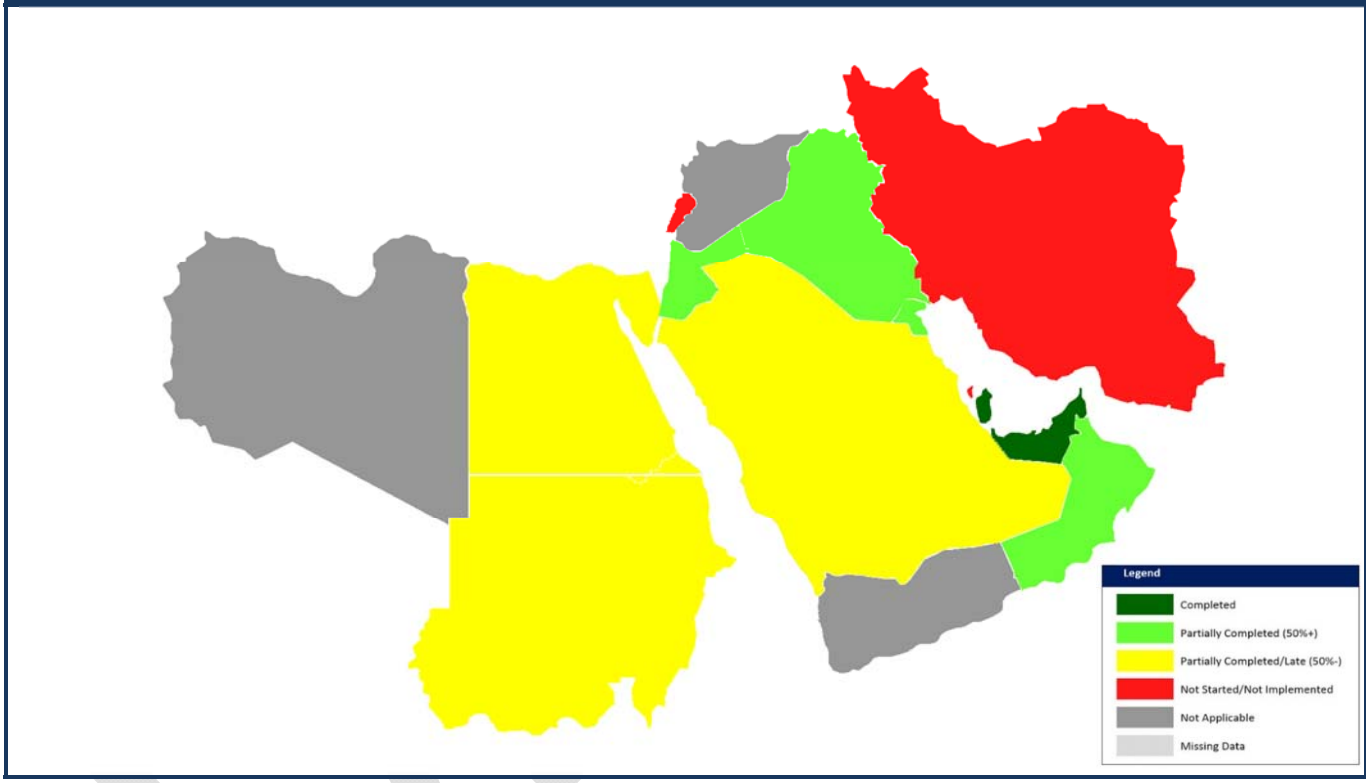
B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
PBN SIDs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, 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% by Dec. 2018 for the identified Aerodromes/TMAs
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% by Dec. 2018 for the identified Aerodromes/TMAs



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

The progress for B0-CCO is acceptable (with approximately 36% implementation).

B0-CCO Status of implementation in the MID Region



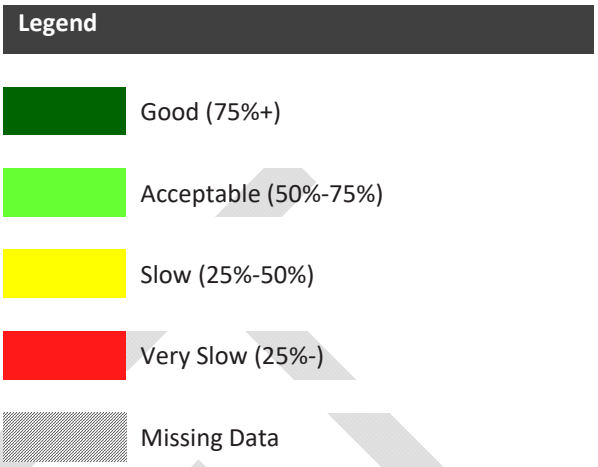
3. ASBU BLOCK 0 IMPLEMENTATION OUTLOOK FOR 2020

3.1 Status of Implementation-2020

This section consolidates the outlook of the Block 0 Modules implementation in the MID States, by 2020. The table below presents the status of implementation of the 18 ASBU Block 0 Modules foreseen to be achieved by the end of 2020, in accordance with the planning dates reported by States in the ICAO MID Region. This would provide a good basis/prerequisite for the planning of ASBU Block 1 implementation (2019-2025).

Detailed status of implementation of the 18 ASBU Block 0 Modules foreseen to be achieved by the end of 2020, for each State is provided at **Appendix B**.

The following color scheme is used for the projection of the outlook status:



Module	Status of implementation December 2016 (approximate rate)	Status of implementation December 2017 (approximate rate)	Projected Status of implementation by 2020* (approximate rate)
B0-APTA	44%	52%	**96%**
B0-WAKE	(Priority 2)	(Priority 2)	**71%**
B0-RSEQ	(Priority 2)	(Priority 2)	**55%**
B0-SURF	48%	50%	**67%**
B0-ACDM	0%	23%	**50%**
B0-FICE	56%	58%	**83%**
B0-DATM	62%	63%	**87%**
B0-AMET	67%	73%	**92%**
B0-FRTO	43%	45%	**71%**
B0-NOPS	(Priority 2)	(Priority 2)	**46%**
B0-ASUR	(Priority 2)	(Priority 2)	**70%**
B0-ASEP	(Priority 2)	(Priority 2)	**69%**
B0-OPFL	(Priority 2)	(Priority 2)	**60%**
B0-ACAS	73%	73%	**100%**
B0-SNET	(Priority 2)	80%	**100%**
B0-CDO	34%	47%	**67%**
B0-TBO	(Priority 2)	(Priority 2)	**44%**
B0-CCO	28%	36%	**63%**

Note – projected status for 2020 is calculated based on information received from 12 States (out of 15).

4. ENVIRONMENTAL PROTECTION

4.1 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.

4.2 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.

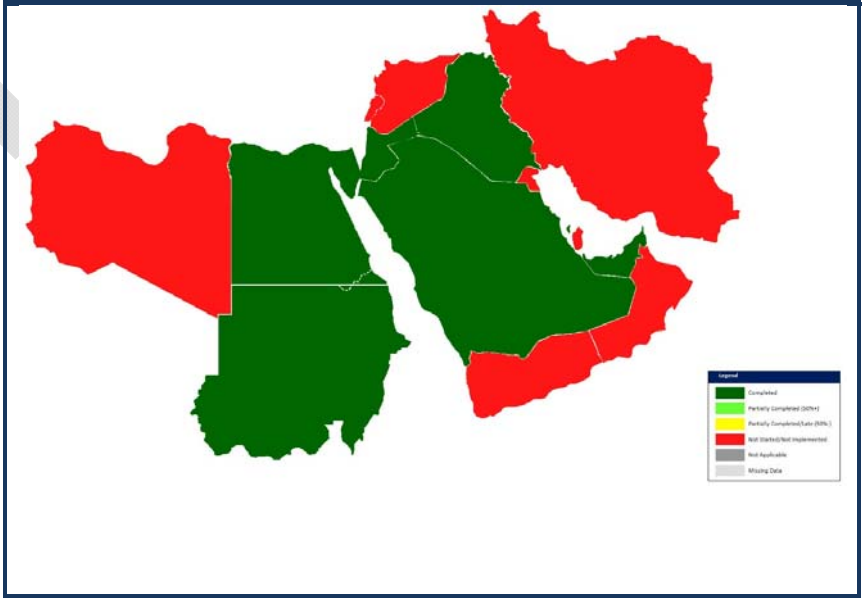
The MIDANPIRG/16 meeting (Kuwait, 13 - 16 February 2017) invited States to develop/update their Action Plans for CO2 emissions reduction and submit them to ICAO through the APER website or the ICAO MID Regional Office.

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	-
Saudi Arabia	April 2018
Sudan	January 2015
Syria	-
UAE	June 2012
Yemen	-

Status of States' Action Plans



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

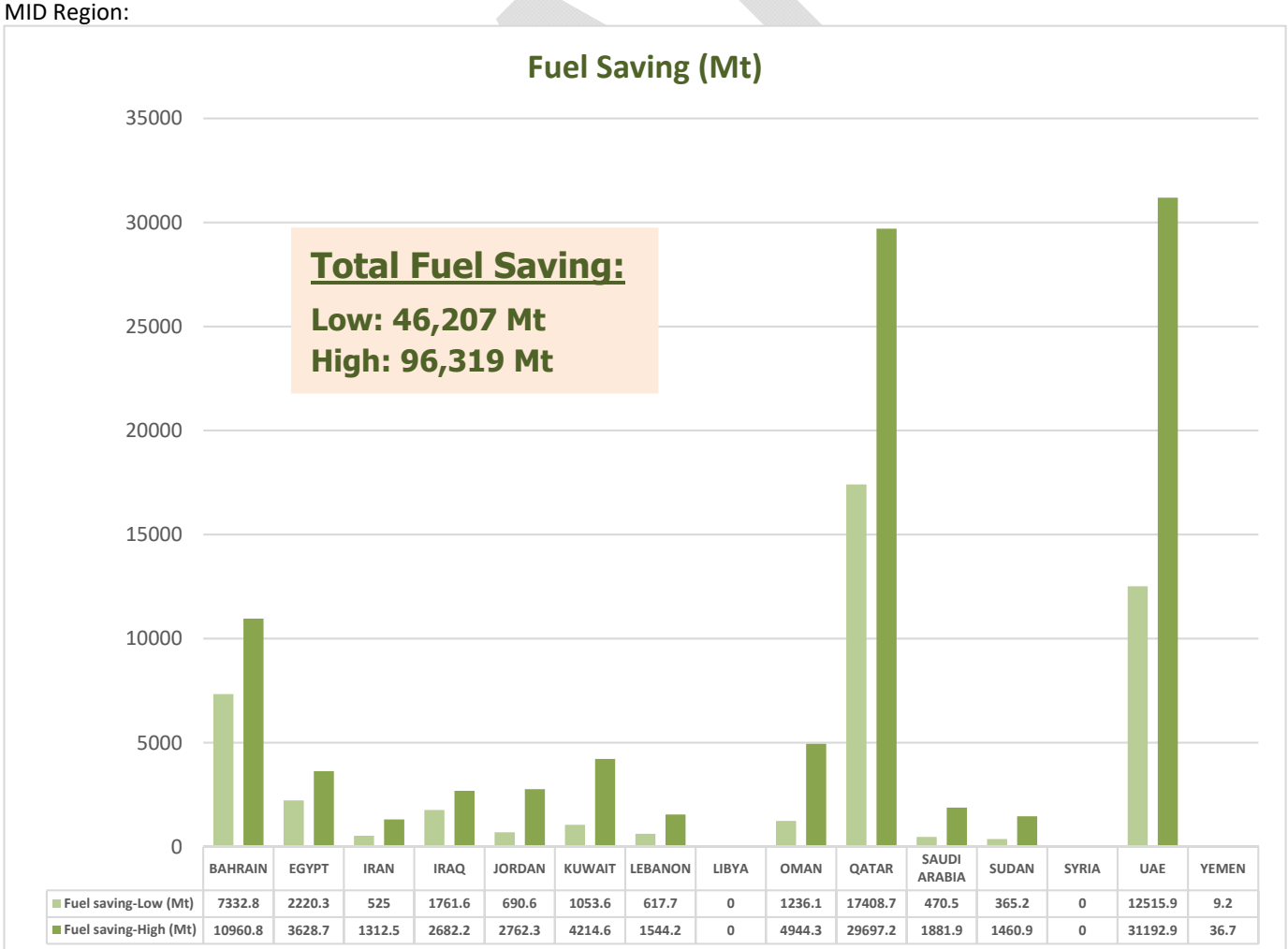
CAEP/10 conducted an assessment of the potential environmental benefits (fuel savings / CO2) for the period between the start of implementation of ASBU Block 0 modules in 2013 and the planned implementation of such modules in 2018 (end of Block 0). In order to accomplish this task, CAEP developed sets 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 46,696 to 96,808 Mt** of fuel saving in the MID Region, as a result of the implementation of the selected Block 0 Modules (APTA, CDO and CCO), as shown below:



	BAHRAIN	EGYPT	IRAN	IRAQ	JORDAN	KUWAIT	LEBANON	LIBYA	OMAN	QATAR	SAUDI ARABIA	SUDAN	SYRIA	UAE	YEMEN
Fuel saving-Low (Mt)	7332.8	2220.3	525	1761.6	690.6	1053.6	617.7	0	1236.1	17408.7	470.5	365.2	0	12515.9	9.2
Fuel saving-High (Mt)	10960.8	3628.7	1312.5	2682.2	2762.3	4214.6	1544.2	0	4944.3	29697.2	1881.9	1460.9	0	31192.9	36.7

5. SUCCESS STORIES/BEST PRACTICES

5.1 NCLB ACTIVITIES IN THE MID REGION

I. Introduction

The ICAO Council identified that there is a large discrepancy among States in the implementation of ICAO Standards and Recommended Practices (SARPs). As a result, the ICAO "No Country Left Behind" (NCLB) Campaign was established by the Council to help ensure that SARPs implementation is better harmonized globally. To avoid this gap, ICAO should focus its activities on States lacking fundamental oversight capabilities for effective implementation of ICAO SARPs, particularly in the priority areas of safety, air navigation and efficiency, and security. Therefore, particular attention should be given to the assistance of those States with a higher safety and security risk.

In accordance with Assembly Resolution A39-23 "No Country Left Behind" (NCLB) Initiative, States should effectively implement ICAO's Standards and Recommended Practices (SARPs) and policies so that all States have safe, secure, efficient, economically viable and environmentally sound air transport systems, which support sustainable development and socio-economic prosperity.

At the Regional Level; the MID Region NCLB Strategy supports the implementation of the Global Aviation Safety Plan (GASP) and its Roadmap as the basis to develop action plans that define the specific activities, which should take place in order to improve safety at the regional and national levels.

The MID Region NCLB Strategy is complemented by the MID Region NCLB Implementation Plan as a companion document. This Plan is a living document used for recording the NCLB activities in the MID Region (general and State-by-State), including the monitoring of the States' NCLB Plan of Actions and States/Stakeholders' contributions to support the NCLB initiative.

The Fourth meeting of the Directors General of Civil Aviation – Middle East Region (DGCA-MID/4), which was held in Muscat, Oman from 17 to 19 October 2017, through DGCA-MID/4 Conclusion 4/1, endorsed the NCLB Declaration (Muscat Declaration) in support of the ICAO NCLB Initiative; and invited States and Stakeholders to support the implementation of the MID Region NCLB Strategy.

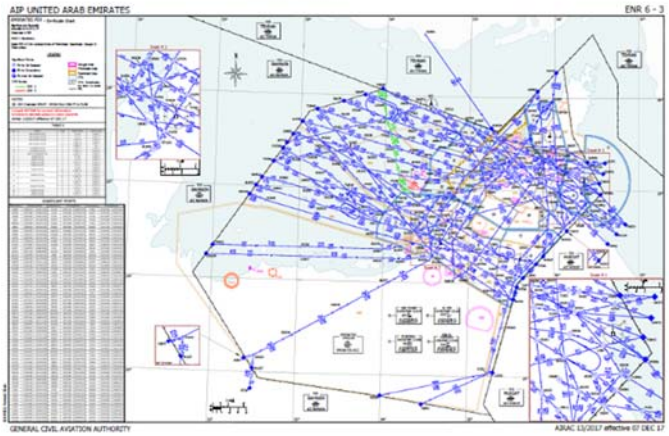
It is to be highlighted that Kingdom of Saudi Arabia has kindly provided 400 K US$ to support ICAO MID NCLB activities; and UAE provided 50 K US$ to support the establishment of the MID Flight Procedure Programme (MID FPP). Other States and stakeholders, such as Egypt, Iran and EASA provided in-kind support to some MID States related to aviation safety and security, under the MID Region NCLB framework.

II. MID NCLB Activities related to Air Navigation

- 10 NCLB assistance missions in 2016 and 7 in 2017 (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Sudan)
- 6 NCLB Seminars/Workshops in 2016 and 6 in 2017
- 1 ATM Inspectors Course (GSI-ANS/ATM)

5.2 UNITED ARAB EMIRATES: AIRSPACE RESTRUCTURING PROJECT – INTEGRATION & IMPLEMENTATION PHASE

On December 7th 2017, the General Civil Aviation Authority (GCAA) completed the implementation of the UAE Airspace Restructuring Project – Integration & Implementation (UAE ARP3). This airspace change saw the Emirates Flight Information Region (FIR) transformed into an airspace structure completely based on Performance Based Navigation (PBN) with a Navigation Specification of RNAV-1 (GNSS).



UAE ARP (Integration & Implementation) was the culmination of years of extensive analysis, development, collaboration and cooperation across the UAE Aviation Community including the GCAA Sheikh Zayed Air Navigation Centre (SZC), Dubai Air Navigation Services, Abu Dhabi Airports Company, Ras Al Khaimah Department of Civil Aviation, Sharjah Department of Civil Aviation, Fujairah Department of Civil Aviation as well as more than twenty further aviation stakeholders.

The UAE ARP (Integration & Implementation) was designed to meet multiple objectives, all of which were achieved in line with global best practices. Primarily the airspace change was designed to increase UAE Airspace capacity to meet the forecasted air traffic demand for 2020, as well as increased access to all UAE airports, improve efficiency for both aviation system customers and Air Navigation Service Providers (ANSP) and reduce the environmental impact of the increasing traffic through more effective Air Traffic Management operations.

UAE ARP3 Facts:

- Capability to safely meet capacity requirements for the forecasted 2040 air traffic demand through the UAE ARP3 Integrated Airspace Master Plan (IAMP).
- Annual fuel savings exceeding $15 million to the airlines customers within the first year after implementation.
- Annual environmental efficiency exceeding 100,000 Mt of CO^2, supporting a 'Greener' aviation.

- Project Implementation Duration – 18 months
- Number of project Deliverables - 50
- Number of Workshops / Meetings – over 200
- Actual Man hours for design development – over 120,000 hours
- Number of UAE Air Navigation Service Providers involved – 6
- Number of Emirates of the United Arab Emirates involved - 5
- Number of Aviation Stakeholder organizations collaboratively involved - 26
- Number of Project Representatives – over 150
- Number of Air Traffic Controllers trained for UAE ARP3 - 250

The project directly involved five of the seven Emirates within the UAE and required over 120,000 man-hours to develop the airspace design network. Multiple Fast Time and Real Time simulations in Italy, UK and in the UAE formed critical activities for the design validation and verification of the revised airspace network.

The UAE ARP (Integration & Implementation) also required over 250 Air Traffic Controllers to take simulation and theoretical training on the redesign for over two hundred Instrument Flight Procedures and thirty new airways.

In 2012, prior to the launch of the UAE ARP the GCAA, in collaboration with the local Departments of Civil Aviation and ANSPs, undertook a 'UAE Airspace Study' which, among other recommendations, identified a requirement to 'develop a comprehensive airspace design that will accommodate transition to a full PBN airspace environment to support the increasing demand' and this laid the foundations of the UAE ARP.

Accordingly, UAE ARP adopted an industry wide collaborative approach, encompassing a three phased project which kicked off in 2013. In July 2016, the ARP activated Phase 3 (Integration & Implementation) and with the support of globally recognised consultants ensured the successful transformation of the chosen conceptual designs were integrated into an implementable solution. The first iteration of the design network delivered on 7th December 2017 enabled the airspace within the Emirates FIR sufficient capacity, capability and efficiency to support the forecasted traffic growth to 2020.

Communication of such a large scale change is a vital change management activity to ensure a smooth and successful transition. UAE ARP (Integration & Implementation) undertook months of cross industry stakeholder workshops and events culminating in an awareness campaign at the Dubai Airshow between November 17-21st.

A Communication and Engagement document was also generated to ensure clear and consistent messages were relayed by all stakeholders, whilst also leaflets and briefing material generated across the six ANSPs, National carriers and IATA. AICs and NOTAMs were used to promulgate further Global awareness prior to the December 7th transition.

Implementing a new network for the entire Emirates FIR airspace change without generating disruption to the aviation customers was a major and critical challenge which required significant stakeholder collaboration. To do this, UAE ARP (Integration & Implementation) created a Transition Plan Development Team (TPDT) encompassing ANSPs, airlines, IATA, military, NCMS and other appropriate aviation stakeholders. The ultimate focus of the team was to develop a harmonised Transition Plan for all agencies involved to ensure a complete synchronised and seamless transition. One of the first hurdles for the team to overcome was as a result of the traffic patterns of the Emirates FIR and the unsuitable timing associated with the AIRAC effectiveness. Through the TPDT a bespoke collaborative solution was found to delay the 'Operational Effective' time of implementation to 03:30 UTC (07:30 UAE) and therefore not utilising the 0000UTC effective time associated with AIRAC 13/17. The rationale ensured that the major arrival flows into the UAE airfields which would be operating predominantly to old FMS network data would have landed prior to the operational airspace change. The new airspace would then become operationally effective prior to the major UAE departure flow materializing and would encompass a majority of aircraft operating to the new AIRAC 13/17 FMS network.

To ensure that a synchronised airspace transition was enabled across the six ANSPs, a Transition Team was created with representation of six Transition Coordinators (one per ANSP, with also a deputy allocation) coordinating through a Transition Manager based at SZC. These Transition Coordinators and Transition Manager operated to an Operational Transition Event Schedule, containing major 'Check-Points' confirming that each unit's activities were operating in sync, whilst also in parallel. To enable rapid decision making capability, the UAE ARP (Integration & Implementation) also formed a Transition & Contingency Cell at SZC. This cell contained PSG representation from the ANSPs, military and also representation from the UAE Airline community. The Transition & Contingency Cell was activated several hours prior to the Operational Transition of the new airspace and their role was to ensure that if any major decisions were required at either an ANSP or project level, a resolution could be sought and acted upon quickly to enable minimal disruption to the Transition Event.

As part of the Transition Plan, UAE ARP (Integration & Implementation) adopted varying Transition timelines to provide regulatory assurance that each ANSP had implemented the airspace change successfully. In preparation for the airspace implementation, the project carried out a Transition Readiness Review which was held on November 23rd. The purpose of this review was to ensure that all ANSPs had satisfied specific 'Entry Criteria' prior to the Transition Event (December 7th). In the five day build up to the Transition Event, NCMS provided a daily weather forecast for December 7th across the UAE which was disseminated to the PSG and Transition Coordinators via the Transition Manager. From December 5th, this information was also supplemented with a fog forecast for the UAE airfields.

During the Transition Event four appropriately scheduled teleconferences were also held to provide a status check on the progress of the transition to the airline community and allow an opportunity for the airlines to provide pertinent information back to the Transition Manager. A final teleconference was held at 13:30 UTC (17:30 UAE) which confirmed that each ANSP had satisfied the Transition Event 'Exit Criteria'. This information was then relayed to the PSG for their approval to exit the Transition Event. At this stage, the UAE ARP transition was transferred from the Transition Event to a 10 day Transition Period. Any observations or feedback from each of the six ANSPs or from the airline community would then be fed into a 10/30/60/90 day review, with the project then supporting a six month Post Implementation Maintenance & Support period.

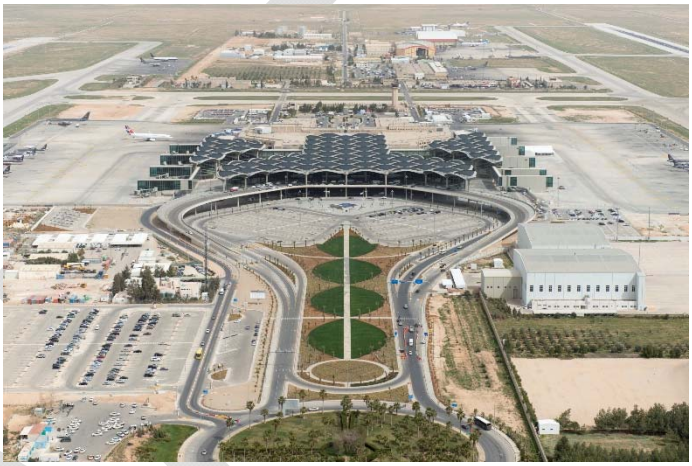
The output of the extensive planning and preparation by the TPDT in the generation of a Transition Delivery Document (TDD) and associated Transition Plans for the Transition Event ensured that on December 7th 2017, a seamless transition took place with no disruption or delay to the aviation community and no issues reported from any of the six ANSPs involved.

Through the development of an Integrated Airspace Master Plan (IAMP), the project will also create a Roadmap to future-proof the UAE's airspace network for the forecasted traffic growth until 2040. Design elements will need to incorporate such major airport expansion projects for both Dubai World Central Al Maktoum International Airport, Abu Dhabi International Airport as well as meeting the anticipated capacity increases for Dubai's Expo 2020. Moreover, it will ensure that aviation will continue to provide a vital contribution to the UAE Gross Domestic Product.

5.3 JORDAN: AIRPORT CARBON ACCREDITATION PROGRAM IN AMMAN/QUEEN ALIA INTERNATIONAL AIRPORT

Amman/Queen Alia International Airport (QAIA) completed the requirements of the final level (level 3+ Neutrality) of the Airport Carbon Accreditation (ACA) program, which is a carbon management program developed by Airport Council International (ACI). QAIA is the first airport in the Middle East to achieve this accomplishment.

QAIA has demonstrated commitment to the aviation environmental protection, by implementing a comprehensive Environment Management Plan (EMP), which was developed to assess the probability of a multitude of risks, related to airport operations and activities, on the surrounding environment. This plan is reviewed annually to comply with the latest changes in national and international standards and requirements. QAIA's EMP is developed to minimize and control sources of environmental pollution such as carbon emissions, in addition to the monitoring of several environmental elements, through an integrated waste management program, in addition to air quality, water and biodiversity management, as well as noise control.



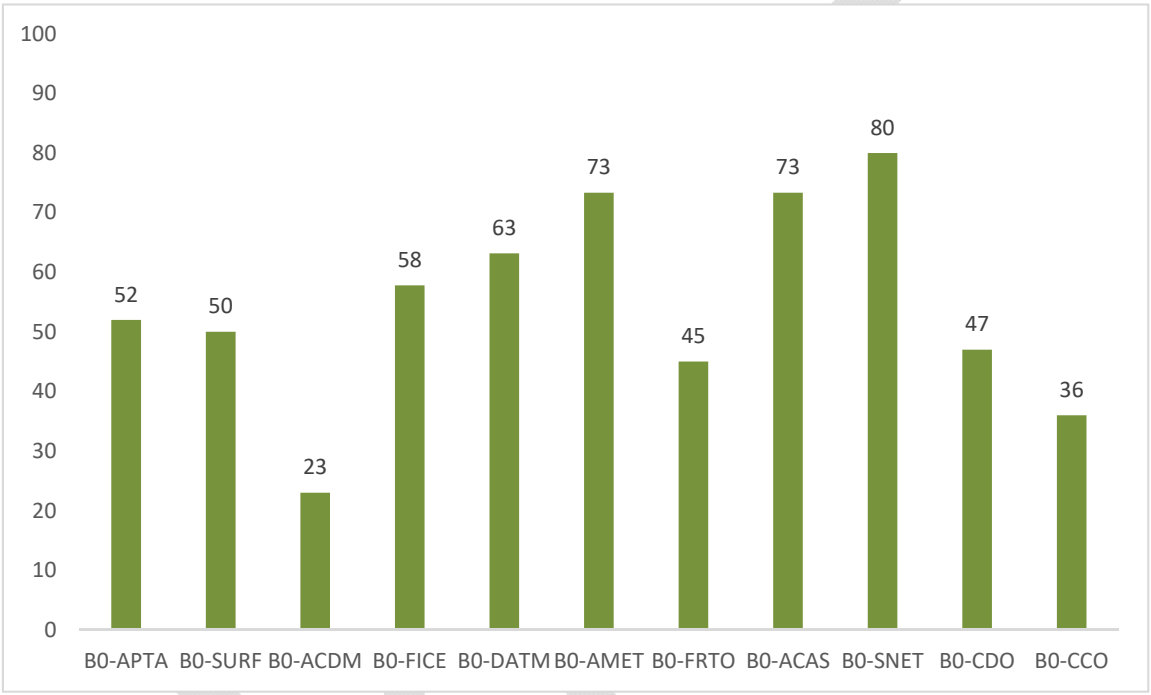
QAIA completed the first level of ACA Programme (Mapping) in March 2013, helping to determine the sources of harmful emissions on Airport grounds. This was followed in March 2015, by reaching level 2 (Reduction), as a result of the continuous efforts to reduce Carbon emissions, making QAIA the first airport to achieve this level in the region.

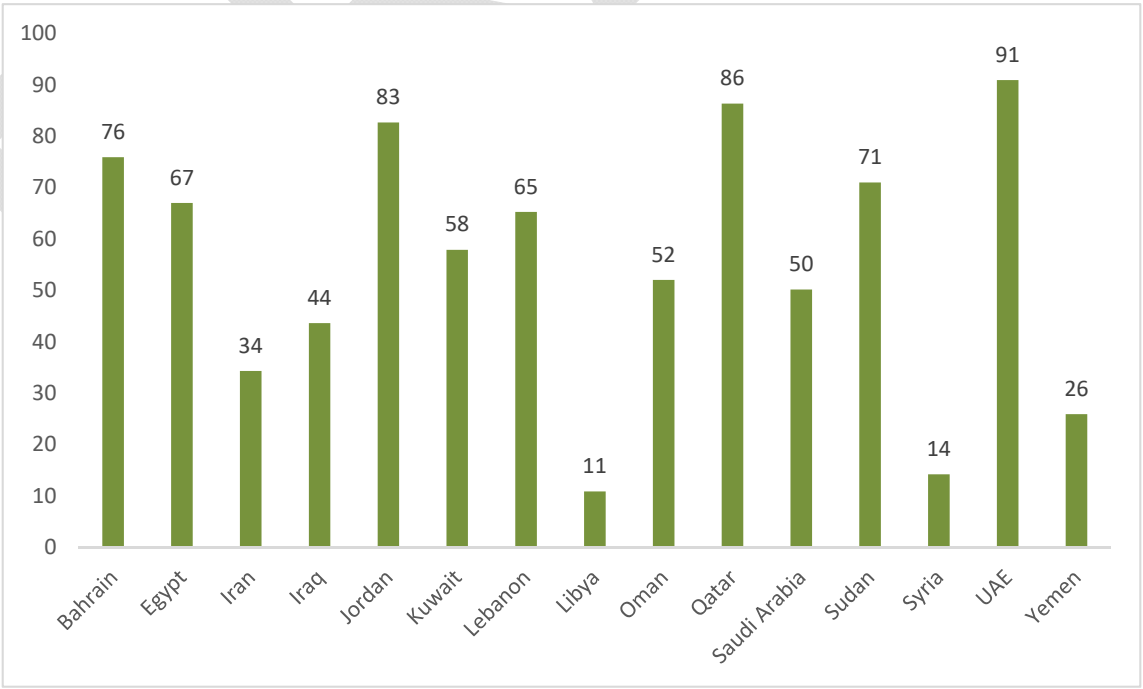
6. CONCLUSION

The progress for the implementation of some priority 1 Block0 Modules in the MID Region has been acceptable/good; such as B0-ACAS, B0-AMET and B0-DATM. 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, Egypt, Jordan, Kuwait, Qatar, Saudi Arabia and UAE made a good progress in the implementation of the priority 1 ASBU Block 0 Modules.

Looking into the States' plans for 2020 (outlook), the focus/priority of States is to complete the implementation of B0-APTA, B0-FICE, B0-DATM, B0-AMET, B0-CCO and B0-CDO.





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

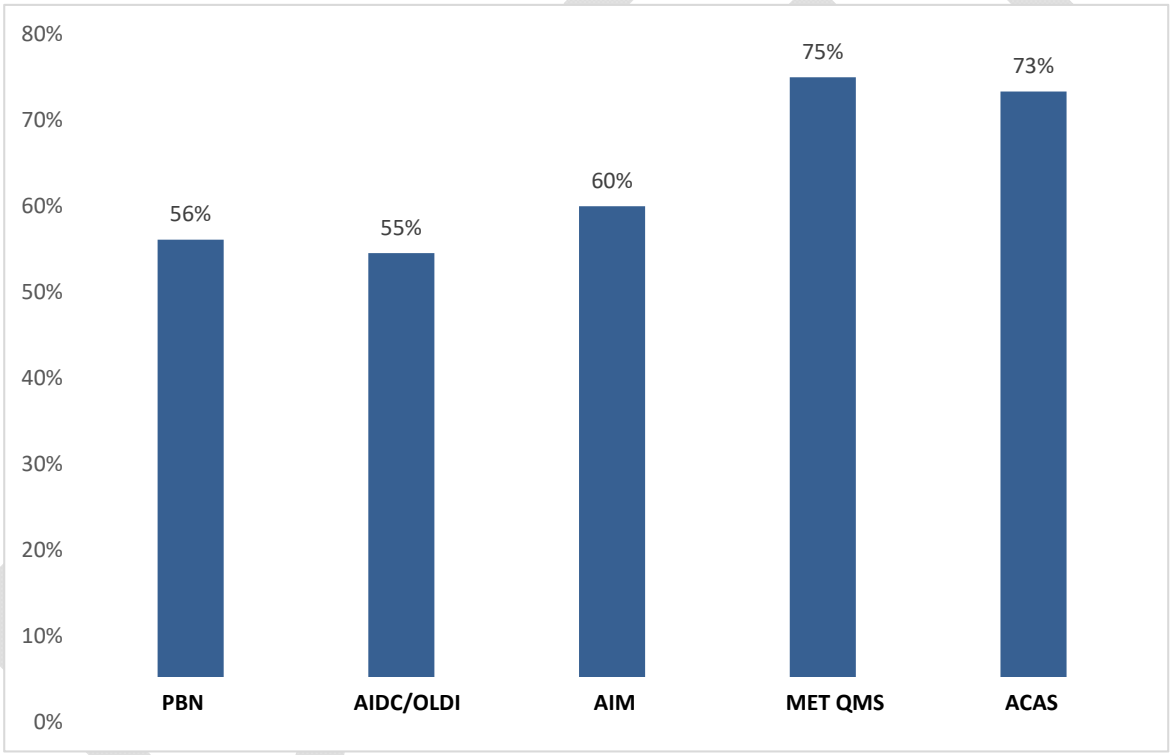
2- Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration: 11 States to implement AIDC/OLDI between their ACCs and at least one adjacent ACC by 2017

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

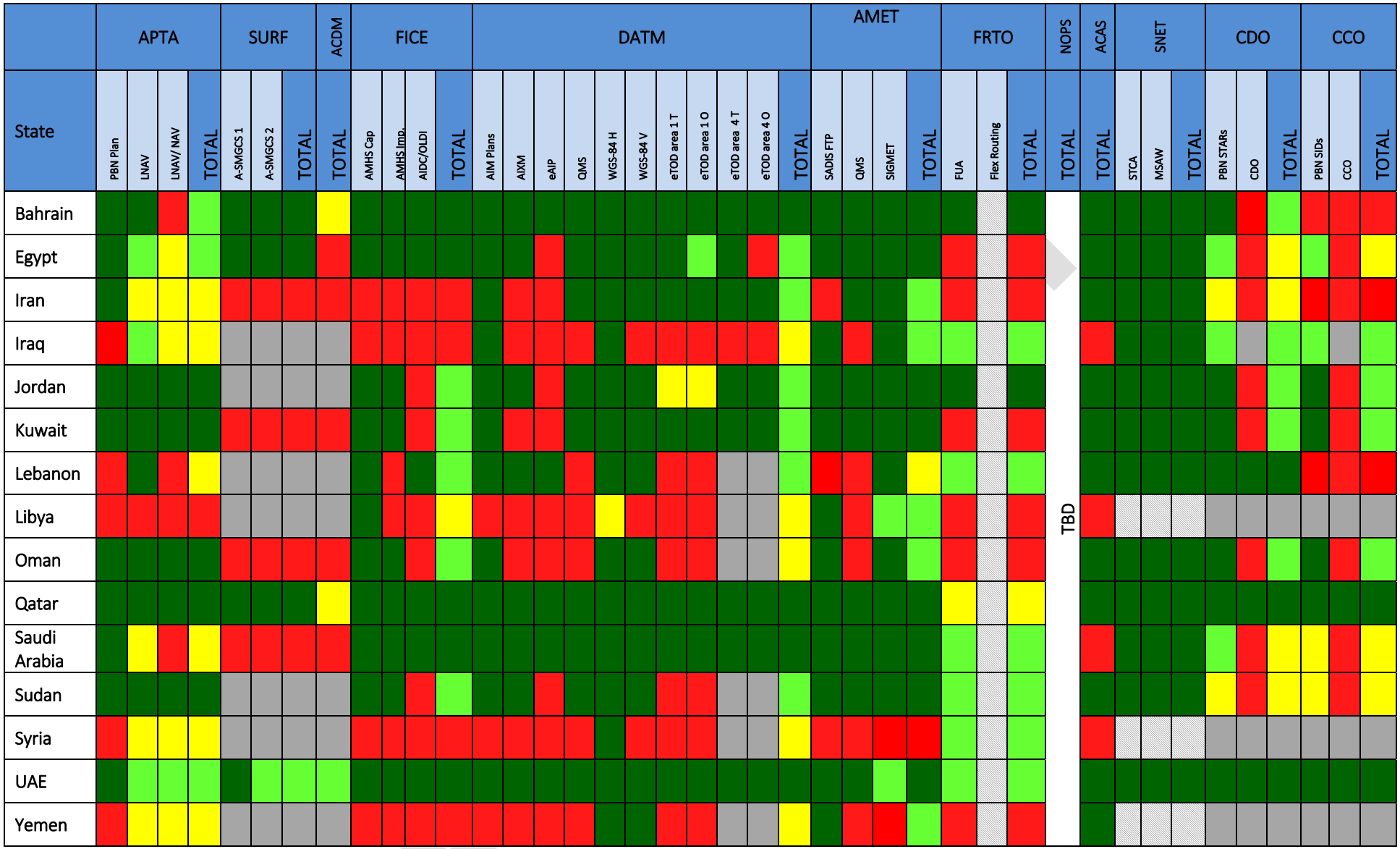
4- Meteorological information supporting enhanced operational efficiency and safety: 12 States to complete the implementation of QMS for MET by 2017

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:



APPENDIX A: STATUS OF ASBU BLOCK 0 MODULES



APPENDIX B: ASBU BLOCK 0 STATUS OF IMPLEMENTATION OUTLOOK 2020

State	B0-APTA	B0-WAKE	B0-RSEQ	B0-SURF	B0-ACDM	B0-FICE	B0-DATM	B0-AMET	B0-FRTO	B0-NOPS	B0-ASUR	B0-ASEP	B0-OPFL	B0-ACAS	B0-SNET	B0-CDO	B0-TBO	B0-CCO
Bahrain	FI	N/A	PI	FI	PI	FI	FI	FI	PI	PI	FI	PI	N/A	FI	FI	FI	PI	FI
Egypt	FI	FI	N/A	FI	PI	FI	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	PI	N/A	PI
Iran	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	N/A	FI
Iraq	PI	N/A	N/A	N/A	NI	FI	FI	PI	PI	NI	NI	NI	N/A	FI	FI	NI	NI	NI
Jordan	FI	N/A	NI	NI	PI	PI	PI	FI	NI	NI	FI	N/A	N/A	FI	FI	PI	NI	PI
Kuwait	FI	PI	PI	PI	PI	PI	PI	FI	PI	PI	PI	PI	PI	FI	FI	PI	PI	PI
Lebanon	FI	N/A	NI	N/A	PI	PI	FI	PI	PI	NI	NI	FI	NI	FI	FI	PI	PI	NI
Libya				N/A														
Oman	FI	FI	FI	PI	PI	FI	FI	FI	FI	FI	PI	FI	N/A	FI	FI	PI	N/A	PI
Qatar	FI	NI	FI	FI	PI	FI	FI	FI	FI	PI	FI	N/A	N/A	FI	FI	FI	PI	FI
Saudi Arabia	FI	N/A	PI	PI	PI	FI	FI	FI	FI	N/A	FI	FI	FI	FI	FI	FI	FI	FI
Sudan	FI	N/A	PI	N/A	N/A	PI	PI	FI	PI	PI	PI	FI	PI	FI	FI	PI	PI	PI
Syria				N/A														
UAE	FI	FI	PI	PI	PI	FI	FI	FI	FI	PI	FI		N/A	FI	FI	FI	PI	FI
Yemen				N/A										FI				

Legend

- FI: Fully Implemented
- PI: Partially Implemented
- NI: Not Implemented
- N/A: Not Applicable
- Missing Data

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ICAO

CAPACITY & EFFICIENCY

MSG/6-WP/6
Appendix D

AIR NAVIGATION REPORT

ICAO Middle East Region

SECOND EDITION (REFERENCE PERIOD: January 2017 – June 2018)

Disclaimer

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A Coordinated Approach to Regional Air Navigation Systems Implementation

Mohamed K. Rahma
Regional Director,
ICAO Middles East Office

The air transport industry plays a major role in world economic activity. It directly and indirectly supports 67.3 million jobs by aviation worldwide, contributes over $2.7 trillion to global Gross Domestic Product (GDP), and carries over 4.1 billion passengers and 53 million tonnes of freight annually.

This is illustrated by the fact that over half of the world's 1.2 billion tourists who travelled across international borders last year were transported by air, and that air transport now carries some 35% of world trade by value. Indeed, more than 90% of cross border Business-to-Consumer (B2C) e-commerce was carried by air transport.

Middle East has been the fastest growing Region for passenger and cargo traffic since 2011. In 2016, MID air carriers recorded 11.8% growth in Revenue Passenger-Kilometers (RPKs). Although this growth has declined to 6.9% in 2017, the Region carried 14% RPK share in the year 2017.

The continuing growth of traffic in the MID Region places increased demand on airspace capacity, which necessitates an optimum utilization of the available airspace and airports.

One of the key elements to maintaining the vitality of civil aviation is to ensure safe, secure, efficient and environmentally sustainable operations at the global, regional and national levels. In this respect, ICAO works constantly to address the expectations of the aviation community in all key performance areas through the following coordinated activities:

- Policy and Standardization initiatives;
- Implementing programmes to address performance issues;
- Monitoring of key performance trends and indicators; and
- Performance Analysis.

The GANP represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/ industry agreed operational objectives.

Its structured approach, organized in blocks of upgrades in non-overlapping six-year time increments starting in 2013 and continuing through 2031 and beyond, provides a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers.

The GANP also explores the need for more integrated aviation planning at both regional and national level and addresses required solutions through the consensus-driven Aviation System Block Upgrade (ASBU) systems engineering modernization strategy.

In all of its coordinated activities, ICAO always strives to achieve a balance between the need for increased capacity and efficiency while maintaining aviation safety and the impact on climate change at an acceptable level.

The regular review of implementation progress and the analysis of potential impediments will ultimately ensure the harmonious transition from one region to another following major traffic flows, as well as ease the continuous evolution towards the GANP's performance targets.

MID Air Navigation Report is the main tool for monitoring and reporting on the status of air navigation systems implementation in the MID Region.

This second edition of the Report provides update on the status and progress of the Priority 1 ASBU Block 0 Modules within the ICAO MID Region during the reporting period of January 2017 to June 2018.

TABLE OF CONTENTS

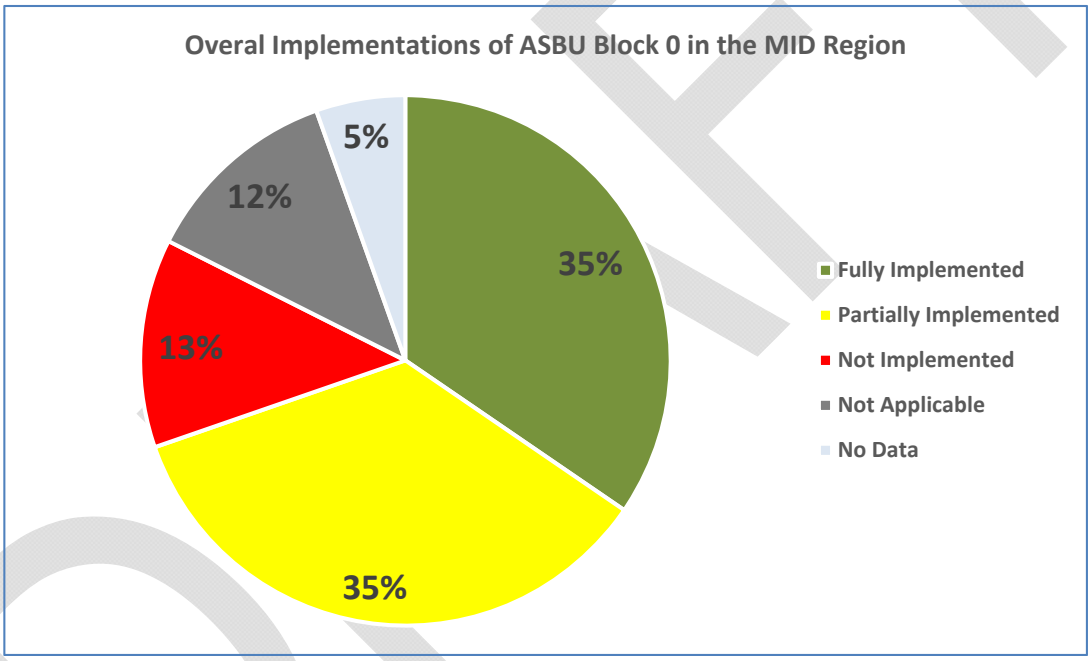
EXECUTIVE SUMMARY

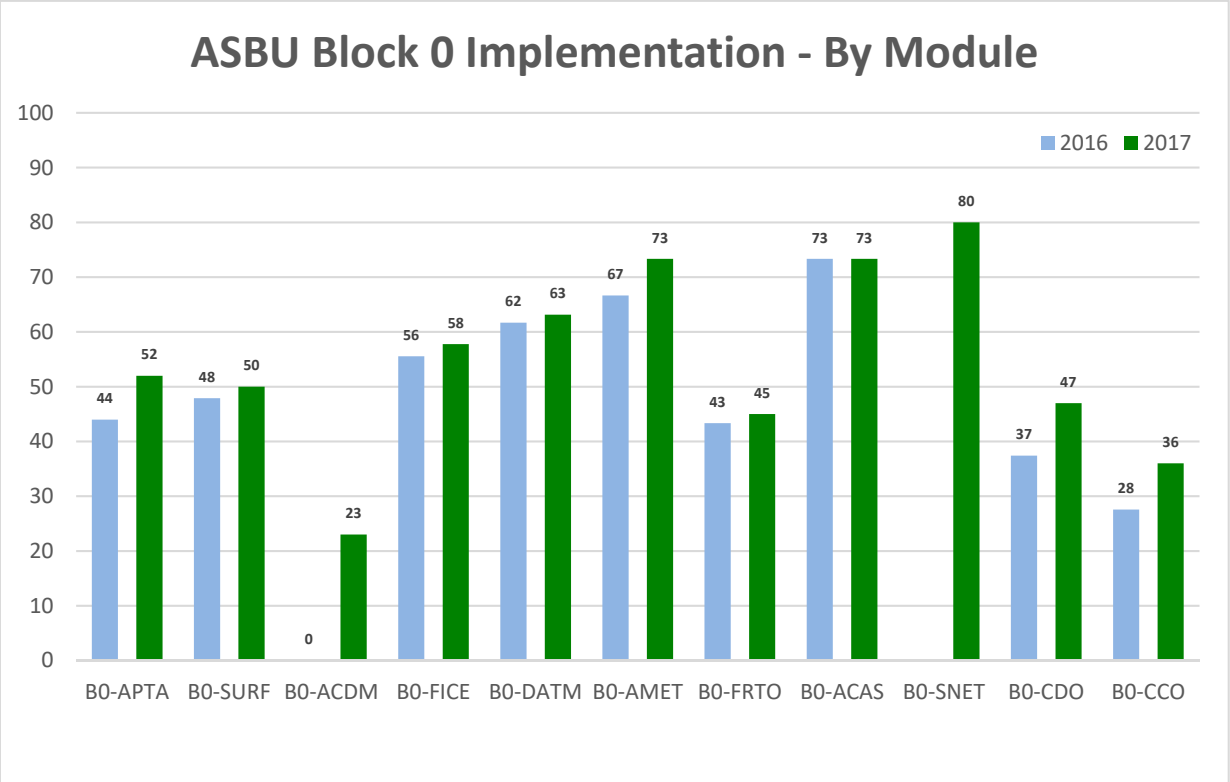
The second edition of the ICAO MID Air Navigation Report (2017-18) provides an overview of the status of implementation of the Priority 1 ASBU Block 0 Modules in the MID Region as well as the progress achieved by MID States from the first edition of the MID Air Navigation Report (2016).

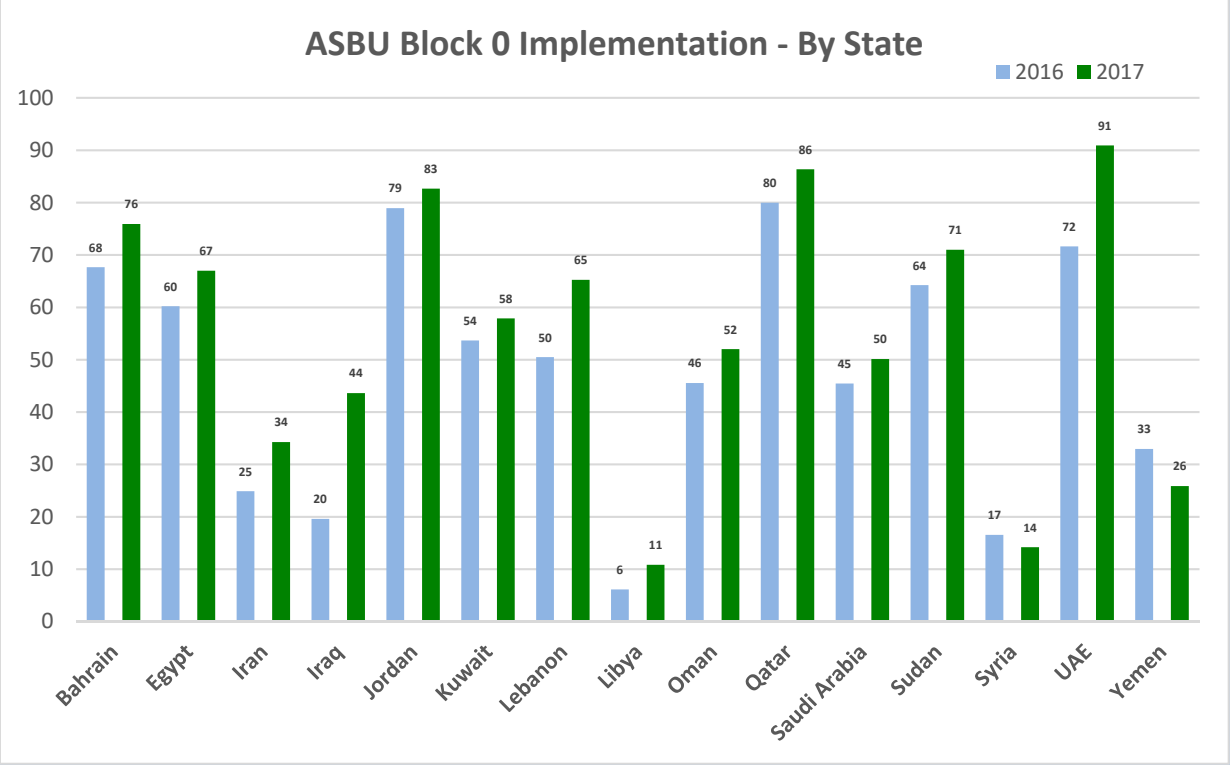
The main part of the document includes Section 2, which provides the status of implementation and the Regional Dashboard for the Priority 1 ASBU Block 0 Modules in the MID Region through different statistical maps and charts.

This Section will be complemented by providing the Outlook 2020 of the Region in Section 3 and environmental protection matters in Section 4. Section 5 provides some best practices/success stories of States in the implementation of ASBU Block 0 Modules.

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.
Note 2 – progress of States from 2016 to 2017 may be from the States implementation as well as some changes in the Modules structure (i.e. introduction of new element for B0-AMET, introduction of B0-SNET as a new Priority1 Module and definition of applicable aerodromes for B0-CDO and B0-CCO)

1. INTRODUCTION

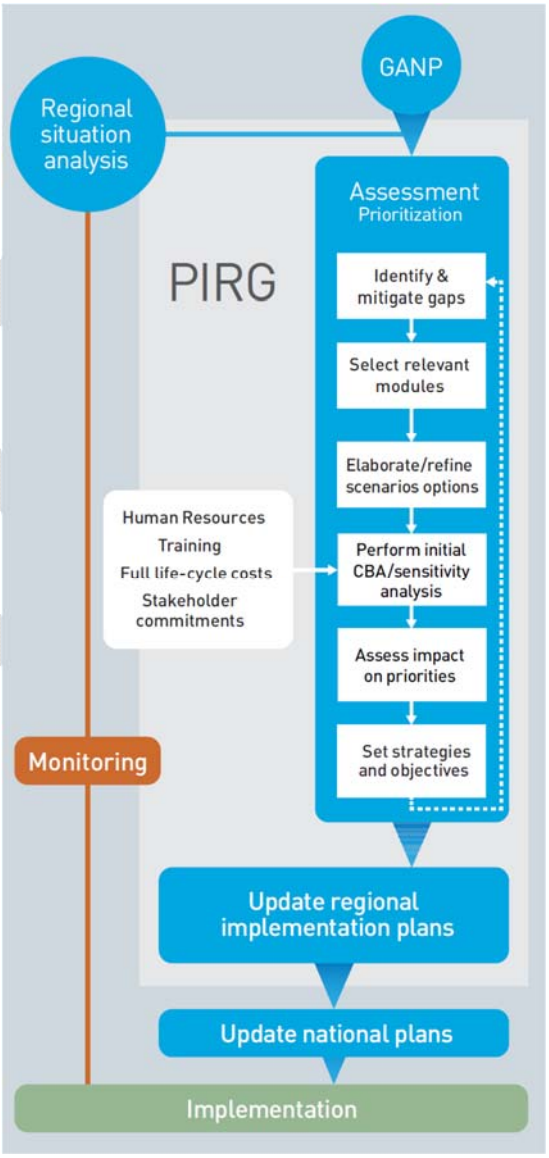
1.1 Objectives

The second 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 2017 till June 2018.

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 Fourth meeting of the MIDANPIRG Steering Group (MSG/4) which was held in Cairo, Egypt from 24 to 26

November 2014 endorsed the MID Region Air Navigation Strategy. The Strategy was later updated by MIDANPIRG/15 and 16 and published as MID Doc 002. The Strategy includes 12 priority 1 Block 0 Modules and their associated performance indicators and targets.

MIDANPIRG and its Subsidiary Bodies (in particular ANSIG) 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 2017 to June 2018.

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

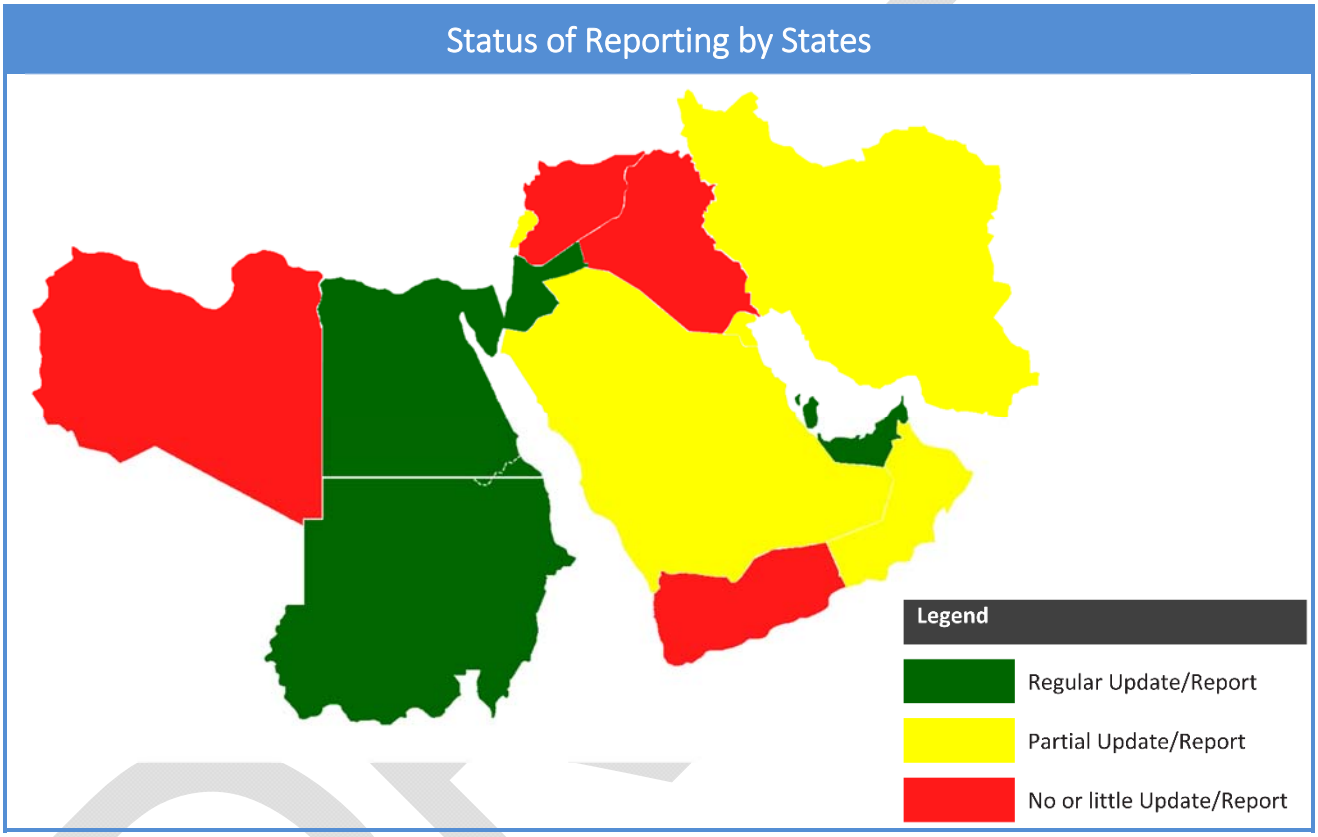
1.4 Collection of data

For the purpose of collecting necessary data for the MID Air Navigation Report-2017, a State Letter Ref.: AN 1/7 – 17/188 was issued on 2 July 2017, to follow-up on the MIDANPIRG Conclusion 16/8, which urged States to provide the relevant data necessary for the development of the MID Region Air Navigation Report-2017. However, some States did not respond to the State Letter. Status of States providing update 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).

Status of Reporting by States



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 presents the ASBU Block 0 implementation outlook for 2020 in the MID Region.

Section 4 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 5 includes some success stories related to the NCLB activities and implementation of ASBU Block 0 Modules, as well as their associated operational improvements and environmental benefits.

Section 6 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.

Appendix B illustrates the detailed status of implementation of ASBU Block 0 Modules in the MID States by 2020.

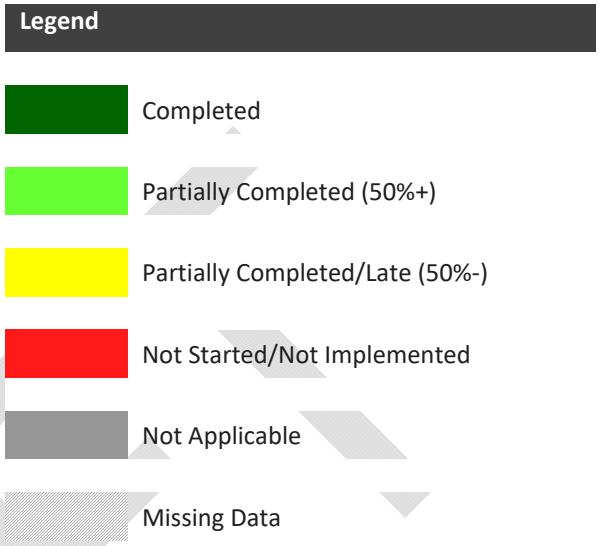
2. STATUS AND PROGRESS OF ASBU IMPLEMENTATION

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:



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/MSG as priority 1 for the MID Region (MID Doc 002 Edition February 2017, 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		

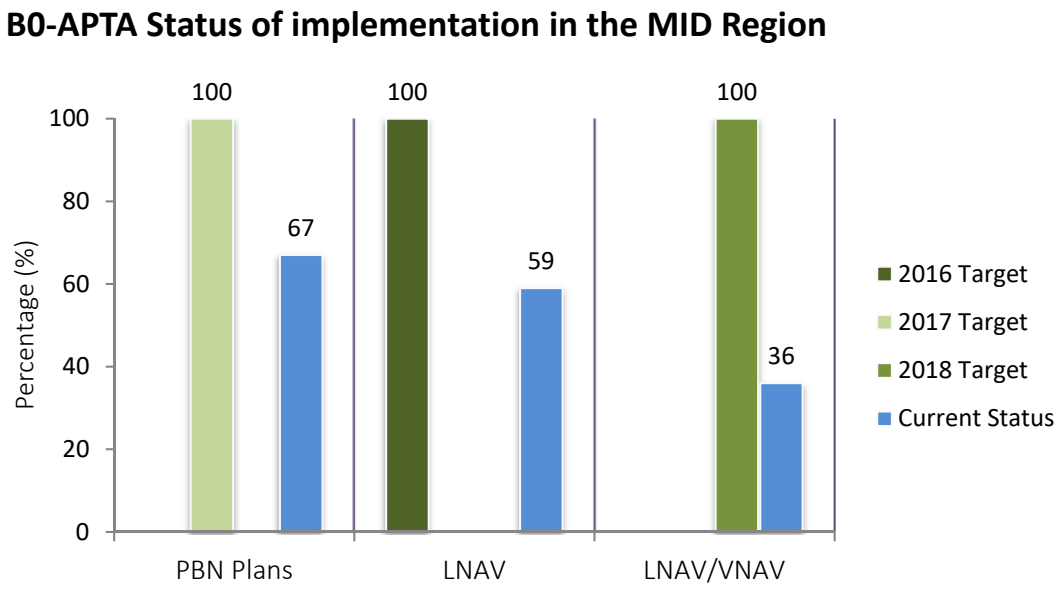
Performance Improvement Areas (PIA) 4 Efficient Flight Path – Through Trajectory-based Operations						
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	1	2014	PBN SG		
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2		ATM SG	CNS SG	
B0-CCO	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.

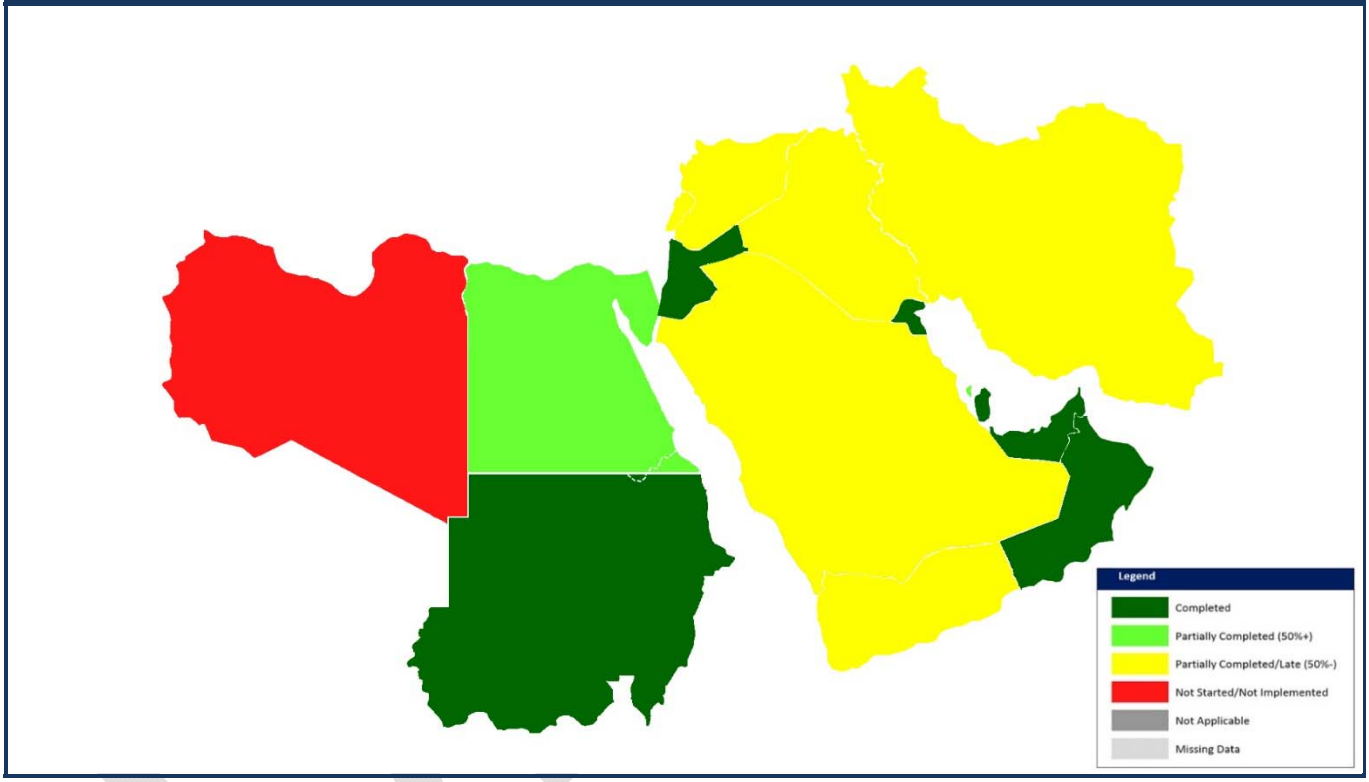
B0 – APTA: Optimization of Approach Procedures including vertical guidance			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
States' PBN Implementation Plans	All States	Indicator: % of States that provided updated PBN implementation Plan Supporting metric: Number of States that provided updated PBN implementation Plan	100% by Dec. 2018
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)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by 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)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2017



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

The progress for B0-APTA is <u>good</u> (with approximately 52% implementation).

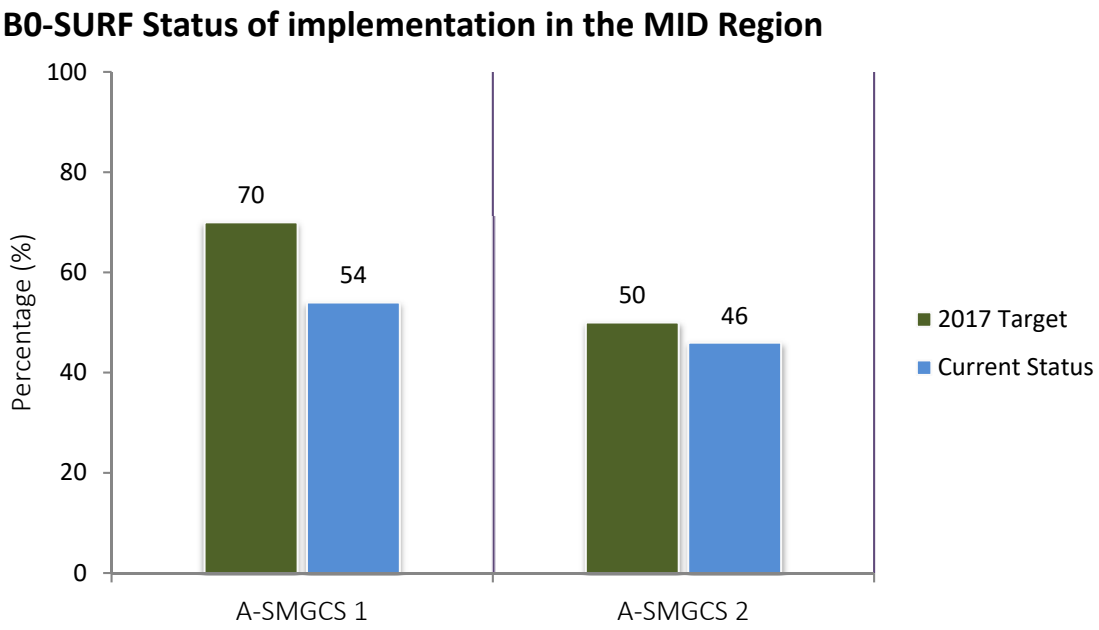
B0-APTA Status of implementation in the MID Region



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).

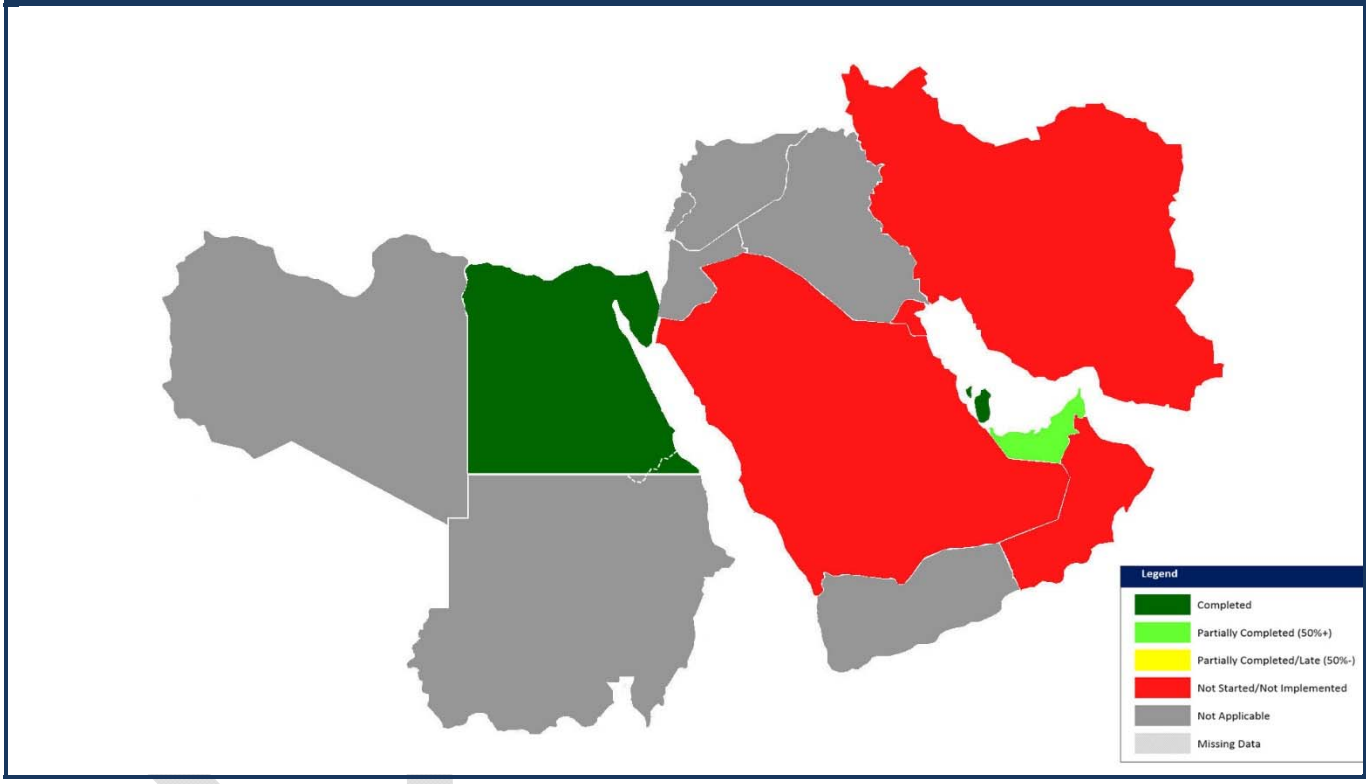
B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes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



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

The progress for B0-SURF is good (with approximately 50% implementation). B0-SURF is not applicable for 7 States.

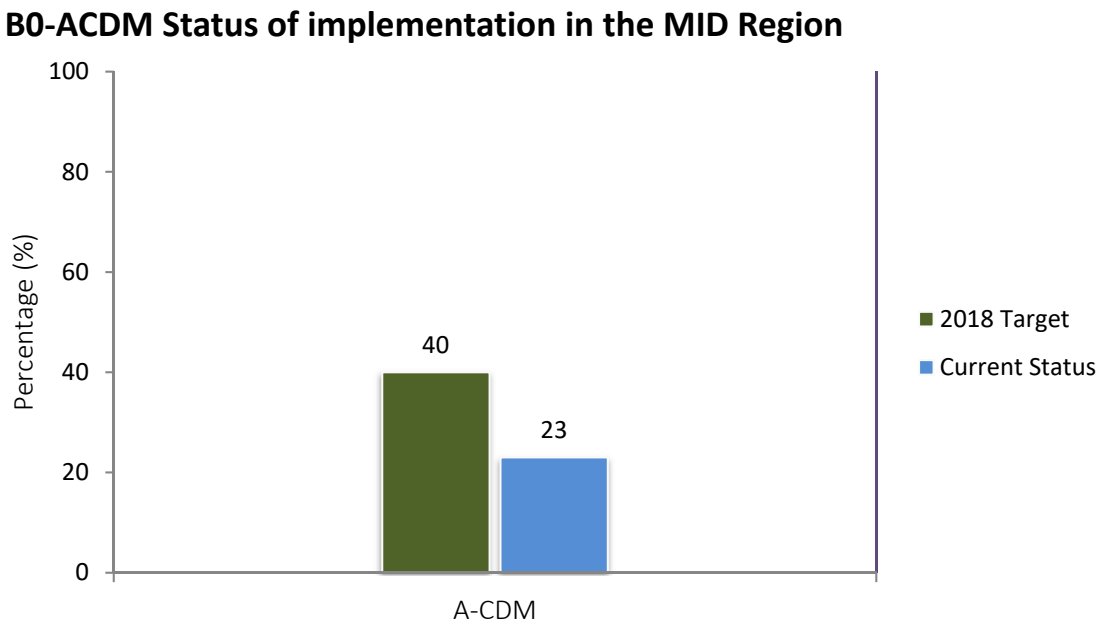
B0-SURF Status of implementation in the MID Region



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 manoeuvering areas and enhance safety, efficiency and situational awareness.

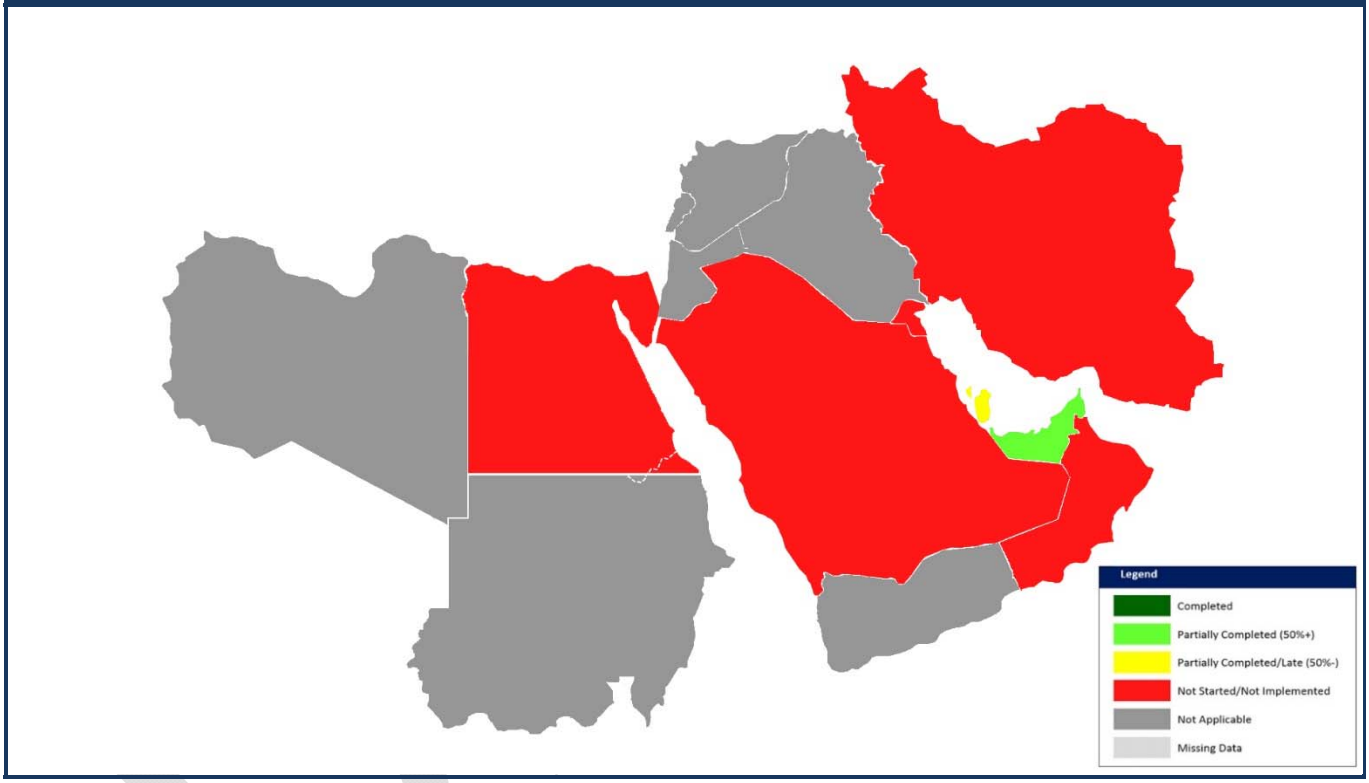
B0 – ACDM: Improved Airport Operations through Airport-CDM			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented improved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



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

The progress for B0-ACDM is very slow (with approximately 23% implementation. Nevertheless, implementation is ongoing in some States.

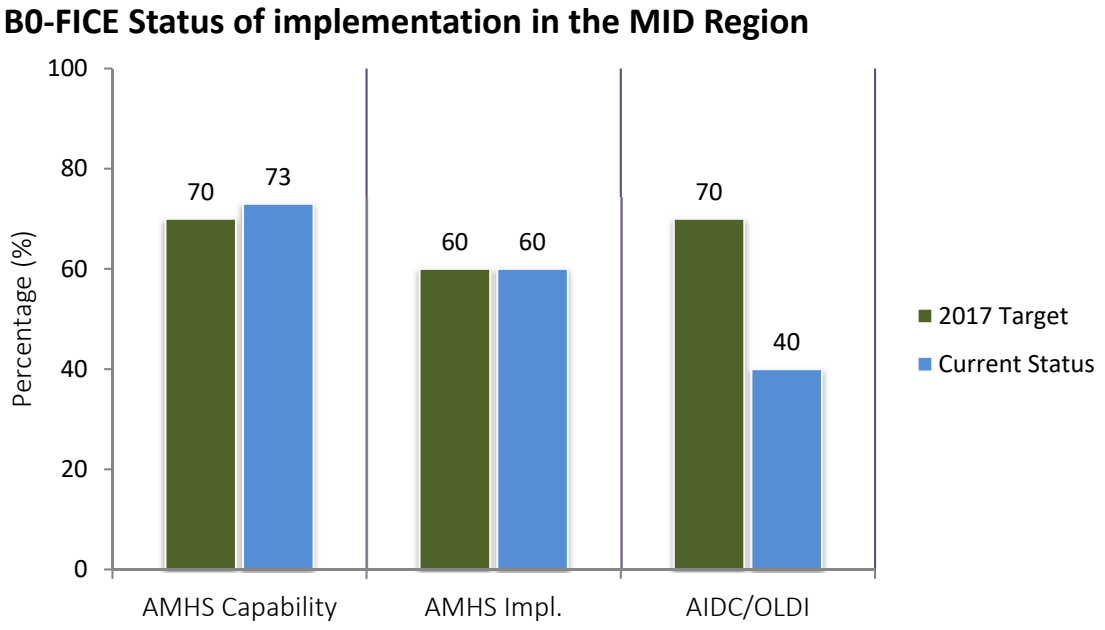
B0-ACDM Status of implementation in the MID Region



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.

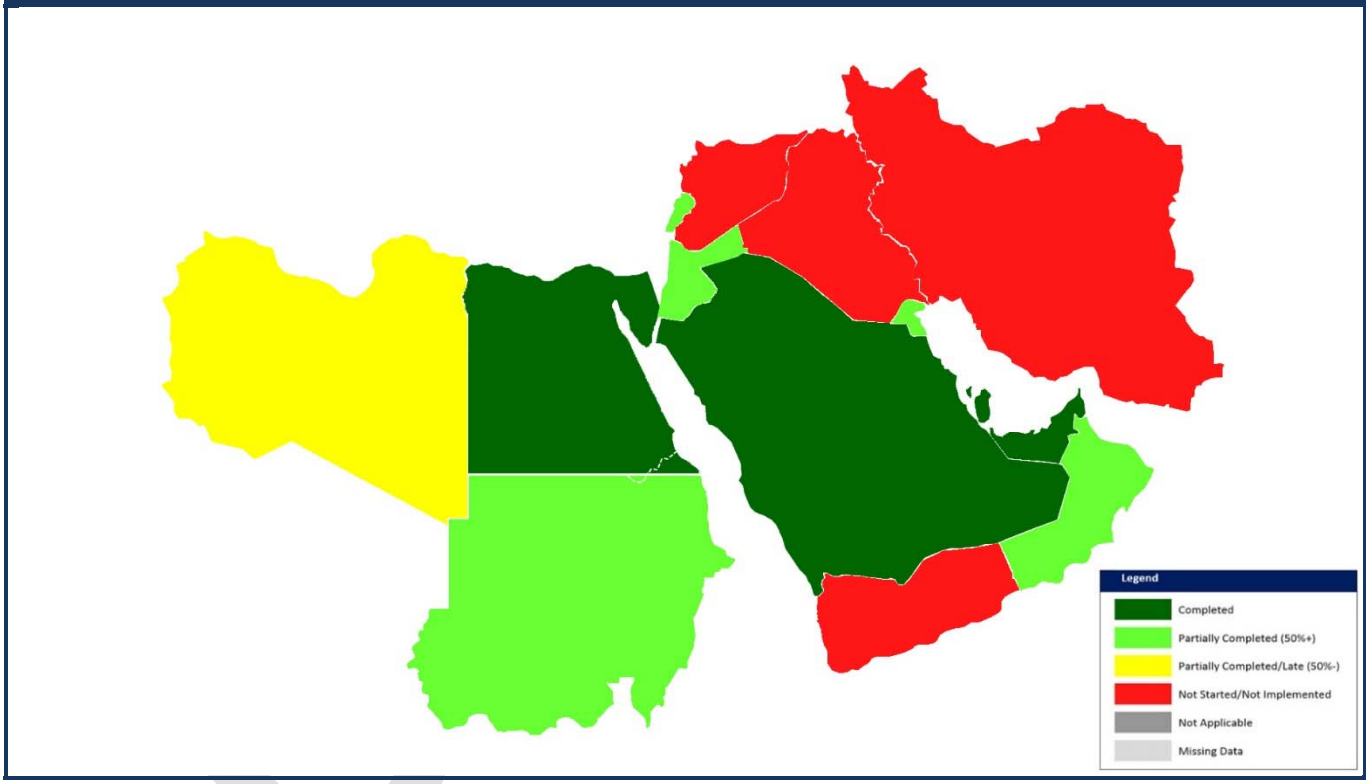
B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
AMHS capability	All States	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70% of States with AMHS capability by 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% of States with AMHS interconnected by Dec. 2017
Implementation of AIDC/OLDI between adjacent ACCs	All ACCs	Indicator: % of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with neighboring ACCs Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70% by Dec. 2017



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

The progress for B0-FICE is good (with approximately 58% implementation).

B0-FICE Status of implementation in the MID Region

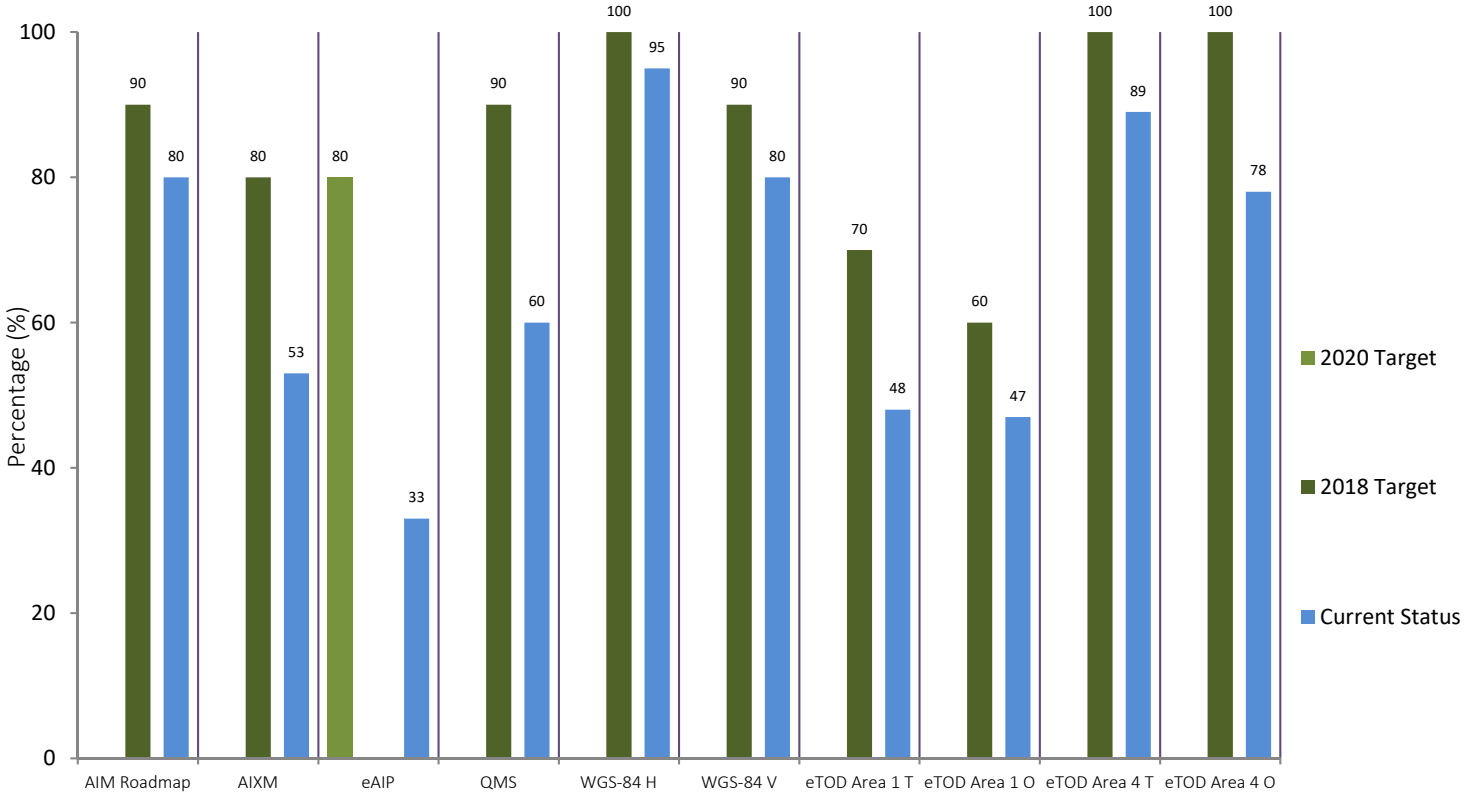


2.2.5 B0-DATM

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**
National AIM Implementation Plan/Roadmap	All States	Indicator: % of States that have National AIM Implementation Plan/Roadmap Supporting Metric: Number of States that have National AIM Implementation Plan/Roadmap	90% by Dec. 2018
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% by 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% by 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% by 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% by Dec. 2018 Vertical: 90% by Dec. 2018
eTOD	All States	Indicator: % of States that have implemented required Terrain datasets Supporting Metric: Number of States that have implemented required Terrain datasets Indicator: % of States that have implemented required Obstacle datasets Supporting Metric: Number of States that have implemented required Obstacle datasets	Area 1 : Terrain: 70% by Dec. 2018 Obstacles: 60% by Dec. 2018 Area 4: Terrain: 100% by Dec. 2018 Obstacles: 100% by Dec. 2018
Digital NOTAM*	All States	Indicator: % of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM Supporting Metric: Number of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM	90% by Dec. 2020

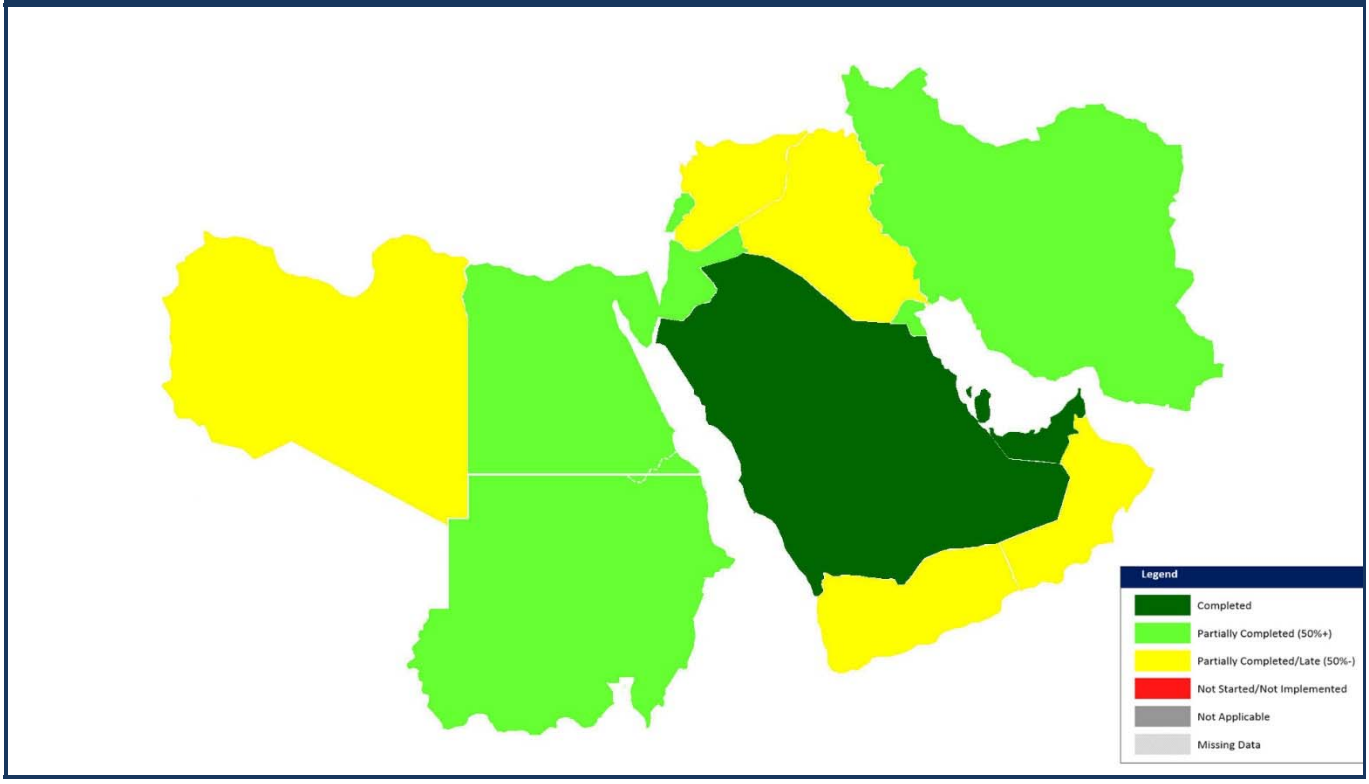
B0-DATM Status of implementation in the MID Region



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-DATM	National AIM Roadmap															
	AIXM															
	eAIP															
	QMS															
	WGS-84 – H															
	WGS-84 – V															
	eTOD Area 1 Terrain															
	eTOD Area 1 Obstacles															
	eTOD Area 4 Terrain															
	eTOD Area 4 Obstacles															

The progress for B0-DATM is good (with approximately 63% implementation). eTOD Area 4 is not applicable in 6 States.

B0-DATM Status of implementation in the MID Region



2.2.6 B0-AMET

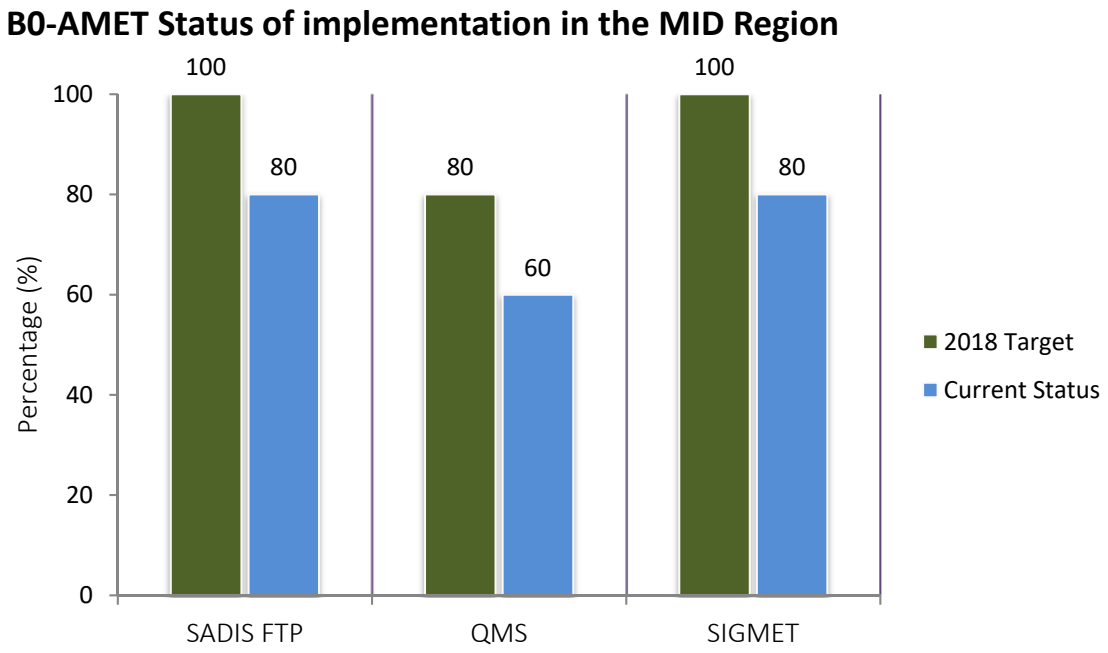
Global, regional and local meteorological information:

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.

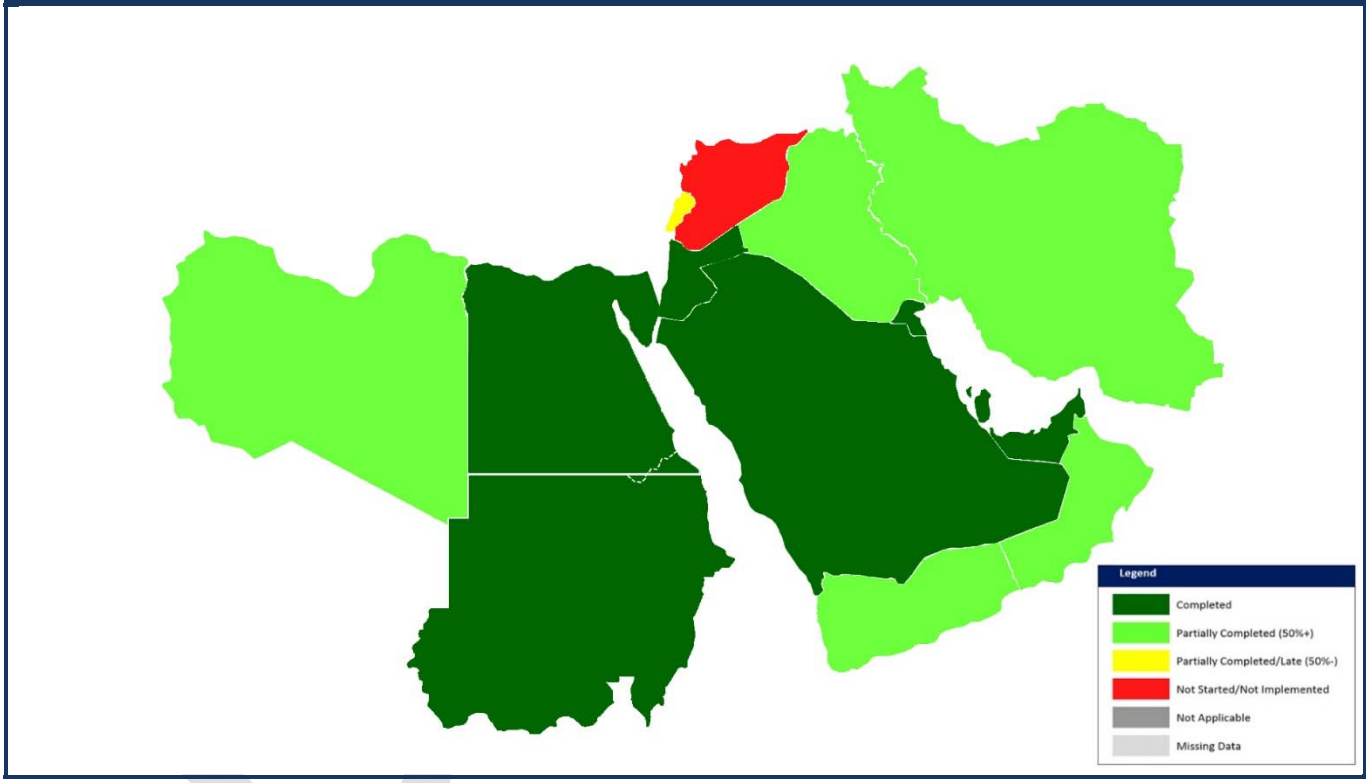
B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
SADIS FTP	All States	Indicator: % of States that have implemented SADIS FTP service Supporting Metric: Number of States that have implemented SADIS FTP service	100% by Dec. 2018
QMS	All States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	80% by Dec. 2018
SIGMET	All MWOs in MID Region	Indicator: % of FIRs in which SIGMET is implemented Supporting metric: number of FIRs SIGMET is implemented	100% by Dec. 2018



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

The progress for B0-AMET is good (with approximately 73% implementation).

B0-AMET Status of implementation in the MID Region

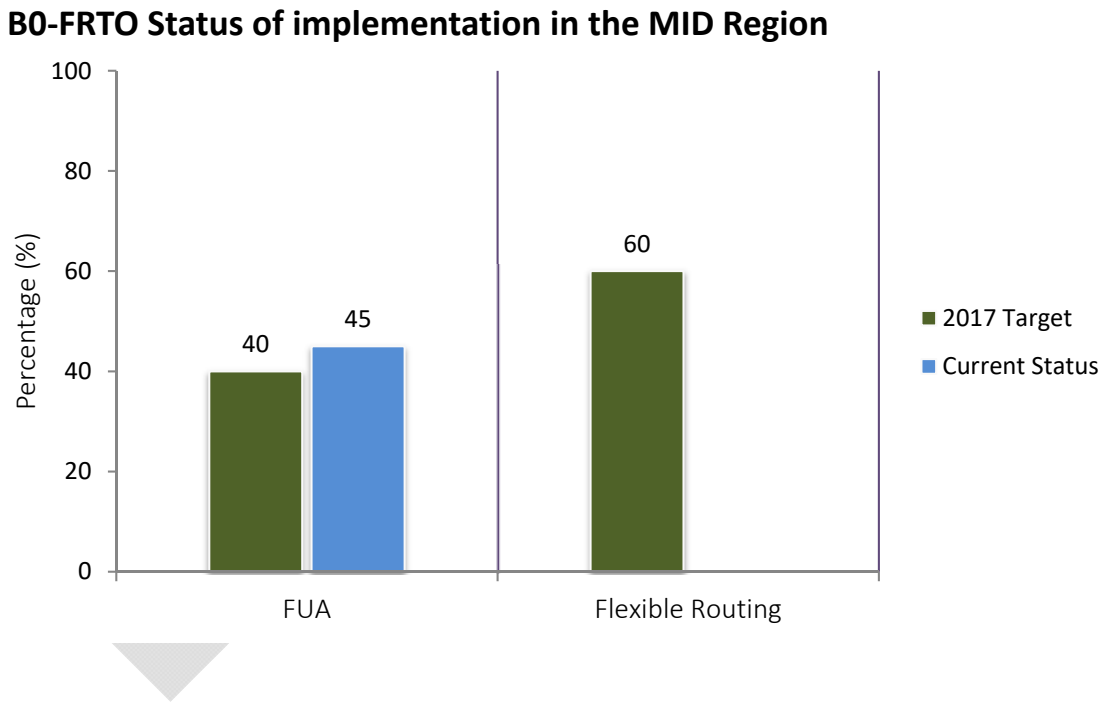


2.2.7 B0-FRTO

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**
Flexible use of airspace (FUA)	All States	Indicator: % of States that have implemented FUA Supporting metric*: number of States that have implemented FUA	40% by Dec. 2017
Flexible routing	All States	Indicator: % of required Routes that are not implemented due military restrictions (segregated areas) Supporting metric 1: total number of ATS Routes in the Mid Region Supporting metric 2*: number of required Routes that are not implemented due military restrictions (segregated areas)	60% by Dec. 2017

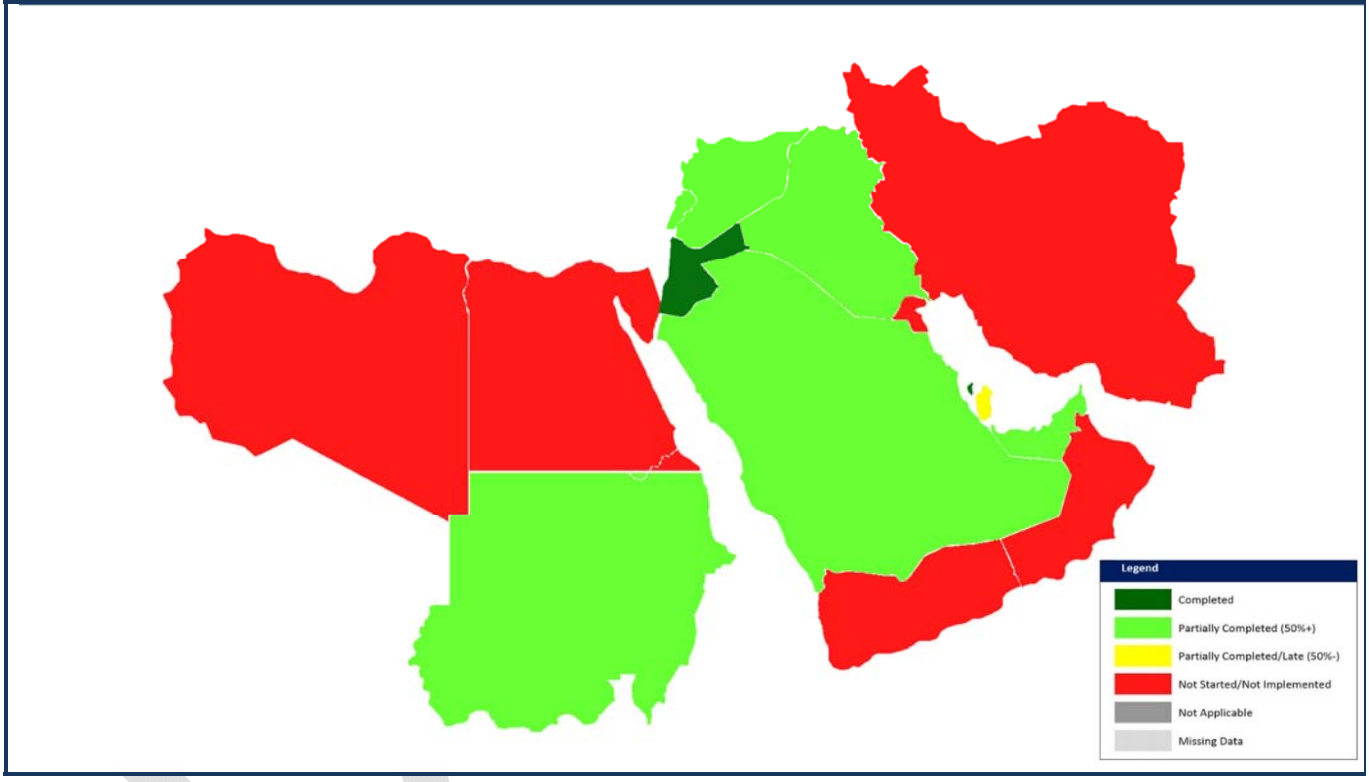
* *Implementation should be based on the published aeronautical information*



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-FRTO	Flexible use of airspace (FUA)															
	Flexible routing															

The progress for B0-FRTO (FUA) is acceptable (with approximately 45% implementation). The element "Flexible Routing" could not be monitored because of the lack of data.

B0-FRTO (FUA) Status of implementation in the MID Region



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**.**

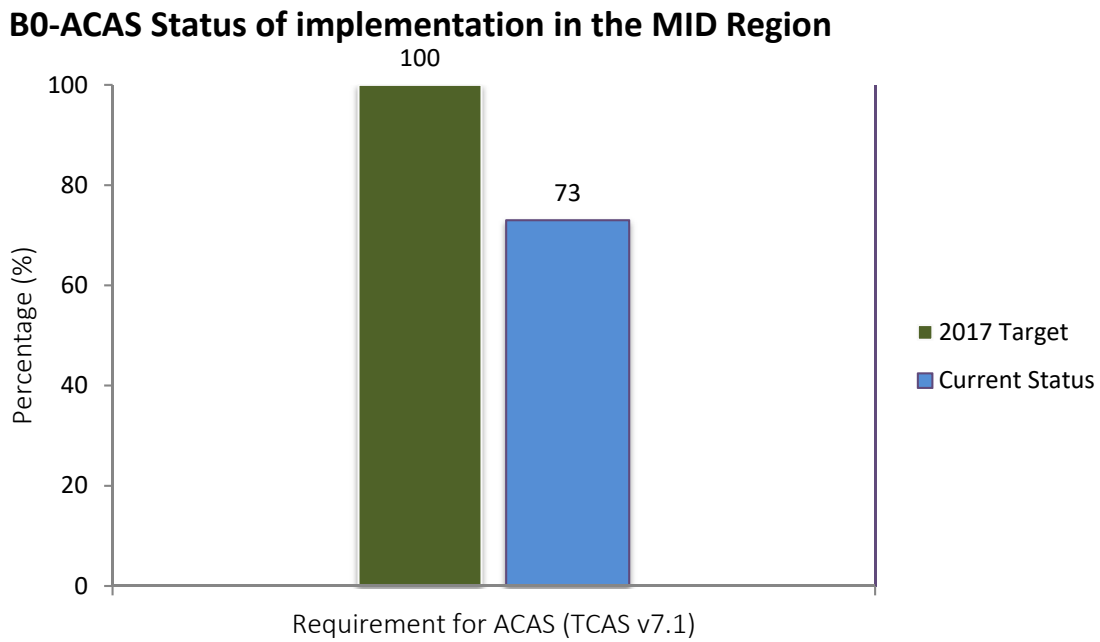
B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
ATFM Measures implemented in collaborative manner	All States	Indicator: % of States that have established a mechanism for the implementation 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% by Dec. 2017

Note – B0-NOPS could not be monitored because the elements and associated performance indicators and targets have not yet been agreed upon and are under development.

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.

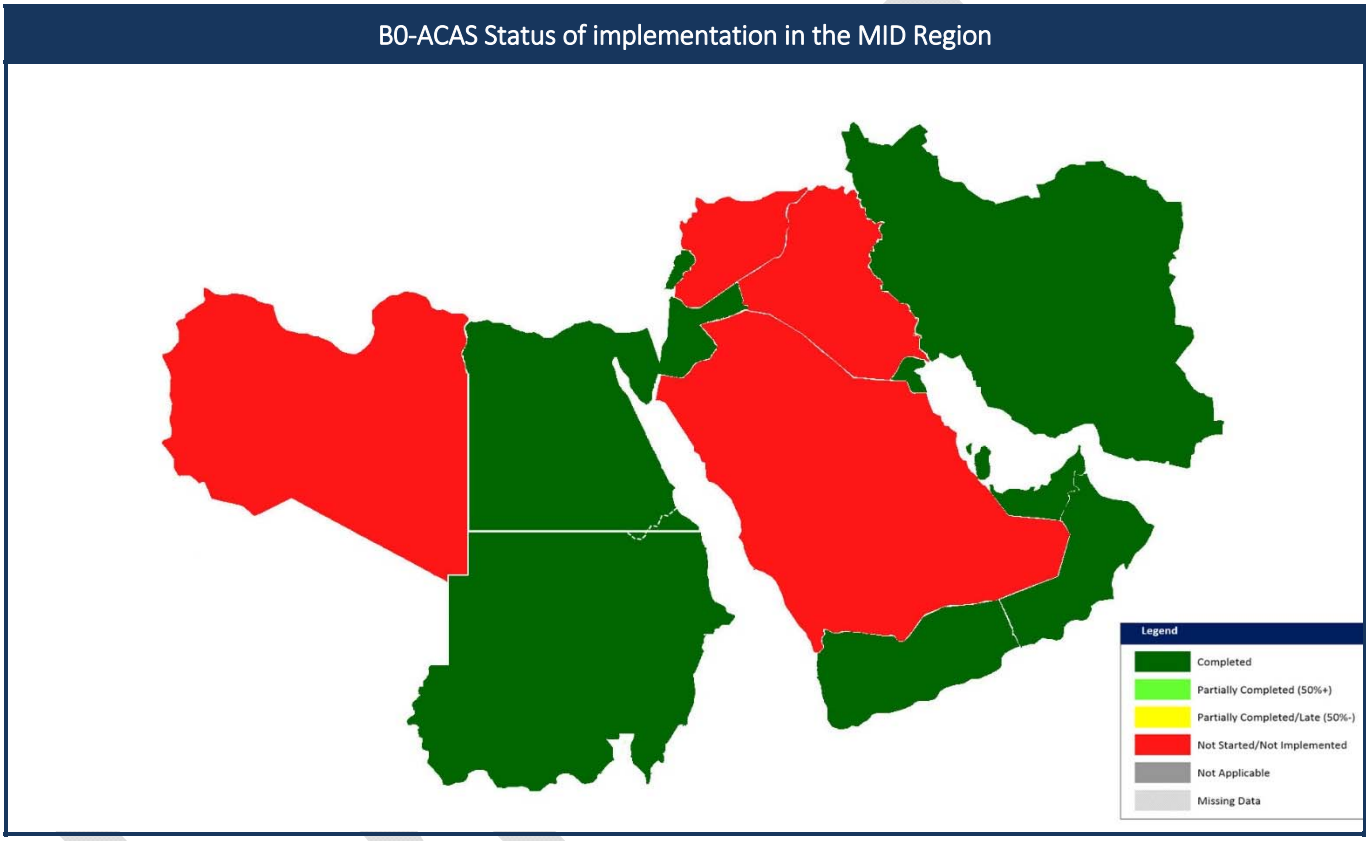
B0 – ACAS: ACAS Improvements			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
Avionics (TCAS V7.1)	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: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



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

The progress for B0-ACAS is good (with approximately 73% implementation).

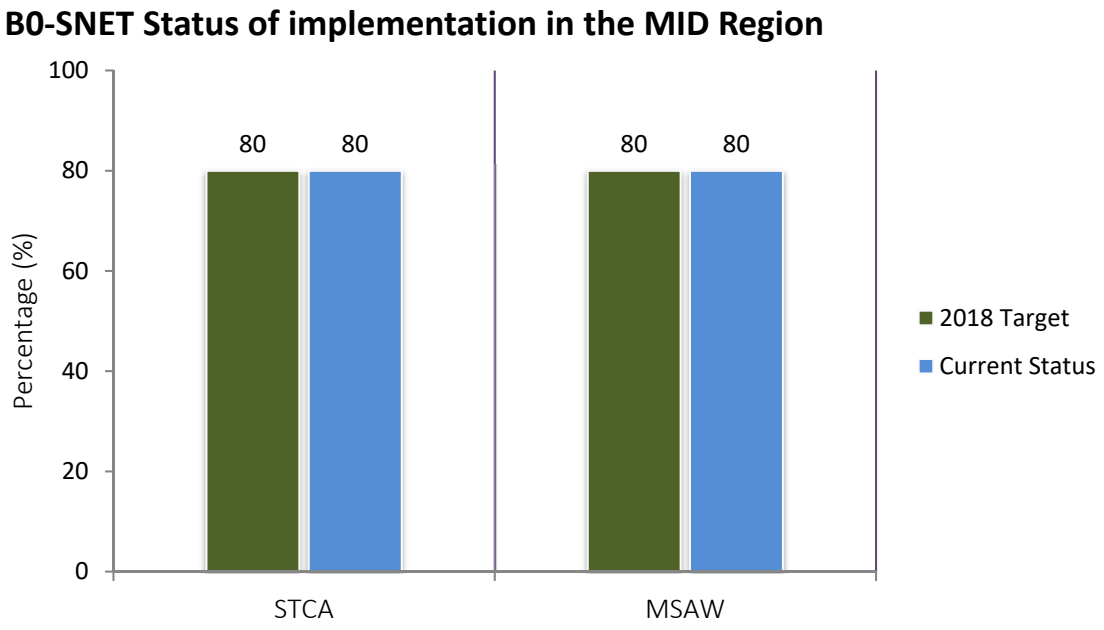
B0-ACAS Status of implementation in the MID Region



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.

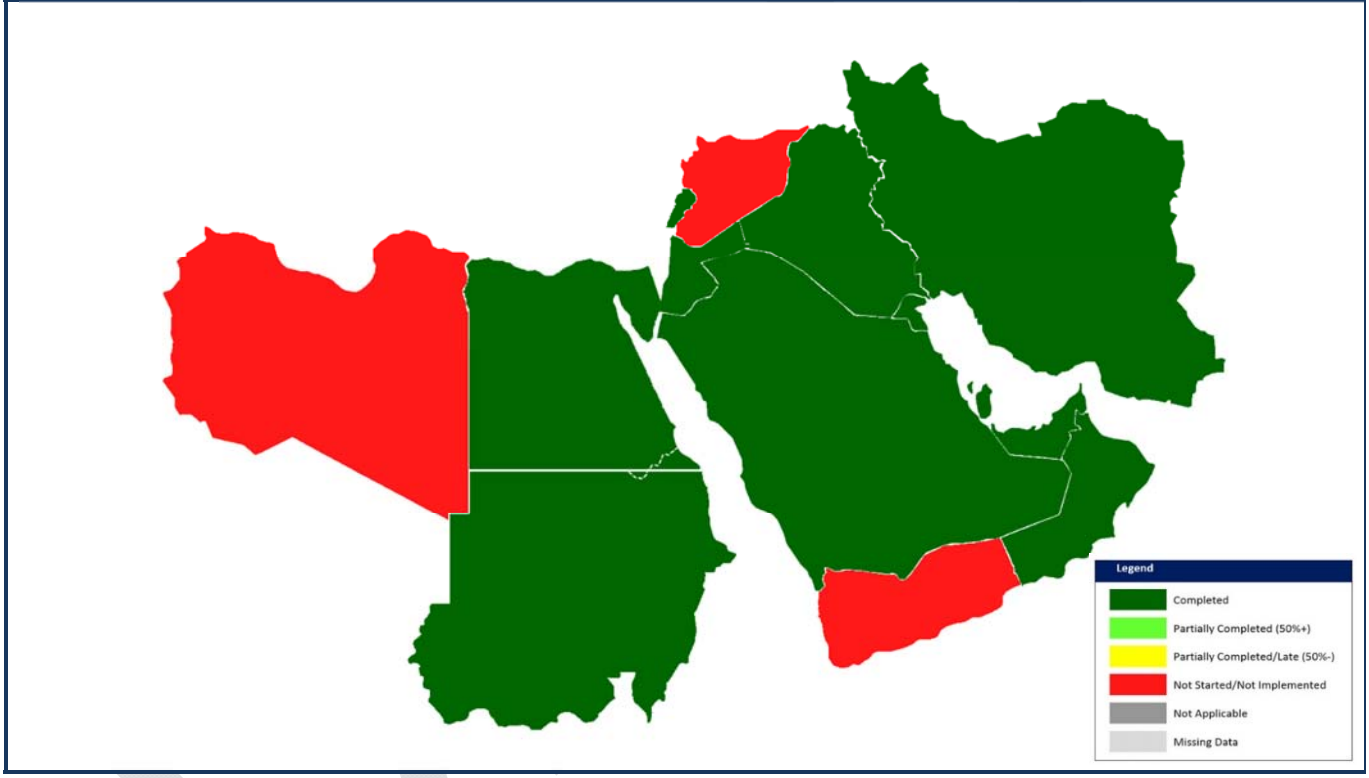
B0 – SNET: Increased Effectiveness of Ground-based Safety Nets			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
Short-term conflict alert (STCA)	All States	Indicator: % of States that have implemented Short-term conflict alert (STCA) Supporting metric*: number of States that have implemented Short-term conflict alert (STCA)	80 % by 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 % by 2018



Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	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).

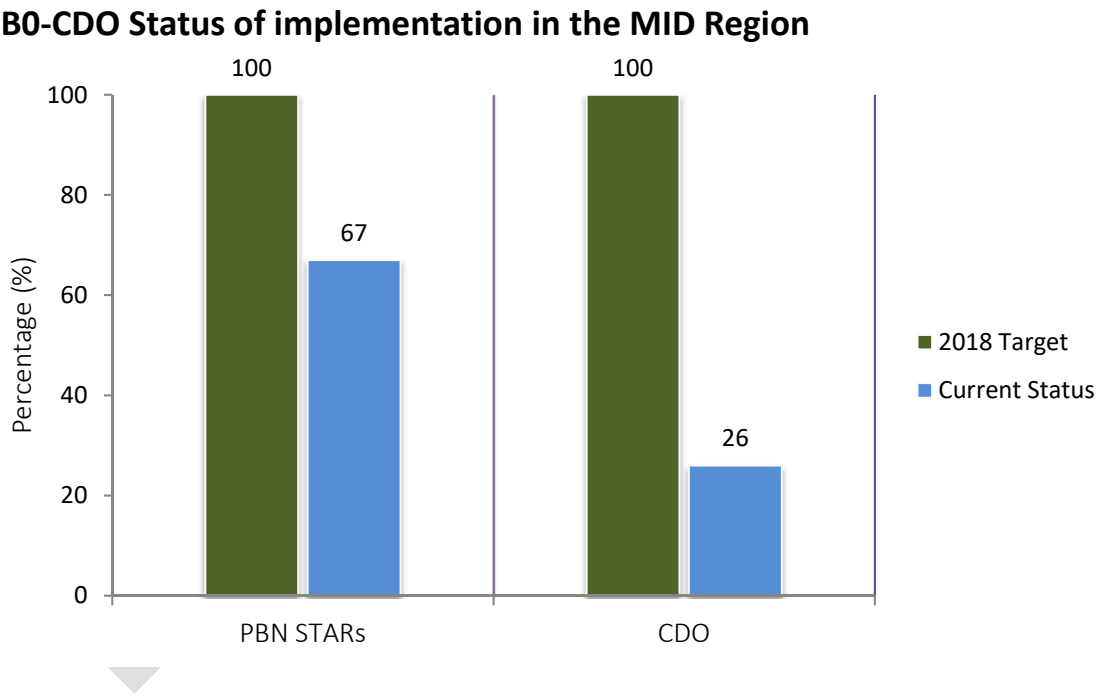
B0-SNET Status of implementation in the MID Region



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.

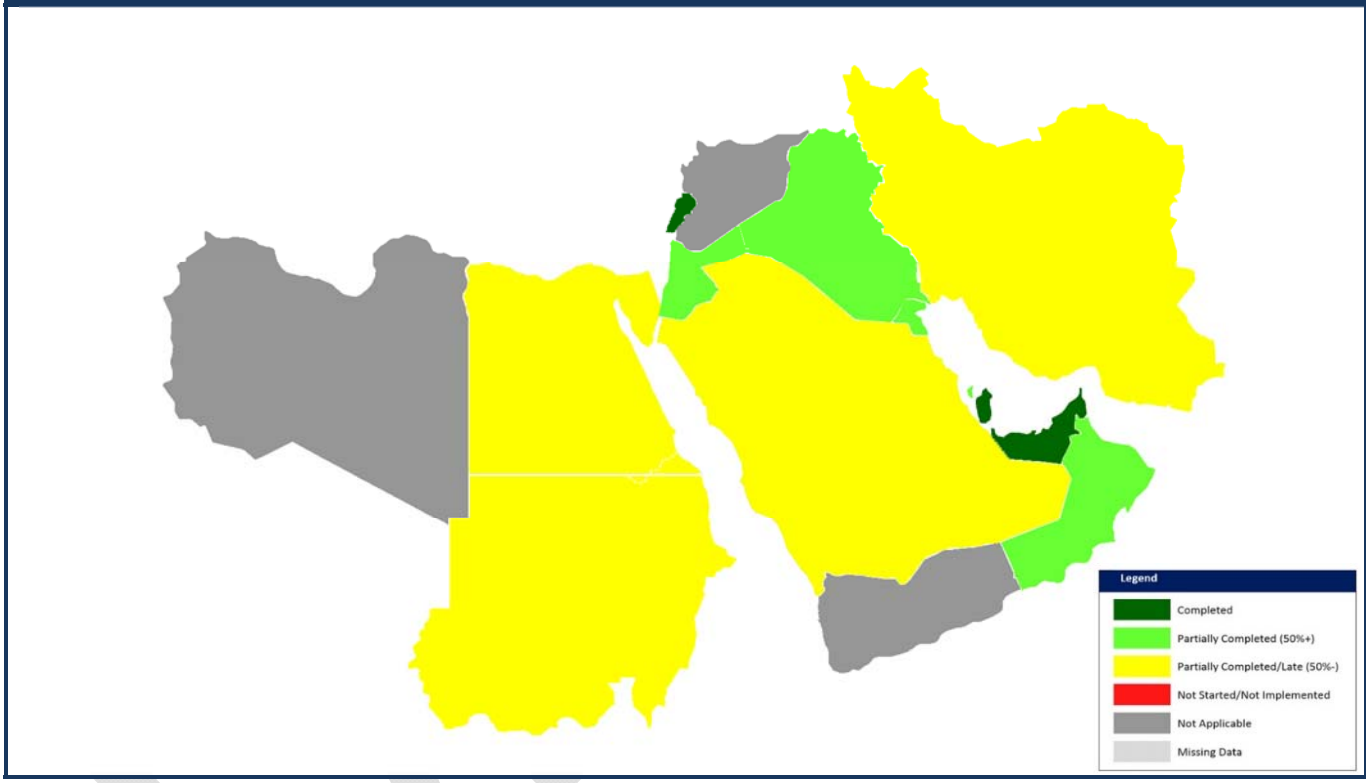
B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
PBN STARs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, 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% by Dec. 2018 for the identified Aerodromes/TMAs
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 Dec. 2018 for the identified Aerodromes/TMAs



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

The progress for B0-CDO is acceptable (with approximately 47% implementation).

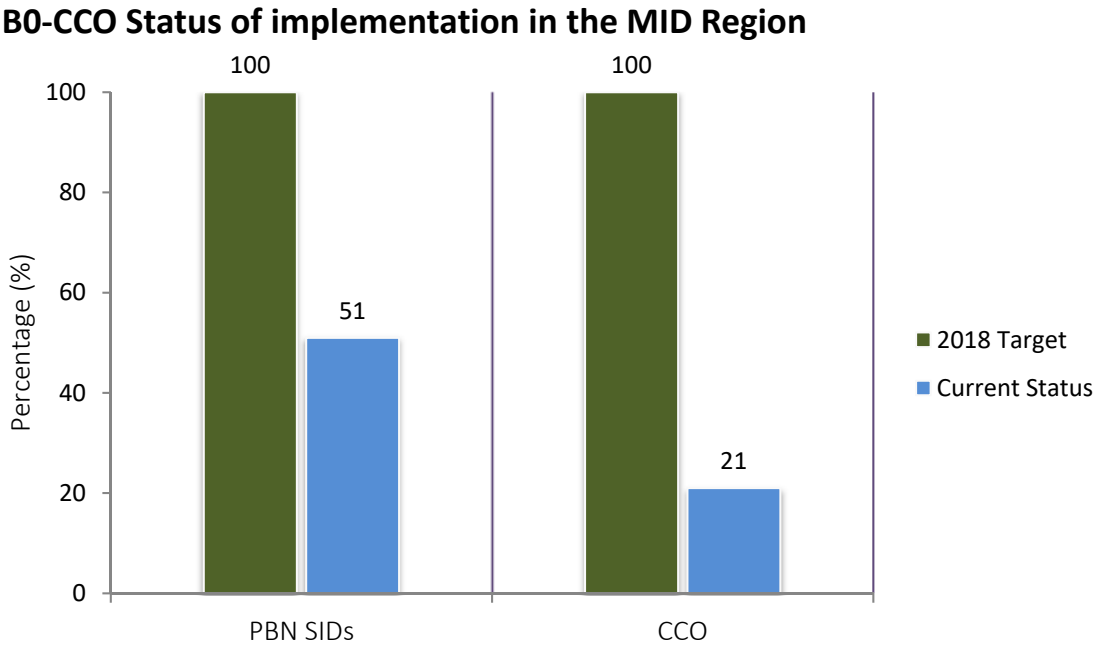
B0-CDO Status of implementation in the MID Region



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.

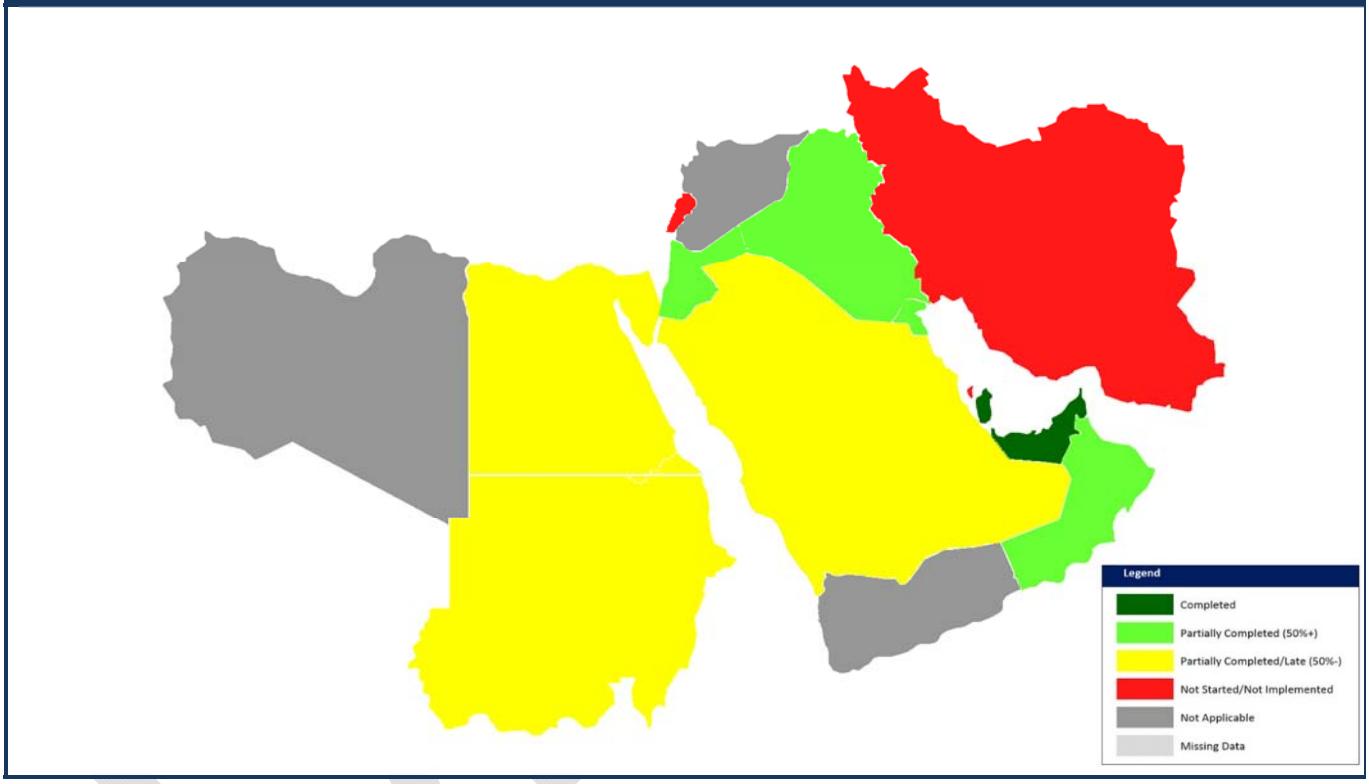
B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)			
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**
PBN SIDs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, 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% by Dec. 2018 for the identified Aerodromes/TMAs
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% by Dec. 2018 for the identified Aerodromes/TMAs



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

The progress for B0-CCO is acceptable (with approximately 36% implementation).

B0-CCO Status of implementation in the MID Region



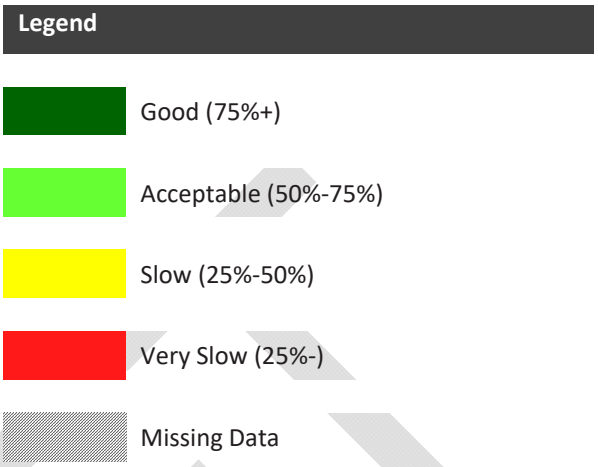
3. ASBU BLOCK 0 IMPLEMENTATION OUTLOOK FOR 2020

3.1 Status of Implementation-2020

This section consolidates the outlook of the Block 0 Modules implementation in the MID States, by 2020. The table below presents the status of implementation of the 18 ASBU Block 0 Modules foreseen to be achieved by the end of 2020, in accordance with the planning dates reported by States in the ICAO MID Region. This would provide a good basis/prerequisite for the planning of ASBU Block 1 implementation (2019-2025).

Detailed status of implementation of the 18 ASBU Block 0 Modules foreseen to be achieved by the end of 2020, for each State is provided at **Appendix B**.

The following color scheme is used for the projection of the outlook status:



Module	Status of implementation December 2016 (approximate rate)	Status of implementation June 2018 (approximate rate)	Projected Status of implementation by 2020* (approximate rate)
B0-APTA	44%	52%	**96%**
B0-WAKE	(Priority 2)	(Priority 2)	**71%**
B0-RSEQ	(Priority 2)	(Priority 2)	**55%**
B0-SURF	48%	50%	**67%**
B0-ACDM	0%	23%	**50%**
B0-FICE	56%	58%	**83%**
B0-DATM	62%	63%	**87%**
B0-AMET	67%	73%	**92%**
B0-FRTO	43%	45%	**71%**
B0-NOPS	(Priority 2)	(Priority 2)	**46%**
B0-ASUR	(Priority 2)	(Priority 2)	**70%**
B0-ASEP	(Priority 2)	(Priority 2)	**69%**
B0-OPFL	(Priority 2)	(Priority 2)	**60%**
B0-ACAS	73%	73%	**100%**
B0-SNET	(Priority 2)	80%	**100%**
B0-CDO	34%	47%	**67%**
B0-TBO	(Priority 2)	(Priority 2)	**44%**
B0-CCO	28%	36%	**63%**

Note – projected status for 2020 is calculated based on information received from 12 States (out of 15).

4. ENVIRONMENTAL PROTECTION

4.1 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.

4.2 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.

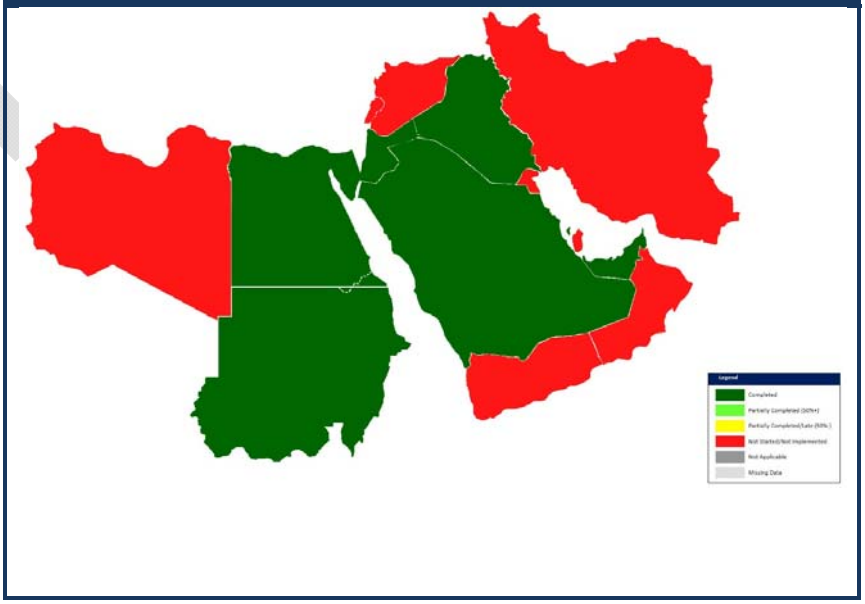
The MIDANPIRG/16 meeting (Kuwait, 13 - 16 February 2017) invited States to develop/update their Action Plans for CO2 emissions reduction and submit them to ICAO through the APER website or the ICAO MID Regional Office.

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	-
Saudi Arabia	April 2018
Sudan	January 2015
Syria	-
UAE	June 2012
Yemen	-

Status of States' Action Plans



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

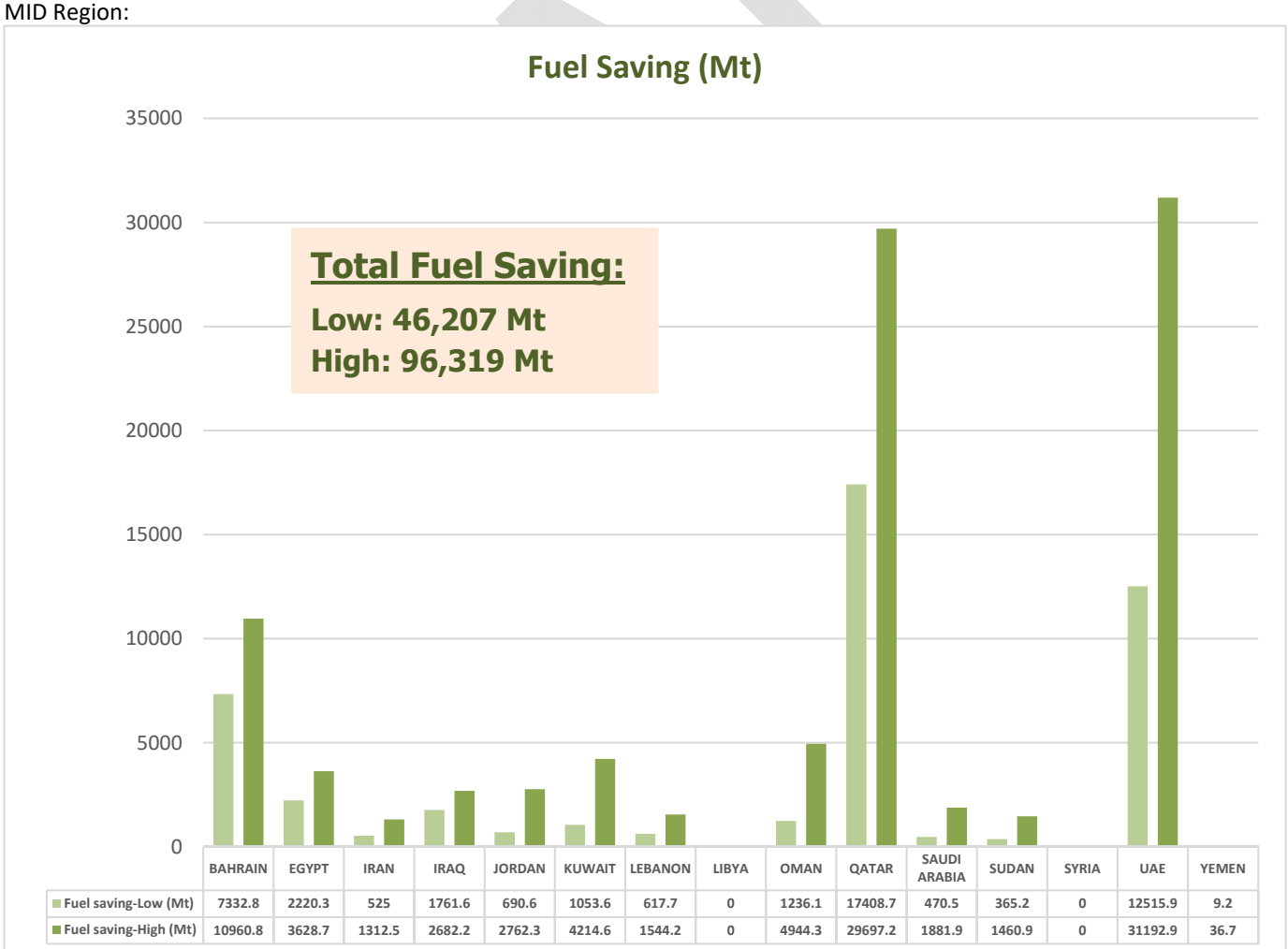
CAEP/10 conducted an assessment of the potential environmental benefits (fuel savings / CO2) for the period between the start of implementation of ASBU Block 0 modules in 2013 and the planned implementation of such modules in 2018 (end of Block 0). In order to accomplish this task, CAEP developed sets 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 46,696 to 96,808 Mt** of fuel saving in the MID Region, as a result of the implementation of the selected Block 0 Modules (APTA, CDO and CCO), as shown below:



	BAHRAIN	EGYPT	IRAN	IRAQ	JORDAN	KUWAIT	LEBANON	LIBYA	OMAN	QATAR	SAUDI ARABIA	SUDAN	SYRIA	UAE	YEMEN
Fuel saving-Low (Mt)	7332.8	2220.3	525	1761.6	690.6	1053.6	617.7	0	1236.1	17408.7	470.5	365.2	0	12515.9	9.2
Fuel saving-High (Mt)	10960.8	3628.7	1312.5	2682.2	2762.3	4214.6	1544.2	0	4944.3	29697.2	1881.9	1460.9	0	31192.9	36.7

5. SUCCESS STORIES/BEST PRACTICES

5.1 NCLB ACTIVITIES IN THE MID REGION

I. Introduction

The ICAO Council identified that there is a large discrepancy among States in the implementation of ICAO Standards and Recommended Practices (SARPs). As a result, the ICAO "No Country Left Behind" (NCLB) Campaign was established by the Council to help ensure that SARPs implementation is better harmonized globally. To avoid this gap, ICAO should focus its activities on States lacking fundamental oversight capabilities for effective implementation of ICAO SARPs, particularly in the priority areas of safety, air navigation and efficiency, and security. Therefore, particular attention should be given to the assistance of those States with a higher safety and security risk.

In accordance with Assembly Resolution A39-23 "No Country Left Behind" (NCLB) Initiative, States should effectively implement ICAO's Standards and Recommended Practices (SARPs) and policies so that all States have safe, secure, efficient, economically viable and environmentally sound air transport systems, which support sustainable development and socio-economic prosperity.

At the Regional Level; the MID Region NCLB Strategy supports the implementation of the Global Aviation Safety Plan (GASP) and its Roadmap as the basis to develop action plans that define the specific activities, which should take place in order to improve safety at the regional and national levels.

The MID Region NCLB Strategy is complemented by the MID Region NCLB Implementation Plan as a companion document. This Plan is a living document used for recording the NCLB activities in the MID Region (general and State-by-State), including the monitoring of the States' NCLB Plan of Actions and States/Stakeholders' contributions to support the NCLB initiative.

The Fourth meeting of the Directors General of Civil Aviation – Middle East Region (DGCA-MID/4), which was held in Muscat, Oman from 17 to 19 October 2017, through DGCA-MID/4 Conclusion 4/1, endorsed the NCLB Declaration (Muscat Declaration) in support of the ICAO NCLB Initiative; and invited States and Stakeholders to support the implementation of the MID Region NCLB Strategy.

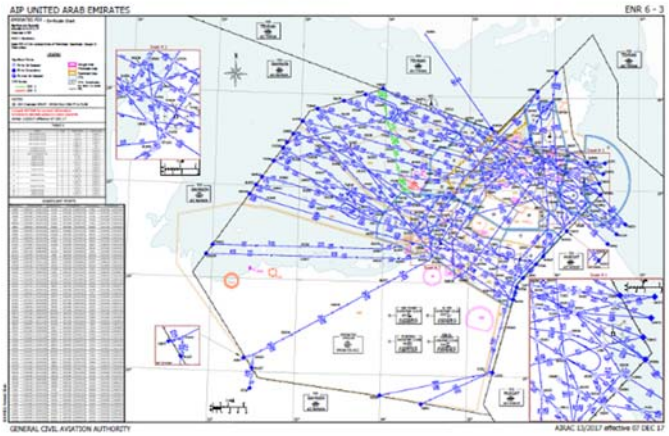
It is to be highlighted that Kingdom of Saudi Arabia has kindly provided 400 K US$ to support ICAO MID NCLB activities; and UAE provided 50 K US$ to support the establishment of the MID Flight Procedure Programme (MID FPP). Other States and stakeholders, such as Egypt, Iran and EASA provided in-kind support to some MID States related to aviation safety and security, under the MID Region NCLB framework.

II. MID NCLB Activities related to Air Navigation

- 10 NCLB assistance missions in 2016 and 7 in 2017 (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Sudan)
- 6 NCLB Seminars/Workshops in 2016 and 6 in 2017
- 1 ATM Inspectors Course (GSI-ANS/ATM)

5.2 UNITED ARAB EMIRATES: AIRSPACE RESTRUCTURING PROJECT – INTEGRATION & IMPLEMENTATION PHASE

On December 7th 2017, the General Civil Aviation Authority (GCAA) completed the implementation of the UAE Airspace Restructuring Project – Integration & Implementation (UAE ARP3). This airspace change saw the Emirates Flight Information Region (FIR) transformed into an airspace structure completely based on Performance Based Navigation (PBN) with a Navigation Specification of RNAV-1 (GNSS).



UAE ARP (Integration & Implementation) was the culmination of years of extensive analysis, development, collaboration and cooperation across the UAE Aviation Community including the GCAA Sheikh Zayed Air Navigation Centre (SZC), Dubai Air Navigation Services, Abu Dhabi Airports Company, Ras Al Khaimah Department of Civil Aviation, Sharjah Department of Civil Aviation, Fujairah Department of Civil Aviation as well as more than twenty further aviation stakeholders.

The UAE ARP (Integration & Implementation) was designed to meet multiple objectives, all of which were achieved in line with global best practices. Primarily the airspace change was designed to increase UAE Airspace capacity to meet the forecasted air traffic demand for 2020, as well as increased access to all UAE airports, improve efficiency for both aviation system customers and Air Navigation Service Providers (ANSP) and reduce the environmental impact of the increasing traffic through more effective Air Traffic Management operations.

UAE ARP3 Facts:

- Capability to safely meet capacity requirements for the forecasted 2040 air traffic demand through the UAE ARP3 Integrated Airspace Master Plan (IAMP).
- Annual fuel savings exceeding $15 million to the airlines customers within the first year after implementation.
- Annual environmental efficiency exceeding 100,000 Mt of CO^2, supporting a 'Greener' aviation.

- Project Implementation Duration – 18 months
- Number of project Deliverables - 50
- Number of Workshops / Meetings – over 200
- Actual Man hours for design development – over 120,000 hours
- Number of UAE Air Navigation Service Providers involved – 6
- Number of Emirates of the United Arab Emirates involved - 5
- Number of Aviation Stakeholder organizations collaboratively involved - 26
- Number of Project Representatives – over 150
- Number of Air Traffic Controllers trained for UAE ARP3 - 250

The project directly involved five of the seven Emirates within the UAE and required over 120,000 man-hours to develop the airspace design network. Multiple Fast Time and Real Time simulations in Italy, UK and in the UAE formed critical activities for the design validation and verification of the revised airspace network.

The UAE ARP (Integration & Implementation) also required over 250 Air Traffic Controllers to take simulation and theoretical training on the redesign for over two hundred Instrument Flight Procedures and thirty new airways.

In 2012, prior to the launch of the UAE ARP the GCAA, in collaboration with the local Departments of Civil Aviation and ANSPs, undertook a 'UAE Airspace Study' which, among other recommendations, identified a requirement to 'develop a comprehensive airspace design that will accommodate transition to a full PBN airspace environment to support the increasing demand' and this laid the foundations of the UAE ARP.

Accordingly, UAE ARP adopted an industry wide collaborative approach, encompassing a three phased project which kicked off in 2013. In July 2016, the ARP activated Phase 3 (Integration & Implementation) and with the support of globally recognised consultants ensured the successful transformation of the chosen conceptual designs were integrated into an implementable solution. The first iteration of the design network delivered on 7th December 2017 enabled the airspace within the Emirates FIR sufficient capacity, capability and efficiency to support the forecasted traffic growth to 2020.

Communication of such a large scale change is a vital change management activity to ensure a smooth and successful transition. UAE ARP (Integration & Implementation) undertook months of cross industry stakeholder workshops and events culminating in an awareness campaign at the Dubai Airshow between November 17-21st.

A Communication and Engagement document was also generated to ensure clear and consistent messages were relayed by all stakeholders, whilst also leaflets and briefing material generated across the six ANSPs, National carriers and IATA. AICs and NOTAMs were used to promulgate further Global awareness prior to the December 7th transition.

Implementing a new network for the entire Emirates FIR airspace change without generating disruption to the aviation customers was a major and critical challenge which required significant stakeholder collaboration. To do this, UAE ARP (Integration & Implementation) created a Transition Plan Development Team (TPDT) encompassing ANSPs, airlines, IATA, military, NCMS and other appropriate aviation stakeholders. The ultimate focus of the team was to develop a harmonised Transition Plan for all agencies involved to ensure a complete synchronised and seamless transition. One of the first hurdles for the team to overcome was as a result of the traffic patterns of the Emirates FIR and the unsuitable timing associated with the AIRAC effectiveness. Through the TPDT a bespoke collaborative solution was found to delay the 'Operational Effective' time of implementation to 03:30 UTC (07:30 UAE) and therefore not utilising the 0000UTC effective time associated with AIRAC 13/17. The rationale ensured that the major arrival flows into the UAE airfields which would be operating predominantly to old FMS network data would have landed prior to the operational airspace change. The new airspace would then become operationally effective prior to the major UAE departure flow materializing and would encompass a majority of aircraft operating to the new AIRAC 13/17 FMS network.

To ensure that a synchronised airspace transition was enabled across the six ANSPs, a Transition Team was created with representation of six Transition Coordinators (one per ANSP, with also a deputy allocation) coordinating through a Transition Manager based at SZC. These Transition Coordinators and Transition Manager operated to an Operational Transition Event Schedule, containing major 'Check-Points' confirming that each unit's activities were operating in sync, whilst also in parallel. To enable rapid decision making capability, the UAE ARP (Integration & Implementation) also formed a Transition & Contingency Cell at SZC. This cell contained PSG representation from the ANSPs, military and also representation from the UAE Airline community. The Transition & Contingency Cell was activated several hours prior to the Operational Transition of the new airspace and their role was to ensure that if any major decisions were required at either an ANSP or project level, a resolution could be sought and acted upon quickly to enable minimal disruption to the Transition Event.

As part of the Transition Plan, UAE ARP (Integration & Implementation) adopted varying Transition timelines to provide regulatory assurance that each ANSP had implemented the airspace change successfully. In preparation for the airspace implementation, the project carried out a Transition Readiness Review which was held on November 23rd. The purpose of this review was to ensure that all ANSPs had satisfied specific 'Entry Criteria' prior to the Transition Event (December 7th). In the five day build up to the Transition Event, NCMS provided a daily weather forecast for December 7th across the UAE which was disseminated to the PSG and Transition Coordinators via the Transition Manager. From December 5th, this information was also supplemented with a fog forecast for the UAE airfields.

During the Transition Event four appropriately scheduled teleconferences were also held to provide a status check on the progress of the transition to the airline community and allow an opportunity for the airlines to provide pertinent information back to the Transition Manager. A final teleconference was held at 13:30 UTC (17:30 UAE) which confirmed that each ANSP had satisfied the Transition Event 'Exit Criteria'. This information was then relayed to the PSG for their approval to exit the Transition Event. At this stage, the UAE ARP transition was transferred from the Transition Event to a 10 day Transition Period. Any observations or feedback from each of the six ANSPs or from the airline community would then be fed into a 10/30/60/90 day review, with the project then supporting a six month Post Implementation Maintenance & Support period.

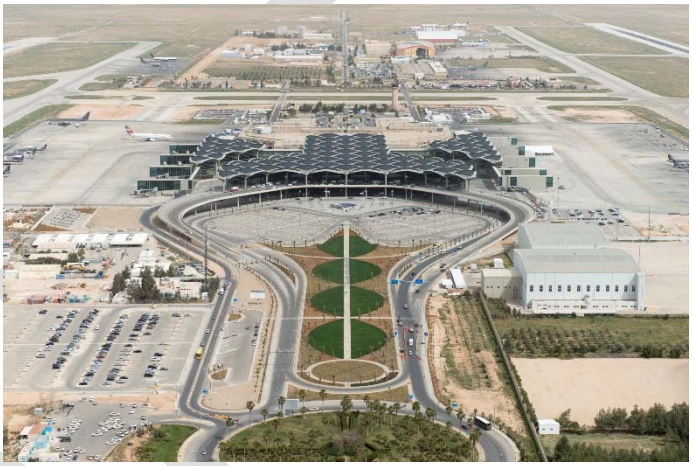
The output of the extensive planning and preparation by the TPDT in the generation of a Transition Delivery Document (TDD) and associated Transition Plans for the Transition Event ensured that on December 7th 2017, a seamless transition took place with no disruption or delay to the aviation community and no issues reported from any of the six ANSPs involved.

Through the development of an Integrated Airspace Master Plan (IAMP), the project will also create a Roadmap to future-proof the UAE's airspace network for the forecasted traffic growth until 2040. Design elements will need to incorporate such major airport expansion projects for both Dubai World Central Al Maktoum International Airport, Abu Dhabi International Airport as well as meeting the anticipated capacity increases for Dubai's Expo 2020. Moreover, it will ensure that aviation will continue to provide a vital contribution to the UAE Gross Domestic Product.

5.3 JORDAN: AIRPORT CARBON ACCREDITATION PROGRAM IN AMMAN/QUEEN ALIA INTERNATIONAL AIRPORT

Amman/Queen Alia International Airport (QAIA) completed the requirements of the final level (level 3+ Neutrality) of the Airport Carbon Accreditation (ACA) program, which is a carbon management program developed by Airport Council International (ACI). QAIA is the first airport in the Middle East to achieve this accomplishment.

QAIA has demonstrated commitment to the aviation environmental protection, by implementing a comprehensive Environment Management Plan (EMP), which was developed to assess the probability of a multitude of risks, related to airport operations and activities, on the surrounding environment. This plan is reviewed annually to comply with the latest changes in national and international standards and requirements. QAIA's EMP is developed to minimize and control sources of environmental pollution such as carbon emissions, in addition to the monitoring of several environmental elements, through an integrated waste management program, in addition to air quality, water and biodiversity management, as well as noise control.



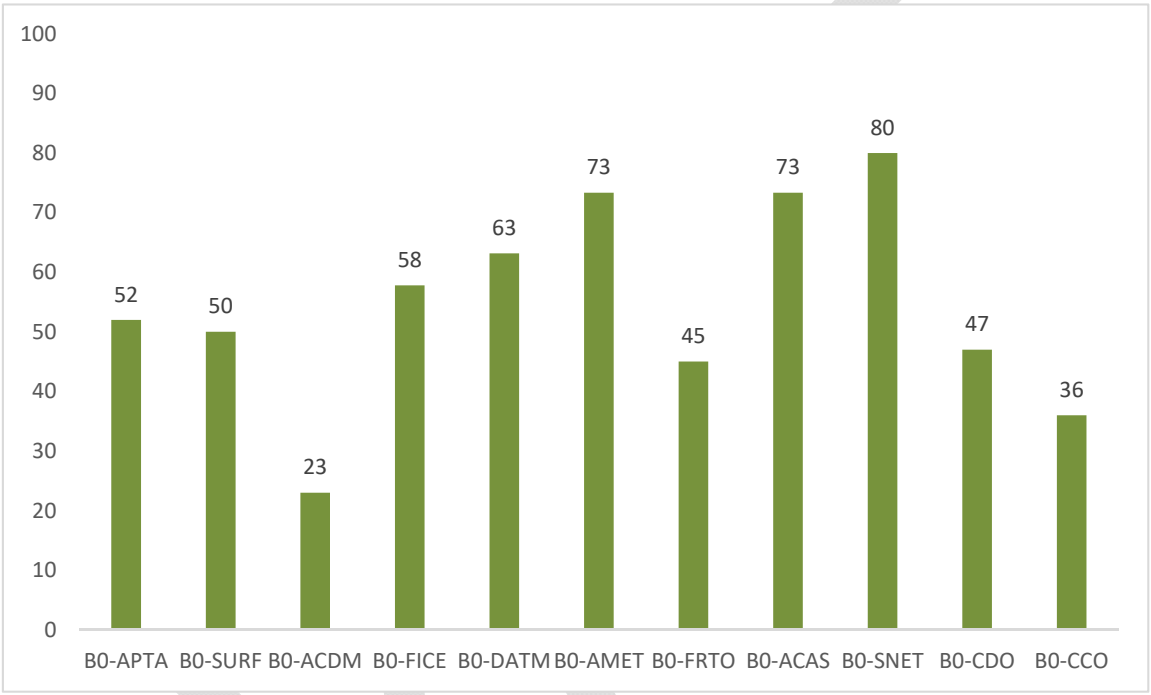
QAIA completed the first level of ACA Programme (Mapping) in March 2013, helping to determine the sources of harmful emissions on Airport grounds. This was followed in March 2015, by reaching level 2 (Reduction), as a result of the continuous efforts to reduce Carbon emissions, making QAIA the first airport to achieve this level in the region.

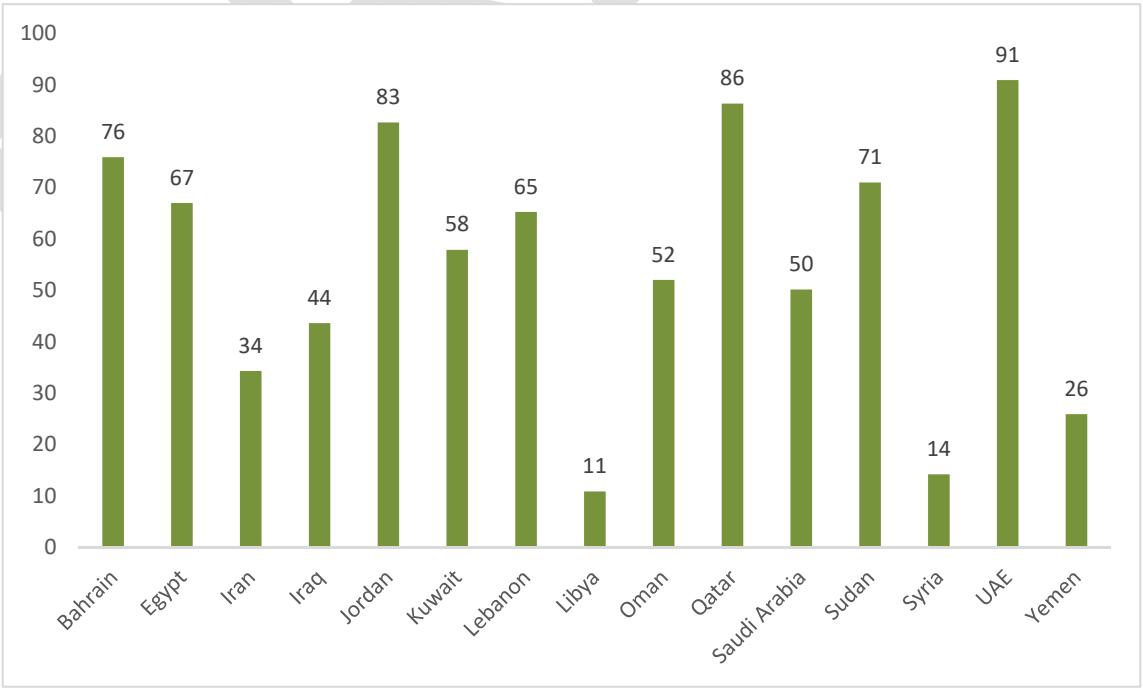
6. CONCLUSION

The progress for the implementation of some priority 1 Block0 Modules in the MID Region has been acceptable/good; such as B0-ACAS, B0-AMET and B0-DATM. 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, Egypt, Jordan, Kuwait, Qatar, Saudi Arabia and UAE made a good progress in the implementation of the priority 1 ASBU Block 0 Modules.

Looking into the States' plans for 2020 (outlook), the focus/priority of States is to complete the implementation of B0-APTA, B0-FICE, B0-DATM, B0-AMET, B0-CCO and B0-CDO.





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

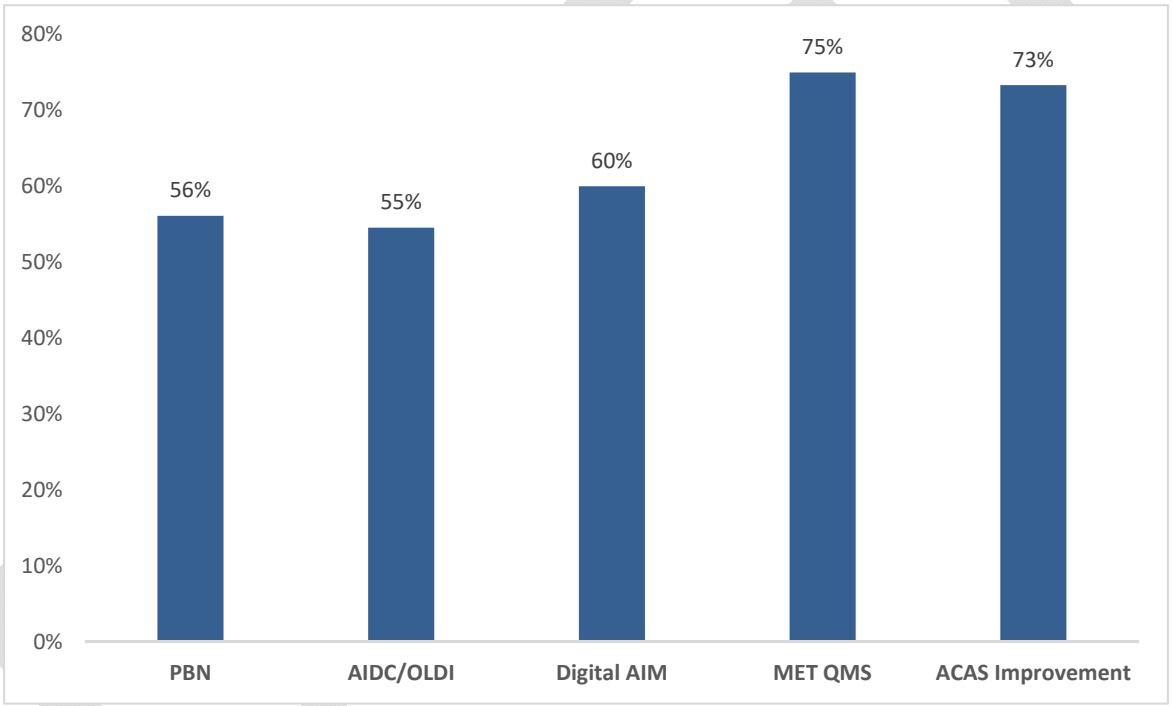
2- Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration: 11 States to implement AIDC/OLDI between their ACCs and at least one adjacent ACC by 2017

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

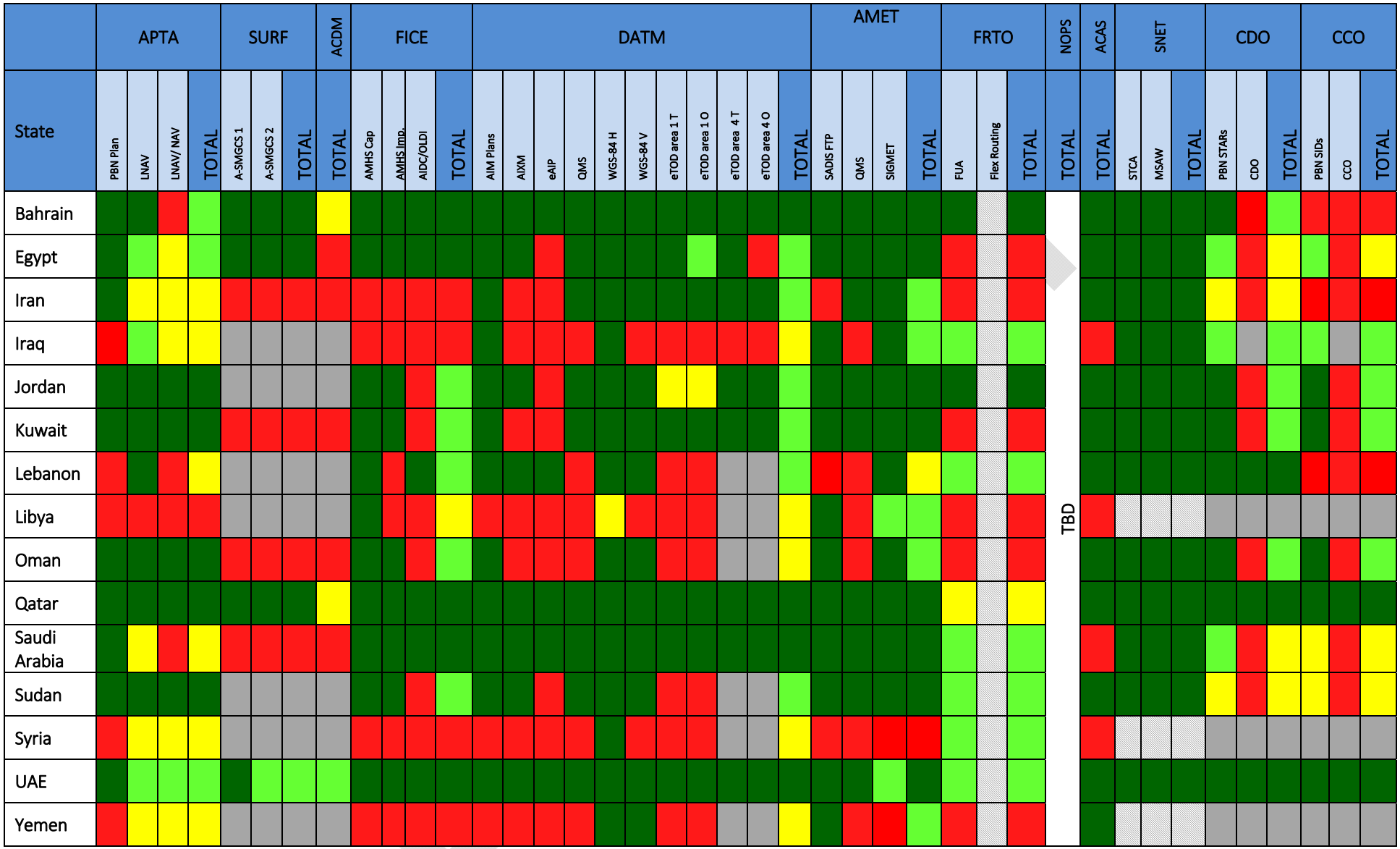
4- Meteorological information supporting enhanced operational efficiency and safety: 12 States to complete the implementation of QMS for MET by 2017

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:



APPENDIX A: STATUS OF ASBU BLOCK 0 MODULES



APPENDIX B: ASBU BLOCK 0 STATUS OF IMPLEMENTATION OUTLOOK 2020

State	B0-APTA	B0-WAKE	B0-RSEQ	B0-SURF	B0-ACDM	B0-FICE	B0-DATM	B0-AMET	B0-FRTO	B0-NOPS	B0-ASUR	B0-ASEP	B0-OPFL	B0-ACAS	B0-SNET	B0-CDO	B0-TBO	B0-CCO
Bahrain	FI	N/A	PI	FI	PI	FI	FI	FI	PI	PI	FI	PI	N/A	FI	FI	FI	PI	FI
Egypt	FI	FI	N/A	FI	PI	FI	FI	FI	FI	FI	FI	N/A	N/A	FI	FI	PI	N/A	PI
Iran	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	N/A	FI
Iraq	PI	N/A	N/A	N/A	NI	FI	FI	PI	PI	NI	NI	NI	N/A	FI	FI	NI	NI	NI
Jordan	FI	N/A	NI	NI	PI	PI	PI	FI	NI	NI	FI	N/A	N/A	FI	FI	PI	NI	PI
Kuwait	FI	PI	PI	PI	PI	PI	PI	FI	PI	PI	PI	PI	PI	FI	FI	PI	PI	PI
Lebanon	FI	N/A	NI	N/A	PI	PI	FI	PI	PI	NI	NI	FI	NI	FI	FI	PI	PI	NI
Libya				N/A														
Oman	FI	FI	FI	PI	PI	FI	FI	FI	FI	FI	PI	FI	N/A	FI	FI	PI	N/A	PI
Qatar	FI	NI	FI	FI	PI	FI	FI	FI	FI	PI	FI	N/A	N/A	FI	FI	FI	PI	FI
Saudi Arabia	FI	N/A	PI	PI	PI	FI	FI	FI	FI	N/A	FI	FI	FI	FI	FI	FI	FI	FI
Sudan	FI	N/A	PI	N/A	N/A	PI	PI	FI	PI	PI	PI	FI	PI	FI	FI	PI	PI	PI
Syria				N/A														
UAE	FI	FI	PI	PI	PI	FI	FI	FI	FI	PI	FI		N/A	FI	FI	FI	PI	FI
Yemen				N/A										FI				

Legend

- FI: Fully Implemented
- PI: Partially Implemented
- NI: Not Implemented
- N/A: Not Applicable
- Missing Data

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