International Civil Aviation Organization

MIDANPIRG Air Traffic Management Sub-Group

Tenth Meeting (ATM SG/10)
(Jeddah, Saudi Arabia, 20 – 23 October 2024)

Agenda Item 3: Planning and Implementation issues related to ATM/SAR

MID AIR NAVIGATION REPORT-2023

(Presented by the Secretariat)

SUMMARY

This paper presents the results of the MID Air Navigation Report 2023 related to CNS/ATM/SAR.

Action by the meeting is at paragraph 3.

REFERENCES

- First Meeting RANP/NANP TF/1 (Cairo, Egypt, 19 – 22 February 2024)
- MIDANPIRG/21 & RASG-MID/11 Meetings (Abu Dhabi, UAE, 4 – 8 March 2024)

1. INTRODUCTION

1.1 The MIDANPIRG/20 meeting, through Conclusion 20/11 urged States to provide the ICAO MID Office, with relevant data necessary for the development of the MID Region Air Navigation Report – 2023.

MIDANPIRG CONCLUSION 20/11: WEB-BASED MID REGION AIR NAVIGATION REPORT (2023)

That,

a) States be invited to provide the ICAO MID Office with the following data for the development of the MID Region Air Navigation Report (2023) by 1 December 2023:

i. Status of ASBU Implementation; and

ii. States' implementation of the Performance Based approach using the agreed Template as at Appendix 6.1A.

b) the MID Air Navigation Report (2023) be presented to the MIDANPIRG/21 for endorsement.

2. DISCUSSION

2.1 As a follow-up action to the above MIDANPIRG/20 Conclusions, the ICAO MID Office issued State Letter AN 1/7-23/270 dated 6 December 2023 to collect the following information and updates from MID States:

a) update on the status of implementation of the Priority 1 ASBU Threads/Elements;

b) progress achieved in the implementation of the Performance Based Approach and development of State National Air Navigation Plan (NANP), by completing the Questionnaire at **Appendix A**; and

c) State's major achievement(s)/success story(ies) in the air navigation field in 2023.

2.2 Nine (9) MID States (Bahrain, Egypt, Iran, Jordan, Kuwait, Oman, Qatar, Saudi Arabia and UAE) have replied to the afore-mentioned State Letter. Accordingly, ICAO MID, based on the above replies and the last updates provided by remaining States in the Air Navigation Report 2022, consolidated the MID Air Navigation Report-2023. This report was reviewed/updated by the RANP/NANP TF/1 and endorsed by MIDANPIRG/21.

2.3 The meeting may wish to note that 10 out of 13 (77%) MID ASBU priority 1 Threads and 17 out of 34 (50%) elements are currently under the monitoring of the CNS and ATM SG meetings. Based on the Air navigation report-2023, the following is the CNS/ATM/SAR related ASBU Threads/Elements with low level of implementation (less than 50%):

a) FICE (B0/1), the regional level of implementation is increased to 39.39% compared to 26.19% in 2022;

b) NOPS (B0/1), the regional level of implementation is 41.67%, the same as the year 2022;

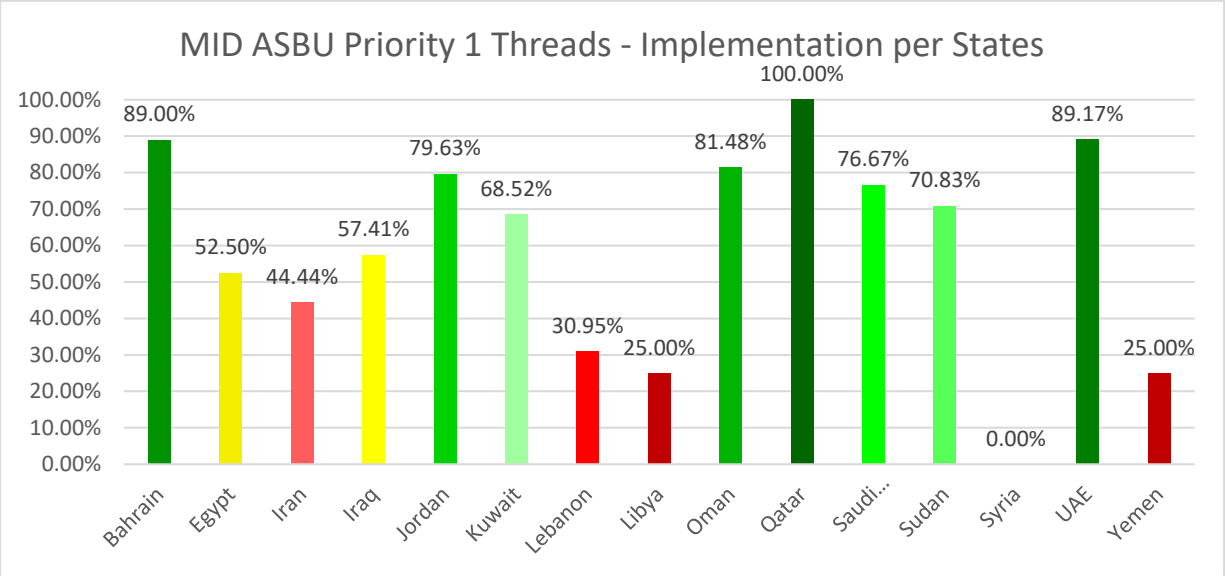
c) RSEQ (B0/1), the regional level of implementation is 35.71%, the same as the year 2022;

d) ASUR (B0/2), the regional level of implementation is decreased to 37.5% compared to 75% in 2022; and

e) NAVS (B0/4), the regional level of implementation is decreased to 40% compared to 46.67% in 2022.

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	
FICE	40.00	25.00	0.00	0.00	50.00	0.00	NA	NA	33.33	100	33.33	NA	NA	75.00	NA	39.39
FRTO	100	50.00	0.00	0.00	100	100	0.00	NA	100	100	100	0.00	NA	50.00	NA	64.88
NOPS	100	0.00	0.00	0.00	0.00	0.00	0.00	NA	100	100	100	0.00	NA	100	NA	41.67
ACAS	100	100	100	100	100	100	100	0	100	100	100	100	0	100	100	86.67
SNET	100	100	100	66.67	100	100	66.67	NA	100	100	100	66.67	NA	100	NA	91.67
GADS	100	100	100	100	100	100	0	100	100	100	100	100	0	100	0	80
RSEQ	100	0.00	NA	NA	NA	NA	NA	NA	NA	100	0.00	NA	NA	100	NA	35.71
ASUR	100	0.00	100	100	66.67	66.67	0.00	NA	100	100	33.33	100	NA	66.67	NA	65.28
NAVS	50	50	0.00	50	100	50	0.00	0.00	0.00	100	100	100	0.00	100	0.00	46.67
COMI	100	100	0.00	100	100	100	50	0.00	100	100	100	100	0.00	100	0.00	70
ATM/SAR	89	52.5	44.44	57.41	79.63	68.52	30.95	25	81.48	100	76.67	70.83	0	89.17	25	62.19

Table 1- Priority 1 ASBU Threats related to CNS/ATM/SAR implementation in the MID Region by State



2.4 The meeting may wish to encourage the State to provide data required for the development of Air Navigation Report 2024, including success stories of ANS implementations, accordingly, the meeting may wish to agree on the following Draft Conclusion:

DRAFT CONCLUSION 10/XX: MID REGION AIR NAVIGATION REPORT (2024)

That,

a) States be invited to provide the ICAO MID Office with the following data for the development of the MID Region Air Navigation Report (2024) by 1 December 2024:

i. update on the status of implementation of the priority 1 ASBU Threads/Elements using the Template at Attachment A;

ii. progress achieved in the implementation of the Performance Based Approach and development of your State National Air Navigation Plan (NANP), by completing the Questionnaire at Attachment B; and

iii. your State's major achievement(s)/success story(ies) in the air navigation field in 2024.

b) the MID Air Navigation Report (2024) be presented to the MIDANPIRG/22 for endorsement.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) urge States to review Air Navigation Report-2023 and provide update information for development of the Air Navigation Report 2024 until 15 December 2024;

b) States that have not achieved the target level of implementation should take necessary actions and submit a plan through their NANP to ICAO MID Office; and

c) review and agree on the draft Conclusion on para 2.4 above.

Modules	Elements	Description (GANP 7th)	Description (GANP 6th)	MID Strategy plan indicators/metrics	Applicability area	Targets	Year	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Regional level
B0 – RICE	FICE B0/1 Automated basic inter facility data exchange (AIDC)	This element represents a first automation step in the evolution of the coordination and transfer of control between neighbouring ATS units to guarantee that all related and necessary flight information will be available to the other unit as per agreement.	This element represents a first automation step in the evolution of the coordination and transfer of control between neighbouring ATS units to guarantee that all related and necessary flight information will be available to the other unit as per agreement.	**Indicator*:** % of priority 1 AIDC/OLDI interconnection have been implemented **Supporting metric**: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	**Bahrain**: Qatar, UAE, Saudi Arabia, Kuwait, Iran **Egypt**: Jordan, Saudi Arabia, Cyprus, Greece **Iran**: Turkey, Bahrain **Iraq**: Turkey, Kuwait **Jordan**: Egypt, Saudi Arabia **Kuwait**: Iraq, Bahrain **Oman**: UAE, Saudi Arabia, India **Qatar**: Bahrain, UAE, Saudi Arabia **Saudi Arabia**: Jordan, Bahrain, Qatar, Oman, Egypt, UAE **UAE**: Bahrain, Qatar, Saudi Arabia, Oman	70%	2023	40.00%	25.00%	0.00%	0.00%	50.00%	0.00%	NA	NA	33.33%	100.00%	33.33%	NA	NA	75.00%	NA	28.99%
							2022	40.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	25.00%	100.00%	14.29%	0.00%	NA	75.00%	NA	26.19%
		Average					2023	40.00%	25.00%	0.00%	0.00%	50.00%	0.00%	NA	NA	33.33%	100.00%	33.33%	NA	NA	75.00%	NA	28.99%
							2022	40.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	25.00%	100.00%	14.29%	0.00%	NA	75.00%	NA	26.19%
B0–FRTO	FRTO B0/2 Airspace planning and Flexible Use of Airspace (FUA)	This element addresses strategic/long term airspace management, pre-tactical planning and tactical operations. Automated ASM support systems improve airspace management processes and flexible airspace planning including time horizon specifications in all flight phases (strategic, pre-tactical and tactical time horizons) by providing mutual visibility on civil and military requirements. They also support flexible airspace planning according to civil and military ANSPs and airspace user requirements, including permit cross border and use of segregated areas operations regardless of national boundaries.	This element addresses strategic/long term airspace management, pre-tactical planning and tactical operations. Automated ASM support systems improve airspace management processes and flexible airspace planning including time horizon specifications in all flight phases (strategic, pre-tactical and tactical time horizons) by providing mutual visibility on civil and military requirements. They also support flexible airspace planning according to civil and military ANSPs and airspace user requirements, including permit cross border and use of segregated areas operations regardless of national boundaries.	**Indicator*:** % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. **Supporting metric**: Number of ACCs using and implementing appropriate means (procedures and tools (automation))to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. * As per the applicability area	Bahrain Egypt Jordan Qatar Saudi Arabia (2 ACCs) Sudan UAE	50.00%	2023	100.00%	0.00%	NA	NA	100.00%	NA	NA	NA	NA	100.00%	100.00%	0.00%	NA	100.00%	NA	71.43%
							2022	100.00%	0.00%	NA	NA	0.00%	NA	NA	NA	NA	100.00%	100.00%	0.00%	NA	100.00%	NA	57.14%
	FRTO B0/4 Basic conflict detection and conformance monitoring	MTCD assists the controller in conflict identification and planning tasks by providing automated early detection of potential conflicts; facilitating identification of flexible routing/conflict free trajectories; identifying aircraft constraining the resolution of a conflict or occupying a flight level requested by another aircraft. The monitoring aids (MONA) function provides the controller with warnings if aircraft deviate from a clearance or planned trajectories and reminders related to the ATCO instructions to be issued. MONA might include the flight progress monitoring as well as the lateral, longitudinal, vertical and Cleared Flight Level (CFL) deviations.	MTCD assists the controller in conflict identification and planning tasks by providing automated early detection of potential conflicts; facilitating identification of flexible routing/conflict free trajectories; identifying aircraft constraining the resolution of a conflict or occupying a flight level requested by another aircraft. The monitoring aids (MONA) function provides the controller with warnings if aircraft deviate from a clearance or planned trajectories and reminders related to the ATCO instructions to be issued. MONA might include the flight progress monitoring as well as the lateral, longitudinal, vertical and Cleared Flight Level (CFL) deviations.	**Indicator*:** % States that implemented MTCD and MONA, for ACCs, as required **Supporting metric**: The number of States that implemented MTCD and MONA for ACCs, as required. * As per the applicability area	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia (2 ACCs) Sudan UAE	70.00%	2023	100.00%	100.00%	0.00%	0.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	0.00%	NA	58.33%
							2022	100.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	0.00%	NA	50.00%
		Average					2023	100.00%	50.00%	0.00%	0.00%	100.00%	50.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	50.00%	NA	64.58%
							2022	100.00%	50.00%	0.00%	0.00%	50.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	50.00%	NA	53.57%
B0-NOPS	NOPS B0/1 Initial integration of collaborative airspace management with air traffic flow management	This element represents the initial step to enhancing the common situational awareness supporting optimum availability of airspace and ATC capacity to meet air traffic demands. It will result in a dynamic/rolling process supporting the enhancement of network operations. It will improve the cross border operations and optimise network operations based on the richest and more accurate information. It requires the implementation of new tools/systems and processes notably: 1- ASM/ATFM process for the provision of the airspace use plan; 2- Improved ASM/ATFM process for the provision of updated airspace use plan; 3- System/tools for provision of airspace plan to ATM network function; 4- Improved notification process for the ASM/ATFM purposes; 5- Improved accuracy of airspace booking; 6- Interoperability between local ASM and ATFM systems.	This element represents the initial step to enhancing the common situational awareness supporting optimum availability of airspace and ATC capacity to meet air traffic demands. It will result in a dynamic/rolling process supporting the enhancement of network operations. It will improve the cross border operations and optimise network operations based on the richest and more accurate information. It requires the implementation of new tools/systems and processes notably: 1- ASM/ATFM process for the provision of the airspace use plan; 2- Improved ASM/ATFM process for the provision of updated airspace use plan; 3- System/tools for provision of airspace plan to ATM network function; 4- Improved notification process for the ASM/ATFM purposes; 5- Improved accuracy of airspace booking; 6- Interoperability between local ASM and ATFM systems.	**Indicator*:** % of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process **Supporting metric**: number of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process.	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	50.00%	2023	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	100.00%	NA	41.67%
							2022	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	100.00%	NA	41.67%
		Average					2023	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	100.00%	NA	41.67%
							2022	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	100.00%	NA	41.67%
B1-ACAS	ACAS B1/1 ACAS Improvements Operational	TCAS systems selectively interrogate nearby aircraft to determine their position and velocity (using Mode C/S replies); this information is passed through "threat logic" to determine proximate traffic, issue traffic alerts, and issue collision avoidance "resolution advisories" to flight crews. Resolution advisories provide flight crews with vertical guidance (climb, descend, remain level, do not descend/climb) as appropriate to avoid collisions. Modern "hybrid surveillance" TCAS systems use ADS-B information to reduce the interrogations needed to perform some of these functions – however, resolution advisories are only issued based on interrogation/reply information (ADS-B data is not used).	TCAS systems selectively interrogate nearby aircraft to determine their position and velocity (using Mode C/S replies); this information is passed through "threat logic" to determine proximate traffic, issue traffic alerts, and issue collision avoidance "resolution advisories" to flight crews. Resolution advisories provide flight crews with vertical guidance (climb, descend, remain level, do not descend/climb) as appropriate to avoid collisions. Modern "hybrid surveillance" TCAS systems use ADS-B information to reduce the interrogations needed to perform some of these functions – however, resolution advisories are only issued based on interrogation/reply information (ADS-B data is not used).	**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	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	100.00%	2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	86.67%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	86.67%
		Average					2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	86.67%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	86.67%
B0 – SNET	SNET B0/1 Short Term Conflict Alert (STCA)	Surveillance data from ground radars and ADS-B stations is used to track aircraft. For each pair of aircraft which are sufficiently close, a short term conflict alert is raised if at least one of the following tests is true: 1- (current proximity test) their current horizontal separation is lower than a horizontal threshold and their current vertical separation is lower than a vertical threshold; or 2- (linear prediction test) at any of their future positions within a given amount of time (warning time), as linearly extrapolated from their current track, their horizontal separation will be lower than a horizontal threshold and their vertical separation will be lower than a vertical threshold. The horizontal and vertical thresholds may be different in each test but are equal or lower than the ATC separation standards for the airspace covered by the STCA system. The warning time for the linear prediction may depend on the control unit specificities but is typically equal to or lower than 2 minutes. The above parameters may be configured differently in defined geographic areas of the control unit. Additionally, inhibitions of alerts may be set up for a list of aircraft and for defined geographic areas. On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an avoiding instruction to one or both aircraft, with the appropriate emergency phraseology.	Surveillance data from ground radars and ADS-B stations is used to track aircraft. For each pair of aircraft which are sufficiently close, a short term conflict alert is raised if at least one of the following tests is true: 1- (current proximity test) their current horizontal separation is lower than a horizontal threshold and their current vertical separation is lower than a vertical threshold; or 2- (linear prediction test) at any of their future positions within a given amount of time (warning time), as linearly extrapolated from their current track, their horizontal separation will be lower than a horizontal threshold and their vertical separation will be lower than a vertical threshold. The horizontal and vertical thresholds may be different in each test but are equal or lower than the ATC separation standards for the airspace covered by the STCA system. The warning time for the linear prediction may depend on the control unit specificities but is typically equal to or lower than 2 minutes. The above parameters may be configured differently in defined geographic areas of the control unit. Additionally, inhibitions of alerts may be set up for a list of aircraft and for defined geographic areas. On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an avoiding instruction to one or both aircraft, with the appropriate emergency phraseology.	**Indicator*:** % of States that have implemented Short-term conflict alert (STCA) **Supporting metric**: number of States that have implemented Short-term conflict alert (STCA) * As per the applicability area	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	80%	2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	100.00%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	100.00%
	SNET B0/2 Minimum Safe Altitude Warning (MSAW)	Surveillance data (including tracked pressure altitude), flight data (including cleared flight levels) and environment data (including terrain and obstacle data) are input to the MSAW system to generate the alerts to the controller working position. On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an instruction to the aircraft, with the appropriate emergency phraseology.	Surveillance data (including tracked pressure altitude), flight data (including cleared flight levels) and environment data (including terrain and obstacle data) are input to the MSAW system to generate the alerts to the controller working position. On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an instruction to the aircraft, with the appropriate emergency phraseology.	**Indicator*:** % of States that have implemented Minimum safe altitude warning (MSAW) **Supporting metric**: number of States that have implemented Minimum safe altitude warning (MSAW)	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	80%	2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	100.00%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	NA	92.31%
	SNET B0/3 Area Proximity Warning (APW)	Surveillance data (including tracked pressure altitude), flight data (including cleared flight levels and RVSM status) and environment data (including airspace volumes) are input to the APW system to generate the alerts to the controller working position(s). On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an instruction to the aircraft, with the appropriate emergency phraseology.	Surveillance data (including tracked pressure altitude), flight data (including cleared flight levels and RVSM status) and environment data (including airspace volumes) are input to the APW system to generate the alerts to the controller working position(s). On noticing the alert, the controller has to analyse the situation and, if deemed necessary, issue an instruction to the aircraft, with the appropriate emergency phraseology.	**Indicator*:** % of States that have implemented Area Proximity Warning (APW) for ACCs, as required **Supporting metric**: number of States that have Implemented Area Proximity Warning (APW) for ACCs, as required	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	70%	2023	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	100.00%	NA	75.00%
							2022	100.00%	70.00%	0.00%	0.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	100.00%	0.00%	NA	0.00%	NA	55.83%
		Average					2023	100.00%	100.00%	100.00%	66.67%	100.00%	100.00%	66.67%	NA	100.00%	100.00%	100.00%	66.67%	NA	100.00%	NA	91.67%
							2022	100.00%	90.00%	66.67%	66.67%	100.00%	100.00%	66.67%	NA	100.00%	100.00%	100.00%	66.67%	0.00%	66.67%	NA	82.71%

B1-GADS	**GADS B1/2** Contact directory	Point of Contact repository is part of the Global Aeronautical Distress and Safety System (GADSS) and is used to enable timely contact between the persons relevant to an emergency situation involving an aircraft in a specified area.	Point of Contact repository is part of the Global Aeronautical Distress and Safety System (GADSS) and is used to enable timely contact between the persons relevant to an emergency situation involving an aircraft in a specified area.	**Indicator**: % of States that provided GADSS Point of Contact (PoC) information **Supporting Metric**: Number of States that provided GADSS Point of Contact (PoC) information	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	100.00%	2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	80.00%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	73.33%
	Average						2023	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	80.00%
							2022	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	73.33%
B0-RSEQ	**RSEQ B0/1** Arrival Management	This element represents management of arrival sequences, thereby allowing aircraft to fly more efficiently to the necessary fix and to reduce the use of holding stacks, especially at low altitude. Based on inbound traffic prediction information and decision making support, ATC operational techniques (metering points, speed-control, Time-To-Gain/Time-To-Lose, etc.) will be used to sequence inbound flights at minimum separation on final approach (time or distance based) so as to optimise runway utilization. Time-based metering (as opposed to time-based separations) is the practice of planning a sequence of traffic by time rather than distance. Typically, the relevant ATC authorities will assign a time in which a flight must arrive at the aerodrome or at a specific control point, and/or advises subject flights of speed changes as required to achieve the optimal separation on final approach. Besides inbound traffic predication information, input can include aerodrome capacity, terminal airspace capacity, aircraft capability, wind and other meteorological factors. Time-based metering is the primary mechanism in which arrival sequencing is achieved.	This element represents management of arrival sequences, thereby allowing aircraft to fly more efficiently to the necessary fix and to reduce the use of holding stacks, especially at low altitude. Based on inbound traffic prediction information and decision making support, ATC operational techniques (metering points, speed-control, Time-To-Gain/Time-To-Lose, etc.) will be used to sequence inbound flights at minimum separation on final approach (time or distance based) so as to optimise runway utilization. Time-based metering (as opposed to time-based separations) is the practice of planning a sequence of traffic by time rather than distance. Typically, the relevant ATC authorities will assign a time in which a flight must arrive at the aerodrome or at a specific control point, and/or advises subject flights of speed changes as required to achieve the optimal separation on final approach. Besides inbound traffic predication information, input can include aerodrome capacity, terminal airspace capacity, aircraft capability, wind and other meteorological factors. Time-based metering is the primary mechanism in which arrival sequencing is achieved.	**Indicator***: % of Aerodromes that have implemented arrival manager (AMAN), where required/applicable **Supporting Metric**: Number of Aerodrome that have implemented arrival manager (AMAN), where required/applicable * As per the applicability area	**Bahrain**: OBBI **Egypt**: HEBA, HECA, HELX, HESN, HESH **Qatar**: OTBD, OTHH **Saudi Arabia**: OEDF, OEJN, OEMA, OERK **UAE**: OMAA, OMDB	100.00%	2023	100.00%	0.00%	NA	NA	NA	NA	NA	NA	NA	100.00%	0.00%	NA	NA	100.00%	NA	35.71%
							2022	100.00%	0.00%	NA	NA	NA	NA	NA	NA	NA	100.00%	0.00%	NA	NA	100.00%	NA	35.71%
	Average						2023	100.00%	0.00%	NA	NA	NA	NA	NA	NA	NA	100.00%	0.00%	NA	NA	100.00%	NA	35.71%
							2022	100.00%	0.00%	NA	NA	NA	NA	NA	NA	NA	100.00%	0.00%	NA	NA	100.00%	NA	35.71%
B0 – ASUR	**ASUR B0/1** Automatic Dependent Surveillance – Broadcast (ADS-B)	ADS-B provides an aircraft's identification, position, altitude, velocity, and other information to any receiver (airborne or ground) within range. The broadcasted aircraft position/velocity is normally based on the global navigation satellite system (GNSS) and transmitted at least once per second.	ADS-B provides an aircraft's identification, position, altitude, velocity, and other information to any receiver (airborne or ground) within range. The broadcasted aircraft position/velocity is normally based on the global navigation satellite system (GNSS) and transmitted at least once per second.	**Indicator***: % of States that have implemented ADS-B to improve surveillance coverage/capabilities **Supporting Metric**: Number of States that have implemented ADS-B to improve surveillance coverage/capabilities	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	80%	2023	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	0.00%	100.00%	NA	100.00%	NA	75.00%
							2022	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	0.00%	NA	0.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	75.00%
	ASUR B0/2 Multilateration cooperative surveillance systems (MLAT)	MLAT is a new technique providing independent cooperative surveillance. The MLAT system interrogates an aircraft and the transponder reply is received by multiple receivers located in different places. The reply's times of arrival difference at the receivers allows the position of the source of signals to be determined, with an accuracy that is dependent on the number of receivers and their location relative to the aircraft. MLAT systems do not require a rotating radar dish and were initially deployed on airports to provide surface surveillance of aircraft. The technique is now used to provide surveillance over wide area (wide area MLAT system - WAM), sometimes in conjunction with ADS-B. MLAT requires more ground stations than ADS-B, but has the early implementation advantage of using existing aircraft transponders.	MLAT is a new technique providing independent cooperative surveillance. The MLAT system interrogates an aircraft and the transponder reply is received by multiple receivers located in different places. The reply's times of arrival difference at the receivers allows the position of the source of signals to be determined, with an accuracy that is dependent on the number of receivers and their location relative to the aircraft. MLAT systems do not require a rotating radar dish and were initially deployed on airports to provide surface surveillance of aircraft. The technique is now used to provide surveillance over wide area (wide area MLAT system - WAM), sometimes in conjunction with ADS-B. MLAT requires more ground stations than ADS-B, but has the early implementation advantage of using existing aircraft transponders.	**Indicator***: % of States that have implemented Multi-lateration (M-LAT) **Supporting Metric**: Number of States that have implemented Multi-lateration (M-LAT)	Bahrain Egypt Jordan Kuwait Oman Qatar Saudi Arabia UAE	80%	2023	100.00%	0.00%	NA	NA	0.00%	0.00%	NA	NA	100.00%	100.00%	0.00%	NA	NA	0.00%	NA	37.50%
							2022	100.00%	100.00%	NA	NA	0.00%	0.00%	NA	NA	100.00%	100.00%	100.00%	NA	NA	100.00%	NA	75.00%
	ASUR B0/3 Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	Downlink of Aircraft Parameters (DAPS) includes both Controller Access Parameters (CAPs) and System Access Parameters (SAPs). Possible CAPs include Magnetic Heading, Indicated Airspeed / Mach Number, Barometric rate of climb/descent, and Selected Altitude (which can also be consider a SAP). SAPs include Roll Angle, Track Angle Rate, True Track Angle, and Barometric Pressure Setting.	Downlink of Aircraft Parameters (DAPS) includes both Controller Access Parameters (CAPs) and System Access Parameters (SAPs). Possible CAPs include Magnetic Heading, Indicated Airspeed / Mach Number, Barometric rate of climb/descent, and Selected Altitude (which can also be consider a SAP). SAPs include Roll Angle, Track Angle Rate, True Track Angle, and Barometric Pressure Setting.	**Indicator***: % of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS) **Supporting Metric**: Number of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS)	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Oman Qatar Saudi Arabia Sudan UAE	80%	2023	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	83.33%
							2022	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	NA	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	83.33%
	Average						2023	100.00%	0.00%	100.00%	100.00%	66.67%	66.67%	0.00%	NA	100.00%	100.00%	33.33%	100.00%	NA	66.67%	NA	65.28%
							2022	100.00%	66.67%	50.00%	100.00%	66.67%	66.67%	0.00%	NA	66.67%	100.00%	100.00%	100.00%	NA	100.00%	NA	77.78%
B0 - NAVS	**NAVS B0/3** Aircraft Based Augmentation Systems (ABAS)	This element supports non-precision and vertically guided approaches using GNSS lateral navigation and barometric vertical guidance.	This element supports non-precision and vertically guided approaches using GNSS lateral navigation and barometric vertical guidance.	**Indicator**: % of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations **Supporting metric**: Number of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	70%	2023	100.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	53.33%
							2022	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	40.00%
	NAVS B0/4 Navigation Minimal Operating Networks (Nav. MON)	This element allows the rationalization of the ground based conventional infrastructure through the definition of minimal networks of ground navaids. Consultations and agreements from airspace users and aircraft operators are required to define this element. The MON should be revisited with the introduction of new navigation capabilities.	This element allows the rationalization of the ground based conventional infrastructure through the definition of minimal networks of ground navaids. Consultations and agreements from airspace users and aircraft operators are required to define this element. The MON should be revisited with the introduction of new navigation capabilities.	**Indicator**: % of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation **Supporting metric**: Number of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	70%	2023	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	40.00%
							2022	50.00%	100.00%	0.00%	50.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	46.67%
	Average						2023	50.00%	50.00%	0.00%	50.00%	100.00%	50.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	46.67%
							2022	75.00%	50.00%	0.00%	75.00%	0.00%	50.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	43.34%
B0 & 1 - COMI	**COMI B0/7** ATS Message Handling System (AMHS)	The AMHS is served as ICAO mandated communication for data exchange between ANSPs (ICAO Doc. 9880 and Annex X). AMHS is served as enabler for 1- Flight Plan/Clearance 2- AIDC: Flight transfer 3- MET data ATS voice service is used for emergency coordination and/or normal coordination when data communication service is not available. AMHS is expected to be utilized to carry traffic for AIDC/Flight Plan/MET until SWIM is ready in Block 2. This is due to ANSPs need time to upgrade/implement adaptors to support SWIM interface. In the meantime, AMHS will accommodate SWIM compliance data message (IWXXM) as required. It is noted that AMHS would not be able to support FF-ICE and FIXM data. The interface is based on IP over legacy dedicated point-to-point circuits.	The AMHS is served as ICAO mandated communication for data exchange between ANSPs (ICAO Doc. 9880 and Annex X). AMHS is served as enabler for 1- Flight Plan/Clearance 2- AIDC: Flight transfer 3- MET data ATS voice service is used for emergency coordination and/or normal coordination when data communication service is not available. AMHS is expected to be utilized to carry traffic for AIDC/Flight Plan/MET until SWIM is ready in Block 2. This is due to ANSPs need time to upgrade/implement adaptors to support SWIM interface. In the meantime, AMHS will accommodate SWIM compliance data message (IWXXM) as required. It is noted that AMHS would not be able to support FF-ICE and FIXM data. The interface is based on IP over legacy dedicated point-to-point circuits.	**Indicator**: % of States that have established AMHS interconnections with adjacent COM Centres **Supporting metric**: Number of States that have established AMHS interconnections with adjacent COM Centres	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	90%	2023	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	73.33%
							2022	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	73.33%
	COMI B1/1 Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	The ATN/IPS internetwork consists of IPS nodes and networks operating in a multinational environment in support of Air Traffic Service Communication (ATSC) as well as Aeronautical Industry Service Communication (AINSC), such as Aeronautical Administrative Communications (AAC) and Aeronautical Operational Communications. This evolution will support enhanced civil-military cooperation and coordination functions, if interoperability and military information security aspects are considered.	The ATN/IPS internetwork consists of IPS nodes and networks operating in a multinational environment in support of Air Traffic Service Communication (ATSC) as well as Aeronautical Industry Service Communication (AINSC), such as Aeronautical Administrative Communications (AAC) and Aeronautical Operational Communications. This evolution will support enhanced civil-military cooperation and coordination functions, if interoperability and military information security aspects are considered.	**Indicator**: % of States that have established National IP Network for voice and data communication **Supporting metric**: Number of States that have established National IP Network for voice and data communication	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen	80%	2023	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	66.67%
							2022	100.00%	100.00%	0.00%	100.00%	100.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	60.00%
	Average						2023	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	50.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	70.00%
							2022	100.00%	100.00%	0.00%	100.00%	100.00%	50.00%	50.00%	0.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	0.00%	66.67%
State level of implementation (Average)							2023	89.00%	52.50%	44.44%	57.41%	79.63%	68.52%	30.95%	25.00%	81.48%	100.00%	76.67%	70.83%	0.00%	89.17%	25.00%	62.19%
							2022	91.13%	75.14%	42.18%	58.42%	61.68%	66.96%	38.60%	24.71%	68.67%	99.80%	81.75%	64.69%	7.50%	88.16%	26.51%	56.93%