



**SUMMARY OF DISCUSSION
MID ASBU WEBINAR**

(13 – 15 OCTOBER 2020, 08:00 – 10:00 UTC)

1. INTRODUCTION

1.1 The MID ASBU Webinar was successfully held from 13 to 15 October 2020, 08:00 - 10:00 UTC using MS Teams facility.

1.2 The objectives of the ASBU Webinar were to familiarize the participants with the 6th Edition of the GANP (Multi-layer Structure, Performance Framework, Basic Building Blocks (BBB) Framework, Aviation System Block Upgrades (ASBU) Framework, etc.); and showcase the different ASBU Threads through online demonstration using the GANP Portal to agree on the prioritization of the ASBU Threads/Elements, considering States' and users' needs and plans.

1.3 The Webinar was attended by a total of two hundred and fifty-one (251) participants from twenty (20) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Somalia, Syria, Tunisia, UAE, USA and Yemen) and six (6) Organizations (ACAO, CANSO, IATA, IFALPA, IFATCA and Jeppesen). The list of participants is at **Attachment A**.

1.4 The Webinar's materials including, Agenda/Work Programme, presentations and the Summary of Discussion are available at <http://www.icao.int/MID%20ASBU%20Webinar.aspx>.

2. OPENING REMARKS

2.1 Mr. Mohamed Smaoui, Acting Regional Director, ICAO MID Office, welcomed all participants. Mr. Smaoui extended his gratitude to Ms. Olga De Frutos, Technical Officer, ANB, ICAO HQ, who accepted to support this Webinar, despite the time difference and her busy schedule. He recalled that the MSG/7 meeting agreed that the MIDANPIRG Sub-Groups should conduct virtual meetings in the 4th quarter of 2020 to review the GANP 6th Edition and identify ASBU priority 1 Threads/Elements and associated monitoring elements, considering the Secretariat proposal and States' and stakeholders' inputs. Mr. Smaoui highlighted that the Webinar will also provide an opportunity to start brainstorming on the need to start including in the MID Air Navigation Strategy some elements related to the monitoring of the performance of the air navigation system, through the selection of an initial set of KPIs from the 19 KPIs available in the GANP, which could be monitored in the MID Region.

2.2 Eng. Abdelnebi Manar, Director General of ACAO, also welcomed all participants and commended the excellent cooperation between ACAO and ICAO for the benefit of States.

3. DISCUSSIONS

3.1 *GANP 6th Edition and Regional & National Air Navigation planning*

3.1.1 This session was presented by Ms. Olga de Frutos, Technical Officer, ANB, ICAO Headquarters, through an online demonstration. This session provided an opportunity to familiarize the participants with all the functions/capabilities of the GANP online portal, including the Multilayer Structure, ASBU and Performance Framework, Basic Building Blocks (BBBs), Air Navigation – System Performance Assessment tool (AN-SPA), CBA checklist, Regional and National Air Navigation Plans, etc.

3.2 **ASBU Threads and Revised MID Region Air Navigation Strategy**

3.2.1 During this session, the participants reviewed the following ASBU Threads (Block 0 and Block 1):

- ASBU Technology Threads: NAVS, ASUR, COMS & COMI.
- ASBU Information Threads: DAIM, FICE, AMET & SWIM.
- ASBU Operational Threads: APTA, FRTO, NOPS, ACAS, SNET, SURF, ACDM, GADS and RSEQ.

3.2.2 Considering the Secretariat proposal presented to the MSG/7 meeting and sent to States via SL: AN 1/5 – 20/178 dated 1 October 2020; the replies received from States and the outcome of the discussions, the Table showing the prioritization of the ASBU Threads/Elements and associated responsible monitoring bodies was updated as at **Appendix A**.

3.2.3 The details related to the priority 1 ASBU Elements with associated monitoring elements (applicability area, indicators, metrics, targets and timelines) were also reviewed and updated as at **Appendix B**. It was agreed that this should be further reviewed and updated by relevant MIDANPIRG Sub-Groups.

3.3 **KPIs**

3.3.1 The difference between outcome indicators (Performance indicators) and implementation indicator was underlined as follows:

- o Outcome indicators (Performance indicators), which are important at global level (GANP); and
- o Driver indicators (implementation indicators), which are used for the monitoring of the status of implementation of ASBU elements (related to Regional Offices and States and RANP).

3.3.2 States should consider all related definitions, descriptions, types of data, variance, formula, etc. available on the GANP Portal for each KPI. For example, KPI 01 related to Departure punctuality is defined as “the percentage of flight departing from gate on-time (compared to schedule) and the required data is Scheduled time of departure (STD), Scheduled off-block time (SOBT) and Actual off-block time (AOBT). Details related to each of the 19 KPIs were reviewed as at **Appendix C**.

3.3.3 An initial list of KPIs which might be used in the MID Region for the monitoring of the Air Navigation System performance was identified.

3.3.4 The discussion concerned mainly the challenges related to the collection of necessary data (who is responsible of the data collection, how to collect data, what is the timeframe for each category, etc.). **Appendix D** contains the initial set of KPIs which might be monitored in the MID Region, pending further discussion in the relevant MIDANPIRG Sub-Groups to ensure that necessary data could be collected and agree on additional details (how the data would be collected at National Level and forwarded to the MID Office for the aggregate level, agreement on the timeframe for the collection of data, etc.).

4. **WEBINAR CONCLUSIONS AND RECOMMENDATIONS**

- States are strongly encouraged to use the GANP portal (<https://www4.icao.int/ganpportal>) and familiarize themselves with all features available and provide feedback to ICAO for further improvement;
- States are encouraged to share their implementation experience and best practices using the GANP Portal;

- States are urged to initiate the development of National Air Navigation Plan (NANP) commensurate with the establishment of a NANP Committee composed of representatives from all concerned stakeholders (CAA, ANSP, Military, Airlines, Aerodrome Operators, etc.);
- States are urged to share their identified priorities, KPIs, etc. with the ICAO MID Office;
- States are urged to take necessary measures to complete the implementation of the relevant ASBU Block 0 elements (in accordance with Regional and National Plans);
- States are urged to provide the ICAO MID Office with necessary data for ASBU monitoring and reporting purposes;
- States are strongly encouraged to use the Air Navigation –System Performance Assessment tool (AN-SPA) available on the GANP Portal to implement performance-based approach (6-step performance management process) for a cost-effective modernization of the air navigation system;
- States and air navigation service providers (ANSPs) to perform a cost-benefit analysis (CBA) when defining optimum solutions through the use of the ASBU framework taking into consideration the users’ needs and the size and complexity of their air navigation system (volume of activities); and
- States are encouraged to participate actively in the coming MIDANPIRG Sub-Groups virtual meetings to discuss further and improve the revised MID Region Air Navigation Strategy.

5. CLOSING

5.1 Mr. Mohamed Smaoui, Acting Regional Director, ICAO MID Office thanked all participants for their active participation and fruitful discussion and valuable outcomes. He indicated that from an ICAO perspective, the objectives of the webinar were met (raising awareness, having common understating, identify challenges, prerequisites, benefits, etc.).

5.2 Mr. Smaoui highlighted that the new version of the MID Air Navigation Strategy to be presented to MIDANPIG/18 for endorsement, will include two parts, as follows:

- continuation of the current version related to ASBU priority one Threads and Elements, monitoring and reporting on implementation (output oriented).
- new part related to the monitoring of the performance of AN system (considering the 6 step approach contained in the GANP) and providing the KPIs to be monitored at national and regional levels (outcome oriented).

5.3 Mr. Mohamed Rejeb, Air Navigation and Safety Expert from ACAO thanked all the participants and reiterated ACAO’s support to the ICAO MID Office activities. In this respect, he highlighted that the ASBU Webinar planned for January 2021 will be also jointly organized between ACAO and the ICAO MID Office to review and consolidate the outcomes of all MIDANPIRG Sub-Groups, before presentation of the Revised MID Air Navigation Strategy to MIDANPIRG/18 for endorsement.

APPENDIX A

MID REGION ASBU Threads & Elements (Block 0 & 1) Prioritization Table

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
<i>Technology Threads</i>							
ASUR	B0/1	ADS-B	1	2020	CNS SG	ATM SG ASPIG	
	B0/2	MLAT	1	2020	CNS SG	ATM SG ASPIG	
	B0/3	SSR-DAPS	1	2020	CNS SG	ATM SG ASPIG	
	B1/1	SB ADS-B	2				
NAVS	B0/1	Ground Based Augmentation Systems (GBAS)	2				
	B0/2	Satellite Based Augmentation Systems (SBAS)	2				
	B0/3	Aircraft Based Augmentation Systems (ABAS)	1	2020	CNS SG	PBN SG ATM SG AIM SG	
	B0/4	Navigation Minimal Operating Networks (Nav. MON)	1	2020	CNS SG	PBN SG	
	B1/1	Extended GBAS	2				
COMI	B0/1	Aircraft Communication Addressing and Reporting System (ACARS)	2				
	B0/2	Aeronautical Telecommunication Network/Open System Interconnection (ATN/OSI)	2				
	B0/3	VHF Data Link (VDL) Mode 0/A	2				

	B0/4	VHF Data Link (VDL) Mode 2 Basic	2				
	B0/5	Satellite communications (SATCOM) Class C Data	2				
	B0/6	High Frequency Data Link (HFDL)	2				
	B0/7	AMHS	1	2014	CNS SG		
	B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	1	2020	CNS SG		
	B1/2	VHF Data Link (VDL) Mode 2 Multi-Frequency	2				
	B1/3	SATCOM Class B Voice and Data	2				
	B1/4	Aeronautical Mobile Airport Communication System (AeroMACS) Ground-Ground	2				
Information Threads							
DAIM	B1/1	Provision of quality-assured aeronautical data and information	1	2020	AIM SG		It was B0, monitored earlier
	B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets	2				
	B1/3	Provision of digital terrain data sets	1	2020	AIM SG		It was B0, monitored earlier
	B1/4	Provision of digital obstacle data sets	1	2020	AIM SG		It was B0, monitored earlier
	B1/5	Provision of digital aerodrome mapping data sets	2				

	B1/6	Provision of digital instrument flight procedure data sets	2				
	B1/7	NOTAM improvements	2				
FICE	B0/1	Automated basic inter facility data exchange (AIDC)	1	2014	CNS SG ATM SG		
AMET	B0/1	Meteorological observations products	1	2014	MET SG		
	B0/2	Meteorological forecast and warning products	1	2014	MET SG		
	B0/3	Climatological and historical meteorological products	1	2014	MET SG		
	B0/4	Dissemination of meteorological products	1	2014	MET SG	CNS SG	
	B1/1	Meteorological observations information	2				
	B1/2	Meteorological forecast and warning information	2				
	B1/3	Climatological and historical meteorological information	2				
	B1/4	Dissemination of meteorological information	2				
Operational Threads							
APTA	B0/1	PBN Approaches (with basic capabilities)	1	2014	PBN SG	ATM SG AIM SG CNS SG	

	B0/2	PBN SID and STAR procedures (with basic capabilities)	1	2014	PBN SG	ATM SG AIM SG	
	B0/3	SBAS/GBAS CAT I precision approach procedures	2				
	B0/4	CDO (Basic)	1	2014	PBN SG	ATM SG	
	B0/5	CCO (Basic)	1	2014	PBN SG	ATM SG	
	B0/6	PBN Helicopter Point in Space (PinS) Operations	2				
	B0/7	Performance based aerodrome operating minima – Advanced aircraft	1	2020	ATM SG PBN SG	AIM SG	
	B0/8	Performance based aerodrome operating minima – Basic aircraft	2				
	B1/1	PBN Approaches (with advanced capabilities)	2				
	B1/2	PBN SID and STAR procedures (with advanced capabilities)	2				
	B1/3	Performance based aerodrome operating minima – Advanced aircraft with SVGS	2				
B1/4	CDO (Advanced)	2					

	B1/5	CCO (Advanced)	2				
B0-FRTO	B0/1	Direct routing (DCT)	2				
	B0/2	Airspace planning and Flexible Use of Airspace (FUA)	1	2014	ATM SG	AIM SG	
		Level 1 Strategic	1	2014	ATM SG	AIM SG	
		Airspace planning and Flexible Use of Airspace (FUA) Level 2	1	2014	ATM SG	AIM SG	
	B0/3	Pre-validated and coordinated ATS routes to support flight and flow	2				
	B0/4	Basic conflict detection and conformance monitoring	1	2014	ATM SG	CNS SG	
	B1/1	Free Route Airspace (FRA)	2				
	B1/2	Required Navigation Performance (RNP) routes	2				
	B1/3	Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	2				
	B1/4	Dynamic sectorization	2				
	B1/5	Enhanced Conflict Detection Tools and Conformance Monitoring	2				
	B1/6	Multi-Sector Planning	2				

	B1/7	Trajectory Options Set (TOS)	2				
NOPS	B0/1	Initial integration of collaborative airspace management with air traffic flow management	1	2015	ATM SG		
	B0/2	Collaborative Network Flight Updates	2				
	B0/3	Network Operation Planning basic features	2				
	B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	2				
	B0/5	Dynamic ATFM slot allocation	2				
	B1/1	Short Term ATFM measures	2				
	B1/2	Enhanced Network Operations Planning	2				
	B1/3	Enhanced integration of Airport operations planning with network operations planning	2				
	B1/4	Dynamic Traffic Complexity Management	2				
	B1/5	Full integration of airspace management with air traffic flow management	2				

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	B1/6	Initial Dynamic Airspace configurations	2				
	B1/7	Enhanced ATFM slot swapping	2				
	B1/8	Extended Arrival Management supported by the ATM Network function	2				
	B1/9	Target Times for ATFM purposes	2				
	B1/10	Collaborative Trajectory Options Program (CTOP)	2				
ACAS	B1/1	ACAS Improvements	1	2014	ATM SG CNS SG		It was B0, monitored earlier
SNET	B0/1	Short Term Conflict Alert (STCA)	1	2017	ATM SG	CNS SG	
	B0/2	Minimum Safe Altitude Warning (MSAW)	1	2017	ATM SG	CNS SG	
	B0/3	Area Proximity Warning (APW)	1	2020	ATM SG	CNS SG	
	B0/4	Approach Path Monitoring (APM)	2				
	B1/1	Enhanced STCA with aircraft parameters	2				
	B1/2	Enhanced STCA in complex TMA	2				

SURF	B0/1	Basic ATCO tools to manage traffic during ground operations	1	2014	ASPIG	ATM SG CNS SG	
	B0/2	Comprehensive situational awareness of surface operations	1	2014	ASPIG	ATM SG CNS SG	
	B0/3	Initial ATCO alerting service for surface operations	1	2020	ASPIG	ATM SG CNS SG	
	B1/1	Advanced features using visual aids to support traffic management during ground operations	2		ASPIG	ATM SG CNS SG	
	B1/2	Comprehensive pilot situational awareness on the airport surface	2		ASPIG	ATM SG CNS SG	
	B1/3	Enhanced ATCO alerting service for surface operations	2		ASPIG	ATM SG CNS SG	
	B1/4	Routing service to support ATCO surface operations management	2		ASPIG	ATM SG CNS SG	
	B1/5	Enhanced vision systems for taxi operations	2		ASPIG	ATM SG CNS SG	
ACDM	B0/1	Airport CDM Information Sharing (ACIS)	1	2014	ASPIG	CNS SG, AIM SG, ATM SG	
	B0/2	Integration with ATM Network function	1	2014	ASPIG	CNS SG, AIM SG, ATM SG	

	B1/1	Airport Operations Plan (AOP)	1	2020	ASPIG	CNS SG, AIM SG, ATM SG	
	B1/2	Airport Operations Centre (APOC)	2		ASPIG	CNS SG, AIM SG, ATM SG	
GADS	B1/1	Aircraft Tracking	2				
	B1/2	Contact directory service	1	2020	CNS ATM		
RSEQ	B0/1	Arrival Management	1	2020	ASPIG ATM	CNS SG	
	B0/2	Departure Management	2				
	B0/3	Point merge	2				
	B1/1	Extended arrival metering	2				

APPENDIX B

MID REGION ASBU Threads & Elements (Block 0 & 1) Monitoring Table

Priority 1: Elements that have the highest contribution to the improvement of air navigation safety, capacity and/or efficiency in the MID Region. These elements should be implemented where applicable and will be used for the purpose of regional air navigation monitoring and reporting.

Priority 2: Elements recommended for implementation based on identified operational needs and benefits.

Priority 1 Thread: Any thread with at least 1 priority 1 element.

APTA		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
APTA B0/1	PBN Approaches (with basic capabilities)	All RWYs ENDS at International Aerodromes	Priority 1	<p>Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)</p> <p>Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)</p>		
APTA B0/2	PBN SID and STAR procedures (with basic capabilities)	All RWYs ENDS at International Aerodromes	Priority 1	<p>Indicator: % of runway ends at international aerodromes provided with PBN SID and STAR (basic capabilities).</p> <p>Supporting Metric: Number of runways ends at international aerodromes provided with PBN SIDs and STAR (basic capabilities).</p>		
APTA B0/4	CDO (Basic)	OBBI, HESH, HEMA, HEGN, OIIE, OIKB, OIFM, OJAI, OJAJ, OKBK, OLBA, OOMS, OTHH, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA,	Priority 1	<p>Indicator: % of International Aerodromes/TMA with CDO implemented as required.</p> <p>Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.</p>		

APTA		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
		OMDB, OMDW, OMSJ				
APTA B0/5	CCO (Basic)	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	Priority 1	<p>Indicator: % of International Aerodromes/TMA with CCO implemented as required.</p> <p>Supporting Metric: Number of International Aerodromes/TMAs with CCO implemented as required.</p>		
APTA B0/7	Performance based aerodrome operating minima – Advanced aircraft	TBD	Priority 1	<p>Indicator: % of International Aerodromes with PB AOM implemented for Advanced aircraft as required.</p> <p>Supporting Metric: Number of International Aerodromes with PB AOM implemented for Advanced aircraft as required.</p>		

FRTO		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
FRTO B0/2	Airspace planning and Flexible Use of Airspace (FUA) Level 1 Strategic	All States	Priority 1	<p>Indicator: % of States that have implemented FUA.</p> <p>Supporting metric*: number of States that have implemented FUA.</p>		

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	Airspace planning and Flexible Use of Airspace (FUA) Level 2 Pre-tactical	All States	Priority 1	Indicator: % of States that have implemented FUA Level 1 Supporting metric*: number of States that have implemented FUA Level 1		
	Airspace planning and Flexible Use of Airspace (FUA) Level 3 Tactical	All States	Priority 1	Indicator: % of States that have implemented FUA Level 2 Supporting metric*: number of States that have implemented FUA Level 2		
FRTO B0/4	Basic conflict detection and conformance monitoring	In high traffic density areas	Priority 1	Indicator: % of States that have implemented conflict detection tools (Medium Term Conflict Detection Tool- MTCD) and conformance monitoring warnings. Supporting metric*: number of States that have implemented conflict detection tools (Medium Term Conflict Detection Tool- MTCD) and conformance monitoring warnings.		

NOPS		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
NOPS B0/1	Initial integration of collaborative airspace management with air traffic flow management	All States	Priority 1	Indicator: % of States integrating collaborative airspace management with air traffic flow management Supporting metric: number of States that have integrated collaborative airspace management with air traffic flow management		

DAIM	Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
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DAIM B1/1	Provision of quality-assured aeronautical data and information	All States	Priority 1	<p>Indicator: % of States provide for quality-assured aeronautical data and information</p> <p>Supporting Metrics:</p> <ul style="list-style-type: none"> 1- Number of States that have implemented QMS for AIS/AIM 2- Number of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) and have implemented WGS-84 Geoid Undulation 3- Number of States that have implemented an AIXM-based AIS database (AIXM V5.1+) 4- Number of States that have established formal arrangements with at least 50% of their AIS data originators 		
DAIM B1/3	Provision of digital terrain data sets	All States	Priority 1	<p>Indicator: % of States that provide required Terrain digital datasets</p> <p>Supporting Metric: Number of States that provide required Terrain digital datasets</p>		
DAIM B1/4	Provision of digital obstacle data sets	All States	Priority 1	<p>Indicator: % of States that provide required Obstacle digital datasets</p> <p>Supporting Metric: Number of States that provide required Obstacle digital datasets</p>		

FICE		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
FICE B0/1	Automated basic inter facility data exchange (AIDC)	As per the AIDC/OLDI Applicability Table	Priority 1	Indicator: % of priority 1 AIDC/OLDI Interconnection have been implemented		

				Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs.		
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ASUR		<i>Applicability</i>	<i>Priority</i>	Performance Indicators/Supporting Metrics	Targets	Timelines
ASUR B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)	TBD	Priority 1	Indicator: % of States that have implemented ADS-B to supplement surveillance coverage Supporting Metric*: Number of applicable States that have implemented ADS-B		
ASUR B0/2	Multilateration cooperative surveillance systems (MLAT)	TBD	Priority 1	Indicator: % of States that have implemented Multilateration as required Supporting Metric*: Number of applicable States that have implemented Multilateration		
ASUR B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	All States	Priority 1	Indicator: % of States that have enabled the downlink of the aircraft parameter (DAPS) Supporting Metric*: Number of States enable ATM System to obtain DAPS from the cooperative surveillance radars		

SNET		<i>Applicability</i>	<i>Priority</i>	Performance Indicators/Supporting Metrics	Targets	Timelines
SNET B0/1	Short Term Conflict Alert (STCA)	All States	Priority 1	Indicator: % of States that have implemented Short-term conflict alert (STCA) Supporting metric*: number of States that have implemented Short-term conflict alert (STCA)		
SNET B0/2	Minimum Safe Altitude Warning (MSAW)	All States	Priority 1	Indicator: % of States that have implemented Minimum safe altitude warning (MSAW)		

				Supporting metric*: number of States that have implemented Minimum safe altitude warning (MSAW)		
SNET B0/3	Area Proximity Warning (APW)	TBD	Priority 1	Indicator: % of States having implemented APW. Supporting metric*: number of States having implemented APW.		

GADS		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
GADS B1/2	Contact directory service	All states	Priority 1	Indicator: % of States provided Point of Contact information Supporting metric: number of States that have implemented directory service.		

AMET		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
AMET B0/1	Meteorological observations products	All states	Priority 1	Indicator: % of States that provides the following Meteorological observations products, as required: <ol style="list-style-type: none"> 1. Automatic Weather Observation System (AWOS) information (including real-time exchange of wind and RVR data) 2. Local reports (MET REPORT / SPECIAL) 3. Aerodrome reports (METAR / SPECI) 4. Lightning information 5. Ground-based weather radar information 6. Meteorological satellite imagery 7. Aircraft meteorological report (ie. ADS-B, AIREP, AMDAR etc.) 		

				<ul style="list-style-type: none"> 8. Vertical wind and temperature profiles 9. Volcano Observatory Notice for Aviation (VONA) 10. Wind shear alerts <p>Supporting metric: number of States that provides the above Meteorological observations products, as required.</p>		
AMET B0/2	Meteorological forecast and warning products	All states	Priority 1	<p>Indicator: % of States that provides the following Meteorological forecast and warning products, as required.</p> <ul style="list-style-type: none"> 1. World Area Forecast System (WAFS) gridded products 2. Significant Weather (SIGWX) 3. Low-level Area Forecast (GAMET) 4. Aerodrome Forecast (TAF) 5. Trend Forecast (TREND) 6. Take-off Forecast 7. Tropical Cyclone Advisory (TCA) 8. Volcanic Ash Advisory (VAA) 9. AIRMET 10. SIGMET 11. Aerodrome Warning 12. Wind Shear Warning <p>Supporting metric: number of States that provides the above Meteorological forecast and warning products, as required.</p>		
AMET B0/3	Climatological and historical meteorological products	All states	Priority 1	<p>Indicator: % of States that provides Climatological and historical meteorological products, as required.</p> <p>Supporting metric: number of States that provide Climatological and historical meteorological products, as required.</p>		

AMET B0/4	Dissemination of meteorological products	All states	Priority 1	<p>Indicator: % of States that disseminating Meteorological products using a variety of formats and means (TAC, Gridded, Graphical, BUFR code, IWXXM)</p> <p>Supporting metric: number of States that disseminating Meteorological products using the above formats and means.</p>		
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ACAS		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
ACAS B1/1	ACAS Improvements Operational	All States	Priority 1	<p>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</p> <p>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</p>		

COMI		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
COMI B0/7	ATS Message Handling System (AMHS)	All States	Priority 1	<p>Indicator: % of States have implemented AMHS connections with all adjacent COM Centres as required</p> <p>Supporting metric: Number of required AMHS interconnections established in the COM Centre</p>		
COMI B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	All States	Priority 1	<p>Indicator 1: % of States that established National IP Network for voice and data communication</p> <p>Supporting metric: Number of States that established National IP Network for voice and data communication</p>		

				<p>Indicator 2: % of States that joined the MID IP Network</p> <p>Supporting metric: Number of States that joined the MID IP Network</p>		
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NAV		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
NAVS B0/3	Aircraft Based Augmentation Systems (ABAS)	All States	Priority 1	<p>Indicator: % of States requiring aircrafts' equipage with the Aircraft Based Augmentation System (ABAS) to enable PBN Operations</p> <p>Supporting metric: Number of States requiring aircrafts' equipage with the Aircraft Based Augmentation System (ABAS) to enable PBN Operations</p>		
NAVS B0/4	Navigation Minimal Operating Networks (Nav. MON)	All States	Priority 1	<p>Indicator: % of States developed the plan of rationalized conventional navaids network to ensure the necessary levels of resilience for navigation</p> <p>Supporting metric: Number of States developed the plan of rationalized conventional navaids network to ensure the necessary levels of resilience for navigation</p>		

SURF		Applicability	Priority	Performance Indicators/Supporting Metrics	Targets	Timelines
SURF-B0/1	Basic ATCO tools to manage traffic during ground operations		Priority 1			
SURF-B0/2	Comprehensive situational awareness of surface operations		Priority 1			

SURF- B0/3	Initial ATCO alerting service for surface operations		Priority 1			
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ACDM		<i>Applicability</i>	<i>Priority</i>	Performance Indicators/Supporting Metrics	Targets	Timelines
ACDM- B0/1	Airport CDM Information Sharing (ACIS)		Priority 1			
ACDM- B0/2	Integration with ATM Network function		Priority 1			
ACDM- B1/1	Airport Operations Plan (AOP)		Priority 1			

RSEQ		<i>Applicability</i>	<i>Priority</i>	Performance Indicators/Supporting Metrics	Targets	Timelines
RSEQ- B0/1	Arrival Management	TBD	Priority 1			

APPENDIX C

GANP KPIs

#	Title	Definition	Measurement Units	Objects Characterized	Data Requirement	Data Feed Providers
KPI01	Departure punctuality	Percentage of flights departing from the gate on-time (compared to schedule).	% of scheduled flights	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each departing scheduled flight: <ul style="list-style-type: none"> - Scheduled time of departure (STD) or Scheduled off-block time (SOBT) - Actual off-block time (AOBT) 	Schedule database(s), airports, airlines and/or ANSPs
KPI02	Taxi-out additional time	Actual taxi-out time compared to an unimpeded/reference taxi-out time.	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each departing flight: <ul style="list-style-type: none"> - Actual off-block time (AOBT) - Actual take-off time (ATOT) In addition, for the advanced KPI variant: <ul style="list-style-type: none"> - Departure gate ID - Take-off runway ID 	Airports (airport operations, A-CDM), airlines (OOOI data), ADS-B data providers and/or ANSPs
KPI03	ATFM slot adherence	Percentage of flights taking off within their assigned ATFM slot (Calculated Take-Off Time Compliance).	% of flights subject to flow restrictions	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each departing IFR flight subject to an ATFM regulation: <ul style="list-style-type: none"> - Calculated Take-Off Time (CTOT) - Actual take-off time (ATOT) 	Airports, ATFM service
KPI04	Filed flight plan en-route extension	Flight planned en-route distance compared to a reference ideal trajectory distance.	% excess distance	The KPI can be computed for any volume of en-route airspace; this implies that it can be computed at State level (covering the FIRs of a State).	For each flight plan: <ul style="list-style-type: none"> - Departure airport (Point A) - Destination airport (Point B) - Entry point in the 'Reference area' (Point O) - Exit point from the 'Reference area' (Point D) - Entry points in the 'Measured areas' (Points N) 	ANSPs

					<ul style="list-style-type: none"> - Exit points from the ‘Measured areas’ (Points X) - Planned distance for each NX portion of the flight 	
KPI05	Actual en-route extension	Actual en-route distance flown compared to a reference ideal distance.	% excess distance	The KPI can be computed for a traffic flow or a volume of en-route airspace; this implies that it can be computed at State level (covering the FIRs of a State).	<p>For each actual flight trajectory:</p> <ul style="list-style-type: none"> - Departure airport (Point A) - Destination airport (Point B) - Entry point in the ‘Reference Area’ (Point O) - Exit point from the ‘Reference Area’ (Point D) - Entry points in the ‘Measured Areas’ (Points N) - Exit points from the ‘Measured Areas’ (Point X) - Distance flown for each NX portion of the actual flight trajectory, derived from surveillance data (radar, ADS-B...). 	ANSPs, ADS-B data providers
KPI06	En-route airspace capacity	The maximum volume of traffic an airspace volume will safely accept under normal conditions in a given time period.	<p>Variant 1: Movements/hr</p> <p>Variant 2: Number of aircraft (occupancy count)</p>	The KPI is typically used at the level of individual sectors (sector capacity) or en-route facilities (ACC capacity).	The various capacities are determined by the ANSP, and are dependent on traffic pattern, sector configuration, ATCO and system capability, etc.	ANSPs
KPI07	En-route ATFM delay	ATFM delay attributed to flow restrictions in a given en-route airspace volume	Minutes/flight	The KPI can be computed for any volume of en-route airspace which participates in the ATFM process.	<p>For each IFR flight:</p> <ul style="list-style-type: none"> - Estimated Take-off Time (ETOT) computed from the last filed flight plan - Calculated Take-off Time (CTOT) - ID of the flow restriction generating the ATFM delay - Airspace volume associated with the flow restriction - Delay code associated with the flow restriction 	ATFM

KPI08	Additional time in terminal airspace	Actual terminal airspace transit time compared to an unimpeded time. Actual trajectories are generally longer in time and distance due to path stretching and/or holding patterns. In the example below the unimpeded trajectories are shown in red, and the actual trajectories in green and blue. See Figure 1: Terminal trajectories.	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each arriving flight: <ul style="list-style-type: none"> - Terminal airspace entry time, computed from surveillance data (radar, ADS-B...) - Actual landing time (ALDT) - In addition, for the advanced KPI variants: <ul style="list-style-type: none"> - Terminal airspace entry segment, computed from surveillance data (radar, ADS-B...) - Landing runway ID 	Airlines (OOOI data), airports, ADS-B data providers and/or ANSPs
KPI09	Airport peak capacity	The highest number of operations an airport can accept in a one-hour time frame (also called declared capacity). Can be computed for arrivals, departures or arrivals + departures.	Number of departures / hour, Number of landings / hour, Number of (departures + landings) / hour	The KPI is computed for individual airports.	Scheduling parameters for slot controlled airports Airport Acceptance Rates (AAR), Airport Departure Rates (ADR)	Airports
KPI10	Airport peak throughput	The 95th percentile of the hourly number of operations recorded at an airport, in the “rolling” hours sorted from the least busy to the busiest hour. Can be computed for	Number of departures / hour, Number of landings / hour, Number of (departures + landings) / hour	The KPI is computed for individual airports.	For each flight: <ul style="list-style-type: none"> - Actual landing time (ALDT) - Actual take-off time (ATOT). 	Airports

		arrivals, departures or arrivals + departures.				
KPI11	Airport throughput efficiency	Airport throughput (accommodated demand) compared to capacity or demand, whichever is lower. Can be computed for arrivals, departures or arrivals + departures.	Average Over/Under Delivery or % of accommodated operations.	The KPI is computed for individual airports.	For each arriving and/or departing flight: <ul style="list-style-type: none"> - Actual landing time (ALDT) and take-off time (ATOT) - Estimated landing time (ELDT) and take-off time (ETOT) (from flight plan) For each time interval: <ul style="list-style-type: none"> - Declared landing capacity of the airport - Declared departure capacity of the airport - Declared total capacity of the airport 	Airports
KPI12	Airport/Terminal ATFM delay	ATFM delay attributed to arrival flow restrictions at a given airport and/or associated terminal airspace volume.	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each IFR flight: <ul style="list-style-type: none"> - Estimated Take-off Time (ETOT) computed from the last filed flight plan - Calculated Take-off Time (CTOT) - ID of the flow restriction generating the ATFM delay - Airport or terminal airspace volume associated with the flow restriction - Delay code associated with the flow restriction 	ATFM
KPI13	Taxi-in additional time	Actual taxi-in time compared to an unimpeded/reference taxi-in time	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each arriving flight: <ul style="list-style-type: none"> Actual landing time (ALDT) Actual in-block time (AIBT) In addition, for the advanced KPI variant: <ul style="list-style-type: none"> Landing runway ID 	Airports (airport operations), airlines (OOOI data), ADS-B data providers and/or ANSPs

					Arrival gate ID	
KPI14	Arrival punctuality	Percentage of flights arriving at the gate on-time (compared to schedule)	% of scheduled flights	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each arriving scheduled flight: - Scheduled time of arrival (STA) or Scheduled in-block time (SIBT) - Actual in-block time (AIBT)	Schedule database(s), airports, airlines and/or ANSPs
KPI15	Flight time variability	Distribution of the flight (phase) duration around the average value.	Minutes/flight	The KPI is typically computed for the scheduled traffic flows interconnecting a given cluster of airports (two or more; selection/grouping based on size and/or geography).	For each flight: - OOOI data: gate “out” (AOBT), wheels “off,” wheels “on,” and gate “in” (AIBT) actual times.	Airlines
KPI16	Additional fuel burn	Additional flight time/distance and vertical flight inefficiency converted to estimated additional fuel burn attributable to ATM	kg fuel/flight	This KPI is a conversion of the additional flight time/distance and vertical flight inefficiency KPIs to a corresponding (estimated) additional fuel consumption; hence it describes a performance characteristic of the same objects as the additional flight time/distance and vertical flight inefficiency KPIs: en-route airspace, terminal airspace and airports. Typically the KPI is published at the level of a State or (sub)region.	Indicator values to be converted to estimated additional fuel burn: - KPI02 Taxi-Out Additional Time (min/flight) - KPI13 Taxi-In Additional Time (min/flight) - KPI05 Actual en-Route Extension (%) & average en-route distance flown (km/flight) - KPI08 Additional time in terminal airspace (min/flight) - KPI17 Level-off during climb - KPI18 Level capping during cruise & average cruise (ToC-ToD) distance flown (km/flight) - KPI19 Level-off during descent	Performance analysts

KPI17	Level-off during climb	Distance and time flown in level flight before Top of Climb.	NM/flight and minutes/flight	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	<ul style="list-style-type: none"> - For each flight trajectory: - 4D data points (latitude, longitude, altitude and time) - Departure airport ARP coordinates - 	Trajectory data providers (reporting archived actual trajectories based on ADS-B and/or other surveillance data sources) and/or ANSPs.
KPI18	Level capping during cruise	Flight Level difference between maximum Flight Levels on a measured airport pair and maximum Flight Levels on similar unconstrained airport pairs.	Flight Levels/flight	The KPI is typically computed for traffic flows on individual airport pairs or groups of airport pairs (weighted average).	For each flight trajectory: <ul style="list-style-type: none"> - Maximum cruise Flight Level - Departure airport - Arrival airport 	For variant 1: ANSPs; For variant 2: Trajectory data providers (reporting archived actual trajectories based on ADS-B and/or other surveillance data sources) and/or ANSPs
KPI19	Level-off during descent/capping during cruise	Distance and time flown in level flight after Top of Descent.	NM/flight and minutes/flight	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each flight trajectory: <ul style="list-style-type: none"> - 4D data points (latitude, longitude, altitude and time) - Arrival airport ARP coordinates 	Trajectory data providers (reporting archived actual trajectories based on ADS-B and/or other surveillance data sources) and/or ANSPs.

APPENDIX D

Initial List of MID Region Air Navigation KPIs

#	Title	Definition	Measurement Units	Objects Characterized	Data Requirement	Data Feed Providers	Issues
KPI01	Departure punctuality	Percentage of flights departing from the gate on-time (compared to schedule).	% of scheduled flights	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each departing scheduled flight: - Scheduled time of departure (STD) or Scheduled off-block time (SOBT) - Actual off-block time (AOBT)	Schedule database(s), airports, airlines and/or ANSPs	<ul style="list-style-type: none"> resources the way of data collection duration
KPI02	Taxi-out additional time	Actual taxi-out time compared to an unimpeded/reference taxi-out time.	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each departing flight: - Actual off-block time (AOBT) - Actual take-off time (ATOT) In addition, for the advanced KPI variant: - Departure gate ID - Take-off runway ID	Airports (airport operations, A-CDM), airlines (OOOI data), ADS-B data providers and/or ANSPs	<ul style="list-style-type: none"> resources the way of data collection duration

KPI09	Airport peak capacity	The highest number of operations an airport can accept in a one-hour time frame (also called declared capacity). Can be computed for arrivals, departures or arrivals + departures.	Number of departures / hour, Number of landings / hour, Number of (departures + landings) / hour	The KPI is computed for individual airports.	Scheduling parameters for slot controlled airports Airport Acceptance Rates (AAR), Airport Departure Rates (ADR)	Airports	<ul style="list-style-type: none"> • resources • the way of data collection • duration • the way of calculation
KPI11	Airport throughput efficiency	Airport throughput (accommodated demand) compared to capacity or demand, whichever is lower. Can be computed for arrivals, departures or arrivals + departures.	Average Over/Under Delivery or % of accommodated operations.	The KPI is computed for individual airports.	<p>For each arriving and/or departing flight:</p> <ul style="list-style-type: none"> - Actual landing time (ALDT) and take-off time (ATOT) - Estimated landing time (ELDT) and take-off time (ETOT) (from flight plan) <p>For each time interval:</p> <ul style="list-style-type: none"> - Declared landing capacity of the airport - Declared departure capacity of the airport - Declared total capacity of the airport 	Airports	<ul style="list-style-type: none"> • resources • the way of data collection • duration • the way of calculation

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KPI13	Taxi-in additional time	Actual taxi-in time compared to an unimpeded/reference taxi-in time	Minutes/flight	The KPI is typically computed for individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each arriving flight: Actual landing time (ALDT) Actual in-block time (AIBT) In addition, for the advanced KPI variant: Landing runway ID Arrival gate ID	Airports (airport operations), airlines (OOOI data), ADS-B data providers and/or ANSPs	<ul style="list-style-type: none"> • resources • the way of data collection • duration
KPI14	Arrival punctuality	Percentage of flights arriving at the gate on-time (compared to schedule)	% of scheduled flights	The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).	For each arriving scheduled flight: - Scheduled time of arrival (STA) or Scheduled in-block time (SIBT) - Actual in-block time (AIBT)	Schedule database(s), airports, airlines and/or ANSPs	<ul style="list-style-type: none"> • resources • the way of data collection • duration

MID ASBU WEBINAR
(13 – 15 October 2020 from 08:00 to 10:00 UTC)
List of Participants

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