International Civil Aviation Organization

MIDANPIRG CNS/ATM/IC Sub-Group (CNS/ATM/IC SG)

Sixth Meeting
(Cairo, Egypt, 31 January – 02 February 2012)

Agenda Item 4: MID Region Air Navigation Performance Based Approach

MID REGION PERFORMANCE METRICS AND PERFORMANCE FRAMEWORK FORMS (PFFs)

(Presented by the Secretariat)

SUMMARY

This paper presents an update on the monitoring of the MID Region Performance Metrics and associated global developments. The paper calls also for the review and update of the MID Region Regional Performance Framework Forms (PFFs).

Action by the meeting is at paragraph 3.

REFERENCES

- ATM/SAR/AIS SG/12 Report
- MIDANPIRG/12 Report

1. INTRODUCTION

1.1 The Performance-Based Approach (PBA) adheres to strong focus on results through adoption of performance objectives and targets; collaborative decision making driven by the results; and reliance on facts and data for decision making. The assessment of achievements is periodically checked through a performance review, which in turn requires adequate performance measurement and data collection capabilities. In this regard, one of the key aspects of the performance based approach to air navigation planning is the development of performance objectives with related measurable indicators and metrics.

1.2 The State or Region that has adopted a PBA, must acknowledge the following requirements: commitment (at the top); agreement on goals (desired results); responsibility (who is accountable); human resources and know-how (culture and skills) ; data collection, processing, storage and reporting; collaboration and coordination (with other partners) and cost implication (what does it cost).

1.3 Following the adoption of performance-based approach to air navigation planning and implementation by all PIRGs in 2008, the next step calls for performance monitoring through an established measurement strategy. While PIRGs are progressively identifying a set of regional performance metrics, States in the meantime have recognized that data collection, processing, storage and reporting for the identified regional performance metrics are fundamental to the success of performance based approach.

2. DISCUSSION

2.1 The meeting may wish to recall that data collection, processing, storage and reporting are fundamental to the performance-based approach and forms part of performance monitoring and management.

2.2 The meeting may wish to recall the following definitions:

a) *Performance Objective:* objectives defined to satisfy ATM community expectations;

b) *Performance Indicator:* Current/past performance, expected future performance as well as actual progress in achieving performance objectives is quantitatively expressed by means of performance indicators (also called Key Performance Indicators, or KPIs);

c) *Performance target*: Performance targets are closely associated with performance indicators: they represent the values of performance indicators that need to be reached or exceeded to fully achieve performance objective; and

d) *Metrics:* determine which data needs to be collected to calculate values of performance indicators. Metrics are challenging and expensive to collect; therefore it is important to keep them "SMART" (Specific, Measurable, Achievable, Realistic & Time-bound) and easy to measure.

2.3 The meeting may wish to note that MIDANPIRG/12 (Amman, Jordan, 17-21 October 2010) developed the following Conclusions related performance monitoring of the air navigation systems in the MID Region:

CONCLUSION 12/47: MID REGION PERFORMANCE METRICS

That:

a) the following MID Region Metrics be adopted for performance monitoring of the air navigation systems:

MID Metric 1: Number of accidents per 1,000 000 departures;

MID Metric 2: Percentage of certified international aerodromes;

MID Metric 3: Number of Runway incursions and excursions per year;

MID Metric 4: Number of States reporting necessary data to the MIDRMA on regular basis and in a timely manner;

MID Metric 5: The overall collision risk in MID RVSM airspace;

MID Metric 6: Percentage of air navigation deficiencies priority "U" eliminated;

MID Metric 7: *Percentage of instrument Runway ends with RNP/RNAV approach procedure; and*

MID Metric 8: *Percentage of en-route PBN routes implemented in accordance with the regional PBN plan.*

b) the MIDANPIRG subsidiary bodies monitor the Metrics related to their work programmes; develop associated performance targets and provide feed-back to MIDANPIRG.

CONCLUSION 12/48: DATA COLLECTION FOR MID REGION PERFORMANCE METRICS

That, States be invited to:

a) incorporate the agreed MID Region Performance Metrics into their National performance monitoring process;

b) collect and process relevant data necessary for performance monitoring of the air navigation systems to support the regional Metrics adopted by MIDANPIRG; and

c) submit this data to the ICAO MID Regional Office on a regular basis.

2.4 The meeting may wish to note that, as a follow-up action to the above MIDANPIRG/12 Conclusions, the ICAO MID Regional Office issued State Letter Ref.: AN 7/26.1-11/121 dated 24 May 2011, urging States to develop/update their National Performance Framework and report relevant data necessary for performance monitoring of the air navigation systems, with a view to update the Regional Performance Framework Forms (PFFs) and monitor the MID Region Performance Metrics. In this respect, during the ATM/SAR/AIS SG/12 meeting, it was highlighted that States are providing data using different mechanisms/formats. Accordingly, the need for harmonization and avoidance of duplication of efforts has been underlined.

2.5 The meeting may wish to note that the ATM/SAR/AIS SG/12 meeting supported the proposal made by the MIDRMA Board/11 meeting related to the following performance targets associated with the MID Metrics 4 and 5:

- Performance Target associated with MID Metric 4: Minimum **80%** of States report necessary data to the MIDRMA on regular basis and in a timely manner; and

- Performance Target associated with MID Metric 5: The overall collision risk in MID RVSM airspace **meets the ICAO overall TLS of 5 x 10^{-9}** fatal accidents per flight hour.

2.6 With regard to the MID Metric 6 – elimination of deficiencies priority "U", the ATM/SAR/AIS SG/12 meeting agreed that the performance target should be **15%**.

2.7 The meeting may wish to note that the Air Navigation Commission, in reviewing different PIRG reports, noted that all the PIRGs were in the process of identifying metrics to measure regional performance in the relevant key performance areas. The Commission recognized that every PIRG requires their own region specific metrics. However, the ANC emphasized the need to have a set of performance metrics common to all ICAO regions to facilitate comparative analysis of overall regional development. Consequently, the Commission requested the Secretariat to complete the task of developing a set of performance metrics applicable to all ICAO Regions along with guidance for

the collection of data (ANC Min 186/7 and AN-WP /8537 refers). In this respect, it's to be noted that work is in progress for the development of a set of global Metrics mapped to the Aviation System Block Upgrades (ASBUs) for review by the ANC and presentation to the 12th Air Navigation Conference AN Conf/12 (Montreal, 19-30 November 2012).

2.8 In accordance with MIDANPIRG/11 Conclusion 11/70 – "*Regional Performance Framework*", the different MIDANPIRG subsidiary bodies continued work on the development and update of the Regional PFFs. The PFFs related to AGA, AIM, ATM, CNS and MET are at **Appendices A, B, C, D and E,** respectively. In this respect, it's to be highlighted that MIDANPIRG/12 underlined that the Regional PFFs could be further improved, giving that users provide their needs and expectations and States develop/update their National PFFs and report relevant data necessary for performance monitoring of the air navigation systems, as required.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) take necessary follow-up actions on MIDANPIRG/12 Conclusions 12/47 and 12/48 and propose to MIDANPIRG the way forward, taking into consideration the global developments;

b) urge States to establish a measurement strategy and methodology for collection of data and submit it to the ICAO MID Regional Office;

c) review and update the Regional PFFs at **Appendices A, B, C, D and E**; and

d) urge States to develop/update their National PFFs in order to ensure their alignment with and support to the regional performance objectives.

APPENDIX A

MID REGIONAL PERFORMANCE OBJECTIVES
AERODROMES PERFORMANCE OBJECTIVES

IMPLEMENTATION OF CERTIFICATION OF AERODROMES	
Benefits	
Environment	• enhanced Land-use management around aerodromes • reduction in aircraft noise and emission impact
Efficiency	• enhance safety, access, efficiency and capacity of aerodrome operations in the States • uniform implementation of ICAO SARPS in the MID States • efficient use of aerodrome resources • reduction in delays • maximize aerodrome capacity in all weather conditions
Safety	• safely manoeuvre in all weather conditions • reduced wild life/bird strikes hazards • reduced incident/accident factors • reduced number of deficiencies • increased runway usability factors • improved safety of aerodromes operations • decreased number of accidents & serious incidents occurred during aircraft movements to/from aerodromes
KPI	• status of implementation of certification of aerodromes • status of implementation of SSP & SMS for aerodrome • status of planning for aerodrome emergencies and testing their effectiveness • status of readiness to accommodate NLs operations at aerodromes
Proposed Metrics:	• number of certified aerodromes used for international operations • number of resolved Air Navigation deficiencies identified in the area of aerodrome operations • number of accidents & serious incidents per 100000 aircraft movements to/from aerodromes • number of adequate aerodromes for NLAs operations • number of peoples in and around aerodromes affected by aircraft operations

Strategy

ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, CM, DCB, ATM SDM	**Certification of aerodromes**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for developing national plans to increase aerodrome capacity aimed at meeting actual air traffic and/or forecast demand	2012 - 2013	States & AOP SG	valid
	• implement aerodrome ground infrastructure commensurate with operational expectations including operations of new larger aircrafts at existing aerodromes	Ongoing	States & AOP SG	valid

Strategy				
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• implement collaborative aerodrome operational procedures with ATM, ground services providers and associated operations support services	2012 - 2014	States & AOP SG	valid
	• monitor and ensure promulgation of national standards for aerodromes including certification of aerodromes requirement in accordance with established criteria and certification process	2012-2013	ICAO, States & AOP SG	valid
	• ensure that national requirements for aerodrome includes enforcement provisions for unresolved non-compliances in a timely manner	2012-2014	ICAO, States & AOP SG	valid
	• monitor and ensure clear separation of authority between the aerodrome operation service providers (aerodrome Operators) and the State regulatory agency	2012-2013	ICAO ., States & AOP SG	valid
	• monitor and ensure establishment of an organizational structure of a separate entity within CAA with clearly defined duties and responsibilities relevant to airport certification and continuous surveillance activities, appropriate to the size and scope of aerodromes in the State and ensure having sufficient qualified human resources to carry out its functions and mandate	2008-2013	ICAO, States & AOP SG	valid
	• monitor and ensure that the certification process explicitly include coordination with elements of air traffic service (ATS) for the local airspace of an aerodrome	2012-2014	ICAO, States & AOP SG	valid
	• monitor and ensure that aerodrome certification process include procedures for dealing with a non-compliance with the established requirements, including aeronautical studies and risk assessment mechanism and notification procedure	2012-2014	ICAO, States & AOP SG	valid
	• develop, review, approve and verify the content of an Aerodrome Manual for each aerodrome used for international operations	Ongoing	States	valid
	• issue/grant certification of aerodromes as required	Ongoing	States	valid

Strategy				
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• establish an aerodrome surveillance and safety oversight programme and develop associated implementation plans, monitor and insure that aerodromes continue meeting certification obligations and application of enforcement provisions for non compliance in a timely manner	2009-2016	States and AOP SG	valid
	• ensure promulgation of information on status of certification of aerodromes in the State AIP	2010-2016	ICAO, States and AOP SG	valid
	• monitor and follow-up alleviating of identified aerodrome deficiencies and ensure application of enforcement provisions for unresolved non-compliances in a timely manner	2010-2016	ICAO, States and AOP SG	valid
AO, CM, AUO	**Safety Management of Aerodromes**			
	• monitor and ensure promulgation of national harmonized requirement for aerodrome safety management	2010-2016	ICAO, States and AOP SG	valid
	• establish and implement an aerodrome safety programme and define acceptable level of safety and ensure it includes a requirement for certified aerodrome operators to implement a Safety Management System (SMS) acceptable to the State	2012-2016	ICAO, States and AOP SG	valid
	• Monitor, develop and implement an SMS with agreed performance objectives for aerodrome operations and ensure it clearly define lines of safety accountability throughout a certified aerodrome including a direct accountability for safety on the part of senior management	2011-2016	ICAO, States and AOP SG	valid
	• implement remedial action necessary to maintain agreed safety performance and ensure the continuous monitoring and regular assessment of the safety performance that aims at a continuous improvement of the overall performance of the safety management system. Review and assess effectiveness of mitigation measures in regular bases	2011-2016	States and AOP SG	valid

Strategy				
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• Implement, where warranted, precise surface movement guidance and control system integrated with the runway incursion prevention programme to improve safety, increase capacity and efficiency of runway operations	2009-2012	States & AOP SG	valid
	• Develop, Implement and make available to ATM at aerodromes a positioning system for all vehicles and aircrafts operating on the movement area on a cost-benefit basis.	2013 - 2016	States & AOP SG	valid
AO, CM	**Aerodrome Emergency Planning**			
	• Establish collaborative bodies with ATS, aircraft operators, aerodrome operators, aerodrome security agency and other agencies that might be involved in different aerodrome emergencies to develop emergency plans for each aerodrome	2012 - 2014	States & AOP SG	valid
	• Coordinate and conduct different exercises as required to assess, review and ensure proper coordination between different agencies involved in an emergency and the effectiveness of the aerodrome emergency plan observing Human Factors principles aimed at ensuring optimum response by all existing agencies participating in emergency operations	2012 - 2014	States & AOP SG	valid
	• Arrange and test where warranted, precise measures for aircraft emergencies in difficult environment in and around aerodromes	2009-2012	States & AOP SG	valid
Linkage to GPIs	GPI/13: Aerodrome design and management GPI/14: Runway operations GPI/21: Navigation Systems			

IMPLEMENTATION OF RUNWAY SAFETY PROGRAMME	
Benefits	
Environment	• Contribution to efficient environmental control
Efficiency	• efficient use of Runways • increased runway usability factors • reduced incident/accident factors • reduced number of deficiencies • minimize the effects of weather on capacity
Safety	• improve situational awareness • enhance precise surface guidance to and from a runway • improve safety of runway operations • improve safety of aerodrome operations in general
KPI	• status of implementation of Runway Safety programmes in the MID Region
Proposed Metrics:	• number of Runway incursions per year • number of Runway excursions per year • number of aircraft accidents& serious incidents per 100,000 movements

Strategy
Short term (2010-2012)
Medium term (2013 - 2016)

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AO, CM, , DCB, ATM SDM	**Runway Incursion Prevention**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for implementing plans and measures aimed at prevention of runway incursion	2012 - 2016	States & AOP SG	valid
	• establish Runway Incursion Prevention programme, identify its goals as part of the national Runway Safety programme and monitor implementation plan	2012-2014	States & AOP SG	valid
	• implement, where warranted, precise surface movement guidance to and from a runway to improve capacity, safety and efficiency	2012-2015	States & AOP SG	valid
	• develop, Implement and make available to ATM at aerodromes a positioning system for all vehicles and aircrafts operating on the movement area on a cost-benefit basis	2013 – 2016	States & AOP SG	valid
	• implement procedures and technologies to enhance the performance of runway operations and optimize runway capacity	2013 – 2016	States & AOP SG	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, CM, , AUO, ATM SDM	• **Runway Excursion Prevention**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for measures and implementing plans aimed at prevention of runway excursions	2012 – 2016	States & AOP SG	valid
	• harmonize, coordinate and support the Runway Excursion Prevention measures and implementation activities on a regional basis	2012 – 2017	ICAO, States & AOP SG	valid
	• develop and implement an integrated maintenance programme at aerodromes that includes pavement and visual aids	2010-2016	States & AOP SG	valid
	• establish collaborative bodies with AIM and ATM to ensure meeting quality requirements for runway declared distances	2012 – 2014	ICAO, States & AOP SG	valid
	• monitor and implement Runway End Safety Area (RESA) requirements at aerodromes	Ongoing	ICAO, States & AOP SG	valid
	• monitor and ensure meeting Runway strip characteristics and frangibility requirements	Ongoing	ICAO, States & AOP SG	valid
	• monitor, develop measures and ensure inspection of the movement area including control of Foreign Object Damage (FOD)	Ongoing	States & AOP SG	valid
AO	**Runway Pavement Maintenance**			
	• promote the awareness about the requirements for the provision of Pavement Maintenance in the movement area	ongoing	ICAO & AOP SG	valid
	• develop and implement a runway maintenance programme	2012-2014	States & AOP SG	valid
	• harmonize, coordinate and support the Runway pavement maintenance guidance for implementation activities on a regional basis	201-2015	ICAO & AOP SG	valid
	• defined maintenance performance level objectives in order to maintain good friction characteristics and low rolling resistance on runways	2012-2014	States & AOP SG	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• identify minimum friction level below which information that a runway may be slippery when wet should be made available, and develop coordination between AIM, ATM and aerodrome operators to monitor effective implementation in a timely manner	2012-2014	States & AOP SG	valid
	• monitor the removal of runway contaminants in particular; rubber deposits and accumulated sand	Ongoing	States & AOP SG	valid
	• monitor implementation of the requirements for measurement and reporting of the friction characteristics and carrying out appropriate corrective maintenance in accordance with defined maintenance performance level objectives and pavement maintenance programme	Ongoing	ICAO, States & AOP SG	valid
Linkage to GPIs	GPI/6 Air traffic flow management GPI/9 Situational awareness GPI/13 Aerodrome design and management GPI/14 Runway operations GPI/15 Match IMC and VMC operating capacity GPI/18 Aeronautical information			

APPENDIX B

MID REGIONAL PERFORMANCE OBJECTIVES
AIM PERFORMANCE OBJECTIVES

TRANSITION FROM AIS TO AIM	
Benefits	
Safety	• Safety level improved
Environment	• Reduced emissions through use of optimum routes/trajectories
Capacity	• Increased capacity through better utilization of airspace
Cost effectiveness	• Fuel cost reduction through use of optimum routes/trajectories
	Performance Measurement
Performance Metrics:	• number of States having fully implemented WGS 84 • number of States having implemented eTOD for Areas 1 & 4 • Number of deficiency Priority "U" related to the AIS/MAP field • Number of States having implemented QMS • Number of States having developed eAIP • Number of States having developed a National Plan for the transition from AIS to AIM • Number of States having implemented an AIXM based AIS Database • Number of States having implemented an Integrated Aeronautical Information Database (IAID)

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
ATM SDM, AUO, CM	• improve the compliance with the AIRAC system, , including the use of the internet for the advance posting of the aeronautical information considered of importance to users.	B0-30	Ongoing	States	valid
	• complete WGS-84 implementation	B0-10 B0-65	2012	States	valid
	• monitor the implementation of WGS-84 until complete implementation of the system by all States and take remedial action, as appropriate	B0-10 B0-65	ongoing	ICAO & AIM TF	valid
	• foster the implementation of QMS based on the MID Region Methodology for the implementation of QMS and the Eurocontrol CHAIN deliverables	B0-30	Ongoing	ICAO & AIM TF & States	valid
	• monitor the implementation of QMS until complete implementation of the requirements by all MID States	B0-30	Ongoing	ICAO & AIM TF	valid

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
	• review and update the deficiencies in the AIS/MAP field and provide necessary guidance for their elimination	B0-30	Ongoing	ICAO & AIM TF	valid
	• plan for the transition from AIS to AIM in the MID Region	B0-30	2008-2016	ICAO & AIM TF & States	valid
	• monitor the implementation of AIS automation in the MID Region in order to ensure availability, sharing and management of electronic aeronautical information	B0-30	2008-2013	ICAO & AIM TF	valid
	• development of eAIPs by MID States	B0-30	Ongoing	States	valid
	• establishment of Integrated Aeronautical Information Database (IAID)	B0-30	2011-2016	States	valid
	• provision of AIM products and services based on the established IAID	B0-30 B1-25	2013-2020	States	valid
	• support the development of a MID Region AIS database (MIDAD)	B0-30	2011-2016	States & ICAO & AIM TF	valid
	• establishment of formal arrangements with approved data originators concerning aeronautical data quality	B0-30	2009-2016	States	valid
	• implementation of digital data exchange with originators	B0-30	2013-2018	States	valid
	• foster the integrated improvement of AIS/AIM through proper training and qualification of the AIS/AIM personnel in the MID Region and certification of the AIM Services	B0-30	2011-2016	ICAO & AIM TF & States	valid

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
	• provide Terrain and Obstacle data for area 1	B0-30 B0-85 B2-25	2008-2012	States	valid
	• provide Terrain and Obstacle data for area 4	B0-30 B0-85 B2-25	2008-2012	States	valid
	• assessment of Annex 15 requirements related to the provision of eTOD for area 2 and area 3	B0-30 B0-85 B2-25	2010-2012	States	valid
	• development of an action plan for the provision of eTOD for area 2 and area 3	B0-30 B0-85 B2-25	2013	States	valid
	• provide necessary Terrain and Obstacle data for area 2	B0-30 B0-85 B2-25	2015	States	valid
	• provide necessary Terrain and Obstacle data for area 3	B0-30 B0-85 B2-25	2015	States	valid
	• foster the implementation of Aerodrome mapping and electronic aeronautical charts in the MID Region	B0-30	2012-2016	ICAO & AIM TF & States	valid
Linkage to GPIs	GPI-5: Performance-based navigation GPI-11: RNP and RNAV SIDs and STARs GPI-9: Situational awareness GPI-18: Aeronautical Information GPI-20: WGS-84 GPI-21: Navigation systems				

APPENDIX C

MID REGIONAL PERFORMANCE OBJECTIVES
ATM PERFORMANCE OBJECTIVES

OPTIMIZATION OF THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE	
Benefits	
Environment	reductions in fuel consumption and CO_2 emission
Safety	Improved safety of ATS routes
Efficiency	• ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity
KPI	• status of implementation of RNAV 1 in the MID Region • status of implementation of the ATS Routes listed in the MID ATS Route Catalogue • status of implementation of RNAV 5 area in the level band FL160-FL460, in the MID Region • status of Duplicated 5LNCs in the MID Region • status of deficiencies related to non-implementation of ATS Routes • status of implementation of 20NM radar longitudinal separation • status of implementation of 10NM radar longitudinal separation
Performance Metrics:	• number of RNAV 1 Routes implemented, in accordance with the MID Basic ANP • number of implemented ATS Routes from the MID ATS Route Catalogue • number of States having implemented RNAV 5 area in the level band FL160-FL460 • number of duplicate 5LNC eliminated • number of eliminated deficiency related to non-implementation of ATS Routes • number of concerned States implementing 20NM longitudinal separation • percentage of CO_2 reduction of implemented new routes

Strategy
Short term (2010-2012)
Medium term (2013-2016)

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	***En-route airspace***			
	• develop Airspace Concept based on the MID PBN implementation plan, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN and, in particular, RNAV 5, taking into account interregional harmonization	ongoing	ATM/SAR/AIS SG (ARN TF)	valid
	• develop State PBN implementation plans related to ATS Route development	2008-2012	States	valid
	• monitor user requirements for the establishment of ATS routes in the MID Region	Ongoing	ATM/SAR/AIS SG ARN TF	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013-2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• provide status of PBN implementation	2010-2012	States	valid
	• monitor the implementation of pending ATS Routes and update the MID Basic ANP and the MID ATS Route catalogue	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• follow–up with States on the implementation of pending ATS Routes and update the list of air navigation deficiencies, accordingly	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• monitor the implementation of RNAV 5 area in the level band FL160 - FL460 (inclusive)	2008-2012	ATM/SAR/AIS SG ARN TF PBN/GNSS TF	valid
	• monitor the implementation of RNAV 1 routes in the MID Region	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• implementation of 20NM Radar longitudinal separation between States	2010-2013	Iraq, Iran and Yemen	Implemented by Bahrain; Jordan; Kuwait; Lebanon; Saudi Arabia; Syria and UAE
	• implementation of 10NM Radar longitudinal separation between States	2011-2016	Bahrain; Iraq; Jordan; Kuwait; Lebanon; Oman, Saudi Arabia; Syria, UAE and Yemen	Implemented between (Bahrain and UAE) and (Oman and UAE)
	• monitor the process of allocation of 5LNCs	Ongoing	ICAO	valid
	• elimination/Reduction of the use of duplicate 5LNCs	2010-2012	ICAO States	valid
linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/20: WGS-84			

OPTIMIZATION OF THE TERMINAL AIRSPACE	
Benefits	
Environment **Safety**	• reductions in fuel consumption and CO_2 emission • enhance safety in terminal air space
Efficiency	• ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity • facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency
KPI	• status of implementation of PBN routes in terminal airspace • status of implementation of SID and STARS
Proposed Metrics:	• number of States implemented PBN routes in terminal airspace • total Number of PBN routes in MID region terminal airspace • number States implemented SID and STARS • percentage of CO_2 reduction of implemented new routes

Strategy
Short term (2010-2012)
Medium term (2013-2016)

ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AO	***In terminal airspace***			
	• develop Airspace Concept taking into consideration the MID PBN implementation plan, in order to design and implement optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures (particular RNAV 1, Basic RNP1 and RNP AR)	Ongoing	States	valid
	• include terminal Airspace in the State PBN implementation plans	Ongoing	(ATM/SAR/AIS SG) States, MPST	valid
	• formulate safety plan (assessment and monitoring)	2009-2012	States, MPST	valid
	• support for operational approvals	2012-2013	MPST	valid
	• publish national regulations for aircraft and operators approval using PBN manual as guidance and considering available foreign approval material	2008-2012	States	valid
	• training	2008-2012	States MPST	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013-2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• system performance measuring (measurement and monitoring plan)	2009-2012	States, ATM/SAR/AIS SG	valid
	• implement SIDs and STARs	2009-2012	States	valid
	• monitor implementation progress in accordance with MID PBN implementation roadmap and States implementation plan	2009-2012	States, ATM/SAR/AIS SG	valid
Linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: Functional integration of ground systems with airborne systems.			

IMPLEMENTATION OF RNAV AND RNP APPROACHES	
Benefits	
Environment **Efficiency** **Safety**	• Reduce CO_2 emission • reductions in fuel consumption and emissions; • improvements in capacity and efficiency at aerodromes • improvements in safety at aerodromes
KPI	• status of implementation of PBN approaches
Proposed Metrics:	• number of States having implemented PBN approaches • percentage of CO_2 reduction of implemented new PBN approaches

Strategy
Short term (2010-2012)
Medium term (2013-2016)

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM, AO	***At airports***			
	• develop Airspace Concept based on the MID PBN Implementation Plan, in order to design and implement RNP APCH APV in most possible airports; RNP AR APCH at airports where there are obvious operational needs	2009-2012	States	valid
	• formulate safety plan (assessment and monitoring)	2009-2012	States	valid
	• support for operational approvals	2012-2013	MPST	valid
	• publish national regulations for aircraft and operators approval using PBN manual as guidance and considering available foreign approval material	2008-2012	States	valid
	• system performance measuring (measurement and monitoring plan)	2009-2012	States, ATM/SAR/AIS SG	valid
	• implement APV procedures	2009-2012	States	valid
	• implement LNAV procedures where applicable	2012-2016	States	valid
	• monitor implementation progress in accordance with MID PBN implementation Plan and States implementation plan	2009-2012	PBN/GNSS TF States, ATM/SAR/AIS SG	valid
Linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures			

Strategy ***Short term (2010-2012)*** ***Medium term (2013-2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
ENHANCE CIVIL/MILTARY COORDINATION AND CO-OPERATION				
Benefits				
Environment	• reductions in fuel consumption and CO_2 emission			
Efficiency	• allow a more efficient ATS route structure; and • increase airspace capacity			
Safety	• ensure safe and efficient action in the event of unlawful interference			
KPI	• number of ATS routes not implemented due to Military restrictions • number of Conditional Routes (CDR) implemented in accordance with user requirements • number of reported incident related to uncoordinated flights operating over high seas			
Proposed Metrics:	• reduction of the number of ATS routes not implemented due to Military restrictions • increase the number of CDRs implemented in accordance with user requirements • reduction of the number of incident related to uncoordinated flights operating over high seas • percentage of CO2 reduction of implemented new PBN approaches			

Strategy ***Short term (2010-2012)*** ***Medium term (2013-2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AUO	• establish civil/military coordination bodies at national level	2008-2011~~1~~2	States	valid
	• arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units	2008-2011~~1~~2	States	valid
	• implement collaborative civil/military airspace planning at national level	2008-2012	States	valid
	• develop a regional strategy and an Action Plan for implementation of flexible use of airspace in a phased approach beginning with more dynamic sharing of restricted airspace while working towards full integration of civil and military aviation activities	2009-2013	ATM/SAR/AIS SG ARN TF	valid
	• implement FUA	2009- 2016	States	valid
	• monitor FUA implementation progress	Ongoing	ATM/SAR/AIS SG	valid

Linkage to GPIs	GPI/1: flexible use of airspace, GPI/7: Dynamic and flexible ATS route management, GPI/8: Collaborative airspace design and management

REGIONAL PERFORMANCE OBJECTIVES RVSM OPERATIONS IN THE MID REGION	
Benefits	
Environment	• reductions in fuel consumption and emissions;
Efficiency	• increase airspace capacity
Safety	• meet the agreed Target Level of Safety (TLS)
KPI	• Status of States listed in the MANDD for non-reporting necessary data to the MIDRMA on regular basis and in a timely manner • Overall Target Level of Safety (TLS): 5 x 10^{-9} fatal accident per flight hour • Number of RVSM approved aircraft in the MID Region • Number of RVSM approved aircraft in the MID Region with known height-keeping monitoring results
Proposed Metrics:	• number of States reporting necessary data to the MIDRMA on regular basis and in a timely manner • number of Overall vertical-collision risk in MID RVSM airspace • percentage of the RVSM approved aircraft in the MID Region with known height-keeping monitoring results

Strategy
Short term (2010-2012)
Medium term (2013 - 2016)

ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AUO, ATM SDM				
	• develop an Action Plan for the implementation of RVSM within Baghdad FIR	2009-2010	BFRI WG	Completed
	• develop necessary planning material related to RVSM implementation in Baghdad FIR	2009-2011	BFRI WG MIDRMA ICAO	Completed
	• ensure that Iraq met all RVSM implementation requirements	2010-2011	BFRI WG MIDRMA ICAO	Completed
	• implement RVSM within Baghdad FIR	2011	Iraq ICAO MIDRMA	Completed
	• monitor RVSM operations in the MID Region	Ongoing	MIDRMA Board ATM/SAR/AIS SG ICAO	valid
	• develop MID RVSM Safety Monitoring Reports (SMR) with a view to demonstrate that safety objectives continue to be met	Ongoing	MIDRMA	valid
	• assess MID RVSM SMRs and take action as required	Ongoing	ATM/SAR/AIS SG MIDRMA Board MIDANPIRG	valid
linkage to GPIs	GPI-2: Reduced Vertical Separation Minima			

IMPLEMENTATION OF THE NEW ICAO FPL FORM	
Benefits	
Environment	• reductions in fuel consumption and CO_2 emission utilizing proper flight planning and aircraft capabilities are known in advance to ANSP
Efficiency	• ability of air navigation service providers to make maximum use of aircraft capabilities • ability of aircraft to conduct flights more closely to their preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information
Safety	• enhance safety by use of modern capabilities onboard aircraft
KPI	• status of implementation of ICAO new FPL provisions • status of updates in the FITS
Proposed Metrics:	• number of States meeting the deadline for implementation of the ICAO new FPL provisions • number of States providing the focal points and initiated impact studies

Strategy
Short term (2010-2012)
Medium term (2013 - 2016)

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
SDM	• Planning and implementation of transition elements	2009-2012	INFPL SG	valid
	• States to assign focal points and form and internal nucleus team	2009 - 2010	States	valid
	• ensure that enabling regulatory (regulations procedures, AIP etc..) provisions are developed	2009- 2012	States	valid
	• ensure that the automation and software requirements of local systems are fully adaptable to the changes envisaged in the new FPL form	2009 - 2012	States	valid
	• ensure that issues related to the ability of all system to pass information correctly and to correctly identify the order in which messages are received, to ensure that misinterpretation of data does not occur	2009- 2012	States	valid
	• analyze each individual data item within the various fields of the new flight plan form, comparing the current values and the new values to verify any problems with regard to applicability of service provided by the facility itself or downstream units	2009 – 2011	INFPL SG States	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• ensure that there are no individual State peculiarities or deviations from the flight plan provisions	2009- 2012	States	valid
	• ensure that the accepting ATS Reporting Office accepts and disseminates all aircraft capabilities and flight intent to all the downstream ACCs as prescribed by the PANS-ATM provisions	2009 – 2012	INFPL SG States	valid
	• plan the transition arrangements to ensure that the changes from the current to the new ICAO FPL form occur in a timely and seamless manner and with no loss of service	2009-2012	States INFPL SG	valid
	• in order to reduce the chance of double indications it is important that any State having published a specific requirement(s) which are now addressed by the amendment should withdraw those requirements in sufficient time to ensure that aircraft operators and flight plan service providers, after 15 November 2012, use only the new flight plan indications.	2009- 2012	States	valid
	• internal testing	2009 – June 2012	States	valid
	• external testing and transition into operation	1 April to 30 June 2012	States	valid
	• airspace users validation and filling of NEW FPLs if appropriate	1 July to 14 November 2012	States and users	valid
	• Plan and ensure the training of relevant stakeholders (air traffic controllers, etc)	2009 - 2012	States	valid
	• develop and make available, guidance material for users, including but not limited to ANSP personnel	2009 - 2011	INFPL SG	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• establish and enhance as appropriate a central depository (FITS) in order to track the implementation status	Ongoing	ICAO	Completed
	• inform the ICAO regional offices on an ongoing basis	Ongoing- Dec 2012	States	Valid
linkage to GPIs	GPI/5 RNAV and RNP (Performance-based- navigation, GPI/9 Situational awareness, GPI/16 Decision Support systems and alerting systems, GPI/17 Data link application, GPI/18 Aeronautical Information GPI/21 Navigation systems and GPI/23 Aeronautical radio spectrum.			

APPENDIX D

CNS PERFORMANCE OBJECTIVES

REGIONAL PERFORMANCE OBJECTIVES RADIO SPECTRUM MANAGEMENT AND PROCESSES TO PROTECT THE AERONAUTICAL SPECTRUM	
Benefits	
Environment	• Supports ATM for the optimized use of technologies to reduce effect on environmnet
Efficiency	• proper administration the allocated aviation spectrum • resolve air Space communications
Safety	• availability of spectrum for safety systems and communication
KPI	• satisfactory results of the WRC-12 • current Aviation Frequency spectrum is protected to extent possible • availability Frequency Spectrum for Future Aeronautical utilization • status of deletion of footnotes affecting aviation spectrum
Proposed Metrics:	• number of aviation experts participate in WRC-12 • number of States deleted their State name from the foot notes affecting aviation spectrum • number of States coordinated with TRA to support the ICAO position

Strategy Short term (2010-2012) Medium term (2013 - 2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AUO, ATMSDM	• implement frequency spectrum management tool	2008-2012	ICAO States	valid
	• harmonize Regional coordination for the protection of the aviation spectrum at WRC-12, and beyond	2008-2012	ICAO, CNS SG States	valid
	• promote the awareness of Participation of Civil Aviation Experts in State's delegation to ITU WRC Meetings	2007-2012	ICAO CNS SG	valid
	• Civil Aviation Spectrum experts attend WRC-12 and be part of their National delegation and inform ICAO MID Office	Feb 2012	States	valid
	• disseminate ICAO policy statements of requirements for aeronautical radio frequency spectrum for WRC-12	2009-2011	ICAO	complete
	• deletion of MID States name from footnote affecting Aviation spectrum and inform ICAO Mid Regional Office	2007- 2012	States	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• coordination with National TRA for the support of the ICAO position and inclusion in State position to the extent possible and inform ICAO MID regional office	2007- 2012	States	valid
	• ICAO attend WRC-12 to provide necessary support to the delegation for the support of the aviation spectrum	Feb 2012	ICAO	valid
	• organize workshop for the Regional support to ICAO position	Sep 2010	ICAO	complete
	• attend Regional Workshop along with the National TRA	Sep 2010	States	complete
	• increase awareness and Ensure frequency Spectrum availability for future aviation needs	Ongoing	ICAO/States	valid
Linkage to GPIs	GPI-23: Aeronautical radio spectrum			

REGIONAL PERFORMANCE OBJECTIVE IMPROVEMENT OF COMMUNICATION INFRASTRUCTURE RELATED TO ATN IMPLEMENTATION	
Benefits	
Environment	• Air Ground ATN communication improve air space usage thus benefiting the environment
Efficiency	• improvement in operational efficiency • better coordination using more reliable networks
Safety	• improved safety by having related information on time
KPI	• status of the development of the Regional Plan • status of the development of the test procedures for the
Proposed Metrics:	• number of States participate in the development of the plan • number of States follow the implementation Plan

Strategy Short term (2010-2012) Medium term (2013-2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO	• develop Regional ATN Planning document	2008-2012	ATN/IPS WG	valid
	• review of ATN implementation issues and develop coordinated solutions	2009-2012	ATN/IPS WG and CNS SG	valid
	• develop conformance procedures and check list for AMHS	2009-2011	ATN/IPS WG and CNS SG	Completed
	• develop information Security policy and Guidance	2009-2011	ATN/IPS WG and CNS SG	valid
	• coordinate and monitor implementation to be harmonized and interoperable globally	On going	ATN/ IPS WG and CNS SG	valid
	• implement agreed G-G ATN application and report to ICAO MID Regional Office	On going	States	valid
	• monitor and report deficiencies to support the agreed MID METRICS	2011-2012	ATN/IPS WG and CNS SG	Valid
	• support other MIDANPIRG Subsidiary bodies for CNS infrastructure requirement	2008-2016	ATN/IPS WG and CNS SG	Valid

REGIONAL PERFORMANCE OBJECTIVES IMPLEMENTING ADVANCED TECHNOLOGIES TO SUPPORT DATA LINK SERVICES	
Benefits	
Efficiency	• improvement in operational efficiency • better coordination • efficient use of frequency spectrum
Safety	• improved safety
KPI	• status of infrastructure survey • status of data links implementation
Proposed Metric	• number of States reply to infrastructure survey • number of States Implemented data links

Strategy Short term (2010-2012) Medium term (2013-2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO DCB, ATMSDM	• identify requirement and harmonize implementation plan to ensure interoperability between States and Regions	2010-2012	CNS/ATM/IC SG CNS SG	valid
	• technical audit of available supporting infrastructure	2010-2012	CNSATM/IC SG	valid
	• implement available technologies that bring immediate benefits (D-ATIS, CPDLC, ADS-C, ADS-B) and inform ICAO MID Regional Office	2011-2012	States , user	valid
	• monitor and report deficiencies to support agreed MID Metrics	On going	All MIDANPIRG Subsidiary bodies	valid
Linkage to GPIs	GPI-22: Communications Infrastructure GPI-17: Data Link Application			

REGIONAL PERFORMANCE OBJECTIVES IMPLEMENTATION OF GNSS IN THE MID REGION	
Benefits	
Environment	• supports the implementation of PBN which in turn bring benefits to environment
Efficiency	• optimal use of advanced technologies • optimization of infrastructure • operational efficiency
Safety	• reduced navigational errors • additional navigational capabilities brings more safety
KPI	• alignment of GNSS Implementation strategy with PBN • status of Implementation of GNSS
Proposed Metrics:	• number of States Implemented GNSS • number of report on trails and demo on GNSS

Strategy
Short term (2010-2012)
Medium term (2013-2016)

ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO AOM,	• carry out GNSS trials, demonstrations and test beds; inform ICAO MID Regional Office	2008-2012	States, ICAO	valid
	• determine the most appropriate augmentation system for the MID Region	2009-2012	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• define required infrastructure according to regional PBN implementation plan	2010-2012	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• implement required infrastructure and/or procedures and inform ICAO MID Regional Office	2009-2012	States	valid
	• monitor implementation progress	2009-2012	PBN/GNSS TF	valid
	• monitor and report deficiencies to support agreed MID METRICS	On going	All MIDANPIRG Subsidiary bodies	valid
Linkage to GPIs	GPI-21: Navigation Systems GPI-9: Situational Awareness			

REGIONAL PERFORMANCE OBJECTIVES IMPROVE SURVEILLANCE INFRASTRUCTURE/ EXCHANGE OF SURVEILLANCE DATA	
Benefits	
Environment	• Sharing surveillance data will benefit the user for optimum flight routes bringing reductions in fuel consumption and CO_2 emission
Efficiency	• optimal use of advanced technologies • optimization of infrastructure • operational Efficiency • ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity
Safety	• reduced separation • reduce controller work load
KPI	• status of the surveillance roadmap • status of surveillance data sharing
Proposed Metrics:	• number of States Participate in the development of MID Surveillance Road map • number of States sharing Radar

Strategy Short term (2010-2012) Medium term (2013 - 2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AUO, ATMSDM	• prepare Plan for introduction of new surveillance systems	2011-2012	States, ICAO PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• determine the most appropriate surveillance for each States supporting the PBN regional Plan	2009-2012	States CNS/ATM/IC	valid
	• organize workshop for developing MID surveillance roadmap	2009-2011	ICAO	completed
	• MID States participate actively in the workshop to reach its objective	2011	States	completed
	• follow up on the Regional Surveillance systems in MID Regional ANP and FASID	2008-2012	CNS SG	valid
	• monitor and report deficiencies In order to support agreed MID Metrics	On going	ATN/IPS WG and CNS SG	valid

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• No objection letter between states concerned for sharing Surveillance data	2010-2012	States	valid
	• identify format of RDPS Data	2010-2012	States / CNS SG and CNS/ATM/IC	Valid
	• follow up on the Regional Surveillance systems in MID Regional ANP and FASID	2008-2012	CNS SG	valid
Linkage to GPIs	GPI-9: Situational Awareness			

APPENDIX E

MID REGIONAL PERFORMANCE OBJECTIVES
MET PERFORMANCE OBJECTIVES

IMPLEMENT INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW), INTERNATIONAL TROPIOCAL CYCLONE WATCH (ITCW), AND IMPROVE THE QUALITY OF METEOROLOGICAL WARNINGS AND ADVISORIES	
Benefits	
Safety	• Improve in-flight safety by providing information on volcanic ash, tropical cyclone and other hazardous weather by way of meteorological advisories and warnings
Environment	• Reduced emissions through use of optimum routes/trajectories (achieved by optimizing flight routes with respect to volcanic ash, tropical cyclone and other hazardous weather phenomena by way of meteorological advisories and warnings)
Capacity	• Increased capacity through better utilization of airspace
Cost effectiveness	• Fuel cost reduction through use of optimum routes/trajectories
	Performance Measurement
Performance Metrics:	• TBD

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
MET	• Monitor and provide assistance in the regional implementation of meteorological warnings and advisories that include volcanic ash (VA) and tropical cyclone (TC) advisories and meteorological warnings and advisories based on current and future requirements	B0-xx	Ongoing	MET SG	In progress
	• Track and investigate deficiencies in the format and dissemination of meteorological advisories and warnings and propose remediation plans and provide information to ICAO and WMO groups for possible assistance	B0-xx	Commence in 2012	BMG	In progress
	• Conduct periodic tests for SIGMET on VA, TC, and phenomena other than VA and TC in view of assessing improvements in their implementation	B0-xx	ongoing	MET SG & BMG	In progress

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
	• Provide guidance and/or training related to the implementation of meteorological advisories and warnings, including the Regional SIGMET Guide as they related to the Annex 3 amendment cycle	B0-xx	Ongoing	MET SG	In progress
	• Develop contingency plan for volcanic ash with reference to developments made by the IVATF and WMO scientific steering committee	B0-xx	2012-2013	MET SG	To begin
Linkage to GPIs	GPI-19 – Meteorological Systems				

Refernces: *Annex 3*; *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691); *Handbook on the International Airways Volcano Watch (IAVW) Operational Procedures and Contact List* (Doc 9766); *Manual on Low-level Wind Shear* (Doc 9817); *MID Regional SIGMET Guide; EUR OPMET Data Management Handbook (ICAO EUR Doc 018) – reference SIGMET test in Appendix C section 11*

DEVELOP REGIONAL MET REQUIREMENTS TO SUPPORT ATM	
Benefits	
Environment	• Improve efficiency of ATM and airlines by providing tailored regional MET products needed to optimize flight routes in all weather conditions
Capacity	• Increased capacity through better utilization of airspace
Cost effectiveness	• Fuel cost reduction through use of optimum routes/trajectories
	Performance Measurement
Performance Metrics:	• TBD

Strategy

ATM Operational Concept Components	Projects/Tasks	*Linkage to ASBU Module*	Timeframe Start/End	Responsibility	Status
MET	• Conduct MET seminar in coordination with WMO in 2013 or 2014 depending on regional and global developments related to MET requirements to support ATM	B0-xx	2013-2014	MET SG	future
	• Assess aviation meteorological services, systems and architecture in the region and how they can integrate weather information into decisión support tools	B0-xx	2013+	MET SG	future
	• Investigate sub-regional exchange of MET information (e.g. weather radar data) and associated agreements that facilitate ATM operations particularly over busy routes that overlap different FIRs	B0-xx	2013+	MET SG	future
	• Facilitate implementation of Meteorological Services for the Terminal Area (under development by WMO)	B0-xx	2014+	MET SG	future
Linkage to GPIs	GPI-19 – Meteorological Systems				

References: *Manual on co-ordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377)*

IMPROVE OPMET EXCHANGE EFFICIENCY	
Benefits	
Environment	• Increase OPMET availability and reliability needed for flight planning (efficiency) and in-flight re-planning (safety)
Capacity	• Increased capacity through better utilization of airspace
Cost effectiveness	• Fuel cost reduction through use of optimum routes/trajectories
	Performance Measurement
Performance Metrics:	• TBD

Strategy					
ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
MET	• Improve the availability of OPMET data at the Regional OPMET Data Banks (RODB)	B0-xx	ongoing	BMG	In progress
	• Improve the inter-regional OPMET exchange	B0-xx	ongoing	BMG	In progress
	• Consider development of and maintenance of regional ROBEX tables and guidance material	B0-xx	ongoing	BMG	In progress
	• Facilitate and provide guidance to the implementation new/modified standards before applicability date and carry out post implementation review to ensure that standardized procedures are followed	B0-xx	ongoing	BMG	In progress
	• Conduct periodic quality checks and OPMET monitoring to improve the quality and timeliness of OPMET in the MID Region	B0-xx	ongoing	BMG in coordination with EUR DMG	In progress
	• Facilitate and monitor the migration to AIM and new MET codes (e.g. XML) for METAR/SPECI, TAF and SIGMET	B0-xx	ongoing	BMG & MET SG & RO	In progress
Linkage to GPIs	GPI-19 – Meteorological Systems				

Refernces: *SADIS User Guide, Asia/Pacific ROBEX Handbook; Asia/Pacific OPMET Data Banks Interface Control Document; EUR OPMET Data Management Handbook 4th Edition December 2010 – revised January 2012*

IMPLEMENT WAFS AND ASSOCIATED DEVELOPMENTS	
Benefits	
Environment	• Improve the regional implementation of weather forecasts (including upper winds and upper-air temperatures, direction, speed and height of maximum winds and tropopause heights, as well as turbulence, icing, cumulonimbus) used by airlines and ATM needed to optimize flight routes which will provide an increase in efficiency and reduced carbon
Capacity	• Increased capacity through better utilization of airspace
Cost effectiveness	• Fuel cost reduction through use of optimum routes/trajectories
	Performance Measurement
Performance Metrics:	• TBD

Strategy

ATM Operational Concept Components	**Projects/Tasks**	***Linkage to ASBU Module***	**Timeframe Start/End**	**Responsibility**	**Status**
MET	• Assist the regional implementation of new gridded products for turbulence, icing and CB forecasts	B0-xx	2012-2013	MET SG	In progress
	• Facilitate in organizing regional training of new gridded products for turbulence, icing and cumulonimbus forecasts	B0-xx	2012-2013	ICAO & WMO	In progress
	• Monitor the implementation of WIFS for backup purposes to SADIS noting the planned cessation of ISCS-G2 broadcast in June 2012	B0-xx	ongoing	MET SG	In progress
	• Promote the implementation of Secure SADIS FTP service	B0-xx	By Nov 2012	MET SG	In progress
	• Promote the migration from WAFS upper-air forecasts in GRIB1 to GRIB2 format	B0-xx	Preferably by 5 July 2012 but no later than Nov 2013	MET SG	In progress
	• Monitor the implementation status of WAFS within the MID Regions, and report to MET SG	B0-xx	2012+	MET SG	To begin
	• Report WAFS training needs of MID States to MET SG	B0-xx	2012+	MET SG	To begin
Linkage to GPIs	GPI-19 – Meteorological Systems				

Refernces: *Annex 3*; *http://www.icao.int/anb/wafsopsg/*; *http://www.icao.int/anb/sadisopsg*; *Asia/Pac WAFS Implementation Plan and Procedures (http://www.bangkok.icao.int/edocs/WAFS_Service_Reference_v1.pdf)*

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