MID Doc 008

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

GUIDANCE FOR AIM PLANNING AND IMPLEMENTATION IN THE MID REGION

EDITION MARCH 2022

RECORD OF AMENDMENTS

Edition Number	Edition Date	Description	Pages Affected
0.1	1 September 2015	Initial draft version	All
0.2	7 October 2015	Inputs incorporated by AIM SG/2	All
0.3	April 2016	Change in Doc title; improving order and content of chapters; States comments considered; Reviewed by MSG/5	All
0.4	November 2016	Review by ANSIG/2	All
1.0	February 2017	Endorsed by MIDANPIRG/16	All
1.1	August 2021	Alignment the content with the GANP 6th edition, revised MID Air Navigation Strategy (Doc002) and the updated MID Region AIM Implementation Roadmap. Drafted by DDI AD-HOC WG	All
1.2	September 2021	Reviewed by AIM SG/8	All
2.0	February 2022	Endorsed by MIDANPIRG/19	All

TABLE OF CONTENTS

FOREWORD

The “Guidance for AIM Planning and Implementation in the MID Region” has been developed to harmonize transition from AIS to AIM in the MID Region and to addresses Global and Regional issues related to planning and implementation of Aeronautical Information Management. This Regional AIM Guidance material explains concept and operational elements of AIM; outlines the Regional and National AIM Roadmaps; and provides guidance and tools for their implementation at the Regional and National levels.

This Document consolidates updates and supersedes all previous guidance materials on the AIM implementation in the MID Region (National AIM Roadmap Template, Regional AIM Roadmap, etc.). The “Guidance for AIM Planning and Implementation in the MID Region” will be reviewed and updated, whenever deemed necessary, by the AIM Sub-Group.

First edition of the Document, developed by the ICAO MID Regional Office, was endorsed by MIDAPIRG/16 (Kuwait, 13-16 February 2017).

The Document was prepared in accordance with ICAO provisions related to AIM, the Global Air Navigation Plan, Aviation System Block Upgrades (ASBU) methodology, MID Region Air Navigation Plan and the MID Region Air Navigation Strategy, in addition to the twelfth Air Navigation Conference (AN-Conf/12) Recommendation 3/8 related to AIM. States are invited to take necessary measures to implement provisions of this document and notify their experiences and practices related to transition from AIS to AIM.

ABBREVIATIONS AND ACRONYMS

The abbreviations and acronyms used in this document along with their expansions are given in the following List:

AI	Aeronautical Information
AICM	Aeronautical Information Conceptual Model
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Services
AIS-AIM SG	AIS to AIM Study Group
AIM	Aeronautical Information Management
AIM SG	Aeronautical Information Management Sub-Group
AIXM	Aeronautical Information Exchange Model
AN-Conf/11	Eleventh Air Navigation Conference
AN-Conf/12	Twelfth Air Navigation Conference
ANP	Air Navigation Plan
ANSP	Air Navigations Services Provider
ASBU	Aviation System Block Upgrade
ATM	Air Traffic management
CBTA	Competency-based training and assessment
eAIP	electronic Aeronautical Information Publication
eANP	electronic Air Navigation Plan
GANP	Global Air Navigation Plan
GANR	Global Air Navigation Report
GIS	Geographic Information System
GML	Geography Markup Language
IM	Information Management
IMP	Information Management Panel
ISO	International Organization for Standardization
MET	Meteorology
MIDAD	MID Region AIM Database

MIDANPIRG	Middle East Air Navigation Planning and Implementation Regional Group
MIL	Military
MSG	MIDANPIRG Steering Group
PBN	Performance-Based Navigation
QMS	Quality Management System
RWY	Runway
SARPs	Standards and Recommended Practices
SMART	Specific, Measurable, Achievable, Relevant and Timely
SWIM	System Wide Information Management
TOD	Terrain and Obstacle Data
TORs	Terms of Reference
UML	Unified Modelling Language
WGS-84	World Geodetic System-1984
XML	Extensible Markup Language

CHAPTER 1. ICAO AIM CONCEPT

1.1 INTRODUCTION

1.1.1 The Eleventh Air Navigation Conference (AN-Conf/11) held in Montréal, 22 September to 3 October 2003, endorsed the Global ATM Operational Concept (Doc 9854) and recognized that, in the global air traffic management (ATM) system environment envisioned by the operational concept, aeronautical information service (AIS) would become one of the most valuable and important enabling services. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making environment, the timely availability of high-quality and reliable electronic aeronautical, meteorological, airspace and flow management information would be necessary. Some recommendations of AN-Conf/11 addressed the importance of aeronautical information in particular.

1.1.2 Aeronautical Information Management (AIM) during its evolution has been defined as the provision of the right Aeronautical Information (quality assured), at the right place (through digital exchange), and at the right time (timeliness). ICAO Annex 15 defines AIM as the *dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties*.

1.1.3 The Twelfth Air Navigation Conference (AN-Conf/12) held in Montréal, 19 to 30 November 2012, through Recommendation 3/8, supported and pushed:

- Transition from AIS to AIM by implementing a fully automated digital aeronautical data chain;
- Implementing necessary processes to ensure the quality of aeronautical data; and
- Engage in intraregional and interregional cooperation for an expeditious transition from AIS to AIM in a harmonized manner and to using digital data exchange and consider regional or subregional AIS databases as an enabler for the transition from AIS to AIM information from the origin to the end users

1.2 TRANSITION FROM AIS TO AIM

1.2.1 The aeronautical information/data based on paper and telex-based text messages can not satisfy anymore the requirements of the ATM integrated and interoperable system. AIS is required to evolve from the paper product-centric service to the data-centric aeronautical information management (AIM) with a different method of information provision and management.

1.2.2 ICAO published in 2009 the "*Roadmap for the transition from AIS to AIM*". The changes foreseen are such that this development is being referred to as the transition from aeronautical information services (AIS) to aeronautical information management (AIM). It identifies the major milestones recommended for a uniform evolution across all regions of the world and specific steps that need to be achieved for implementation.

1.2.3 The Roadmap envisaged the transition into three phases and twenty one (21) steps. Three (3) phases of action are envisaged for States and ICAO to complete the transition to AIM:

- *Phase 1 — Consolidation*

  Phase 1 is the pre-requisite for the transition from AIS to AIM (implementation of the current SARPs). In Phase 1, QMS implementation is still a challenge for some States.

– *Phase 2 — Going digital*

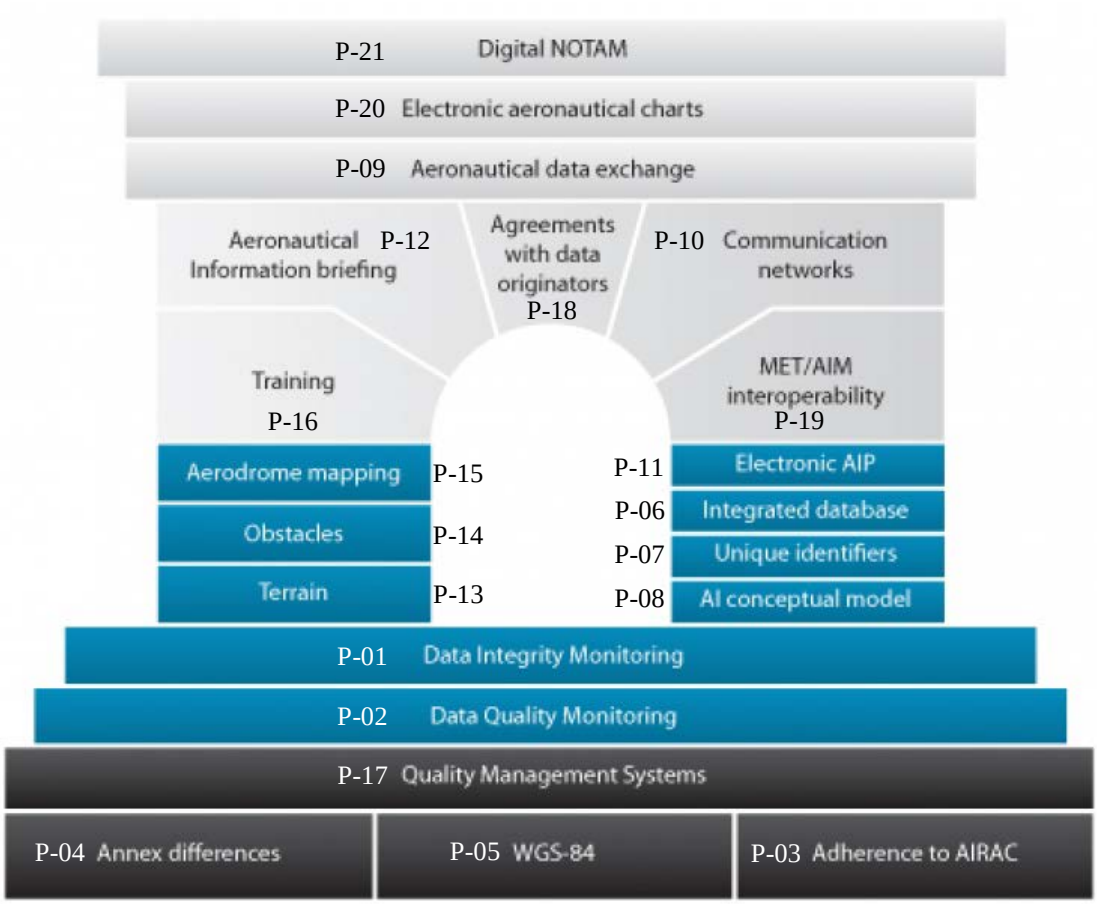
Main components of the Phase 2 are:

- Data-driven processes for the production of the current products;
- Introduction of structured digital data from databases into AIS/AIM processes;
- Introduction of highly structured databases and tools such as GIS;
- Electronic Terrain and Obstacle Datasets; and
- Implementation of aeronautical information conceptual model (AICM).

– *Phase 3 — Information management*

Main components of the Phase 3 are:

- Enabling AIM functions to address the new requirements of the Global ATM Operational Concept in a net-centric information environment;
- Transfer of information in the form of digital data based on the established databases; and
- Aeronautical data exchange model ensuring interoperability between all systems.



Positioning of the 21 steps of the roadmap in the three phases

1.3 INFORMATION MANAGEMENT PANEL (IMP)

1.3.1 Information management is identified in the ICAO Global Air Traffic Management Operational Concept (Doc 9854) as the fundamental enabler allowing the future ATM system to achieve its full operational potential. The Information Management Panel (IMP) has thus been formed to further elaborate on the concepts, means, practices, procedures and technologies needed to provide accredited, quality- assured information on a timely basis across the spectrum of ATM community operations.

1.3.2 Five (5) Working Groups were established to undertake tasks of the Panel:

- Information Services Working Group
- Architecture working Group
- Awareness Working Group
- Governance Working Group
- AIM Working Group

1.3.3 Materials related to the IMP including the meetings' Working/Information Papers and Reports are available on the ICAO AIM portal at:

http://www.icao.int/airnavigation/IMP/Pages/default.aspx

CHAPTER 2. REGIONAL AIM PLANNING

2.1 REGIONAL ROADMAP FOR AIM IMPLEMENTATION

Having Phase 1of the transition from AIS to AIM mostly completed in the MID Region, the current focus should be the implementation of Phase 2 of the Roadmap for the transition from AIS to AIM to prepare further transition to Phase 3 in a timely manner. Accordingly, States should take into consideration the following “MID Region AIM Implementation Roadmap” in planning for the transition from AIS to AIM in a prioritized manner.

2.2 MID REGION AIM IMPLEMENTATION ROADMAP

Light Green: Timeframe for implementation (implemented / ongoing)
Dark Green: Implementation completed (by all States)

Steps/Elements	2019 & before	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031+	Priority	Remarks
AIXM database (AIXM 5.1+)														**1**	
eAIP														**1**	
Terrain area 1, 2a and 4 Datasets														**1**	Terrain area 2a dataset (and its supplementary areas according to Annex 15, 5.3.3.3.3)
Obstacle area 1, 2a and 4 Datasets														**1**	Obstacle area 2a dataset (and its supplementary areas according to Annex 15, 5.3.3.4.5)
Terrain area 2b, 2c, 2d and 3 Datasets														**2**	Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs
Obstacle area 2b, 2c, 2d and 3 Datasets														**2**	Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs
AIP Datasets														**1**	(sub-datasets/grouping TBD)
Aerodrome Mapping Dataset(s)														**2**	Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs
Instrument Flight Procedure (IFP) Dataset(s)														**1**	
Agreement with data originators														**1**	
Provision of quality-assured aeronautical data and information														**1**	
Training														**1**	Continuous
NOTAM Improvements														**2**	Step 1: identification of operational conditions under which a NOTAM shall or shall not be originated Step 2 (TBD): replacement of current NOTAMs by a digital version through the use of AIXM

Light Green: Timeframe for implementation (implemented / ongoing)
Dark Green: Implementation completed (by all States)

Steps/Elements	2019 & before	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031+	Priority	Remarks
Aeronautical Data Exchange														**2**	Continuous trials between States' AISs should be ongoing
Dissemination of Aeronautical Information in SWIM environment														**2**	
Electronic Aeronautical Charts														**2**	
Interoperability with MET														**2**	
Aeronautical Information Briefing														**2**	(Digital briefing)

MEASURE OF NATIONAL AIM IMPLEMENTATION ROADMAP

Taking into consideration the "MID Region AIM implementation Roadmap" MID States are requested to provide the ICAO MID Regional Office with their National AIM Implementation roadmap Using the template provided at Appendix A, in planning for the transition from AIS to AIM in a prioritized manner.

CHAPTER 3. ASBU METHODOLOGY AND MID AIR NAVIGATION STRATEGY (AIM/SWIM RELATED ASBU THREADS/ELEMENTS)

3.1 ASBU METHODOLOGY

3.1.1 ICAO introduced the Aviation System Block Upgrades (ASBU) methodology in the fourth edition of the Doc 9750 (Global Air Navigation Plan), endorsed by the ICAO Assembly in 2013 (further revised by Assembly 39 in 2016), as a systemic manner to achieve a harmonized implementation of the air navigation services. An ASBU designates a set of improvements that can be implemented globally from a defined point in time to enhance the performance of the ATM system.

3.1.2 The GANP represents a rolling, 15-year strategic methodology, which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. The Block Upgrades are organized in six-year time increments starting in 2013 and continuing through 2031 and beyond.

3.1.3 The Sixth Edition of the Global Air Navigation Plan – GANP (ICAO DOC 7950) endorsed by the ICAO Assembly 40, introduced the Multilayer Structure for the Global Air Navigation Planning:

- Global Strategic Level: includes GATMOC vision, Global performance ambitious and the conceptual roadmap.
- Global Technical Level: includes the BBBs, ASBUs and the performance-based decision making method
- Regional Level: addresses regional and subregional performance and operational needs, differences, constraints and opportunities through the ICAO regional air navigation plans and other regional initiatives aligned with the global levels.
- National Level: focuses on State National Plans and their deployment in coordination with relevant stakeholders and in alignment with regional and global plans.

3.1.4 Details on the 6th Edition of the GANP and ASBU framework including the four levels of the GANP are available for interactive consultation via the GANP Portal: https://www4.icao.int/ganpportal

3.2 BASIC BUILDING BLOCK (BBB) FRAMEWORK

3.2.1 The Basic Building Block (BBB) framework outlines the foundation of any robust air navigation system. It is nothing new but the identification of the essential services to be provided for international civil aviation in accordance with ICAO Standards. These essential services are defined in the areas of aerodromes, air traffic management, search and rescue, meteorology and information management.

3.2.2 The BBB is considered an independent framework and not a block of the ASBU framework as they represent a baseline rather than an evolutionary step. This baseline is defined by essential services recognized by ICAO Member States as necessary for international civil aviation to develop in a safe and orderly manner. Once these essential services are provided, they constitute the baseline for any operational improvement.

3.2.3 BBBs provide two-baseline framework for the Aeronautical Information Services:
- AIS basic modules and elements;
- AIS support & end users.

3.3 MID REGION AIR NAVIGATION STRATEGY

3.3.1 In accordance, with the Resolutions of the 40th Session of the ICAO Assembly, particularly Resolution A40-1 "ICAO global planning for safety and air navigation", the ICAO Assembly urged States and PIRGs to utilize the guidance provided in the GANP for planning and implementation activities, which establish priorities, targets and indicators consistent with globally harmonized objectives, taking into account operational needs. In response to this, the MID Region updated the MID Region Air Navigation Strategy, which is aligned with the GANP 6th Edition and ASBU Framework.

3.3.2 The Revised MID Region Air Navigation Strategy (MID Doc 002) was endorsed by the MIDANPIRG/18 meeting to introduce MID Region ASBU Threads/Elements Prioritization and Monitoring. For more information refer to the MID Doc 002 in the ICAO Secure Portal at: https://portal.icao.int/RO_MID/Pages/MIDDocs.aspx).

3.4 AIM ASBU THREADS/ELEMENTS

3.4.1 ASBU is heavily dependent on AIM, as AIM is a critical prerequisite for the implementation of many current or future ATM or Air Navigation concepts that relies on enhanced data quality (accuracy, resolution, integrity, timeliness, traceability, completeness, format) to support Performance-Based Navigation (PBN), airborne computer-based navigation systems and ground automation.

3.4.2 In the AIM domain, the main ASBU THREAD/ELEMENTS, which are relevant with Seamless ATM, are as follows:

- DAIM-B1/1:Provision of quality-assured aeronautical data and information
- DAIM-B1/2:Provision of digital Aeronautical Information Publication (AIP) data sets
- DAIM-B1/3:Provision of digital terrain data sets
- DAIM-B1/4:Provision of digital obstacle data sets
- DAIM-B1/5:Provision of digital aerodrome mapping data sets
- DAIM-B1/6:Provision of digital instrument flight procedure data sets
- DAIM-B1/7:NOTAM improvements
- DAIM-B2/1:Dissemination of aeronautical information in a SWIM environment
- DAIM-B2/2:Daily Airspace Management information to support flight and flow
- DAIM-B2/3:Aeronautical information to support higher airspace operations
- DAIM-B2/4:Aeronautical information requirements tailored to UTM
- DAIM-B2/5:NOTAM replacement

3.5 DAIM THREAD/ELEMENTS (BLOCK 1) PRIORITIZATION AND MONITORING IN THE MID REGION

On the basis of operational requirements and taking into consideration the associated benefits, the following table shows priority 1 DAIM Elements along with the associated elements, applicability, performance Indicators, supporting Metrics, and performance Targets as included in the revised version of the MID Region Air Navigation Strategy as endorsed by MIDANPIRG/18.

3.5.1 ***Description and purpose:***

Improved aeronautical information based on enhanced data quality (accuracy, resolution, integrity, timeliness, traceability, completeness, format) to support Performance-Based Navigation (PBN), airborne computer-based navigation systems and ground automation. In addition, digital exchange and processing of aeronautical information allows a more efficient management of information by avoiding reliance on manual processing and manipulation.

3.5.2 *Main performance impact:*

KPA- 01 – Access and Equity	KPA-02 –Capacity	KPA-04 –Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	N	Y	Y	Y

Element		Applicability	Performance Indicators/ Supporting Metrics	Targets	Timelines
Information Threads					
DAIM					
DAIM B1/1	Provision of quality-assured aeronautical data and information	All States	Indicator*: Regional average implementation status of DAIM B1/1 (provision of quality-assured aeronautical data and information). Supporting Metrics: 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 are compliant with the requirements of AIRAC adherence, 4. Number of States that have implemented an AIXM-based AIS database (AIXM V5.1+) 5. Number of States that have established formal arrangements with at least 50% of their AIS data originators.	80%	Dec 2021
DAIM B1/3	Provision of digital terrain data sets	All States	Indicator*: Regional average implementation status of DAIM B1/3 (Provision of Terrain digital datasets). Supporting Metric: Number of States that provide required Terrain digital datasets	60%	Dec 2021
DAIM B1/4	Provision of digital obstacle data sets	All States	Indicator*: Regional average implementation status of DAIM B1/4	60 %	Dec 2021

Element		Applicability	Performance Indicators/ Supporting Metrics	Targets	Timelines
			(Provision of obstacle digital datasets). Supporting Metric: Number of States that provide required obstacle digital datasets		

3.6 MID AIR NAVIGATION KEY PERFORMANCE INDICATORS (KPISs)

3.6.1 In accordance with GANP, "a performance-based approach is results-oriented, helping decision makers set priorities and determine appropriate trade-offs that support optimum resource allocation while maintaining an acceptable level of safety performance and promoting transparency and accountability among stakeholders. In promoting a performance-based approach, ICAO recommends that States utilize a focused set of Key Performance Indicators (KPIs) that provide the means of identifying shortfalls and prioritizing investments. The sixth edition of the GANP includes 19 key performance indicators (KPIs) for States' adoption to facilitate the performance-based approach and management to improve air traffic management (ATM) operations. An overview of ICAO KPIs is at https://www4.icao.int/ganpportal/ASBU/KPI.

3.6.2 In the MID Region, an initial set of KPIs has been identified to be used for monitoring the performance of the Air Navigation System at National and Regional Levels. The MID Region Air Navigation Strategy included an initial list of Key Performance Indicators (KPIs) to be used for the monitoring of the air navigation system performance.

3.7 CONCEPT OF OPERATIONS OF D-AIM

3.7.1 AIS in the BBBs: Quality-assured product-centric Aeronautical Information Services.

3.7.2 The BBBs refer to the basic AIS services and the provision of aeronautical information in a standardized presentation, based on point-to-point exchanges.

3.7.3 AIM in Block1: Service Improvement through enhanced data quality and digital exchange and processing of information.

- Improved aeronautical information based on enhanced data quality to support PBN, airborne Computer-based navigation systems and ground automation

- Digital information exchange and processing allows a more efficient information management

3.7.4 AIM in Block2: Service improvement through dissemination of aeronautical info via SWIM and new information for new users.

- Block2 guides towards a full AIM environment, which include the dissemination of aeronautical information in a SWIM-enabled environment, user-defined products and the decommissioning of current distribution mechanisms

- The traditional aeronautical information will be complemented by new information required to support operations in high airspace or the UAS Traffic Management concept.

3.8 PRIORITY 1 ELEMENTS IN MID REGION

3.8.1 DAIM –B1/1 PROVISION OF QUALITY-ASSURED AERONAUTICAL DATA AND INFORMATION

The main purpose of this element is to ensure that aeronautical data and information comply with quality standards in order to meet the needs of airspace users and support the safety of flight operations.

This element ensures that processes, procedures and systems are improved to allow for an enhanced quality of aeronautical information products and services. This element includes:

3.8.2 QUALITY MANAGEMENT SYSTEM (QMS)

Implementation of quality management systems to ensure that aeronautical data and information comply with the required standards.

Quality aeronautical data and information is critical for area navigation, required navigation performance, airborne computer-based navigation systems and data link systems.

The provision of quality assured aeronautical information products and services should be carried out in a standardized presentation since there is an inherent need to fulfil the requirements of the next intended users. Customers in the AIS domain are the next intended users of aeronautical data and information (pilots, air traffic controllers, flight planning organizations, etc.).

Data quality specifications have evolved to include requirements for accuracy, resolution, integrity, traceability, timeliness, completeness and format of aeronautical data and information. These data quality specifications are specified in Annex 15, Chapter 3.

Non-compliant aeronautical information and data can potentially affect the safety of air navigation. Annex 15 requires States to introduce a QMS to provide users assurance and confidence in the quality of data and information throughout the aeronautical data chain (collection, processing, and distribution). Roles, responsibilities, competencies and associated knowledge, skills and attitudes required for the performance of each function within the AIS is identified in the QMS.

The application of a QMS introduces benefits such as risk-based thinking, effective communication, overall understanding and demonstrated control over processes.

The QMS is based on process approach principles to manage and control processes, the interactions between processes and the inputs and outputs required to meet customer and regulatory requirements. Processes and procedures provide structure in the work environment and promote quality and safety. Widely communicated, accepted and utilized processes ensures consistency in the delivery of aeronautical information products and services.

Policies, processes and procedures, including the use of metadata ensuring aeronautical data is traceable to the source, allows for any anomalies to be detected and corrected.

An AISP must monitor compliance with the QMS and may elect to have the system certified under a quality management standard. An external certification organization will carry out conformity audits over the certificate validity period. ISO 9001 certification is a means to assure that the implemented QMS is compliant with the requirements of the quality standard.

Note - Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839).

2. Use of common reference systems (spatial – WGS84 and temporal- AIRAC) to facilitate consistent interpretation of aeronautical data and information and facilitate their timely exchange.

3.8.3 WORLD GEODETIC SYSTEM-1984 (WGS-84)

World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

WGS-84 shall be introduced in the published coordinates in AIP in the following sections:

a) Horizontal:
   - Enroute
   - Terminal
   - Aerodrome

b) Vertical:
   - Geoid Undulation

Note - Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System - 1984 (WGS-84) Manual (Doc 9674).

3.8.4 IMPLEMENTATION OF A SYSTEM FOR AIRAC ADHERENCE MONITORING

Aeronautical information is constantly changing: airspace structures and routes are revised, navigation aids change, flight procedures are amended, and runway and taxiway information changes. It is essential for efficiency and safety that airlines, pilots, air traffic controllers and air traffic flow managers all use the same aeronautical information at the same time.

AIRAC is a system established by ICAO Annex 15 — *Aeronautical Information Services* and based on common effective dates to ensure that changes to aeronautical information are made in a consistent manner by States around the world. As a result, States are working with globally agreed timelines when it comes to making aeronautical information available, allowing all further actors in the data chain to perform their obligations in a timely manner.

Operationally significant changes to the AIP, listed in Annex 15 STD 6.2.1shall be published in accordance with AIRAC procedures and shall be clearly identified by the acronym — AIRAC.

When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a NOTAM called “Trigger NOTAM” shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement.

The Trigger NOTAM shall be issued as soon as possible, preferably at the publication date of the AIRAC AIP Amendment or the AIP Supplement. This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid for a period of fourteen days.

The text in Item E) should start with the words ‘TRIGGER NOTAM’ (followed only in the case of an AIP Amendment by the abbreviation PERM), the reference number of the published AIP Amendment or AIP Supplement concerned, the effective date and a brief description of its contents.

Trigger NOTAM shall be issued in the appropriate NOTAM series, according to the information to be promulgated and shall follow the normal NOTAM procedures.

Example:

Q) HECA/QARTT/I/BO/000/999
A) HECC B) 1704270000 C) 1705102359
E) TRIGGER NOTAM – PERM AIRAC AIP AMDT 4/17 WEF 27 APR 2017.
IMPLEMENTATION OF NEW ATS ROUTE UL111.

Note – the term 'PERM' is inserted in Item E) to stress that Item C) contains an artificial end-date and that the information is of a permanent nature.

When information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM or other suitable means, not later than one cycle before the AIRAC effective date concerned.

Implementation dates other than AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

Information provided under the AIRAC system in paper copy form shall be distributed by the AIS unit at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date. Information provided as electronic media, concerning the circumstances listed in Annex 15, STD 6.2.1 shall be distributed/made available by the AIS unit so as to reach recipients at least 28 days in advance of the AIRAC effective date.

Recommendation *– Whenever major changes are planned and where advance notice is desirable and practicable, information provided as electronic media should be distributed/made available at least 56 days in advance of the effective date. This should be applied to the establishment of, and premeditated major changes in, the circumstances listed in* STD 6.2.7 *, and other major changes if deemed necessary.*

AIS/AIM units should:

1) raise the awareness of the Data Originators regarding the AIRAC provisions; and

2) include necessary procedures related to AIRAC adherence in the arrangement with the Data Originators.

States should implement a system for AIRAC adherence monitoring and report on annual basis (by 31 December) to the ICAO MID Regional Office the case(s) of late publication of aeronautical information of operational significance and non-adherence to the AIRAC provisions. **Appendix B** could be used as a monitoring and reporting tool in the AIRAC adherence.

List of AIRAC effective dates for 2020 to 2024 is as follows:

2020	*2021*	*2022*	*2023*	*2024*
2020-01-02	2021-01-28	2022-01-27	2023-01-26	2024-01-25
2020-01-30	2021-02-25	2022-02-24	2023-02-23	2024-02-22
2020-02-27	2021-03-25	2022-03-24	2023-03-23	2024-03-21
2020-03-26	2021-04-22	2022-04-21	2023-04-20	2024-04-18
2020-04-23	2021-05-20	2022-05-19	2023-05-18	2024-05-16
2020-05-21	2021-06-17	2022-06-16	2023-06-15	2024-06-13
2020-06-18	2021-07-15	2022-07-14	2023-07-13	2024-07-11
2020-07-16	2021-08-12	2022-08-11	2023-08-10	2024-08-08
2020-08-13	2021-09-09	2022-09-08	2023-09-07	2024-09-05
2020-09-10	2021-10-07	2022-10-06	2023-10-05	2024-10-03
2020-10-08	2021-11-04	2022-11-03	2023-11-02	2024-10-31
2020-11-05	2021-12-02	2022-12-01	2023-11-30	2024-11-28
2020-12-03	2021-12-30	2022-12-29	2023-12-28	2024-12-26
2020-12-31				

3.8.5 AIXM-BASED AIS DATABASE

Full move into an automated data-centric environment so that the management, processing, verification, usage and exchange can be done in a structured, automatic manner and human intervention is reduced.

Annex 15 STD 3.5.1 states that Automation shall be applied in order to ensure the quality, efficiency and cost-effectiveness of aeronautical information services.

In addition, STD 3.5.3 stipulates that in order to meet the data quality requirements, automation shall:

a) enable digital aeronautical data exchange between the parties involved in the data processing chain; and

b) use aeronautical information exchange models and data exchange models designed to be globally interoperable.

An Integrated Aeronautical database is a single, centralized repository of aeronautical information where digital aeronautical data from a State are integrated and used to produce current and future AIM products and services.

The establishment and maintenance of a database where digital aeronautical data from a State are integrated and used to produce current and future AIM products and services is the main step in Phase 2 of the transition to AIM.

A database may be operated by States or by regional initiatives under delegation from States. The design of such a database will not be identical in all States or regions because local technical or functional requirements must be considered.

This Integrated Aeronautical database must be able to exchange information based on the Aeronautical Information Exchange Model (AIXM) with other aeronautical databases.

3.8.6 AERONAUTICAL INFORMATION EXCHANGE MODEL (AIXM)

The aeronautical information exchange model (AIXM) is designed to enable the management and distribution of aeronautical information services data in digital format. AIXM takes advantages of established information engineering standards and supports current and future aeronautical information system requirements. The major tenets are:

a) an exhaustive temporality model, including support for the temporary information contained in NOTAM;

b) alignment with ISO standards for geospatial information, including the use of the geography markup language (GML);

c) support for the latest ICAO and user requirements for aeronautical data including obstacles, terminal procedures and airport mapping databases; and

d) modularity and extensibility.

AIXM covers the ICAO requirements for the "data necessary for the safety, regularity and efficiency of international air navigation", existing industry standards (e.g. ARINC 424) and emerging data needs. It has constructs for: aerodromes, navigation aids, terminal procedures, airspace and route structures, ATM and related services, air traffic restrictions and other data.

AIXM has two components:

a) The AIXM UML Model provides a formal description of the information.

b) The AIXM XML Schemas are an encoding format for aeronautical data.

AIXM 5 takes advantages of established information engineering standards and supports current and future aeronautical information system requirements.

3.8.7 FORMAL ARRANGEMENTS WITH AIS DATA ORIGINATORS

Aeronautical data and information is of high quality if it is aggregated and provided by authoritative sources. This requires to properly controlling relationships along the whole data chain from the origination to the distribution to the next intended user (formal arrangements with data originators, neighboring States, data and information service providers and others).

Annex 15 — Aeronautical Information Services requires formal arrangements to be established between the parties providing aeronautical data and aeronautical information on behalf of the States and their users. The formal arrangements between data originators and the AIS provider should reflect the relevant regulations and standards for the data origination.

States must establish requirements for the identification of appropriate aeronautical data originators and ensure that formal arrangements are put in place between the AIS provider and the aeronautical data originators.

Since the aeronautical data catalogue contains all data elements that the AIS manages, each one being assigned an owner, the AIS can use the aeronautical data catalogue to systematically establish and document formal arrangements with all identified data originators.

A sample formal arrangement which may be used as a template when formalizing the working arrangements between the data originators and the AIS is provided in *Aeronautical Information Services Manual, Part II,* Appendix 1.

3.8.8 PROVISION OF DIGITAL TERRAIN AND OBSTACLE DATA SETS

The requirements for the provision of terrain and obstacle data in an electronic form are part of the move from traditional AIS to Aeronautical Information Management (AIM) defined by ICAO as the dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties. It is anticipated that the provision of data, rather than the traditional paper products that have always been required in the past, will increase over time. With the transition from a product-based to a data-centric environment, the AIM will be able to use the digital terrain and obstacle data from the central storage for the development and provision of various AIM products using terrain and/or obstacle data. Therefore, terrain and obstacle data bring about a change in the culture and philosophy with regard to aeronautical information provision.

With the introduction of TOD in Amendment 33 to ICAO Annex 15, ICAO has defined four coverage areas where different numerical requirements apply for terrain and obstacle data:

- Area 1: The entire territory of a State
- Area 2: The vicinity of an aerodrome
- Area 3: An area bordering the movement area on an aerodrome
- Area 4: The radio altimeter area operating in front of a precision approach runway, Category II or III.

With Amendment 36 to ICAO Annex 15, Area 2 was broken down into four sub-areas as follows:

— Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists;
— Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;
— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and
— Area 2d: an area outside Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing terminal control area (TMA) boundary, whichever is nearest.

3.8.9 DAIM –B1/3 PROVISION OF DIGITAL TERRAIN DATA SETS

ICAO Annex 15 PARA 5.3.3.3.1 states that: *"Terrain data sets shall contain digital representation of the terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum."*

ICAO PANS-AIM PARA 5.3.3.2.1.1 provides that: *"A terrain grid shall be angular or linear and shall be of regular or irregular shape."*

Terrain data - Area 1

ICAO Annex 15 PARA 5.3.3.3.2 states that "*Terrain data sets shall be provided for Area 1.*" This standard requires an electronic terrain data set to be provided for the entire territory of the State.

Terrain data - Area 2

ICAO Annex 15 PARA 5.3.3.3.3 states that *"For aerodromes regularly used by international civil aviation, terrain data shall be provided for:*

a) Area 2a;
b) the take-off flight path area; and
c) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces."

This standard defines the minimal required set of electronic terrain data for Area 2 to be provided for all aerodromes designated as international in the National AIP section AD 1.3 – 'Index to aerodromes and heliports'.

ICAO Annex 15 TEXT PARA 5.3.3.3.4 states that "*Recommendation.— For aerodromes regularly used by international civil aviation, additional terrain data should be provided within Area 2 as follows:*

a) In the area extending to a 10-km radius from the ARP; and
b) Within the area between 10 km and the TMA boundary or a 45-km radius (whichever is smaller), where terrain penetrates a horizontal terrain data collection surface specified as 120 m above the lowest runway elevation."

ICAO recommends that, in addition to the minimal set of electronic terrain specified in ICAO Annex 15 Para 5.3.3.3.3, terrain data should be provided for all of Area 2 for all aerodromes designated as international in the National AIP section AD 1.3 – 'Index to aerodromes and heliports'.

The recommendation is to provide all terrain data within a 10 km radius from the ARP, and beyond the 10 km radius only data for terrain that is above 120 m of the lowest runway elevation.

Terrain data - Area 3

ICAO Annex 15 PARA 5.3.3.3.7 states that "*Recommendation.— For aerodromes regularly used by international civil aviation, terrain data should be provided for Area 3.*"

The provision of terrain data for Area 3 is a recommendation and it should be provided to support aerodrome-mapping data in order to ensure the consistency and quality of all geographical data related to the aerodrome.

Terrain data - Area 4

ICAO Annex 15 PARA 5.3.3.3.8 states that "*For aerodromes regularly used by international civil aviation, terrain data shall be provided for Area 4 for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.*"

This standard requires that terrain data for Area 4 is made available for Cat II/III runways of all aerodromes designated as international in the National AIP section AD 1.3 – 'Index to aerodromes and heliports'.

3.8.10 DAIM –B1/4 PROVISION OF DIGITAL OBSTACLE DATA SETS

ICAO Annex 15 PARA 5.3.3.4.1 states that "*Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of the obstacles.*"

ICAO Annex 15 PARA 5.3.3.4.2 states that "*Obstacle data shall not be included in terrain data sets.*"

ICAO PANS-AIM PARA 5.3.3.2.2.1 states that "*Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.*"

These provisions define what is meant by obstacle data, reiterating that obstacles must not be included in the terrain data set. They indicate that obstacle data should provide a representation of the horizontal and vertical extent of the obstacles, in a digital form.

Obstacle data - Area 1

ICAO Annex 15 PARA 5.3.3.4.3 states that "*Obstacle data shall be provided for obstacles in Area 1 whose height is 100 m or higher above ground.*"

This standard requires that data relating to obstacle must be provided for all objects over 100 metres in height (above ground level).

Obstacle data - Area 2

ICAO Annex 15 PARA 5.3.3.4.4 states that "*For aerodromes regularly used by international civil aviation, obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.*"

The text "*aerodromes regularly used by international civil aviation*" means all aerodromes designated as international in the National AIP section AD 1.3 – 'Index to aerodromes and heliports'.

ICAO Annex 15 PARA 5.3.3.4.5 states that "*For aerodromes regularly used by international civil aviation, obstacle data shall be provided for*:

a) Area 2a for those obstacles that penetrate an obstacle data collection surface outlined by a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have a height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;

b) Objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and

c) Penetrations of the aerodrome obstacle limitation surfaces.

Note. — Take-off flight path areas are specified in Annex 4, 3.8.2. Aerodrome obstacle limitation surfaces are specified in Annex 14, Volume 1, Chapter 4."

This standard defines the minimal required set of electronic obstacle data for Area 2 to be provided for all aerodromes designated as international in the National AIP section AD 1.3 – 'Index to aerodromes and heliports'.

a) Area 2a:
   All obstacles which exist within the region defined as Area 2a and that intersect a horizontal plane 3m above the nearest point on the runway centreline are to be provided in the digital data set with the Area 2 numerical requirements defined in ICAO PANS AIM Appendix 1 Table A1-6.

b) Objects in the take-off flight path area
Objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area (i.e. at the end of the runway or clearway as appropriate) must be made available with the Area 2 numerical requirements defined in ICAO PANS-AIM Appendix 1 Table A1-6:

It is, therefore, necessary to include those obstacles which must be included on the Aerodrome Obstacle Chart — ICAO Type A (Operating Limitations) in order to meet this clause.

c) Penetrations of the aerodrome obstacle limitation surfaces:
Objects penetrating the aerodrome obstacle limitation surfaces must be provided with the Area 2 numerical requirements defined in ICAO PANS-AIM Appendix 1 Table A1-6.

ICAO Annex 15 PARA 5.3.3.4.6 states that "*Recommendation.— For aerodromes regularly used by international civil aviation, obstacle data should be provided for Areas 2b, 2c and 2d for obstacles that penetrate the relevant obstacle data collection surface specified as follows:*

a) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side. The Area 2b obstacle collection surface has a 1.2 per cent slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;

b) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2 per cent slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c has the elevation of the point of Area 2a at which it commences; and

c) Area 2d: an area outside Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground; except that data need not be collected for obstacles less than a height of 3m above ground in Area 2b and less than a height of 15m above ground in Area 2c."

The collection of obstacle data should comply in accordance with the Area 2 numerical requirements (ICAO PANS-AIM Appendix 1 Table A1-6):

a) Area 2b, as described, is a surface that extends from the outer ends of Area 2a, with a 15% splay to either side. This surface commences at the elevation of the nearest runway threshold or runway end, in case of a displaced threshold, and slopes upwards at an angle of 1.2%.

b) Area 2c is described as the area within 10km of the edges of Area 2a, excluding those parts identified as being Area 2b. Once again, a 1.2% slope~~d~~ assessment surface is identified.

c) Area 2d is identified as the area extending from the outer edges of Area 2a, Area 2b and Area 2c, out to a distance of 45km or the TMA boundary, whichever is the closest. Given that the TMA boundary is only mentioned in this point and in ICAO PANS-AIM Appendix 8 Figure A8-1, it is assumed that should the TMA end closer

to Area 2a than 10km, Area 2b and 2c would still extend to 10km, despite extending further than the TMA boundary.

Obstacle data - Area 3

ICAO Annex 15 PARA 5.3.3.4.9 states that "*Recommendation.— For aerodromes regularly used by international civil aviation, obstacle data should be provided for Area 3 for obstacles that penetrate the relevant obstacle data collection surface extending a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.*"

The provision of obstacle data for Area 3 is a recommendation and the data should be provided to support aerodrome-mapping data in order to ensure consistency and quality of all geographical data related to the aerodrome. Therefore, the provision of this data serves no purpose if aerodrome-mapping data is not provided, as the view resulting from the Area 3 data set will comprise "islands" of data with no reference point to place the data in context, e.g. a digital representation of the movement surfaces.

Obstacle data - Area 4

ICAO Annex 15 PARA 5.3.3.4.10 states that "*For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Area 4 for all runways where precision approach Category II or III operations have been established.*"

This standard requires that obstacle data for Area 4 is made available.

CHAPTER 4. AIM NATIONAL PLANNING AND IMPLEMENTATION

4.1 AIM NATIONAL PLANNING

States should focus on the implementation of Phase 2 and 3 of the ICAO Roadmap for the transition from AIS to AIM and take into consideration the "MID Region AIM implementation Roadmap" in planning for the transition from AIS to AIM in a prioritized manner.

States are required to develop/update their National AIM Implementation Roadmap on an annual basis (by end of December), using the Template at **Appendix A** (National AIM Implementation Roadmap Template) and provide their feedback, lessons learned and difficulties to the ICAO MID Office for further assistance, as necessary.

4.2 AIR NAVIGATION DEFICIENCIES

A deficiency is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.

Priority for action to remedy a deficiency is based on the following safety assessments:

> **'U' priority** = Urgent requirements having a direct impact on safety and requiring immediate corrective actions. Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.
>
> **'A' priority** = Top priority requirements necessary for air navigation safety. Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.
>
> **'B' priority** = Intermediate requirements necessary for air navigation regularity and efficiency. Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

MIDANPIRG is responsible to identify and address specific deficiencies in the air navigation field and to facilitate the development and implementation of an action plan by States to resolve identified deficiencies, where necessary.

States are required to use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies, including the submission of a specific Corrective Action Plan (CAP) for each deficiency. Each State MANDD Focal Point is given the required credential and MANDD is accessible at: http://www.icao.int/mid

A Sample State's Corrective Action Plan (CAP) is provided as **Appendix C** for assistance to States in developing their CAPs for the Air Navigation Deficiencies.

States are required to submit a Formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have been implemented for the elimination of deficiency(ies) when requesting the elimination of deficiency(ies) from the MANDD.

4.3 HUMAN RESOURCE AND TRAINING

As part of an organization's quality management system (QMS), AIS technical personnel are required to be competent in the tasks they perform. The goal of Competency-based training and assessment (CBTA) is to provide a competent workforce for the provision of quality aeronautical information services and products. To focus training and assessment on how AIS technical personnel is expected to competently perform on the job, a description of this performance in the operational context is needed. Clear performance criteria are identified and assessed in an organizational competency framework to ensure consistency. The adapted competency model, with defined performance criteria, provides a means of assessing whether trainees achieve the desired performance. The AIS trainee, instructor, training organization and regulator must share a common understanding of the competency requirements and individual roles and responsibilities. Competency requirements must be identified and documented. Processes (i.e., training, assessment plans, etc.) must be established and followed to ensure all AIS are trained and assessed to perform assigned function. Using an adapted competency model with selected competencies, pre-defined observable behaviours, conditions and standards are used to ensure these requirements are met.

4.4 DEVELOPING COMPETENCY-BASED TRAINING

In line with the State's requirements, the AISP must ensure that job descriptions, training programs, training plans and training records are developed, maintained and continuously improved based on the ICAO competency frameworks. CBTA makes use of a systematic approach whereby the competencies and performance criteria are defined. The training programme is based on identified tasks, and a process for assessment is developed to ensure the identified competencies have been achieved. In particular, the performance criteria are established by the AISP since the competency standards are context-dependent per function. The CBTA methodology is delivered throughout all phases of training; supported by classroom events and performance reviews. Observations and periodic assessments should be conducted to ensure competencies are obtained and maintained. There may be instances where additional training is required, such as training for new or changed software, new tasks and functions, or training required after a long absence.

Note.— The ICAO Competency Framework is defined in the AIS Manual Volume I (Doc 8126) and the AIS Competency Framework is described in more detail in Section 2 of the Training Manual (Doc 9991).

CHAPTER 5. REPORTING AND MONITORING

5.1 MID eANP VOLUME III

The status of implementation is reported and monitored by the AIM Sub-Group and through the B0-DATM Tables contained in the MID eANP Volume III. The MID eANP is available on the ICAO MID website at: http://www.icao.int/MID/Pages/MIDeANP.aspx

5.2 REGIONAL PERFORMANCE DASHBOARD

The 38th Assembly approved the Regional Performance Dashboards. The Dashboards aim to provide a glance of both Safety and Air Navigation Capacity and Efficiency strategic objectives, using a set of indicators and targets based on the regional implementation of the Global Aviation Safety Plan (GASP) and the Global Air Navigation Plan (GANP).

ICAO introduced the Regional Performance Dashboards as a framework of nested reporting of results with an increased focus on implementation. The initial version of the dashboard shows the globally agreed targeted performance at the regional level and contains graphics and maps with a planned expansion to include regionally agreed targets and the Aviation System Block Upgrades (ASBU) Block 0 Modules (i.e. AIM National Plan/Roadmap, AIXM, eAIP, eTOD, WGS-84 and QMS).

For the first edition of the Regional Performance Dashboards, the implementation of 3 steps from Phase 1 of the ICAO Roadmap for transition from AIS to AIM (AIRAC, QMS and WGS-84) is monitored.

As of January 2016, the Regional Performance Dashboards has evolved to the more advanced iSTARS Regional Safety Briefing.

The integrated Safety Trend Analysis and Reporting System (iSTARS) is a web-based system on the ICAO Secure Portal. iSTARS provides a quick and convenient interface to a collection of safety and efficiency datasets and web applications to make safety, efficiency and risk analyses.

The ICAO Regional Offices are monitoring the implementation progress of the Air Navigation improvements against the objectives set forth by the Global Air Navigation Plan and the Regional Air Navigation plan.

The primary purpose of the application is to inform all the civil aviation stakeholders and ICAO regional bodies about the implementation progress, and collectively channel the appropriate resources to solve the implementation gaps.

The dashboard and details of status of AN Implementation by Region is available on **iSTARS** at https://portal.icao.int/space/Pages/ANPage.aspx

5.3 MID REGION AIR NAVIGATION REPORT

MIDANPIRG/16 endorsed the first MID Region Air Navigation Report-2016. The objective of the Report is to monitor the status of implementation of the priority 1 ASBU Block 0 Modules in the MID Region as well as the outlook of ASBU implementation in 2020. The MID Region Air Navigation

Report will be an annual document for reporting and monitoring the ASBU implementation in the MID Region. The Report is available on the ICAO MID Office website at: https://www.icao.int/MID/MIDANPIRG/Pages/MID-AN.aspx

5.4 DEVELOPING A METHODOLOGY FOR REPORTING THE PROGRESS OF AIM IMPLEMENTATION

"*Methodology for assessing and reporting the progress of transition from AIS to AIM*" aims to develop a uniform method and plan for the reporting by the States on the progress achieved for the AIM transition, based on the ICAO Roadmap for Transition from AIS to AIM. The ICAO air navigation planning and implementation performance framework requires that reporting, monitoring, analysis and review activities be conducted on a cyclical, annual basis (ICAO DOC 9750). The Methodology is used while collecting data for monitoring the progress achieved in the transition from AIS to AIM and for the purpose of Regional Performance Dashboard, MID eANP, etc.

MIDANPIRG/15 meeting (Bahrain, 8-11 June 2015) reviewed the draft Methodology for reporting and assessing the progress related to the transition from AIS to AIM, as an initial MID Regional framework for monitoring the progress achieved for the AIM transition.

5.5 METHODOLOGY FOR REPORTING AND ASSESSING THE PROGRESS RELATED TO THE TRANSITION FROM AIS TO AIM

Element (Phase/Step/Step No.)			Metric/ Indicator	Finalization/Compliance Criteria	Link to ASBU Block	Remarks
1			**2**	**3**	**4**	**5**
Phase 1						
AIRAC adherence		P-03	FC/NC	Implementation of a system for AIRAC adherence monitoring (compliance with Annex 15 AIRAC provisions) (TBD)	Block 0	
WGS-84 implementation		P-05	FC/PC/NC	National AIP GEN 2.1.3 'Geodetic reference datum' provides information about the implementation of WGS-84 in ENR, Terminal and AD	Block 0	
QMS		P-17	FC/NC	ISO 9001 Certification	Block 0	
Phase 2						
Data quality monitoring		P-01	FI/NI	QMS (P-17) and Agreement with data originators (P-18) is implemented (TBD)	Block 0	
Data integrity monitoring		P-02				*Linked to P-01*
Integrated aeronautical information database	AIXM-based AIS Database	P-06	FI/NI	National aeronautical data and information is stored and maintained in AIXM-based AIS database	Block 0	*Structured AI Database with digital exchange capabilities (AIXM 5.1)*
	Implementation of IAID		FI/PI/NI	Implementation of a database providing eAIP (text, tables and charts) and NOTAM, linked to the terrain/obstacles and aerodrome mapping datasets (TBD)	Block 1	
Unique identifiers		P-07				*Linked to P-06*
Aeronautical information conceptual model		P-08				*Linked to P-06*
Electronic AIP		P-11	FI/NI	National AIP GEN 3.1.3 'Aeronautical publications' provides information about the availability of the National AIP in electronic format (eAIP)	Block 0	
Terrain	Area 1	P-13	FC/NC	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset can be obtained	Block 0	
	Area 4	P-13	FC/PC/NC or N/A	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset for specific CAT II/III RWY can be obtained.	Block 0	*In case of PC, list name of CAT II/III ADs having the dataset*

Element (Phase/Step/Step No.)			Metric/ Indicator	Finalization/Compliance Criteria	Link to ASBU Block	Remarks
1			**2**	**3**	**4**	**5**
				States should indicate in remarks the number of existing CAT II/III RWY. N/A for States with no CAT II/III RWY.		
	Area 2a	P-13	FC/PC/NC	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset can be obtained. States should indicate in remarks the number of AD eligible for provision of Area 2 data. This number should come from the Regional eANP Table AOP II-1 – for aerodromes with one of the following designation: — RS: international scheduled air transport, regular use — RNS: international non-scheduled air transport, regular use — RG: international general aviation, regular use.	Block 0	*In case of PC, list name of ADs having the dataset*
	Take-off flight path area	P-13	FC/PC/NC	Same as Terrain Area 2a	Block 0	*In case of PC, list name of ADs having the dataset*
	An area bounded by the lateral extent of the aerodrome obstacle limitation surfaces	P-13	FC/PC/NC	Same as Terrain Area 2a	Block 0	*In case of PC, list name of ADs having the dataset*
Obstacles	Area 1	P-14	FC/NC	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset can be obtained	Block 0	
	Area 4	P-14	FC/PC/NC or N/A	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset for specific CAT II/III RWY can be obtained. States should indicate in remarks the number of existing CAT II/III RWY. N/A for States with no CAT II/III RWY.	Block 0	*In case of PC, list name of CAT II/III ADs having the dataset*
	Area 2a	P-14	FC/PC/NC	National AIP GEN 3.1.6 'Electronic terrain and obstacle data' provides information on how the dataset can be obtained. States should indicate in remarks the number of AD eligible for provision of Area 2 data. This number should come from the Regional eANP Table AOP II-1 – for aerodromes with one of the following designation:	Block 0	*In case of PC, list name of ADs having the dataset*

Element (Phase/Step/Step No.)		Metric/ Indicator	Finalization/Compliance Criteria	Link to ASBU Block	Remarks
1		**2**	**3**	**4**	**5**
			— RS: international scheduled air transport, regular use — RNS: international non-scheduled air transport, regular use — RG: international general aviation, regular use.		
objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area	P-14	FC/PC/NC	Same as Obstacles Area 2a	Block 0	*In case of PC, list name of ADs having the dataset*
penetrations of the aerodrome obstacle limitation surfaces	P-14	FC/PC/NC	Same as Obstacles Area 2a	Block 0	*In case of PC, list name of ADs having the dataset*
Aerodrome mapping	P-15	FI/PI/NI	National AIP GEN 3.1.6 ‘Electronic terrain and obstacle data’ provides information on how the dataset can be obtained	Block 1	*In case of PC, list name of ADs having the dataset*
Phase 3					
Aeronautical data exchange	P-09	FI/PI/NI	Direct data exchange between AIS and data originators/users (TBD)	Block 1	*In case of PC, list name of Units (Data Originators/Users)*
Communication networks	P-10				
Aeronautical information briefing	P-12	FI/PI/NI	Provision of preflight aeronautical information briefing at the international aerodromes (TBD) Mandatory for international aerodromes contained in the Regional eANP Table AOP II-1 – for aerodromes with one of the following designation: — RS: international scheduled air transport, regular use — RNS: international non-scheduled air transport, regular use — RG: international general aviation, regular use.	Block 1	*In case of PC, list name of ADs providing AI briefing*

Element (Phase/Step/Step No.)		Metric/ Indicator	Finalization/Compliance Criteria	Link to ASBU Block	Remarks
1		**2**	**3**	**4**	**5**
Training	P-16				
Agreement with data originators	P-18	FI/PI/NI	Signed agreements between AIS and ANSPs (ATM, CNS, etc.), Aerodromes and Military	Block 0	*In case of PC, list name of Data Originator(s)*
Interoperability with meteorological products	P-19				*Linked to P-12*
Electronic aeronautical charts	P-20	FI/NI	National AIP GEN 3.2 ‘Aeronautical Charts provides information about the availability of the e-Aeronautical Charts	Block 1	
Digital NOTAM	P-21	FI/NI	TBD	Block 1	

FC: Fully Compliant; PC: Partially Compliant; NC: Not Compliant; FI: Fully Implemented; PI: Partially Implemented; NI: Not Implemented; N/A: Not Applicable

---

APPENDICES

APPENDIX A - NATIONAL AIM IMPLEMENTATION ROADMAP TEMPLATE

STATE	
DATE	

Steps/Elements	**Timeline**														**Start**	**End**	**Remarks**
	2019-	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032+**			
WGS-84																	
AIRAC																	
QMS																	
AIXM database (AIXM 5.1+)																	
eAIP																	
Terrain Area 1																	
Obstacle Area 1																	
Terrain Area 2a (plus TKOF flight path and OLS)																	
Obstacle Area 2a (plus TKOF flight path and OLS)																	
Terrain Area 2b, 2c, 2d																	
Obstacle Area 2b, 2c, 2d																	

Terrain Area 3																	
Obstacle Area 3																	
Terrain Area 4																	
Obstacle Area 4																	
AIP Datasets																	
Aerodrome Mapping Datasets																	
IFP Datasets																	
Agreement with data originators																	
Provision of quality-assured aeronautical data and information																	
Training																	
NOTAM Improvements																	
Aeronautical data exchange																	
Dissemination of Aeronautical Information in SWIM environment																	
Electronic aeronautical charts																	

Interoperability with MET products																	
Aeronautical information briefing																	

Legend		Not Started
		In Progress
		Implemented

APPENDIX B - AIRAC ADHERENCE MONITORING

YEAR: 2021			**STATE: …….**		
AIRAC EFF Date	**AIRAC AMDT Serial Number; or NIL Notification**	**AIRAC AMDT PUB/Distribution Date**	**Trigger NOTAM (Serial Number)**	**No change until 28 days after EFF Date? (Yes / No)**	**Remarks**
28 JAN 21	- AIRAC …../21; or - NIL notification issued on …….				
25 FEB 21	- AIRAC …../21; or - NIL notification issued on …….				
25 MAR 21	- AIRAC …../21; or - NIL notification issued on …….				
22 APR 21	- AIRAC …../21; or - NIL notification issued on …….				
	-				
20 MAY 21	- AIRAC …../21; or - NIL notification issued on …….				
17 JUN 21	- AIRAC …../21; or - NIL notification issued on …….				
15 JUL 21	- AIRAC …../21; or - NIL notification issued on …….				
12 AUG 21	- AIRAC …../21; or - NIL notification issued on …….				
09 SEP 21	- AIRAC …../21; or - NIL notification issued on …….				
07 OCT 21	- AIRAC …../21; or - NIL notification issued on …….				
04 NOV 21	- AIRAC …../21; or - NIL notification issued on …….				
02 DEC 21	- AIRAC …../21; or - NIL notification issued on …….				
30 DEC 21	- AIRAC …../21; or - NIL notification issued on …….				

APPENDIX C - SAMPLE STATE'S CORRECTIVE ACTION PLAN

<table>
<tr><td colspan="2">DEFICIENCY DESCRIPTION</td><td>PRIORITY
(U/A/B)</td></tr>
<tr><td colspan="2" rowspan="3"></td><td></td></tr>
<tr><td>RATIONALE
F:Financial, H:HR, S:State, O:Other</td></tr>
<tr><td></td></tr>
<tr><td colspan="3">STATE'S COMMENTS/OBSERVATION</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>CORRECTIVE ACTION(S) PROPOSED</td><td>ACTION OFFICE/BODY</td><td>DATE OF COMPLETION</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

REFERENCES

- ICAO Annex 15 – Aeronautical Information Services and ICAO Annex 4 Aeronautical Charts
- ICAO Doc 9750 – Global Air Navigation Plan
- ICAO Roadmap for the transition from AIS to AIM
- ICAO PANS AIM (Doc. 10066);
- AIS Manual Volumes 1-4 (Doc. 8126);
- Aeronautical Chart Manual (Doc. 8697);
- WGS-84 (Doc. 9674);
- AIM Training Manual (Doc 9991).
- Guidelines for Terrain, Obstacle and Aerodrome Mapping Information (Doc. 9881);
- QMS AIM Manual (Doc. 9839);
- MID Doc 002 – MID Region Air Navigation Strategy
- http://www.aixm.aero
- http://www.icao.int/airnavigation/Documents/ICAO_AN%20Report_EN_final_30042014.pdf
- http://www.icao.int/airnavigation/IMP/Pages/default.aspx
- http://www.icao.int/safety/ais-aimsg/Pages/default.aspx
- http://www.icao.int/safety/Pages/Regional-Targets.aspx.
- https://portal.icao.int/RO_MID/Pages/MIDDocs.aspx
- https://portal.icao.int/space/anp/Pages/Home.aspx

- END -