International Civil Aviation Organization

Second Meeting of the Aeronautical Information Management Digitalization and Planning Task Force (AIMDP TF/2)

(Virtual, 21 April 2026)

Agenda Item 3: AIM digitalization and Planning

OVERARCHING VISION FOR AIM PLANNING & IMPLEMENTATION IN THE MID REGION

(Presented by the Secretariat)

SUMMARY

This paper presents the proposed Overarching Vision for Aeronautical Information Management (AIM) Planning and Implementation in the MID Region, developed by the AIM Digitalization and Planning Task Force (AIMDP TF) under the workstream on Vision and Strategy for AIS Harmonization. The vision establishes a common regional destination for the AIS-to-AIM transition, anchored to the highest levels of global ICAO direction, including the recommendations of the Fourteenth Air Navigation Conference (AN-Conf/14, Montréal, August–September 2024) and the decisions of the Forty-Second Session of the ICAO Assembly (A42, Montréal, September–October 2025).

Action by the meeting is at paragraph 3.

REFERENCES

- AIMDP TF/1 Report, Amman, Jordan, 20–21 January 2025
- Annex 15 — Aeronautical Information Services
- Doc 8126 — Aeronautical Information Services Manual
- Doc 10066 — PANS-AIM

1. INTRODUCTION

1.1 The meeting may wish to recall that the AIM Digitalization and Planning Task Force (AIMDP TF) was established under MIDANPIRG Decision 21/29 to support alignment of the DAIM thread and associated elements with the latest edition of the ICAO Global Air Navigation Plan (GANP, Doc 9750), develop appropriate monitoring tables for ICAO ANP Volume III, and foster the coordinated and harmonized deployment of digital aeronautical information management across the MID Region in order to address AIM digitalization challenges and future demand requirements.

1.2 The First Meeting of the AIMDP Task Force (AIMDP TF/1) identified key regional priorities, including assessment of State readiness, development of an overarching vision and strategy for AIS service provision, development of the MID Regional Implementation Plan for Digital Datasets, implementation support and capacity-building, and monitoring and reporting. The meeting agreed that

the deliverable for the Vision workstream would be incorporated in the Guidance for AIM Planning and Implementation in the MID Region (MID Doc 008).

1.3 The Twenty-Second Meeting of MIDANPIRG and the Twelfth Meeting of RASG-MID (MIDANPIRG/22 & RASG-MID/12, Doha, State of Qatar, 4–8 May 2025) tasked the workstream on Vision and Strategy for AIS Harmonization, led by Egypt and ICAO MID, to deliver an Overarching Vision for AIM Planning and Implementation in the MID Region for incorporation in the updated MID Doc 008.

2. DISCUSSIONS

2.1 The transition from AIS to AIM is no longer limited to the digitization of traditional products. It requires the progressive establishment of a data-centric environment grounded in quality-assured aeronautical data, formal arrangements with data originators, automated workflows, internationally standardized encoding, and improved distribution and interoperability across the full data lifecycle. This transition is driven by the operational requirements of Performance-Based Navigation (PBN), trajectory-based operations, and the Flight and Flow Information for a Collaborative Environment (FF-ICE) concept, all of which depend upon the availability of high-integrity, machine-readable aeronautical data delivered in standardised digital formats. This direction is explicitly reflected in ICAO Annex 15, PANS-AIM (Doc 10066), and the GANP (Doc 9750, Eighth Edition).

2.2 At the global level, this transition is governed by ICAO Annex 15 Aeronautical Information Services, the Procedures for Air Navigation Services Aeronautical Information Management (PANS-AIM, Doc 10066), and the Global Air Navigation Plan (GANP, Doc 9750, 8th Edition). The conclusions of the 14th Air Navigation Conference (AN-Conf/14, Doc 10209) and the resolutions of the 42nd Session of the ICAO Assembly (Doc 10222) further reinforce the urgency of this transition, establishing **31 December 2034** as the target date for the cessation of FPL2012 and the full operational deployment of FF-ICE across all ICAO regions.

2.3 *The AN-Conf/14 agreed that States and PIRGs should focus on implementing mature TBO technical enablers, specifically System-Wide Information Management (SWIM) and FF-ICE as the foundational building blocks for the future ATM system (AN-Conf/14 Report, Para 3.8). The Conference recommended, under Recommendation 3.2/2, the global transition to FF-ICE services and the cessation of the ICAO 2012 Flight Plan (FPL2012) by 2034. The Forty-Second ICAO Assembly agreed that ICAO develop a strategy to support the implementation of SWIM at regional and national levels, and encouraged States to implement SWIM capabilities to enable FF-ICE, meteorology, and aeronautical information services (A42-TE, Para 24.64). The Assembly also agreed that ICAO develop globally unified guidelines for the assessment of SWIM implementation (A42-TE, Para 24.63), recognizing the importance of global harmonization as a prerequisite for interoperability. Furthermore, Resolution A42-9 explicitly requested ICAO to incorporate principles of service-oriented architecture into the GANP to guide air navigation service providers in planning agile, globally interoperable, and future-ready systems in support of seamless ATM.*

2.4 These global mandates establish a clear direction: SWIM is the delivery mechanism, FF-ICE is the operational outcome, and 2034 is the globally agreed deadline. The MID Regional vision, should be aligned with this framework.

2.5 In light of the global direction and the regional context described above, the following vision statement , presented in full in **Appendix A** , is proposed:

> *"By 31 December 2034, the MID Region will have transitioned from a product-centric Aeronautical Information Service (AIS) to a trusted, digital, interoperable, and service-oriented AIM environment. In this environment, aeronautical information is produced, managed, and exchanged as quality-assured, structured digital datasets encoded in ICAO-standard formats across SWIM-enabled information services, supporting seamless,*

reliable, secure, and efficient exchange of ATM-related information throughout the region and beyond."

2.6 The following principles govern how States decide, and prioritize throughout the transition to a data-centric aeronautical information environment. These principles should guide every national implementation decision and every investment choice made between now and 2034.

— AIM as Business Transformation AIM modernization is recognized as a fundamental transformation of the aeronautical information services, not a technical upgrade.

— Non-Negotiable Data Quality Data quality is the foundation of the AIM. The accuracy, integrity, resolution, timeliness, and completeness of aeronautical data are non-negotiable requirements, not performance targets. No transition to digital processes will be accepted unless quality standards are demonstrably met and sustained.

— Governance Before Technology Institutional governance frameworks, including quality management, and formal agreements between data originators and AIM providers will be established before digital systems and technologies are deployed. Technology serves governance; governance does not follow technology.

— Regional Interoperability as a Design Requirement Regional interoperability is not an outcome to be achieved after national implementation , it is a design requirement from the outset. National AIM systems, processes, and data structures will be designed and implemented with regional compatibility as a fundamental constraint.

— Maturity-Based and Sequenced Implementation Implementation will be sequenced according to the maturity of available standards, technologies, and institutional capabilities. Complexity will be introduced progressively, ensuring that each phase of the transition builds on demonstrated foundations rather than untested assumptions.

— End-to-End Automation as the Target State The target state of the AIM is end-to-end automation of the aeronautical information chain from data origination through processing, publication, distribution, and consumption with human intervention reserved for oversight, exception handling, and quality governance.

— SWIM-Compatibility by Design All AIM infrastructure, services, and data developed under this Vision will be designed for compatibility with the System Wide Information Management (SWIM) environment from the outset, ensuring that no element of the transition creates barriers to eventual full SWIM integration.

3. ACTION BY THE MEETING

3.1 The meeting is invited to :

a) review the proposed regional vision for the AIS-to-AIM transition and SWIM-enabled evolution of aeronautical information management in the MID Region, as presented in **Appendix A** to this paper;
b) endorse the proposed vision as the overarching regional framework for AIM planning and implementation to 2034; and
c) endorse the vision statement contained in Appendix A to this paper for inclusion in the in the updated MID Doc 008 (Guidance for AIM Planning)

APPENDIX A

MID REGION DIGITAL AIM & SWIM VISION

Vision Statement

By 31 December 2034, the MID Region will have transitioned from a product-centric Aeronautical Information Service (AIS) to a trusted, digital, interoperable, and service-oriented AIM environment. In this environment, aeronautical information is produced, managed, and exchanged as quality-assured, structured digital datasets encoded in ICAO-standard formats across SWIM-enabled information services, supporting seamless, reliable, secure, and efficient exchange of ATM-related information throughout the region and beyond.

This transition is grounded in the ICAO Global Air Navigation Plan (GANP, Doc 9750) and its Aviation System Block Upgrades (ASBUs), which define the global pathway from legacy Aeronautical Information Services through structured digital data sets to full System-Wide Information Management (SWIM) dissemination.

MID States shall implement this transition in a harmonised and phased manner, ensuring that the right aeronautical information, from the right authoritative source, reaches the right users, at the right time, in the right format, in an interoperable and quality-assured manner.

From Vision to Action — The Seven Pillars
To translate this Vision into reality, it is built upon seven foundational pillars. Each pillar addresses a critical dimension of the digital transition from the quality of the data itself, to the systems that produce it, the networks that share it, and the people who manage it.

Together, these pillars form an integrated framework: no single pillar stands alone. States at every stage of digital maturity will find a starting point within this framework. Early-stage States may focus initially on Pillars 1, 2 and 7 before progressing to digital dataset production and SWIM connectivity.

The seven pillars are therefore not a checklist to be completed in sequence, but a living framework to be developed in parallel and adapted to each State's national context.

Pillar 1 — Data Quality

Grounded in: DAIM-B1/1; ICAO Annex 15; PANS-AIM (Doc 10066); Doc 9839
Aeronautical data shall meet the highest standards of accuracy, integrity, resolution, traceability, and timeliness throughout its entire lifecycle, from origination through processing, verification, and distribution to the next intended user. A certified Quality Management System (QMS), aligned with ISO 9001 and compliant with the quality requirements of ICAO Annex 15 and PANS-AIM (Doc 10066), is the foundation of all AIM services within the MID Region.

Pillar 2 — Data-Centric Governance

Grounded in: DAIM-B1/1 (Authoritative Source Chain); ICAO Annex 15; PANS-AIM (Doc 10066); ISO 19115
Aeronautical information shall be managed as a structured, sovereign data asset throughout its complete lifecycle from origination at the authoritative source through processing, quality assurance, encoding, and publication to distribution to the next intended user.

2.1 Authoritative Source Chain

In accordance with DAIM-B1/1, data quality depends on aggregation from and control of authoritative sources across the entire data chain. Formal arrangements (service-level arrangements, and data excahnge protocols) shall be established and maintained between all parties in the data chain, including neighbouring States, in compliance with ICAO Annex 15 Chapter 3 and DAIM-B1/1.

2.2 Aeronautical Data Catalogue (ADC)

All aeronautical data features shall be catalogued within a structured National Aeronautical Data Catalogue (ADC), providing:

- A definitive inventory of all aeronautical data features managed by the State;
- Metadata conforming to ISO 19115 for each dataset and data feature;
- Traceability of data provenance, version history, and change authority; and
- Unique identifiers (UUIDs) shall be assigned to all aeronautical data features to support lifecycle traceability and cross-system interoperability.

Pillar 3 — Digital Datasets

Grounded in: DAIM-B2/6; DAIM-B2/7; DAIM-B2/8; DAIM-B2/9; DAIM-B3/1; ICAO Doc 10066
All aeronautical data shall be encoded, exchanged, and maintained in standardised digital formats. This constitutes the foundational migration to a data-centric environment where aeronautical information is available in structured, machine-readable, and interoperable form.

Pillar 4 — SWIM Exchange

Grounded in: DAIM-B2/1; SWIM-B2/1; SWIM-B2/2; SWIM-B2/3; ICAO Doc 10039; ICAO Doc 10203
Aeronautical data shall be delivered through loosely-coupled, discoverable, standardised, and interoperable SWIM information services, replacing legacy point-to-point distribution with a Service-Oriented Architecture (SOA).
SWIM comprises three interdependent components:

- Information — quality-assured aeronautical data and datasets
- Information Services — publish/subscribe and request/reply mechanisms
- Technical Infrastructure — IP-based, SWIM-compliant, cybersecure

A SWIM Registry shall enable service discoverability for all authorized users.

Pillar 5 — Regional Harmonization

MID States shall implement this Vision through a coordinated, synchronized, and mutually accountable regional approach, ensuring that no State's implementation creates interoperability barriers for the region as a whole.

Pillar 6 — Systems & Infrastructure

Grounded in: DAIM-B1/1; DAIM-B2/1; ICAO Doc 10203; ICAO Doc 10204

MID States shall establish automated, fit-for-purpose systems and technical infrastructure to support the complete digital AIM lifecycle from data origination and encoding through quality assurance, publication, and SWIM-based distribution.

6.1 Automated Production Systems

In compliance with DAIM-B1/1, States shall implement an automated AIM system supporting:
a) data collection;
b) data validation and verification;
c) data storage and integration; and
d) service provision.
This represents a fundamental shift from manual, document-based processes to a fully automated, data-centric environment, where aeronautical data is managed, processed, verified and exchanged in a structured and automatic manner.

6.2 SWIM Technical Infrastructure

In compliance with SWIM-B2/1, ICAO Annex 10 - Aeronautical Telecommunications Vol III - Manual on System Wide Information Management (SWIM) Implementation and Manual on Aviation Information Security (Doc 10204)
States shall implement SWIM Technical Infrastructure which provides three essential capability domains: Messaging Capabilities supporting multiple exchange patterns required to support the service provision including publish/subscribe and request/reply; Security Capabilities encompassing identity access management, digital certificates, and encryption; and TI Management Capabilities enabling fault and performance monitoring to ensure reliable and high-performing information exchange.

Automation and SWIM Technical Infrastructure are treated as complementary and inseparable elements of the same transformation: automation governs how data moves through the aeronautical information chain internally; the SWIM TI governs how that data is exposed, discovered, and consumed externally across the regional and global network.

Pillar 7 — Capacity Building & Training

Grounded in: ICAO Doc 9991; and PANS-AIM (Doc 10066)
A structured, competency-based training and development framework shall underpin the regional transition, recognizing that the shift to a data-centric, SWIM-enabled environment requires fundamentally new skills across the AIM workforce, which defined across the following competency domains:

7.1 — Digital Dataset Provision & Lifecycle Management Competencies for producing, validating, encoding, and maintaining digital aeronautical datasets.

7.2 — Quality Management & Aeronautical Data Quality (ADQ) Competencies supporting the implementation and maintenance of a data quality culture across the AIM function, including:

- Understanding and applying ICAO data quality requirements as defined in PANS-AIM (Doc 10066) and Doc 9839, covering accuracy, resolution, integrity, traceability and timeliness;
- Implementing a Quality Management System (QMS) in accordance with ISO 9001, including document control, internal audit, corrective action, and continual improvement processes;
- Applying ADQ principles across the data production chain from data origination and validation to distribution and consumer feedback; and

7.3 — Network Operations & AIM Information Requirements Competencies supporting SWIM network operations and service management, including:

- SWIM governance, service overview authoring, registry participation, and service lifecycle management;
- Information security and cybersecurity awareness in a SWIM environment; and
- The evolving professional role of AIM personnel as information service managers in a service-oriented environment.

- END -