



International Civil Aviation Organization

MIDANPIRG/20 & RASG-MID/10

(Muscat, Oman, 14 – 17 May 2023)

Agenda Item 6.2: AIM

DATA DRIVEN CHARTING

(Presented by United Arab Emirates)

SUMMARY

The objective of this working paper is to present the progress made by the United Arab Emirates in implementing Data Driven Charting, encountered challenges, and adopted solutions. The working paper also proposes recommendations to support harmonization in ICAO MID Region

REFERENCES

- ICAO Annex 15 - Aeronautical Information Services
- ICAO Annex 4 - Aeronautical Charts
- ICAO Doc 8697 - Aeronautical Chart Manual
- ICAO 9750 - Global Air Navigation Plan
- ICAO - Roadmap for the Transition from AIS to AIM
- ICAO 9854 - Global Air Traffic Management Operational Concept
- ICAO MIDANPIRG - Doc 008 - MIDANPIRG - GUIDANCE FOR AIM PLANNING AND IMPLEMENTATION IN THE MID REGION
- EUROCONTROL Aeronautical Information Exchange Model (AIXM)

1. BACKGROUND

1.1 ICAO endorsed 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 service. 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.

1.2 ICAO published in 2009 the “Roadmap for the transition from AIS to 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.

1.3 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, as a systemic manner to achieve a harmonized implementation of the air navigation services. It designates a set of improvements that can be implemented globally from a defined point in time to enhance the performance of the ATM system.

1.4 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.

1.5 MID Doc 008 “Guidance for AIM Planning and Implementation in the MID Region” has been developed to harmonize the transition from AIS to AIM in the MID Region and to address Global and Regional issues related to planning and implementation of Aeronautical Information Management. For planning, MID Doc 008 mentions 2031+ as the timeframe for states to implement Electronic Aeronautical Charts.

2. DISCUSSION

2.1 In support of ICAO ASBU and MID Region Implementation Plan, UAE has prepared a Database Driven Charting Implementation Plan (Intermediate and Long Term) to migrate legacy charts progressively. UAE has already completed the migration of the En-route Charts and has started migrating SID and STAR charts into Database Driven Charts. In parallel, UAE is carrying out the required milestones to start the process of migrating RNP Instrument Approach Procedure (IAP) Charts.

2.2 While migrating to Database Driven charting, it created a need for Standardized coding to overcome interoperability issues caused by different AIXM systems and business rules implementation.

2.3 The flexibility provided by the AIXM model with open coding possibilities can lead to:

- Issues related to missing data elements essential for chart production e.g. obstacles, and chart restriction notes
- Encoding vast and complex data which are not required for chart production and AIP e.g. bank angle, speeds & level restrictions at points not required to be depicted

2.4 While migrating to Database Driven charting, coding limitations in the available Model were encountered e.g. Magnetic Variation required for chart and at each significant waypoint (RNAV Procedures) for calculating Magnetic bearing for quality assurance and depiction without manual intervention.

2.5 To overcome these challenges UAE prepared a Standardization document at the state level.

UAE Standardization document provided the following benefits:

- Effective exchange of Data without any critical interoperability issues
- Effective and efficient chart production and publication
- Standardized scope of Data essential for chart production
- Standardized implementation of workarounds to overcome coding limitations

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note and consider UAE experience in their Database Driven Chart production; and
- b) task the Dataset implementation Ad Hoc Working Group to include Database Driven Chart production encoding guidelines to ensure regional harmonization and interoperability

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