

Provision of UAE AIP & Obstacle (TOD) Digital Dataset

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Background

- This presentation outlines UAE AIM high-level plan with the main activities to set up the stage for the operational and technical implementation of ICAO Digital Datasets as part of the strategic GCAA plan for enhancing AIM system capabilities
- Enhancing AIM system capabilities are improvement stages and the natural result of UAE AIM continuous services development process. These have created a solid platform of functionalities allowing better, quality-controlled and standardized interaction with other internal and external (third party) stakeholder systems

UAE AIP Dataset Implementation Plan

The implementation plan is in two phases:

➤ Setting the stage phase

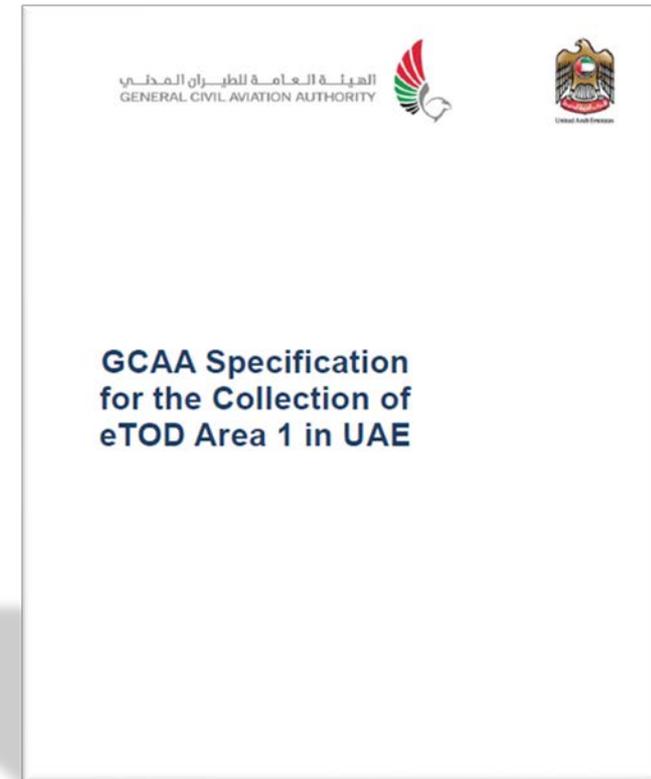
Including detailed Implementation Plan, Operational and Technical Specifications, adapting data capture process for temporary information (AIP Supplements), SWIM Service definition, mapping AIP to PANS-AIM, test sample file and full file testing

➤ Operational Phase

Including a Transition Period i.e. co-existence of full AIP electronic format together with digital files

Setting the Stage Phase for eTOD

- **Specification – Terrain and Obstacle data collection**
 - Quality Requirements
 - Data Formats
 - Deliverables (Includes reports – Quality)
- **Contract – Provision and Maintenance**
- **Management of Change – Identify Risk and Coordination**



AIP Dataset Milestones

UAE AIM initiated project for implementing AIP Digital Dataset with below major milestones:

Activity	Description	Time
Implementation Plan	This document will cover all characteristics of UAE AIP Digital Dataset implementation from planning to distribution.	31-3-2021
Technical Specification	This document will cover mapping ICAO PANS-AIM to AIXM 5.1.1 for UAE AIP Digital Dataset	30-06-2021
UAE AIP Digital Data Set Sample	UAE AIP Digital Data set sample will be generated using in-house developed tools which will be integrated with AIM Database.	31-10-2021

UAE Plan for AIP Dataset Implementation

- Develop In-house/stand-alone application
- Prepare the Dataset as new AIM product
- Query AIM system (SWIM Service)
- Expose to SWIM interface
- Full UAE AIP dataset will be provided, not sub-set or data grouping
- Significant UAE AIP Supplements are encoded in AIM Database (TempDelta)

Technical Specifications Highlights

- Resolve PANS-AIM inconsistencies i.e. filling the gaps
- Mapping PANS-AIM to AIXM 5.1 database
- Separate Technical Specs for mapping, metadata and database AIXM 5.1 Business Rules
- Content adapted to specific UAE AIP content
- Every data integrity class added in AIM Database
- Consistency assured between AIP dataset file vs. #AIP-DS#

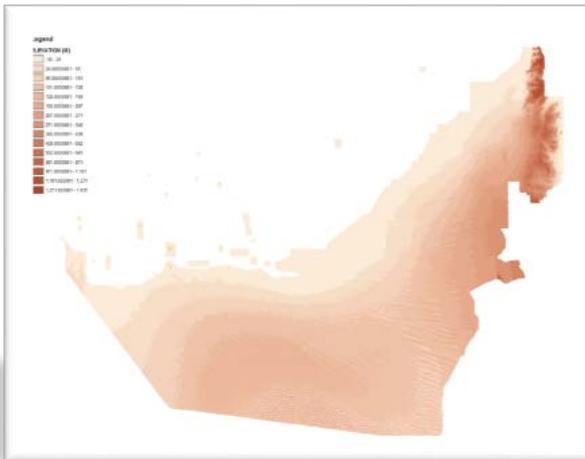
Delivery mechanism of AIP Datasets (SWIM)

- Request/reply for accessing UAE AIP Dataset as complete “information package”
- Publish/Subscribe pattern for regular notification to consumers
- Advanced SWIM interface capability i.e. query/retrieve at feature level
- Service Overview
- Service Registry

Delivery Mechanism of eTOD

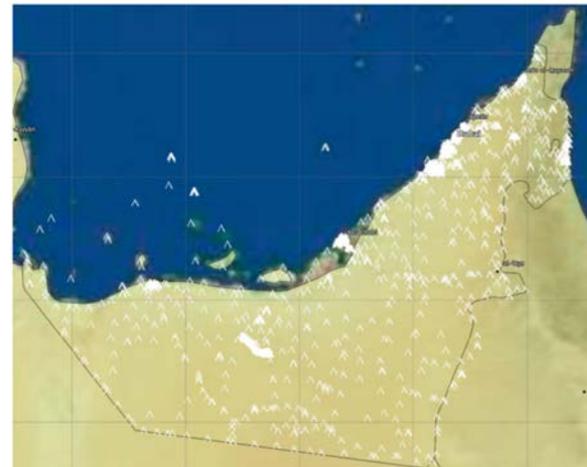
Terrain Data Set

- Terrain Data – DEM, ESRI GRID & GDB
- DPS – PDF, Excel
- Metadata – PDF, Excel



Obstacles Data Set

- Obstacles Data – AIXM 5.1 (Baseline, Permdelta)
- DPS – PDF, Excel
- Metadata – PDF, Excel & AIXM 5.1



Operational Phase of AIP Dataset (Transition Plan)

Section	Elements	Timeframe	Description
Transition	Time	In line with regional agreement/Plan	<ul style="list-style-type: none"> Transition period for provision of eAIP <u>in parallel</u> with AIP Datasets The removal of certain sections of AIP to be done in close coordination with the users which will be through survey & questionnaire
Publication	AIC	TBD	<ul style="list-style-type: none"> UAE AIM alignment with ICAO SARPS Duration of the transition
	GEN 3.1.6	TBD	<ul style="list-style-type: none"> Brief description regarding Digital Dataset will be provided
Regulatory Approval	Technical Specification	Q4/2021	<ul style="list-style-type: none"> Final Version was shared with the Regulator for endorsement

Operational eTOD (Delivery Process)

- Self Declaration for Data access
- Access through file sharing
- Notification on updates
- Provision through SWIM (Planned - End of 2023)

Dear UAE ETOD Area-1 Data Subscribers;
Below listed updates are added to UAE ETOD Area-1 Datasets. This is for your kind information and awareness.

- Batch7 Updates

Regards
UAE GCAA - AIM

> [Click here to view this folder](#)

DATA REQUEST FORM - UAE eTOD Area 1

Requested By

Individual / Company:
Address:

E-mail:
Telephone:
Telefax:

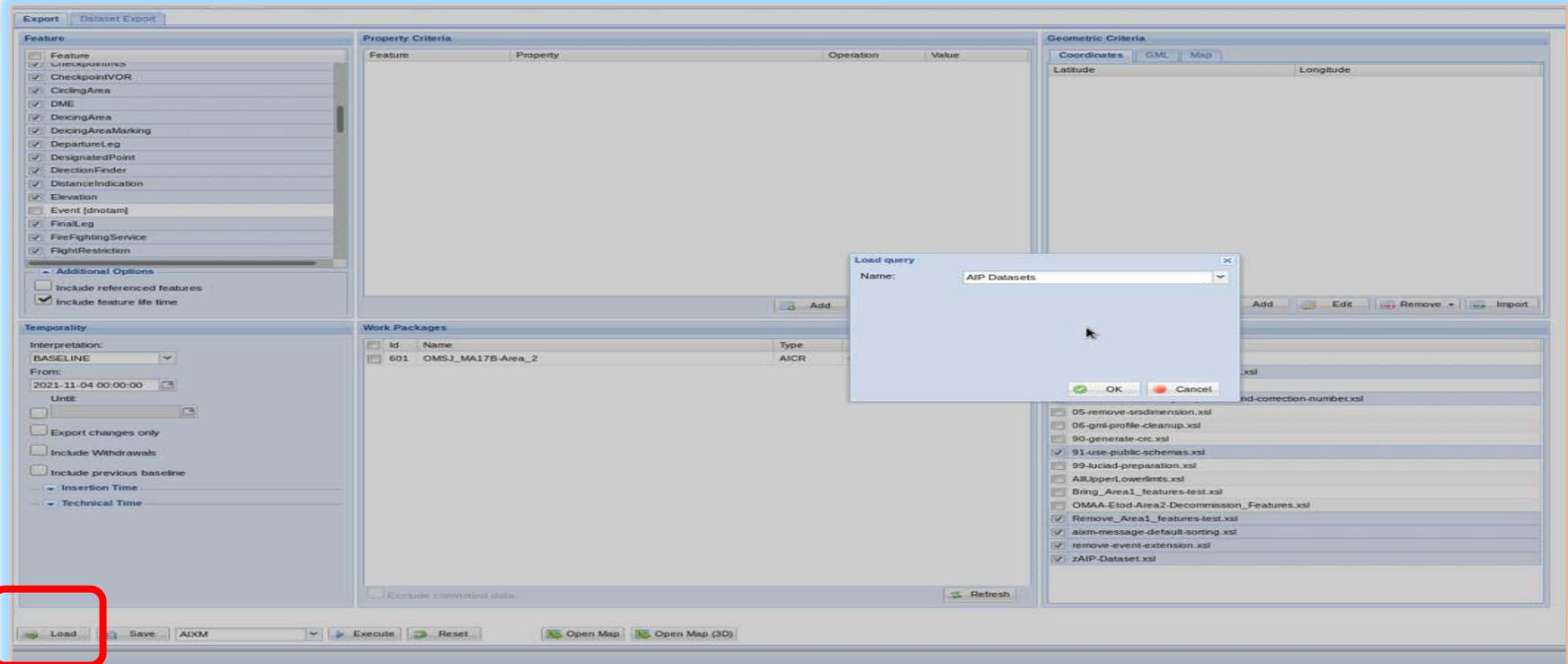
Purpose of using eTOD (Quote from ICAO SARPs):

Note. — Electronic terrain and obstacle data are intended to be used in the following air navigation applications:

- a) Ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning system;
- b) Determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;
- c) Aircraft operating limitations analysis;
- d) Instrument procedure design (including circling procedure);
- e) Determination of en-route "drift-down" procedure and en-route emergency landing location;
- f) Advanced surface movement guidance and control system; and
- g) Aeronautical chart production and on-board databases.

The data may also be used in other applications such as flight simulator and synthetic vision systems, and may assist in determining the height restriction or removal of obstacles that pose a hazard to air navigation.

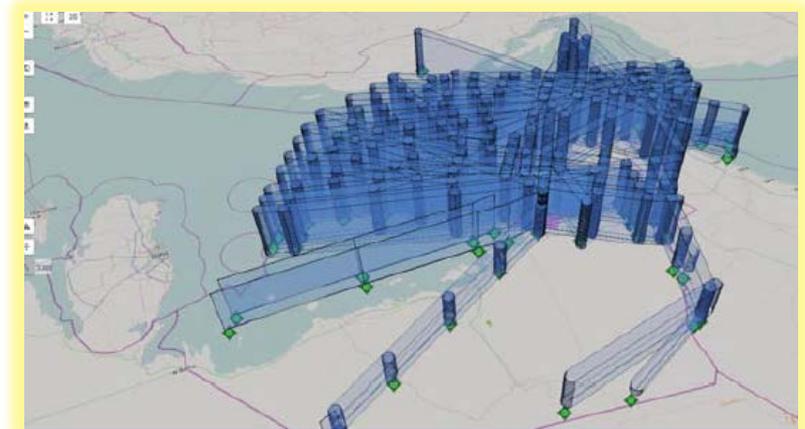
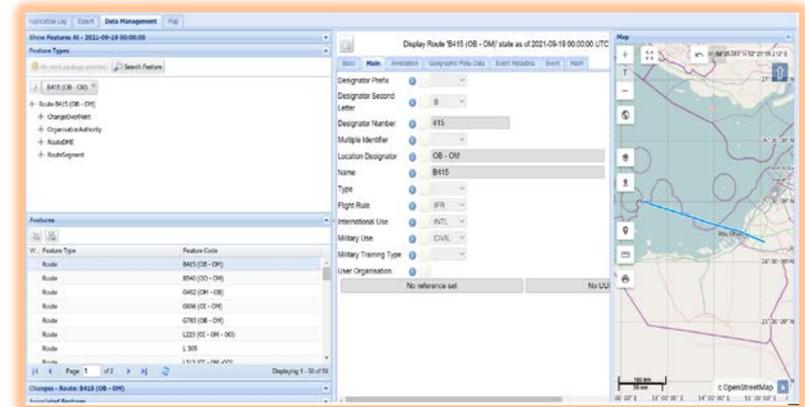
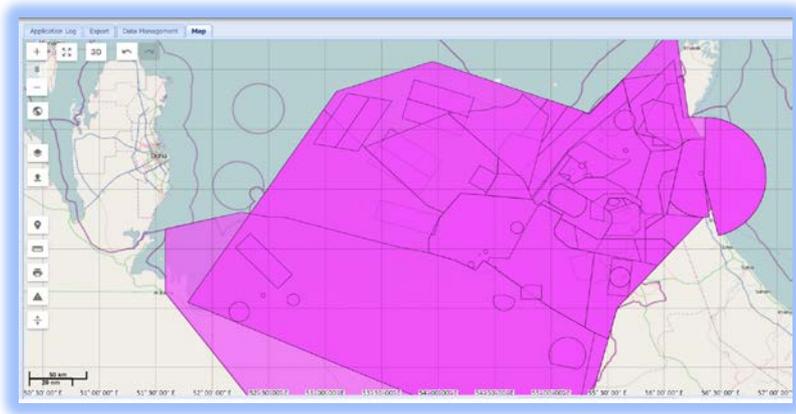
GCAA AIM SWIM Service AIP Datasets



The screenshot displays the GCAA AIM SWIM Service AIP Datasets software interface. The interface is divided into several panels:

- Feature:** A list of features with checkboxes, including Feature, CheckpointVOR, CirclingArea, DME, DeicingArea, DeicingAreaMarking, DepartureLeg, DesignatedPoint, DirectionFinder, DistanceIndication, Elevation, Event (dnotam), FinalLeg, FireFightingService, and FlightRestriction. There are also 'Additional Options' for including referenced features and feature life time.
- Property Criteria:** A table with columns for Feature, Property, Operation, and Value.
- Geometric Criteria:** A table with columns for Latitude and Longitude.
- Work Packages:** A table with columns for Id, Name, and Type. It contains one entry: 601 OMS1_MA17B-Area_2 AICR.
- Load query dialog:** A small dialog box with 'Name:' and a dropdown menu showing 'AIP Datasets'. It has 'OK' and 'Cancel' buttons.
- Bottom Bar:** Contains buttons for Load, Save, AIXM, Execute, Reset, Open Map, and Open Map (3D). The 'Load' button is highlighted with a red box.

Highlights of UAE AIP Dataset on SWIM



Achievements (AIP Dataset)

Key Areas	Strategic Achievements
Technical	<ul style="list-style-type: none"> ➤ In-house developed tool, no dependency on supplier ➤ All-inclusive mapping PANS-AIM to UAE AIP ➤ Resolving gaps/inconsistencies in PANS-AIM i.e. AIP sections versus minimum data subjects ➤ Metadata at dataset level
Inter-operability	<ul style="list-style-type: none"> ➤ AIXM 5.1 model ➤ SWIM Service: Overview and Registry ➤ SWIM Interface: Query/Reply and Publish/Subscribe, consumer notification
ICAO SARPS Compliance	<ul style="list-style-type: none"> ➤ Above and beyond ICAO SARPS compliance ➤ To be ahead of Global and Regional implementation date
Financial	<ul style="list-style-type: none"> ➤ Savings by not depending on external supplier
Strategic	<ul style="list-style-type: none"> ➤ Placing UAE GCAA as implementation “promoter” in MID Region ➤ Having the “solution”: SARPS implementation ➤ AIP Dataset “Proof of concept” pioneered by UAE

Achievements (eTOD Dataset)

- Delivering - Fully compliant (Doc-10066 & Annex 15) electronic terrain and obstacles dataset

Lessons Learnt

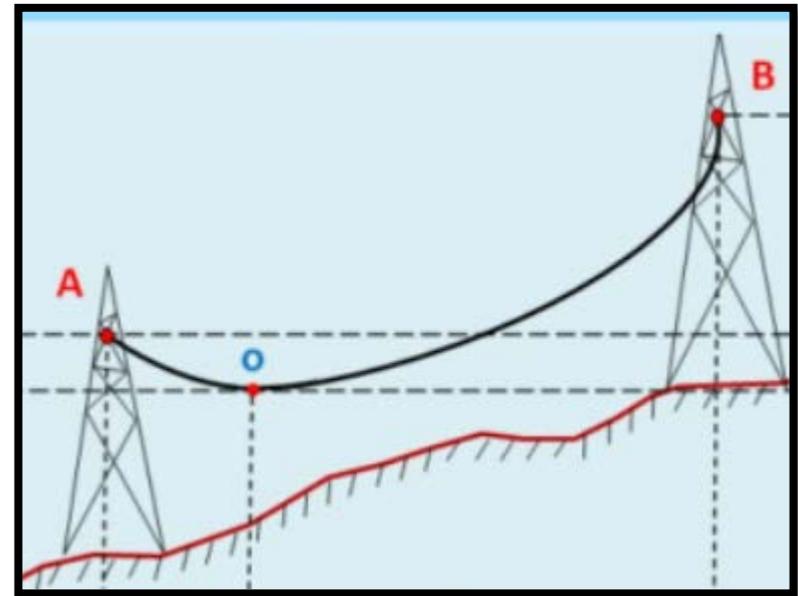
- Agile – ready for uncertainty during initial project phase
- Education – educate supplier throughout the project phase
- Scope for changes –
 - Not possible to foresee all scenarios
 - Have contingency plan and budget
- Engage – Regulator & Stakeholders (Guidance and Support)

AIP Dataset Challenges

- PANS-AIM inconsistencies
- Mapping PANS-AIM to AIXM 5.1 database
- Lack of clear guidance from ICAO for this activity on AIXM 5.1 Mapping
- Development of the in-house tool
- Encoding of AIP Supplements in AIM Database as TempDelta
- SWIM Integration

eTOD Dataset Challenges

- Standard formats not defined for Terrain
- Format for DPS and Metadata
- Maintenance period (reasonable / ideal)
- Access to regulated Areas
- Capturing high tension transmission lines (Complex)



Thank You