



ICAO

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Twentieth Meeting of the ICAO Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF/20)

Chitose, Japan, 9 – 13 June 2025

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## Agenda Item 4: AIS-AIM Updates

### AN INDIGENOUSLY DEVELOPED AIM PLATFORM FOR THE GLOBAL AVIATION INDUSTRY

(Presented by India)

#### SUMMARY

This paper presents a brief overview of iNetra (Indian National Electronic Repository for Aviation), an AIM (Aeronautical Information Management) platform undertaken by AAI (Airports Authority of India) under Make in India initiatives of Government of India through Startups as part of a Digital Transformation in relevance to the AIS to AIM transformation in India.

## 1. INTRODUCTION

1.1 The Airports Authority of India's Startup Program named '*Innovate for Airports*' was initiated in 2018 with a vision to customizing and developing airport relevant innovations as well as pilot testing them at airports across the country.

1.2 The intention of the Program was to enable startups to develop **indigenous and scalable solutions** in the field of aviation across operations and data management keeping in mind the concept of **Digital Transformation**.

1.3 iNetra, also known as Indian National Electronic Repository for Aviation is a platform that was developed to meet the requirements of ICAO standards for data exchange, eCharting, digital data management, eTOD (Terrain and Obstacle Data) and AMDB (Aerodrome Mapping Data). It is designed and custom built using Geospatial Big Data Engine to store and process aeronautical and geospatial data.

1.4 The pilot project was completed across 5 airports with the vision of AIS to AIM transition of the Indian Aeronautical Data Management system. The platform is capable of optimizing data management through automated verification and validation processes whilst also achieving global interoperability by conforming to international standards. It also showcases the benefits of geospatial data in gaining insights across terrain and obstacle analysis.

## 2. DISCUSSION

### Current Scenario and the Need for Digital Transformation

2.1 In India, the Airport's Authority of India has been on the AIS to AIM transformative journey to move from a traditional to a more data centric approach in handling aeronautical datasets. With rising air travel resulting in larger volumes of information to be handled in daily operations, there was a clear industry need for introducing a digital platform for catering to such needs to ensure data integrity without affecting operational timelines.

2.2 Currently, there is a dependency on multiple platforms and semi-automated systems for the development and maintenance of the Indian Airspace and Aeronautical Information database. While this is operationally effective, the need for an indigenous solution with full AIM capabilities is crucial to India's drive towards achieving the AIS to AIM goals. The basic requirements of such a system were expected to be as follows:

2.3 **Accessibility and Digital Data management:** Enables digital management and exchange of aeronautical information to support the transition from traditional AIS to AIM.

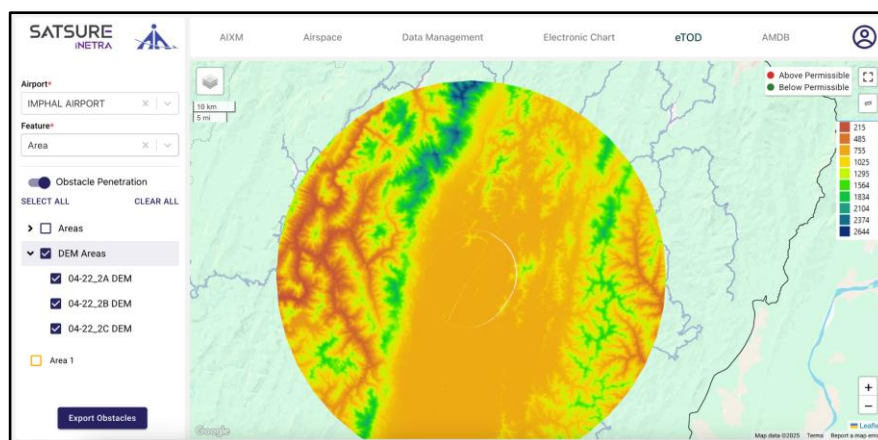
2.4 **Interoperability:** Helps reduce data translation and transformation complexity by providing integration capabilities.

2.5 **Scalability:** To ensure the provision of a scalable solution that can be implemented across multiple airports / ANSPs without compromising on implementation and scaling costs.

2.6 **Global Compliance:** Ensures adherence to relevant data security regulations and standards while being compliant with ICAO's AIXM 5.1 data exchange standards.

2.7 iNetra contains four major modules namely eTOD, AMDB, eCharting and AIXM. Each of these modules cater to specific points in Aeronautical Data Management.

2.8 eTOD provides the complete terrain mapping in and around the airport with obstacle analysis as per ICAO Standards while AMDB provides the complete digital dataset of the aerodrome with a spatial data overlay that can be rendered on a map. We have used AI / ML techniques to identify features in AMDB using high resolution satellite imagery which would make the preparation and update of AMDB much faster than traditional digitization techniques.



*Figure 1: Screenshot of iNetra showing the eTOD module with terrain data*

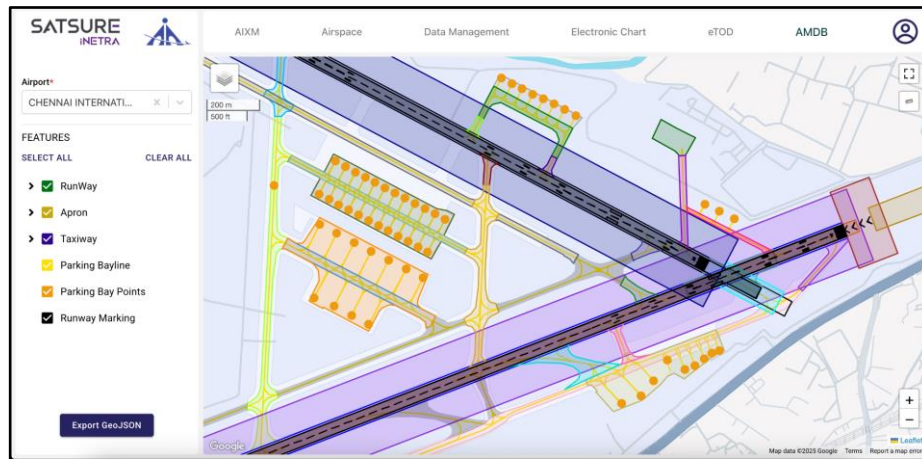


Figure 2: Screenshot showing the AMDB Module

2.9 The eCharting module offers electronic charting and basic cartographic tools to handle charts electronically. The data can not only be rendered on a map but also be exported as per ICAO doc standards. The AIXM Module allows the user to access the entire Indian Airspace and Airport data as per the latest eAIP AIRAC cycle in AIXM 5.1 format. This has been tested and validated against the existing systems being employed in AAI today.

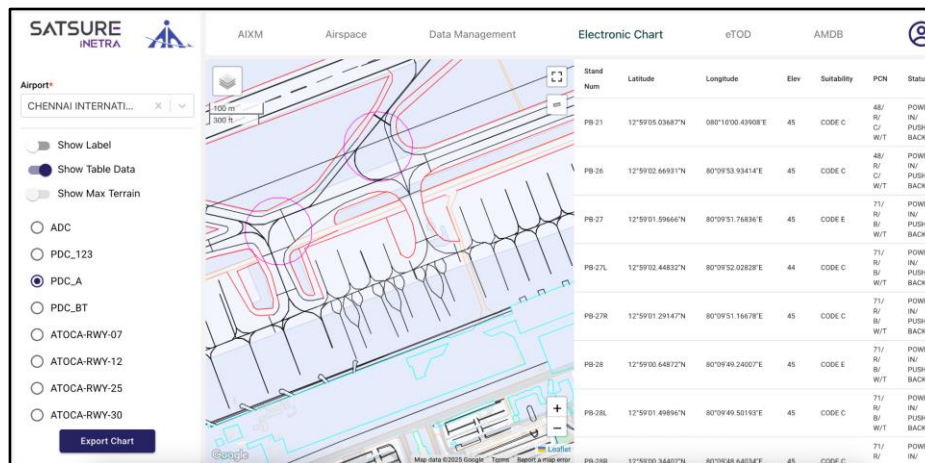


Figure 3: Screenshot showing the eCharting module with chart attributes

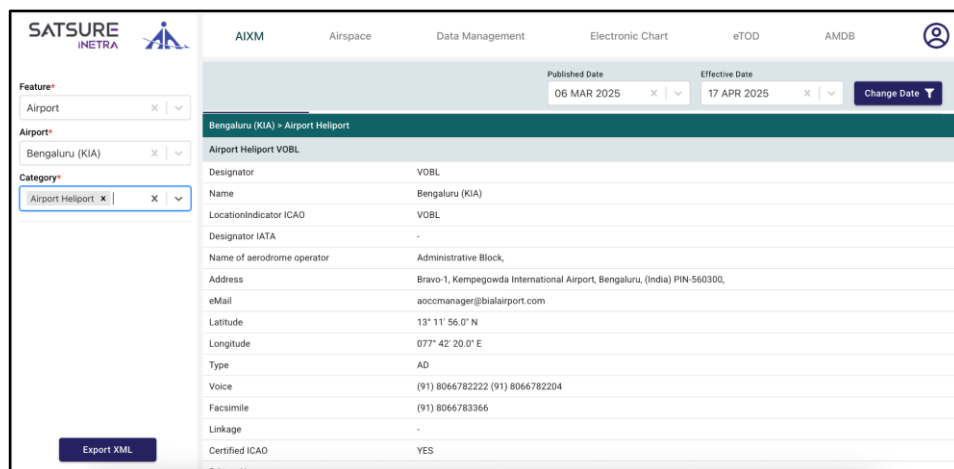


Figure 4: Screenshot showing the AIXM Module as per latest data exchange standards.

2.10 iNetra is not limited to solving specific operational issues within AAI’s aeronautical data management processes, but the larger vision includes the development of a comprehensive AIM ecosystem with capabilities to handle large amounts of data whilst ensuring data integrity, availability and accessibility. The platform also complies with global data storage and exchange standards such as AIXM which ensures it is not only within the scope for AAI, but also for the larger aviation community across the world

2.11 iNetra’s compliance with respect to AIS to AIM transition phases and relevant ICAO documents.

### Compliance Table

Sl. No.	Product Module and referred ICAO Documents	Global Standard Compliance as per ICAO’s AIS to AIM Phases
1	AIXM	Phase 06 - Integrated Aeronautical Information Data Phase 08 - Aeronautical Information Conceptual model Phase 09 - Aeronautical Data Exchange
2	Data Management and eCharting ICAO Annex 4 ICAO Doc 8697	Phase 20 - Electronic Aeronautical Charts
3	Electronic Terrain and Obstacle Data (eTOD) ICAO Annex 14 ICAO Doc 9881	Phase 13 - Terrain Phase 14 - Obstacles
4	Aerodrome Mapping Database (AMDB) RTCA 272D ICAO Doc 9881	Phase 15 - Aerodrome Mapping

*Note1: iNetra was built keeping specific success criteria in focus such as – **improved operational efficiency, increased safety, data integrity assurances and a comprehensive data management platform.***

*Note2: The underlying value proposition across all these features though, is the **global data exchange compatibility** which enables all stakeholders to access relevant datasets as per their requirements.*

### 3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
- note the information contained in this paper; and
  - discuss any relevant matters as appropriate.

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