



Conjunto de datos digitales (Datasets)

Taller NAM/CAR de Gestión de Conjunto de datos y
Cartas aeronáuticas electrónicas (eCharts)



ACERCA DE NOSOTROS

Nuestra Misión

AIM for Safer Skies

(Apuntando a Cielos Seguros)

Permitir que los AIS de los Estados incluyendo el personal AIM puedan alcanzar sus metas operacionales proveyendo Software, Servicios, Entrenamiento y Soporte en el campo de la Gestión de la Información Aeronáutica.



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AIXM



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AIM



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Las relaciones con nuestros clientes son vitales en todo lo que hacemos. Mantenemos un equipo completo de soporte para atender cualquier
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EAD

Integración de datos para FrameAPS / eAIP y DITA para mas de 12 actualizaciones y 4 cambios del modelo AIXM



UK NATS

Suite de creación de AIXM 4.5 and AIXM 5.1 para la gestión y publicación de todos los datos aeronáuticos para Reino Unido de 2006 al 2019



THALES France

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Clientes eAIP para Software, Servicios, Entrenamiento y Soporte de AIXM 4.5/AIXM 5.1 eAIP. Actualmente en un contrato de revisión exhaustivo de tablas para un cliente del área central de Europa

Proyectos Mundiales

Implementaciones en el Mundo y Entrenamiento para AIXM

- M-AIS provee entrenamiento para AIXM 5.1, Datasets y PANS AIM así como consultorías para una clientela global
 - **Software** – AIXM Data Management Suite y FrameAPS
 - **Servicios** – Migración de datos eAIP y AIXM
 - **Entrenamiento** - AIM, AIXM, Cartografía, eAIP y Codificación y Visualización de datos PBN
 - **Soporte y Mantenimiento**- Múltiples contratos de mantenimiento en AIXM y eAIP





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A close-up photograph of a person's hand using a computer mouse on a desk. The mouse is white and the hand is light-skinned. In the background, a white keyboard is visible on a wooden desk. There are also some papers and a yellow folder on the desk. The background is slightly blurred, showing another person's arm in a white shirt.

¿Qué es un conjunto de datos digitales?

Anexo 15



Producto de información aeronáutica. Información aeronáutica y datos aeronáuticos suministrados en forma de **conjunto de datos digitales** o en una presentación normalizada en papel o formato electrónico. Los productos de información aeronáutica incluyen:

- las publicaciones de información aeronáutica (AIP), incluidos sus suplementos y enmiendas;
- las circulares de información aeronáutica (AIC);
- las cartas aeronáuticas;
- los NOTAM; y
- **los conjuntos de datos digitales.**

Nota.—El propósito primordial de los productos de información aeronáutica es responder a las necesidades internacionales de intercambio de información aeronáutica.

Anexo 15



Producto de datos. Conjunto de datos o serie de conjuntos de datos que se ajustan a una especificación de producto de datos (ISO 19131*).

Especificación del producto de datos. Descripción detallada de un conjunto de datos o de una serie de conjuntos de datos junto con información adicional que permitirá crearlo, proporcionarlo a otra parte y ser utilizado por ella (ISO 19131*).

Nota.— Una especificación del producto de datos proporciona una descripción del universo del discurso y una especificación para transformar el universo del discurso en un conjunto de datos. Puede utilizarse para fines de producción, venta, uso final u otra finalidad.

Ejemplo de una Especificación del Producto de datos (DPS)

austro
CONTROL

Data product specification for Obstacle data set (ICAO) – Austria

Title Data product specification for Obstacle data set (ICAO) – Austria

Creator Austro Control GmbH

Date 2020-10-30

Subject Data product specification for Obstacle data set (ICAO) – Austria

Publisher Austro Control GmbH - ATM/AIM/SDM

Type Text

Description This document describes the specification for the Obstacle data set (ICAO) – Austria and information related to it according to the applicable international standards and regulations

Contributor Austro Control GmbH - ATM/AIM/SDM

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Relation ICAO Annex 15, ICAO Doc 10066

Data product specification for Obstacle data set (ICAO) – Austria 30-10-2020

Change History

Version	Date	Reason for Change	Affected Sections
0.1	2020-10-05	Creation of document	All
1.0	2020-10-30	Update of document	All

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Data product specification for Obstacle data set (ICAO) – Austria 30-10-2020

1. SCOPE

This document specifies a harmonised data specification for the publication of obstacle data in digital form as defined in ICAO Annex 15 and ICAO Doc 10066 and is the basis for implementing the rules according to Chapter 5.3.3.4 of ICAO Annex 15. The Obstacle Data Set (ICAO) – Austria includes all obstacles within Area 1 of the FIR Wien (LOVV).

Purpose

This data product specification is intended for individuals and organizations using Obstacle data set (ICAO) – Austria.

The purpose of this guidelines is:

- To provide a consistent basis for data users.
- To provide a technical documentation of the provision of digital data sets.
- To provide a definition of all values and characteristics (features and attributes) of the data that is necessary.
- To provide a summary of quality and integrity requirements of international standards.

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Ejemplo de una Especificación del Producto de datos (DPS)

2. OVERVIEW

2.1. Name and acronyms

Data product specification for Obstacle data set (ICAO) – Austria.
DPS Obstacle data set (ICAO) – Austria

2.2. Informal description

This data product specification describes the attributes related to obstacle data and their quality requirements. The obstacle data set will be provided in AIXM 5.1.1, Excel and KML file format.

2.3. Normative References

[COMMISSION IMPLEMENTING REGULATION (EU) 2017/373]	COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight.
[ICAO Annex 4]	ICAO Annex 4 - Aeronautical Charts
[ICAO Annex 15]	ICAO Annex 15 - Aeronautical Information Services
[ICAO Doc 10066]	ICAO Procedures of Air Navigation Services – Aeronautical Information Management (PANS-AIM)
[ICAO Doc 9674]	ICAO Doc 9674 - World Geodetic System - 1984 (WGS-84) Manual
[ISO 19111]	EN ISO 19111:2003, Geographic information – Spatial referencing by coordinates
[ISO 19115]	EN ISO 19115:2005, Geographic information – Metadata
[ISO 19131]	EN ISO 19131:2007, Geographic information – Data product specification

2.4. Information about the creation of the specification

Document title:	Data product specification for Obstacle data set (ICAO) – Austria
Reference date:	2020-10-05
Responsible party:	Austro Control GmbH - ATM/AIM/SDM
Language:	English

2.5. Terms and definitions

Many of the terms and definitions in this document are taken from the International Standards ISO 19131 (Geographic Information – Data product specification).

2.6. Symbols and abbreviations

This is a list of abbreviations and acronyms used in the data specification

AGL	Above Ground Level
AICM	Aeronautical Information Conceptual Model
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model
ATM	Air Traffic Management
DPS	Data Product Specification
EVRS	European Vertical Reference System
ICAO	International Civil Aviation Organization
ISO	International Organization for Standardization
ITRS	International Terrestrial Reference System
ITRF	International Terrestrial Reference Frame
KML	Keyhole Markup Language
MGI	Militärgeographisches Institut
MSL	Mean Sea Level
OGC	Open Geospatial Consortium
PDF	Portable Document Format
SDI	Spatial Data Infrastructure
SDM	Static Data Management
UTC	Universal Time Coordinated
XML	Extended Markup Language
XLSX	Microsoft Excel

2.7. Conformance

Any data set claiming conformance with this data specification shall pass the requirements as described in ICAO Annex 15 and ICAO Doc 10066.

3. SPECIFICATION SCOPE

3.1. General specification scope

This data product specification is valid for all obstacle data published in digital form as Obstacle data set (ICAO) – Austria

This data product specification applies to:

- Obstacles according to §85 paragraph 2(1) of the Austrian Aviation Act¹ (corresponds to ICAO Coverage Area 1 as specified in ICAO Annex 15 Chapter 5.3.3.1).
- Obstacles according to §85 paragraph 2(2) of the Austrian Aviation Act (obstacles exceeding 30 M AGL located on a significant natural or artificial elevation).
- Obstacles within ICAO Area 2 are currently not part of the obstacle data set.
- This data product specification does not apply to collecting obstacle data.
- This data product specification specifies minimum requirements. In cases where it is appropriate the minimum requirements can be exceeded.
- Non-conformity to ICAO Annex 15 and ICAO Doc 10066 shall be stated explicitly.

¹ Luftfahrtgesetz

4. IDENTIFICATION INFORMATION

Title:	Data product specification for Obstacle data set (ICAO) – Austria
Abstract:	This data product specification is valid for all obstacle data published in digital form.
Topic categories:	Transportation (018)
Geographic description:	This data product specification is valid for obstacles in the state territory of Austria
Purpose:	The purpose of this document is to specify a harmonised data specification for Obstacle data set (ICAO) – Austria.
Spatial representation type:	Markup Language
Spatial resolution:	See chapter 7.
Supplementary information:	The structure follows the ISO standard for data specification (ISO 19131).

Ejemplo de una Especificación del Producto de datos (DPS)

Data product specification for Obstacle data set (ICAO) – Austria 30-10-2020

5. DATA CONTENT AND STRUCTURE

5.1. Narrative information

The Obstacle data set (ICAO) – Austria is provided in three different file formats:

File format	Description
AIXM 5.1.1	Use for machine-readable applications.
Excel	Use for human-readable applications.
KML	Use for display of geographical data.

5.2. AIXM 5.1.1.

AIXM (Aeronautical Information Exchange Model) enables the provision of aeronautical data in digital form. Since aeronautical data can be quite complex it is necessary to use information engineering standards which support current and future information system requirements.

The AIXM 5.1.1 format is an internationally standardized data exchange format which, according to the Commission Regulation (EU) No. 73/2010, is intended for the digital exchange of aeronautical data and information. This format is best suited for an automated software-supported transfer of the obstacle data.

The AIXM 5.1.1 file contains all current obstacles and all obstacles whose end-of-lifetime has been reached since the publication of the preceding Obstacle data set.

For further information on AIXM, please visit:
<http://aixm.aero/sites/aixm.aero/files/mce/AIXM511HTML/index.html>

5.3. Excel

The Excel (XLSX) file format (Microsoft © Excel © 2016) is a spreadsheet format. It is structured based on the table contained in AIP chapter ENR 5.4 and is therefore best suited for human interpretation. The Excel format also enables digital transfer and analysis of the obstacle data, but the structure can be adapted if needed or as a result of future requirements. Compared to the table in AIP chapter ENR 5.4, the Excel format includes the following additional columns: geometry, coordinates in decimal degrees, vertical reference system and identifier. In addition to the complete overview of obstacle data, all new, changed and deleted obstacle data are listed in separate tabs

Annex A shows definitions of attributes in the Excel.

There are five worksheets available:

Worksheet	Description
Metadaten - Metadata:	Lists metadata information of the Obstacle data set (ICAO) – Austria
Alle – All:	All obstacles effective on the stated effective date
Neu – New:	New obstacles added on the stated effective date

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Geändert – Changed:	Changed obstacles in comparison to last effective date (changed attributes are colour-coded)
Geloescht – Deleted:	Obstacles deleted on the stated effective date

5.4. KML

KML (Keyhole Markup Language) is a format used to display geographic data. KML is an international standard maintained by the OGC. Please note that the KML file format does not comply with ICAO Annex 15 standards and shall only be used for visualizing the data. This also applies to the KMZ (compressed KML) file format. For more information, please visit: <https://www.ogc.org/standards/kml/>

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5.5. Feature catalogue for Obstacle data set (ICAO) – Austria

Feature Catalogue for Excel format

Name:	Feature Catalogue for data and information related to Obstacle Data Set (ICAO) – Austria for Excel format
Scope:	Identification of all geospatial and non-geospatial attributes.
Field of Application:	Publication of Obstacle data set (ICAO) – Austria.
Version Number:	1.0
Version Date:	2020-10-05
Feature Catalogue Producer:	
Producer Name:	Katrin Stepanek
Producer Organisation:	Austro Control GmbH
Producer Address:	Wagramer Straße 19, 1220, Wien
Producer Country:	Austria
Phone:	+43 5 1703-3282
Facsimile:	+43 5 1703-2036
Electronic Mail Address:	aim_sdm@austrocontrol.at

See Annex A for details.

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6. REFERENCE SYSTEMS

6.1. Horizontal reference system

The horizontal reference system used for all geographical coordinates is the **World Geodetic System-1984 (WGS-84)**. The WGS-84 coordinate system is aligned with the International Terrestrial Reference System (ITRS), realised through the International Terrestrial Reference Frame (ITRF) at a defined epoch.

Following information for the reference system shall be considered:

Name element	Entry	Comments
Coordinate system name	WGS-84	
Coordinate system alias	WGS-84, ITRF 2000 (Epoch 2000-01-01)	
Coordinate system type	geodetic	
Datum realization epoch	2000-01-01	
Datum validity	Latitude: [-90°, 90°] Longitude: [-180°, 180°]	
Reference ellipsoid	WGS-84	
Semi-major axis	6378137,0 m	
Inverse flattening	298,257223563	
Remarks	See website: http://itrf.ensg.ign.fr/	

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6.2. Vertical reference system

Elevations are based on two different vertical reference systems: EVRS (Amsterdam) or MGI Austria (Adria). The European Vertical Reference System (EVRS) is based on orthometric heights in relation to the tide gauge of Amsterdam (NAP). The Vertical Reference System of Austria "MGI-Gebrauchshöhen – Elevation above the Adriatic" is related to the 1875 tide gauge of Trieste.

Refer to the website of the Austrian Geodetic Institute (Bundesamt für Eich- und Vermessungswesen) <https://www.bev.gv.at> for the transformation between vertical reference systems.

Obstacles with a vertical reference system based on ADRIA do not, in their entirety, meet the data quality requirements laid down in ICAO Doc 10066 and the Commission Regulation (EU) No 73/2010.

The height difference between EVRS and "MGI-Gebrauchshöhen - Elevation above the Adriatic" ranges from +0.1 metres (Austrian mountains with an elevation greater than 10,000 feet) to -0.5 metres (Eastern part of Austria).

Listed below are the information about EVRS:

Element name	Entry	Comments
Vertical datum name	European Vertical Reference System (EVRS)	
Datum validity	Europe	
Citation	Web Project EVRS, see http://www.euref.eu	

For more information, please visit GEN 2.1.4 of the AIP AUSTRIA. <https://ealp.austrocontrol.at/>

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6.3. Temporal reference system

The Gregorian calendar shall be used as a reference system for date values, and the Universal Time Coordinated (UTC) or the local time including the time zone as an offset from UTC shall be used as a reference system for time values.

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7. DATA QUALITY

7.1. Quality Requirements

The following table shows basic quality requirements of obstacle data within Area 1. For further information, see ICAO Doc 10066 Data Catalogue Table A1-6: Obstacle Data.

	Accuracy	Integrity	Origination Type	Publication Resolution	Chart Resolution
Horizontal position	50m	Routine	Surveyed	1 sec	As plotted
Vertical position	30m	Routine	Surveyed	1m or 1ft	3m (10ft)

7.2. Non-compliance

Elevations are based on two different vertical reference systems: EVRS (Amsterdam) or MGI Austria (Adria), see also chapter 6.2 of this document and GEN 2.1.4 of the AIP AUSTRIA.

Obstacles with a vertical reference system based on ADRIA do not, in their entirety, meet the data quality requirements laid down in ICAO Doc 10066 and the Commission Regulation (EU) No 73/2010.

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8. METADATA

8.1. Regulations and references

[ISO 19131] Geographic information - Data product specification	"The core metadata elements as defined in ISO 19115 shall be included with the data product. Any additional metadata items required to be supplied shall be stated in the data product specification. The format and encoding of the metadata shall be stated in the data product specification."
[ISO 19115] Geographic information - Metadata	This International Standard (ISO 19115) defines an extensive set of metadata elements; typically only a subset of the full number of elements is used. However, it is essential that a basic minimum number of metadata elements is maintained for a dataset. Listed are the core metadata elements required to identify a dataset, typically for catalogue purposes. This list contains metadata elements answering the following questions: "Does a dataset on a specific topic exist ('what')?", "For a specific place ('where')?", "For a specific date or period ('when')?" and "A point of contact to learn more about or order the dataset ('who')?" <i>Dataset title</i> <i>Dataset reference date</i> <i>Geographic location of the dataset</i> <i>Dataset language</i> <i>Dataset character set</i> <i>Dataset topic category</i> <i>Abstract describing the dataset</i> <i>Metadata language</i> <i>Metadata character set</i> <i>Metadata point of contact</i> <i>Metadata date stamp</i>
[ADQ] Commission Regulation (EU) No 73/2010	Annex I, Part A: 1. The aeronautical data and aeronautical information [...] shall be provided according to a common data set specification which shall: h) base the description of the metadata information on the ISO standard referred to in point 15 of Annex III; i) include the metadata items listed in Annex I, Part C. The metadata [...] shall include the following items, as a minimum: <i>(a) the data originator of the data;</i> <i>(b) amendments made to the data;</i> <i>(c) the persons or organisations that have interacted with the data and when;</i> <i>(d) details of any validation and verification of the data that has been performed;</i> <i>(e) effective start date and time of the data;</i> <i>(f) for geospatial data:</i> <i>— the earth reference model used,</i>

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	<p>— the coordinate system used; (g) for numerical data: — the statistical accuracy of the measurement or calculation technique used, — the resolution, — the confidence level as required by the ICAO standards referred to in points 1 and 12 of Annex III and in other relevant ICAO standards; (h) details of any functions applied if data has been subject to conversion/transformation; (i) details of any limitations on the use of the data.</p>
[ICAO Annex 15]	<p>4.2. Metadata Note - Details specifications concerning metadata are contained in the PANS-AIM (Doc 10066)</p>
[ICAO PANS-AIM Doc 10066]	<p>5.3.2. Metadata a) names of the organizations or entities providing the data set; b) the date and time when the data set was provided; c) period of validity of the data set; and d) any limitations with regard to the use of the data set. Note. ISO Standard 19115 specifies requirements for geographic information metadata.</p>

8.2. Metadata elements

Listed below are the core metadata elements (mandatory and recommended optional) required for describing a dataset.

Metadata Element [ISO 19115]	Regulation	Description
Dataset title	ISO 19115 Core	Title of the dataset e.g. Obstacle data set (ICAO) – Austria
Dataset responsible party	ICAO Annex 15: Data originator identifier	Name of organization and persons who are providing data set. e.g. Austro Control GmbH including address, E-Mail address, and internet link.
Lineage	ICAO Doc 10066: b) date and time when the data set was provided c) period of validity of the data set	Date and time of processing the data, and effective date of data

Metadata Element [ISO 19115]	Regulation	Description
Geographic location of the dataset	ISO 19115 Core ICAO Annex 15: Area of coverage	Coordinates or Bounding Box of a feature e.g. Austrian state territory
Abstract describing the dataset	ISO 19115 Core	Short description about the dataset, this will be covered by the dataset title.
Constraints	ISO 19115 Core	Use and access constraints, disclaimer
Reference Systems	ICAO Doc 10066 Data Catalogue	e.g. horizontal and vertical reference systems
Topic	ISO 19115	e.g. transportation

9. DATA CAPTURE AND DELIVERY INFORMATION

For information regarding obstacle data capture and data delivery please visit:
https://www.austrocontrol.at/flugsicherung/aim/datenauflieferung_gemaess_adg/

10. DATA SET PROVISION AND MAINTENANCE

10.1. Maintenance: Update cycles for Obstacle data set (ICAO) – Austria

The Obstacle Data Set (ICAO) – Austria shall be updated each quarter with AUSTRIA AIP NON-AIRAC Amendments. The effective date of each data set can be found in the metadata of each data set. Obstacle Data Set (ICAO) – Austria will be published at least two weeks before its effective date.

10.2. Obstacle Data Set (ICAO) – Austria Provision

The Obstacle Data Set (ICAO) – Austria shall be provided via internet link to Austro Control's SDI portal and Austro Control's main portal.

https://sdiimg-free.austrocontrol.at/geonetwork/srv/eng/catalog_search#/metadata/12411efc-c816-488c-babc-a6a2b2005279

https://www.austrocontrol.at/en/pilots/pre-flight_preparation/aim_products/obstacle_data_set_icao

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11. BIBLIOGRAPHY

AIXM 5.1.1. (05.10.2020) <http://www.aixm.aero>
http://www.aixm.aero/public/standard_page/download.html
<http://aixm.aero/sites/aixm.aero/files/imce/AIXM511HTML/index.html>

Austro Control GmbH (05.10.2020) <http://www.austrocontrol.at>
<https://eaip.austrocontrol.at>
https://www.austrocontrol.at/flugsicherung/aim/datenaufflieferung_gemaess_adg/
https://www.austrocontrol.at/en/pilots/pre-flight_preparation/aim_products/obstacle_data_set_icao
<https://sdimd-free.austrocontrol.at/geonetwork/srv/eng/catalog.search#metadata/12411efc-c816-488c-babc-a6a2b2005279>

BEV – Bundesamt für Eich und Vermessungswesen <http://www.bev.gv.at>

EUROCAE EUROCAE ED-98 / RTCA DO-276 / User Requirements for Terrain and Obstacle data, version C, October 2015.

EUROCONTROL (05.10.2020) https://ext.eurocontrol.int/aixm_confluence/display/ACGOBS/Overview

ICAO ICAO Annex 15 – Aeronautical Information Service, 16th Edition
 ICAO PANS AIM – ICAO Doc 10066 – Procedures for Air Navigation Services Aeronautical Information Management, 1st Edition

ISO ISO 19115 – Geographic Information – Metadata, 2003
 ISO 19131 – Geographic information – Data Product Specification, 2007

KML OGC (05.10.2020) <https://www.ogc.org/standards/kml>

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12. ANNEX A: Feature catalogue for Obstacle data set (ICAO) – Austria: Excel file format

The following chapter describes the Excel file format of Obstacle Data Set (ICAO) – Austria. It shall describe the file format including obstacle feature and its attributes.

12.1. Attribute List

The following table shows all attributes provided by the Excel file format.

Nr.	Name (German)	Name (English)
1	Bundesland	Region
2	Bezirk	District
3	Standort	Location
4	Art	Type
5	Geometrie	Geometry
6	Koordinaten	Coordinates
7	Koordination (Dezimalgrad)	Coordinates (decimal degrees)
8	Vertikales Referenzsystem	Vertical reference system
9	Maximale Höhe AMSL (M/FT)	ELEV (M/FT)
10	Maximale Höhe AGL (M/FT)	MAX HGT AGL (M/FT)
11	Tageskennzeichnung	Day marking
12	Befeuert	Lighted
13	Kennung	Identifier

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12.2. Attributes

Attribute Name	Data Type	Attribute Definition
Bundesland Region	codeList	Federal states of Austria: Burgenland, Niederösterreich, Kärnten, Salzburg, Oberösterreich, Steiermark, Tirol, Vorarlberg, Wien. A combination is possible if obstacle is located in more than one state.
Bezirk District	codeList	Administrative districts of Austria. A combination is possible if obstacle is located in more than one district.
Standort Location	string	Name of obstacle, mostly related to its location. This attribute is not necessarily unique.
Art Type	codeList	Type of obstacle. DO-276/ED-98 defines the obstacle type as "a description of the recorded obstacle, e.g., tower, building, tree, power lines, windmill farms, or cable cars." Description from the TOD Manual: "An indication of the type of obstacle recorded. This should be assessed against a generic set of obstacle types which includes types such as tree, building, wind-turbine, etc. This information is linked to the obstacles recorded and should, therefore, be provided at this level (data level)."
Geometrie Geometry	codeList	Type of geometry: point, point (grouped), curve, surface. According to PANS-AIM, 5.3.3.2.2.1 - "Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons." Description from the EUROCONTROL TOD Manual: "An indication of how the obstacle is described, in respect of whether it is a point, line or polygon (data level)."
Koordinaten Coordinates	string	DD MM SS.ssss[N] DDD MM SS.ssss[E] Latitude and longitude of obstacle
Koordinaten (Dezimalgrad) Coordinates (decimal degrees)	float	DD.ddddddd Latitude and longitude of obstacle

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Data product specification for Obstacle data set (ICAO) – Austria 30-10-2020

Vertikales Referenzsystem Vertical reference system	codeList	EVRS, ADRIA
Maximale Höhe AMSL (M/FT) ELEV	float	Maximum elevation above mean sea level in meter and feet. The elevation is considered at the top of the obstacle
Maximale Höhe AGL (M/FT) MAX HGT AGL (M/FT)	float	Maximum elevation above ground level in meter and feet. The TOD Manual explains that "whilst the elevation of an obstacle typically comprises its height above MSL, its height above ground level should also be measured (data level). It should, however, be noted that the key information is the elevation of the obstacle and that the height above ground for an obstacle may vary depending on the position at which it is measured and an uneven ground profile."
Tageskennzeichnung Day marking	boolean	YES/NO
Befeuerung Lighted	boolean	YES/NO
Kennung Identifier	UUID	Universally unique identifier of the obstacle.

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Anexo 15

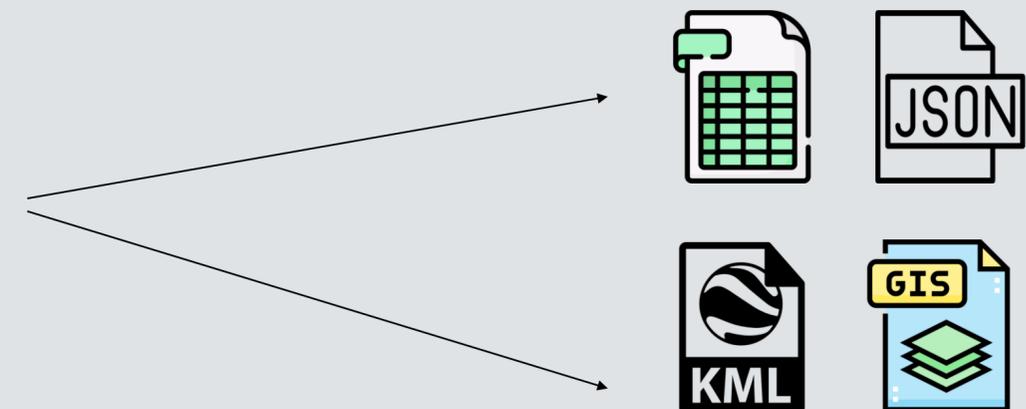
2.3.10 Se utilizarán modelos de intercambio de información aeronáutica y modelos de intercambio de datos aeronáuticos interoperables a escala mundial para el suministro de conjuntos de datos.

Nota 1.— En los Procedimientos para los servicios de navegación aérea — Gestión de la información aeronáutica (PANS-AIM, Doc 10066) figuran especificaciones relativas a los modelos de intercambio de información aeronáutica y datos aeronáuticos interoperables a escala mundial.

Nota 2.— En el Doc 8126 se proporcionan textos de orientación sobre modelos de intercambio de información y datos aeronáuticos interoperables a escala mundial.



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ES POSIBLE





Satisfacer al usuario final

Anexo 15

5.3 Conjuntos de datos digitales

5.3.1 Generalidades

5.3.1.1 Los datos digitales se suministrarán en forma de conjuntos de datos como sigue:

- a) conjuntos de datos AIP;
- b) conjuntos de datos sobre el terreno;
- c) conjuntos de datos sobre obstáculos;
- d) conjuntos de datos cartográficos de aeródromo; y
- e) conjuntos de datos de procedimientos de vuelo por instrumentos.

Nota.— En los PANS-AIM (Doc 10066) figuran especificaciones detalladas acerca del contenido de los conjuntos de datos digitales.

5.3.1.2 Cada conjunto de datos se suministrará al siguiente usuario previsto junto con un conjunto mínimo de metadatos que aseguren la trazabilidad.

Nota.— En los PANS-AIM (Doc 10066) figuran especificaciones detalladas acerca de los metadatos.

5.3.1.3 Se proporcionará en forma periódica una lista de verificación de conjuntos de datos válidos.

PANS AIM Doc 10066

5.3 DATOS DIGITALES

5.3.1 Disposiciones generales

5.3.1.1 Para facilitar y apoyar el intercambio de conjuntos de datos digitales entre los proveedores de datos y los usuarios de los mismos, debería utilizarse como marco de referencia la serie de normas ISO 19100 para información geográfica.

Nota.— En el Doc 8126 figuran textos de orientación sobre el uso de las series de normas ISO 19100.

5.3.1.2 Se proporcionará una descripción de los conjuntos de datos digitales disponibles en la forma de especificaciones de los productos de datos, basándose en la cual los usuarios de la navegación aérea podrán evaluar los productos y determinar si cumplen con los requisitos para el uso (aplicación) previsto.

Nota.— La Norma ISO 19131 describe las especificaciones de los productos de datos geográficos. Puede incluirse una descripción general, el ámbito de las especificaciones, identificación de productos de datos, estructura y contenido de los datos, sistema de referencia, calidad de los datos, captación de datos, mantenimiento de datos, presentación de datos, entrega de productos de datos, información adicional y metadatos.

5.3.1.3 El contenido y la estructura de los conjuntos de datos digitales se definirán según un esquema de aplicación y un catálogo de atributos.

Nota.— La Norma ISO 19109 contiene reglas para los esquemas de aplicación, mientras que la Norma ISO 19110 describe el método de catalogación de atributos para la información geográfica.

PANS AIM Doc 10066

5.3.1.4 El modelo de información aeronáutica que se utilice debería abarcar los datos aeronáuticos y la información aeronáutica que se desee intercambiar.

5.3.1.5 El modelo de información aeronáutica que se utilice **debería**:

- a) utilizar el Lenguaje Unificado de Modelado (UML) para describir los atributos de la información aeronáutica y sus propiedades, asociaciones y tipos de datos;
- b) incluir restricciones a los valores de los datos y reglas para la verificación de datos;
- c) incluir disposiciones relativas a metadatos como se especifica en 4.2.1 y 5.3.2; y
- d) incluir un modelo de temporalidad que permita captar la evolución de las propiedades de una característica de información aeronáutica durante su ciclo de vida.

5.3.1.6 El modelo de intercambio de datos aeronáuticos utilizado **debería**:

- a) aplicar un formato de codificación de datos usado comúnmente;
- b) abarcar todas las clases, los atributos, los tipos de datos y las asociaciones del modelo de información aeronáutica descrito en 5.3.1.5; y
- c) proporcionar un mecanismo de extensión por medio del cual los grupos de usuarios puedan ampliar las propiedades de las características existentes y añadir nuevas características que no afecten negativamente la normalización mundial.

PANS AIM Doc 10066

Nota 1.— El uso de un formato de codificación de datos comúnmente utilizado tiene por objetivo garantizar la interoperabilidad en el intercambio de datos aeronáuticos entre los organismos y organizaciones que participen en la cadena de procesamiento de los datos.

Nota 2.— Algunos ejemplos de formatos utilizados comúnmente para la codificación de datos son: el lenguaje de marcado extensible (XML), el lenguaje de marcado geográfico (GML) y la notación de objetos JavaScript (JSON).

5.3.1.7 Deberían utilizarse cartas, mapas o diagramas para complementar los conjuntos de datos digitales.

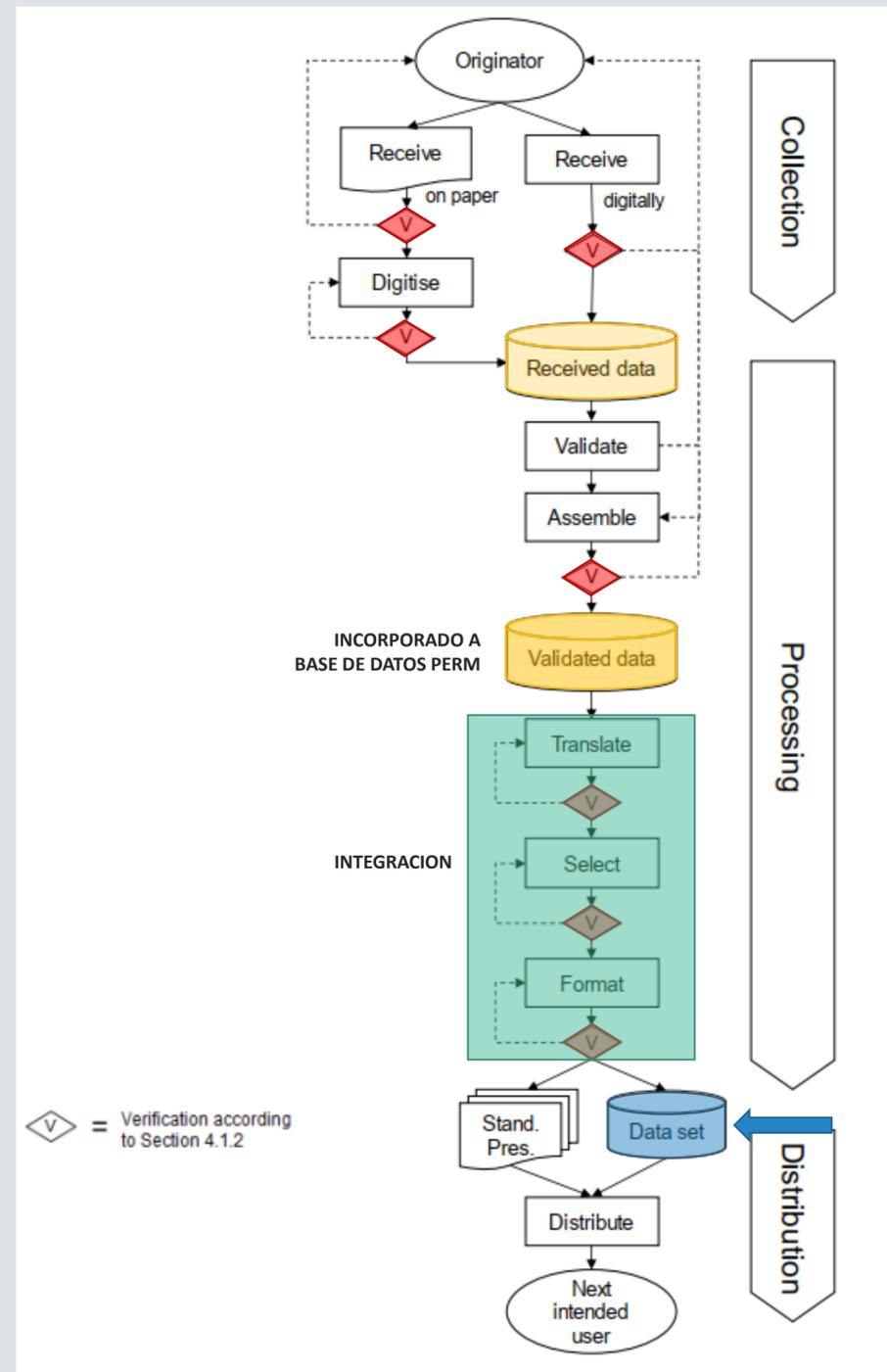
5.3.2 Metadatos

Cada conjunto de datos incluirá el conjunto mínimo de metadatos que figura a continuación:

- a) nombre de la organización o entidades que proporcionan el conjunto de datos;
- b) fecha y hora en que se proporcionó el conjunto de datos;
- c) período de validez del conjunto de datos; y
- d) cualquier limitación con respecto al uso del conjunto de datos.

Nota.— En la Norma ISO 19115 se especifican requisitos para los metadatos de información geográfica.

ICAO Doc 8126 7th Edition (Unedited)





- Data Set Series
- Data Sets (2)
- Create new
- 2021-05-20
- 2021-10-07
- Data Subjects (306)
- Data Product Specification
- Metadata
- History

< Back to d

306 0 306 100.00%

Show passing features Show passing rules

Designated Passes: 12

Rule	Result	Business Rule description
AIXM-5.1_RULE-1A852C	Pass	It is obligatory that each DesignatedPoint with assigned airportHeliport value has airportHeliport value resolved-into exactly one associatedWith AirportHeliport
AIXM-5.1_RULE-1A852D	Pass	It is obligatory that each DesignatedPoint with assigned runwayPoint value has runwayPoint value resolved-into exactly one isSituat
AIXM-5.1_RULE-1A852E	Pass	It is obligatory that each DesignatedPoint with assigned runwayPoint value has runwayPoint value resolved-into exactly one isSituat
AIXM-5.1_RULE-1A2F58	Pass	Each DesignatedPoint.annotation.Note.propertyName shall not have assigned value other than ('designator', 'type', 'name', 'location', 'designator', 'type', 'name', 'location', 'designator', 'type', 'name', 'location')
AIXM-5.1_RULE-1A3368	Pass	

Demoststración

elaboración

conjunto de

Datos





AIXM Database Management System

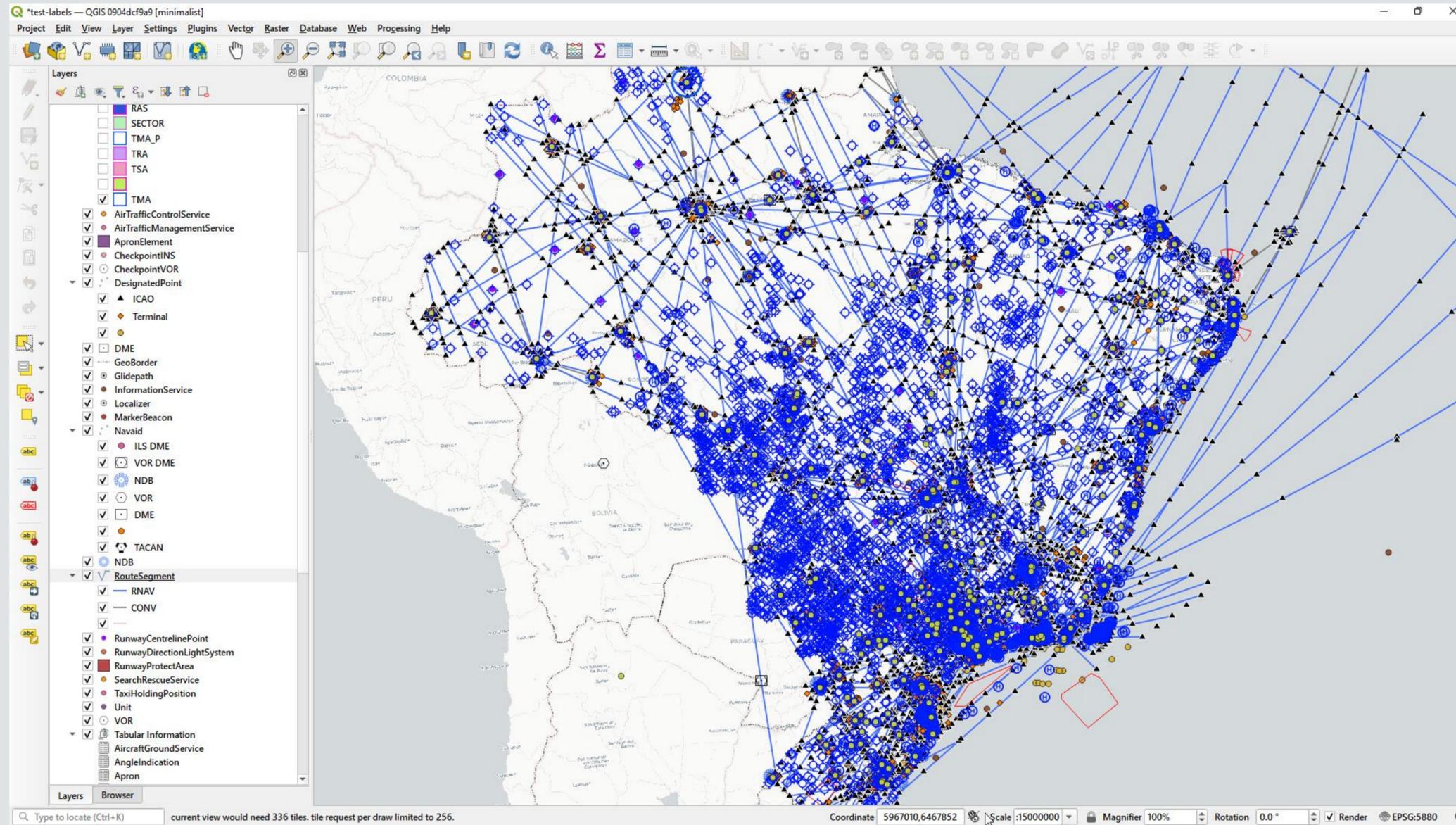


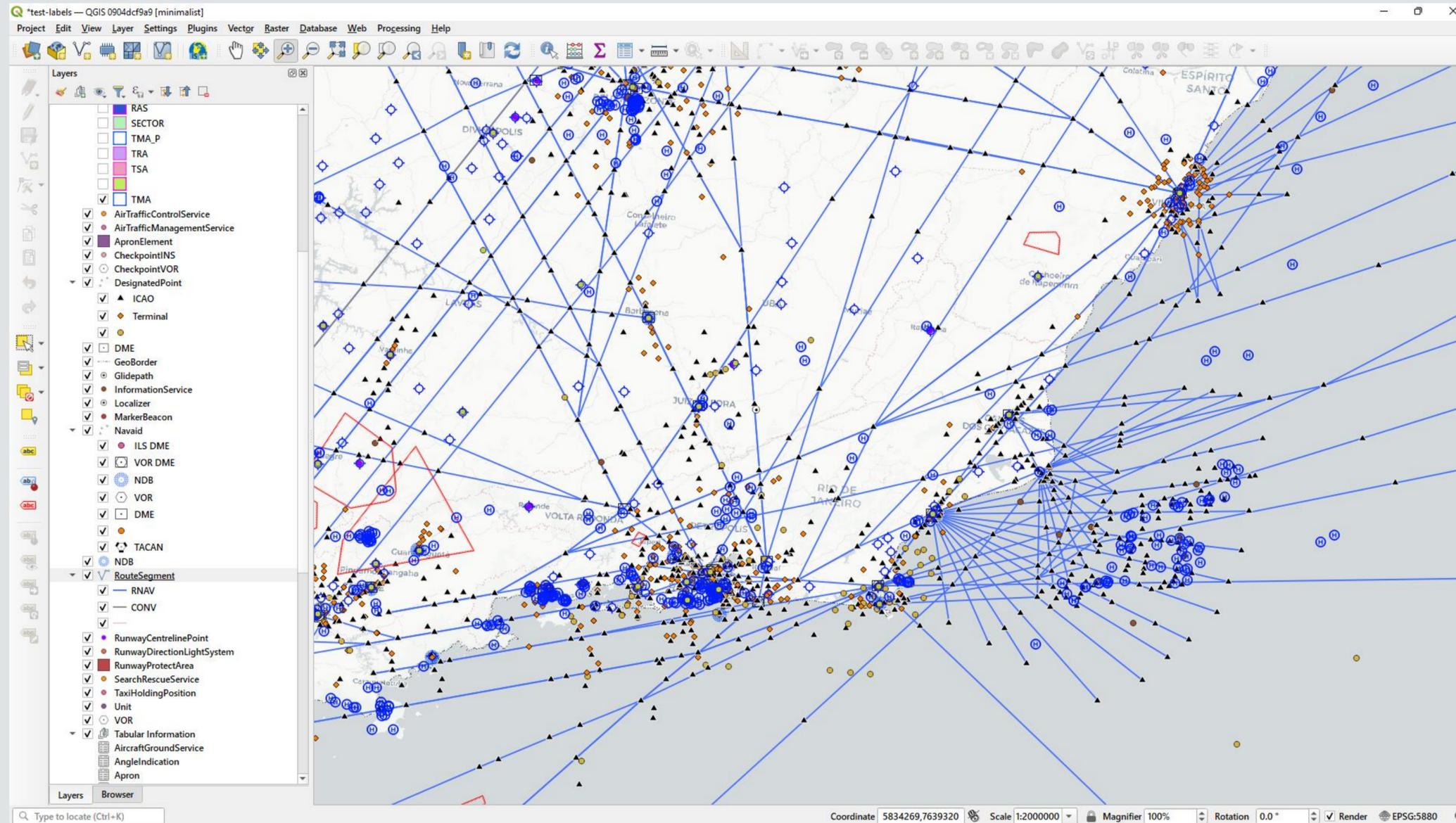
Database
 AIP Production

[Log In](#)

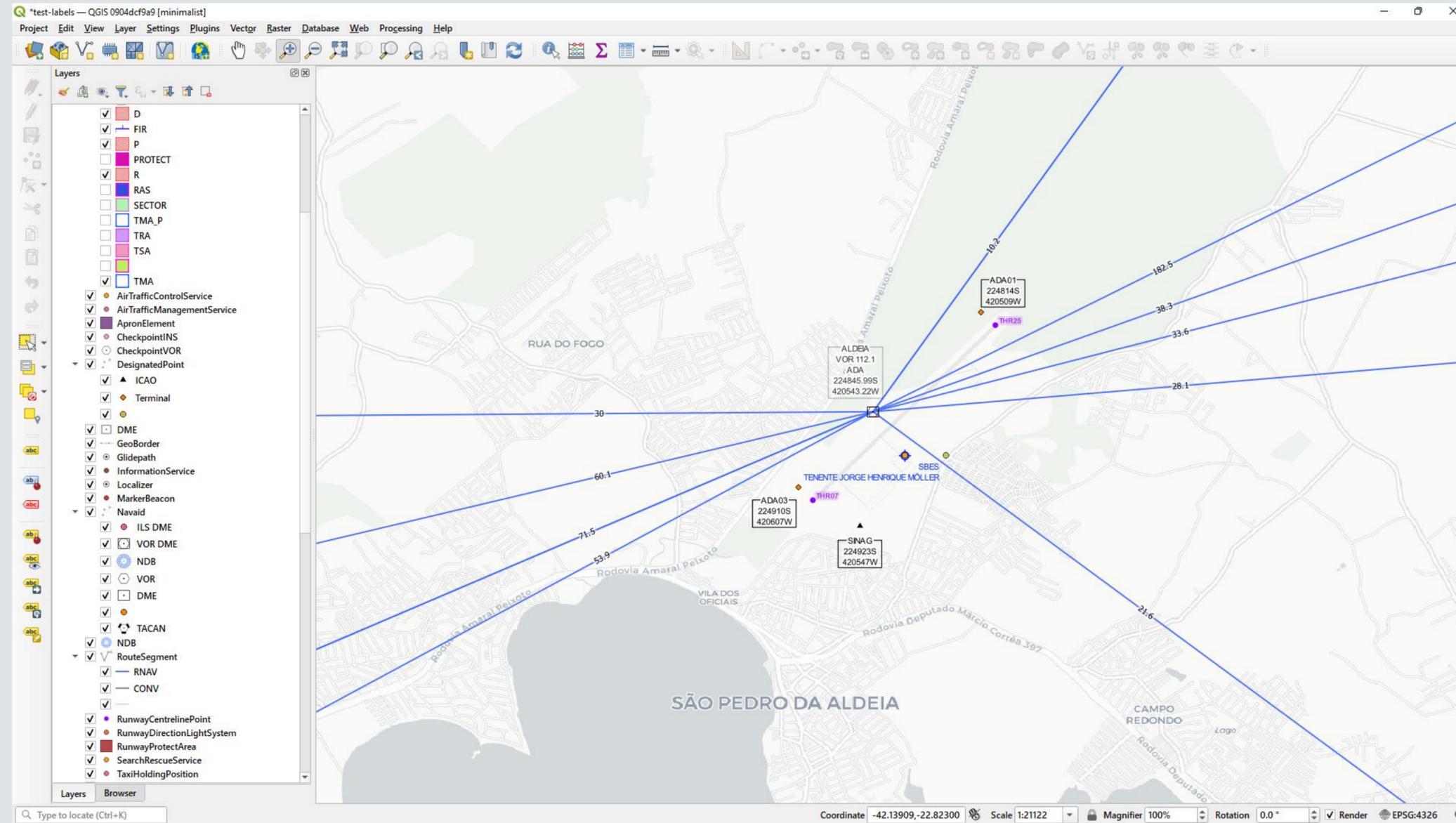
Visualización de Conjunto de datos (datasets) en QGIS



Visualización de Conjunto de datos (datasets) en QGIS



Visualización de Conjunto de datos (datasets) en QGIS



Visualización de Conjunto de datos (datasets) en QGIS

The screenshot displays the QGIS interface with a map of an airport. The map shows a runway, taxiway, and surrounding areas. Several data layers are visible, including 'RunwayCentrelinePoint', 'RunwayDirectionLightSystem', and 'RunwayProtectArea'. The 'Identify Results' panel on the right shows the details of a selected feature, 'RunwayCentrelinePoint', with the following attributes:

Feature	Value
RunwayCentrelinePoint	
gm_l_id	uuid:6dce1698-4572-4e92-98cd-7b5ee2bf447a
(Derived)	
(Actions)	
gm_l_id	uuid:6dce1698-4572-4e92-98cd-7b5ee2bf447a
identifier	6dce1698-4572-4e92-98cd-7b5ee2bf447a
beginPo...	2019-01-03T00:00:00
interpret...	BASELINE
sequenc...	1
correctio...	0
timeSlic...	NULL
role	THR
elevation	18.36
elevatio...	M
onRunw...	urn:uuid:41893fd3-8f9e-4dc4-96c8-917ba7bf8878
designator	25
type	NULL
distance...	NULL
distance...	NULL
geoidUn...	NULL
purpose	NULL
note	NULL
endPosit...	NULL
distance...	NULL
timeSlic...	NULL

The map also shows other features like 'THR07 4.52 M' and 'THR25 18.36 M'. The 'Layers' panel on the left lists various data layers, and the 'Identify Results' panel on the right shows the details of the selected feature.

Ejemplo portales

FAA's Aeronautical Data Delivery Service

Welcome to the FAA's Aeronautical Data Delivery Service
We have the data, you have the fresh ideas. Let's bring them together.

ENA IRC AIP España

12-AUG-21 (Incorporados AIRAC 07/21 y AMDT 344/21)

Filtre secciones. Por ejemplo poniendo: GEN 2, Servicio, LEBL, Barajas, LEMD AOC, Rutas ATS, ...

- ENR 4.1 Radioayudas para la navegación - En ruta.
- ENR 4.2 Sistemas especiales de navegación.
- ENR 4.3 Sistema mundial de navegación por satélite (GNSS).
- ENR 4.4 Det
- ENR 4.5 Luc

ENR 5 Avisos para la navegación

- ENR 5.1 Zor
- ENR 5.2 Ma
- ENR 5.3 Otr
- ENR 5.4 Obr
- ENR 5.5 Dep
- ENR 5.6 Vuk
- ENR 5.7 Zor

ENR 6 Cartas de en ruta

- ENR 6.0 Ind
- ENR 6.1 Car
- ENR 6.5 TM

austro CONTROL

Obstacle Data Sets (ICAO) - Austria

On this website, digital obstacle data related to the Austrian territory will be provided in accordance with ICAO Annex 15, Chapter 5.3.3.

DIGITAL DATASETS

Effective from 12 August 2021.

Type	Name	Format	Download
VRP	VISUAL REPORTING POINTS LIST	XLS	Download
ENR 5.4	ETOD AREA 1 (EN-ROUTE) OBSTACLES	XLS	Download
VFR OBSTACLES	VFR OBSTACLE LIST	XLS	Download
ENR 5.1	UAS AIRSPACE RESTRICTION FILE	XML	Download
ENR 5.1	UAS AIRSPACE RESTRICTION FILE	KMZ	Download
ENR 5.1 MAP	An interactive map of the UK showing all ENR 5.1 airspace restrictions applicable to UAS.	GOOGLE MY MAPS	Download
SRD	STANDARD ROUTE DOCUMENT	XLS	Download
ADQ NON-COMPLIANCE REPORT	ADQ NON-COMPLIANCE REPORT	XLS	Download
ADQ NON-COMPLIANCE REPORT	ADQ NON-COMPLIANCE REPORT	CSV	Download

Software eAIP y AIXM

The screenshot shows the AIP Manager software interface. The main window displays a document titled "LPPT AD 2.2 Aerodrome Geographical And Administrative Data". A table of data is visible, with columns for "File Name", "Status", "File Section Title", and "File Heading". The table lists various airport data entries, including "GEN LOP", "GEN TOC", and "GEN book". A sidebar on the left shows a file directory structure with folders like "GEN", "ENR", "AD", "Charts & Images", "Circulars", "Supplements", and "Amendments".

File Name	Status	File Section Title	File Heading
GEN LOP	Not Applicable for	PAAMS Publishing	
GEN TOC	Not Applicable for	PAAMS Publishing	
GEN book	Not Applicable for	PAAMS Publishing	
TB_GEN_0_1_en...	READY...	GEN 0.1	GEN 0.1 - Preface
TB_GEN_0_2_en...	READY...	GEN 0.2	GEN 0.2 - Record of AIP
TB_GEN_0_3_en...	READY...	GEN 0.3	GEN 0.3 - Record of AIP
TB_GEN_0_4_en...	READY...	GEN 0.4(Sect 0.4)	GEN 0.4 - Checklist of AIP
TB_GEN_0_5_en...	READY...	GEN 0.5	GEN 0.5 - List of hand b...
TB_GEN_0_6_en...	READY...	GEN 0.6(Sect 0.6)	GEN 0.6 - Table of conb...
TB_GEN_1_1_en...	READY...	GEN 1.1	GEN 1.1 - Designated a...
TB_GEN_1_2_en...	READY...	GEN 1.2	GEN 1.2 - Entry, transa...
TB_GEN_1_3_en...	READY...	GEN 1.3	GEN 1.3 - Entry, transa...
TB_GEN_1_4_en...	READY...	GEN 1.4	GEN 1.4 - Entry, transa...
TB_GEN_1_5_en...	READY...	GEN 1.5	GEN 1.5 - Aircraft instr...
TB_GEN_1_6_en...	READY...	GEN 1.6	GEN 1.6 - Summary of r...
TB_GEN_1_7_en...	READY...	GEN 1.7	GEN 1.7 - Differences f...
TB_GEN_2_1_en...	READY...	GEN 2.1	GEN 2.1 - Measuring sy...
TB_GEN_2_2_en...	READY...	GEN 2.2	GEN 2.2 - Abbreviation...
TB_GEN_2_3_en...	READY...	GEN 2.3	GEN 2.3 - Chart symbol...
TB_GEN_2_4_en...	READY...	GEN 2.4	GEN 2.4 - Location ind...
TB_GEN_2_5_en...	READY...	GEN 2.5	GEN 2.5 - List of radio r...
TB_GEN_2_6_en...	READY...	GEN 2.6	GEN 2.6 - Conversion to...
TB_GEN_2_7_en...	READY...	GEN 2.7	GEN 2.7 - Sunrise/Sun...
TB_GEN_3_1_en...	READY...	GEN 3.1	GEN 3.1 - Aeronautical...

The screenshot shows the AIXM web interface for BIKF (KEFLAVIK) AirportHeliport. The page displays metadata for the heliport, including its designator, name, location indicator, type, field elevation, magnetic variation, date magnetic variation, magnetic variation change, and temperature. The interface also shows parent and child relationships, a search bar, and a sidebar with a list of airport features.

BIKF (KEFLAVIK) AirportHeliport

Valid from 2018-02-01T00:00:00Z
Version 1.0

Parent relationships: Metadata, Child relationships

Find All Versions, Add To Dataset, Add To Work Package

Expand all

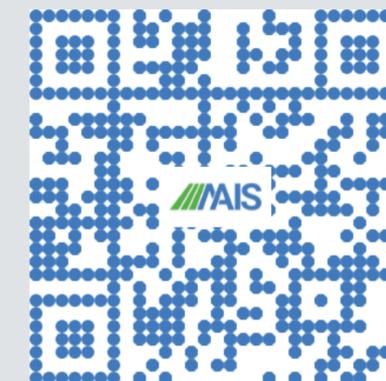
AirportHeliport

designator: BIKF
name: KEFLAVIK
locationIndicator/CAO: BIKF
type: AD
fieldElevation: 169 FT
magneticVariation: 14
dateMagneticVariation: 2016
magneticVariationChange: 0.3
temperature: 14.4 C

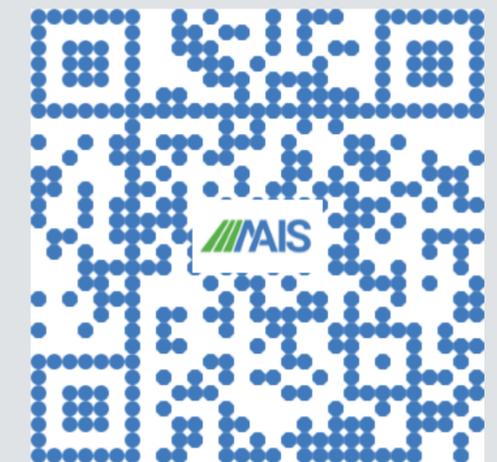
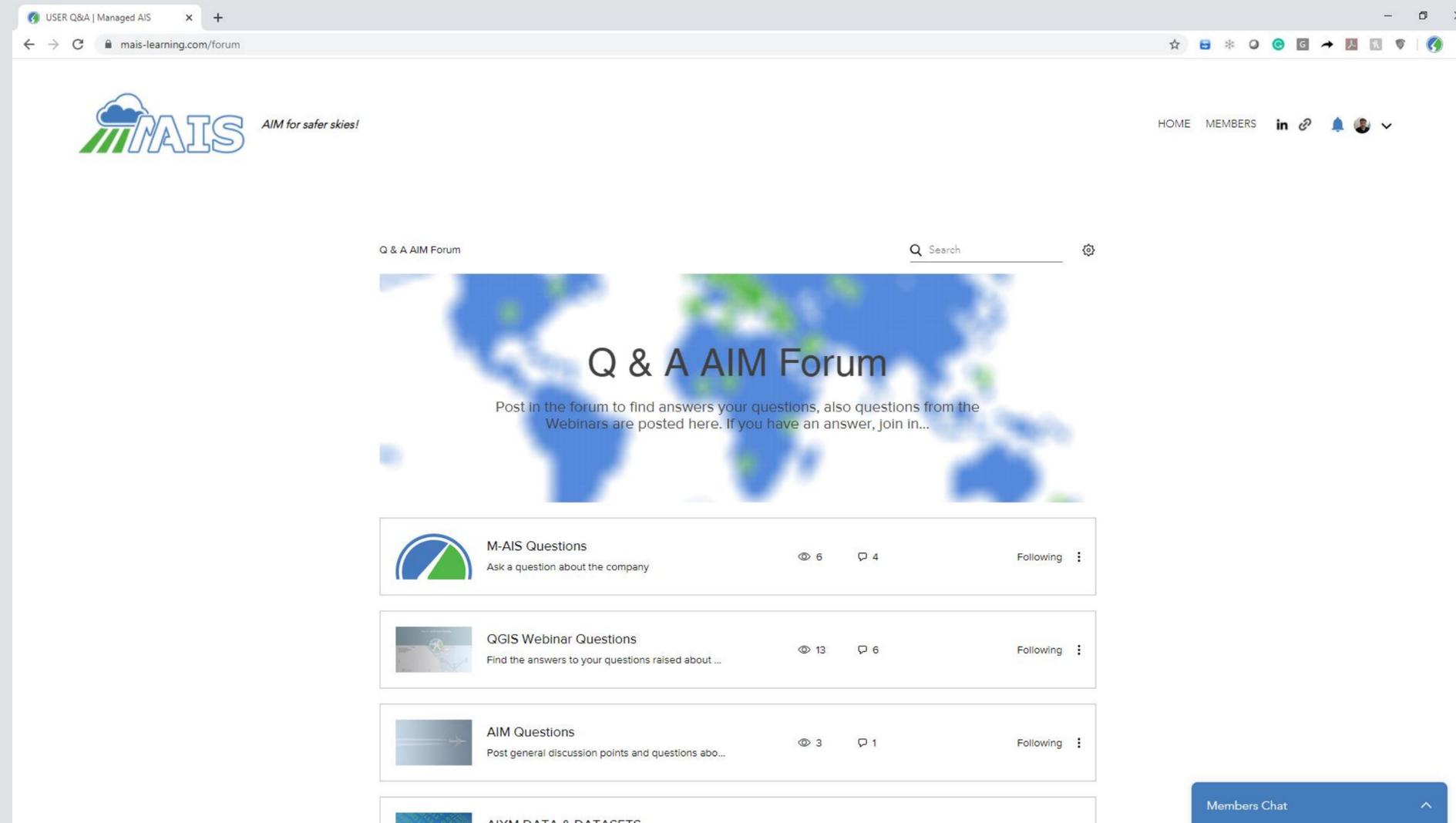
Search for Type (e.g. AirportHeliport)

- Airports and ground features
 - AirportHeliport
 - AircraftGroundService
 - AircraftClearanceService
 - AirportHeliportCollocation
 - AirportSuppliesService
 - CheckpointVOR
 - FireFightingService
 - GroundTrafficControlService
 - PassengerService
 - Runway
 - Taxiway
 - TouchDownLiftOff
 - AirportHotSpot
 - ChangeOverPoint
 - CheckpointINS
 - NonMovementArea
 - ObstacleArea
 - RadarSystem
 - Road
 - RulesProcedures
 - SignificantPointInAirspace
 - SurveyControlPoint
 - WorkArea
 - AeronauticalGroundLight
 - GeoBorder
 - VerticalStructure
 - Navigation aids and points
 - Airspaces and routes
 - Procedures
 - Organisations, units and services

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<https://www.mais-learning.com/aim-forum>



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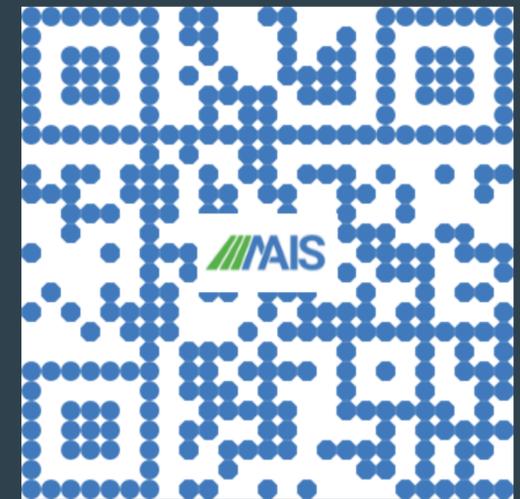
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