

Luciad AIXM 5 Viewer Feature Support

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Introduction

The following sections define the supported AIXM features available in the Luciad AIXM Viewer. It is important to note that this list solely applies to the Viewer and not to the underlying Luciad product, LuciadLightspeed. This product provides an API to develop geospatial situational awareness applications, which gives additional flexibility to the user when developing AIXM-related applications.

The Luciad AIXM Viewer is frequently updated with new capabilities and improvements. Consequently, this page will be updated regularly to represent the latest state of the the Viewer.

Feedback

Luciad welcomes any feedback, suggestions and feature requests to further improve the AIXM 5 Viewer. Please send your input to aixm5viewer@luciad.com.

Data connectors

The following AIXM data sources are supported:

- AIXM 5.0 (.xml)
- AIXM 5.1 (.aixm51, .xml)

Other supported data sources:

- GeoTIFF (.tif, .tiff)
- Shape (.shp, .shp.gz, .shp.zip)
- DMED, DTED, DEM elevation data (.dem, .dem.gz, .dmed, .dt0, .dt1)
- BingMaps

AIXM extensions

The AIXM 5 Viewer includes built-in support for AIXM extensions.

The following extensions, identified by their XML namespace, are automatically recognized; this means that they do not require a link to the XML Schema in the data:

- <http://www.faa.gov/AIM/SAA>
- <http://www.faa.gov/AIM/SAA/SUA>
- <http://www.aixm.aero/schema/5.1/event>
- <http://www.aixm.aero/schema/5.1/dnotam>
- <http://www.aixm.aero/schema/5.1/extensions/ADR>
- <http://www.aixm.aero/schema/5.1/extensions/EUR/ADR>
- <http://www.aixm.aero/schema/5.1/extensions/EUR/ADR/message>

For all other extensions, it is required and sufficient to have a valid XML Schema location in the data that points to the AIXM extension schema.

AIXM feature types

All AIXM feature types defined by the AIXM XML Schemas (airspaces, airports, nav aids ...) can be decoded and accessed by the Viewer. Features are visualized if a geometry is available.

Visualization follows ICAO Annex 4 charting guidelines.

AIXM geometries

This section gives an overview of the AIXM Viewer's support with respect to the geometry types & aspects found in AIXM features.

The first part is general for all feature types; the second part discusses airspace feature types, which have extended geometry capabilities.

Related to all feature types

AIXM uses GML to represent the geometry of features. The following table lists the supported geometry types:

Geometry type	Supported	Notes
Point, elevated point	x	
LineString	x	
GeodesicString	x	
LinearRing	x	
Circle by center point	x	
Circle by 3 points	x	

Arc by center point	x	
Arc by 3 points	x	
Arc by bulge	x	
Curve, elevated curve, composite curve, ring	x	
Surface, elevated surface, polygon, polygon patch	x	
Triangle	x	
Envelope	x	
Rectangle	x	

Additionally, geometry definitions can be embedded or linked, using XLink / XPath. The following table lists the supported possibilities:

Geometry definition	Supported	Notes
Inline	x	
Local geometry link using the gml:id property of the referred geometry	x	
Local geometry link using the gml:identifier property of the feature encompassing the referred geometry	x	
External geometry link	-	This is possible via the product API. Contact us if you are interested in this capability.

Coordinates can be expressed in a geographic reference defined by an EPSG code. The Luciad AIXM Viewer supports over 4500+ EPSG reference codes. The full list can be found on the Luciad Developer Platform, available at https://dev.luciad.com/portal/reference/LuciadLightspeed/com/luciad/reference/format/doc-files/supported_epsg.html. Additionally, multiple references can be used in a single file.

Related to airspace features

In case of airspace features, additional geometry possibilities are available in AIXM. The following table lists the supported possibilities

Geometry type	Supported	Notes
Corridor-based geometry	x	
Geometry aggregations of type UNION	x	
Geometry aggregations of type INTERS	x	
Geometry aggregations of type SUBTR	x	
Hierarchical aggregations	x	
Link to a geoborder (whole)	x	

Link to a geoborder (subset)	-	The link itself is resolved, but the geoborder subset calculation is not performed. Contact us with reference to LCD-4372 if you would need this. It is currently being scheduled to be fixed in the 2017 release.
Link to a contributor airspace	-	A contributor airspace link can be used to reuse an airspace and its geometry into another airspace. Contact us with reference to LCD-4170 / LCD-8522 if you would need this.

AIXM temporality model

The Viewer supports the AIXM temporality model by means of a time filter mode in the application. This mode enables a time slider that triggers on-the-fly SNAPSHOT calculations, providing the user with the state of the feature at the selected time. These snapshot calculations take into account both timeslices and timesheets.

The following table lists the supported temporality concepts in detail:

Temporality concept	Temporality property / type	Supported	Notes
Timeslice	BASELINE	x	
	PERMDELTA	x	
	TEMPDELTA	x	
	SNAPSHOT	x	
Timesheet	Time reference	x	
	Start and end date	x	
	Day and dayTil	All except holidays and busy Fridays, because they depend on local government practices.	Contact us with reference to LCD-983 if you would need this.
	Start and end Time	x	
	Start and end Event	x	
	Start and end time relative Event	x	
	Start and Event interpretation	x	
	Daylight Saving Adjustment	x	
	Excluded	x	

AIXM visualization

The Luciad AIXM 5 Viewer supports 2D, 3D and 4D visualization of AIXM data. The visualization is largely based on ICAO Annex 4 charting guidelines. Based on community feedback, a number of features have received a dedicated style in 2D and / or 3D, to improve the awareness of their geographical extent. The following table gives an overview:

Feature type	2D	3D
Feature types with a point geometry	2D icon	2D icon (billboard)
Feature types with a curve geometry	2D curve	3D curve
Feature types with a surface geometry	2D surface	3D extruded surface using the specified vertical extent (if available)
Vertical structure with a point geometry	2D icon	3D cylinder indicating the horizontal and vertical extent of the obstacle
Route segment	2D curve	3D corridor indicating the horizontal and vertical extent of the route segment
Safe altitude area	2D arc band	3D arc band