



Release guide
LuciadLightspeed 2024.1

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About this release

LuciadLightspeed 2024.1 again strengthens the support for building information modeling (BIM) data. You can now handle Autodesk Navisworks data in addition to the Industry Foundation Classes (IFC) and Autodesk Revit formats. You can also filter BIM data and specify an area of interest to only load and convert data that you're interested in.

This release extends complex strokes support for 3D lines: you can now configure a stroke to appear oriented toward the viewer and you can use an above-terrain elevation mode for the altitude of the 3D line.

There is better default support for vertical datums, which helps you increase vertical accuracy in your applications.

This document lists the most noteworthy improvements. You can find the full list of changes in the release notes.

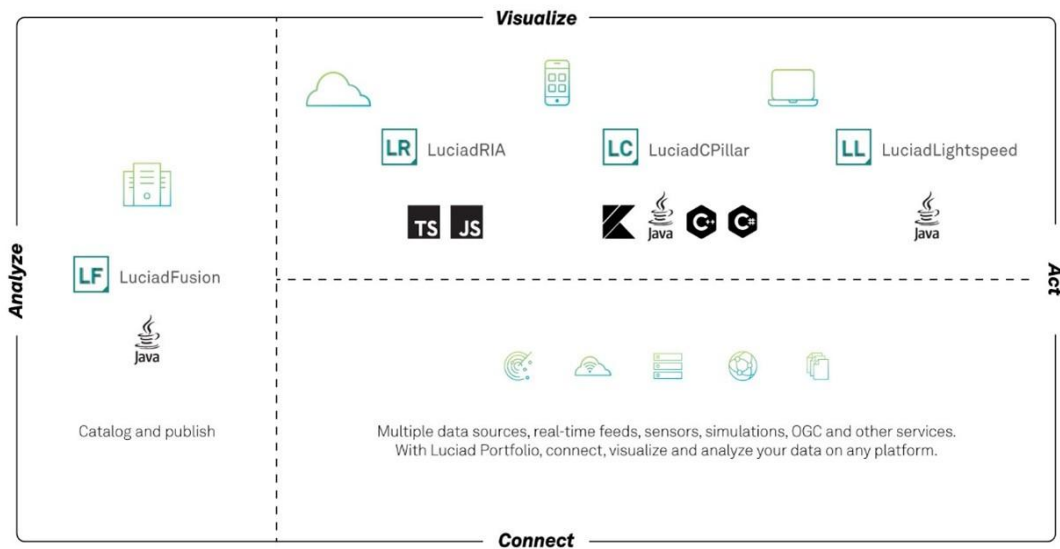


Figure 1 The Luciad portfolio

Benefits of new features

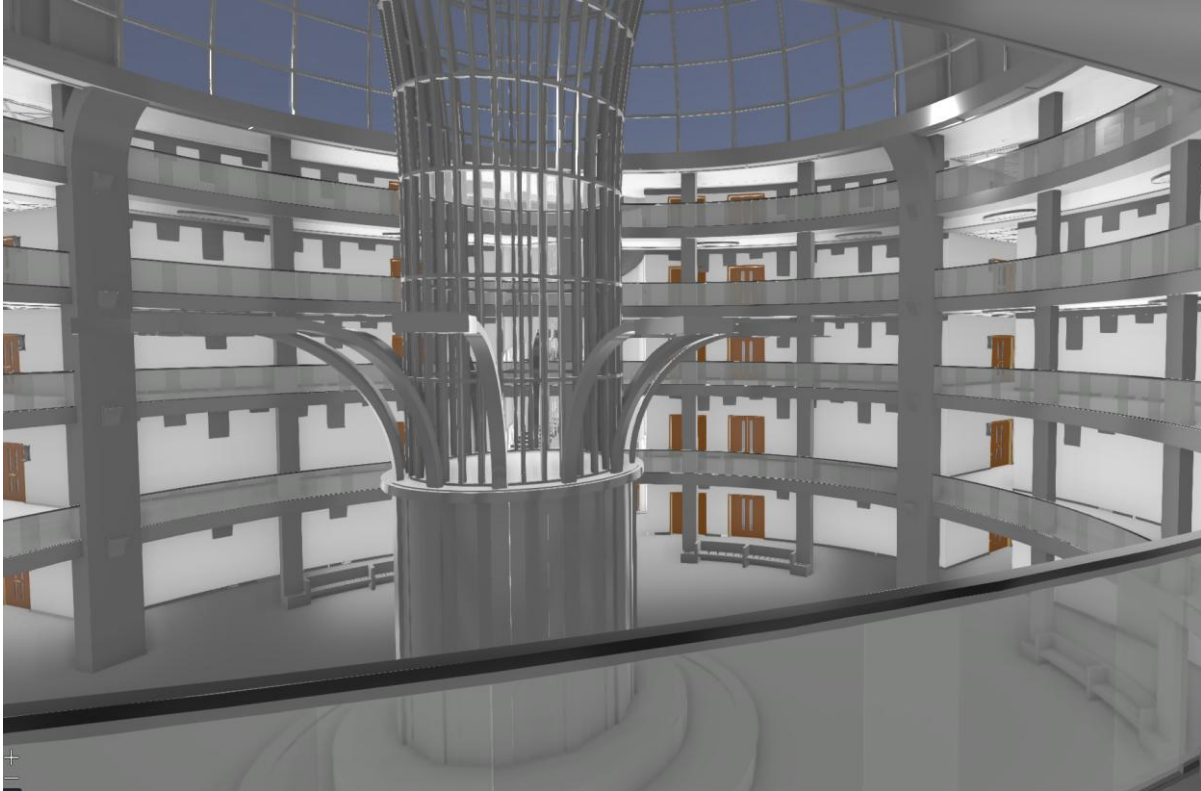


Figure 2 Navisworks data, served by LuciadFusion as OGC 3D Tiles

Extended BIM support

In this release, the LuciadLightspeed support for BIM data has again been extended, strengthening our GeoBIM capabilities. LuciadLightspeed now offers support for Autodesk Navisworks, in addition to support for BIM data in Revit, IFC and Binz formats.

Navisworks support

Autodesk Navisworks is a BIM software tool for architects, engineers and construction professionals to combine and review 3D models created by other software packages, such as Autodesk Revit, AutoCAD and others.

It stores these 3D models in a proprietary NWD file format with the *.nwd* file extension.

These NWD files contain:

- A geometry model of a building or facility, including spatial elements, materials and shapes
- A so-called feature data model describing typical BIM properties of that data, such as layer, material and so on

LuciadLightspeed now decodes both the geometry and the attribute data, handling the two data types in a distinct way.

You can serve the Navisworks data from LuciadFusion using the OGC 3D Tiles protocol. This is illustrated in Figure 2. You can serve the attributes of the elements from LuciadFusion through a WFS service. You can also open the data directly in LuciadLightspeed, although this is not recommended due to a large memory footprint and high CPU load.

Note that the support for Navisworks data is part of the Infrastructure standards option of LuciadLightspeed's Pro tier.

Filtering of BIM data at decoding time

Sometimes, a BIM dataset contains more elements than you're interested in.

Typically, this happens when a CAD model wrongly contains a copy of a building element that is located far away from the actual data, as illustrated in Figure 3. The element in question may be up to hundreds of kilometers away from the relevant model data.

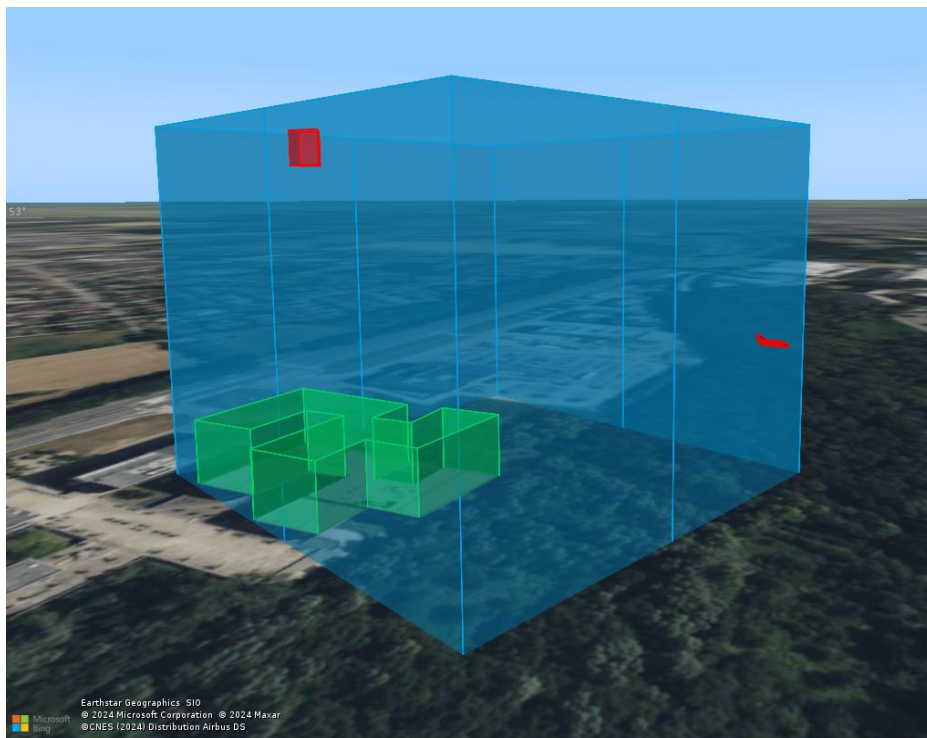


Figure 3 An illustration of the use case for filtering BIM data based on a bounding box

Although the relevant data is present in the dataset, the erroneous objects cause problems when you convert the geometry to an OGC 3D Tiles dataset: because the bounds of the dataset do not match the actual area of interest, it is impossible to automatically create a good tile structure. This impediment can result in poor data quality and unresponsive behavior of a client application that consumes the 3D Tiles.

If changing the source data is not possible, you can now create an XML file, containing an OGC filter that describes the area of interest as a BBOX element.

Sample code/documentation to get you started

The section "[Data Formats: Autodesk Navisworks](#)" was added to documentation. It bundles a collection of relevant articles.

The article [“Filtering BIM data”](#) was added to guide you with filtering BIM data in case of outliers.

Extended complex strokes support

LuciadLightspeed has offered support for complex stroking for many years. It is one of the features that illustrate the flexibility offered by the product in terms of styling feature data. Complex stroking functionality makes it possible to visualize lines constructed from repeating patterns and decorations. An example is a zigzag line, with an arrow or text decorations. See Figure 4.

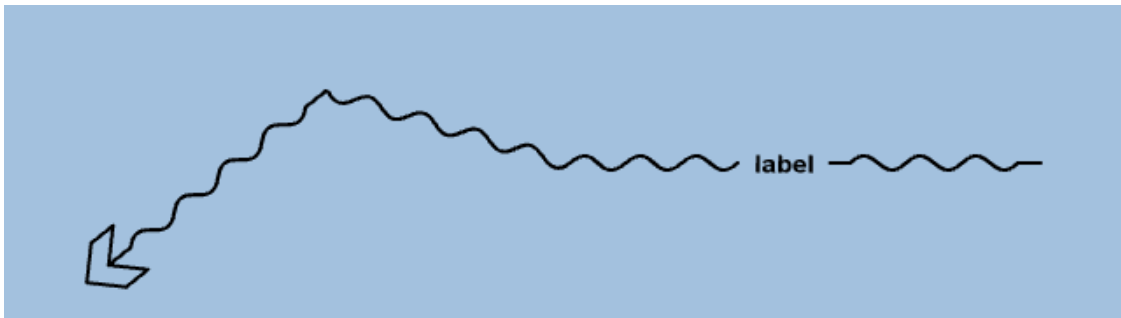


Figure 4 An illustration of a zig zag line on which a complex stroke has been applied

This feature is widely used, and we are open to suggestions from you as developers on how to further improve this capability. Based on popular demand, LuciadLightspeed 2024.1 extends the complex stroking capability in two ways.

First, when 3D lines are styled with a complex stroke (using a non-draped elevation mode), you can now configure the stroke to appear oriented toward the viewer, no matter the camera location. (See [“Figure 5 - Example of complex strokes on 3D lines”](#)).

Second, you can now also apply complex strokes to 3D lines with above-terrain elevation mode for geometries that have a non-zero altitude.

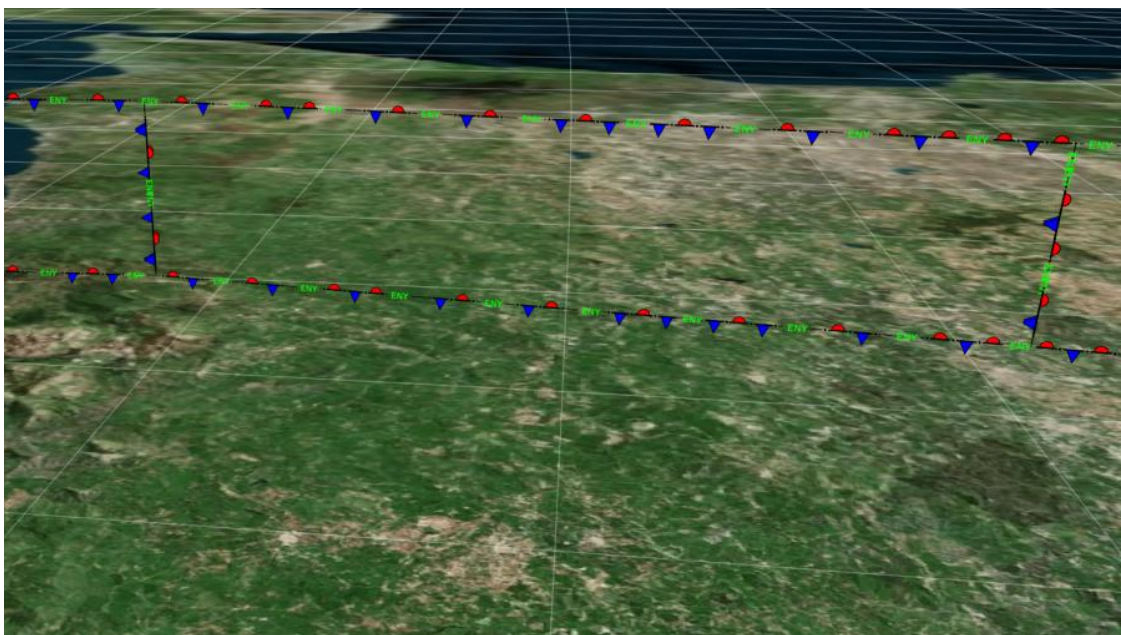


Figure 5 - Example of complex strokes on 3D lines



Better default support for vertical datums

In the 2024.1 release, we continue the work that we started with the 2024.0 release on better default support for vertical datums. We learned this topic can lead to confusion because vertical references are missing, or provided in various formats. Sometimes, they are even incorrectly encoded within data sources. The 2024.1 release brings the possibility to approach almost every vertical datum using the base EGM2008 geoid.

Improve the behavior for unsupported vertical datums by approximating them with EGM2008

Vertical references that are unsupported and have a unit of measure expressed in meters can be approximated by using EGM2008 as base geoid. This behavior is active by default, but you can disable it.

If enabled, this feature adds support for dozens of additional EPSG codes, referring to references including a vertical datum which is approximated by using EGM2008 as fallback vertical datum. The full list of additionally supported EPSG codes is available in the [release notes](#).

Compound EPSG codes (related)

LuciadLightspeed now also supports model references from EPSG model reference source files containing compound CRSes.

Sample code/documentation to get you started

These improvements are default behavior, so no action is needed if you agree that they are beneficial to your application. The [release notes](#) contain details for disabling this behavior, should you want to revert to the behavior of previous LuciadLightspeed versions.

Other improvements

LuciadLightspeed 2024.1 also features a set of upgrades to existing format support.

Support for IFC 4.3

LuciadLightspeed now supports IFC files in the IFC 4.3 format.

Support for LASzip 1.4

LuciadLightspeed now supports LAS point cloud data in the LASzip 1.4 format. LASzip is an open-source library for the lossless compression of LAS point cloud files. The resulting LAZ files can be up to 93% smaller than the original LAS files.

LASzip is considered the de facto standard for exchanging the ubiquitous LiDAR point cloud format, and is supported by many applications. The LASzip compressor is much smaller and faster than generic compressors like bz2, gzip or andrar.

Support for S-52 4.0.4 presentation library

LuciadLightspeed now supports the S-52 version 4.0.4 presentation library for rendering ENC charts.

Support for overview levels in TIFF data

The GeoTIFF model decoder now supports loading TIFF data with overview levels from an external file (with extension *.ovr*).

Anchor icons

The default anchor icon for an icon with vertical displacement enabled now has a halo and follows the fill color of the icon. This is illustrated for military icons in Figure .



Figure 6 The anchor icons now have a halo and follow the fill color of the displaced icon.



About Hexagon

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Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

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