Release guide

LuciadFusion 2023.1

14 December 2023

Contents

About this release

The 2023.1 release completes the 2023 initiative to add more access control support to LuciadFusion. LuciadFusion version 2023.0 already had significantly extended sensitive data protection capabilities.

With this release, you can specify more fine-grained geospatial access rules, through areas of interest and scale ranges. There is also a structural improvement to the 3D Tiles Engine, also called Meshup. This engine was added with the 2018 product release and has become a very popular capability. After five years, we decided to refresh it to make it leaner and more powerful.

Finally, this release includes important security upgrades and bundles a rich set of specific enhancements, based on user feedback. Please also read our advanced notice of the minimum supported Java version for LuciadFusion for next year and beyond.
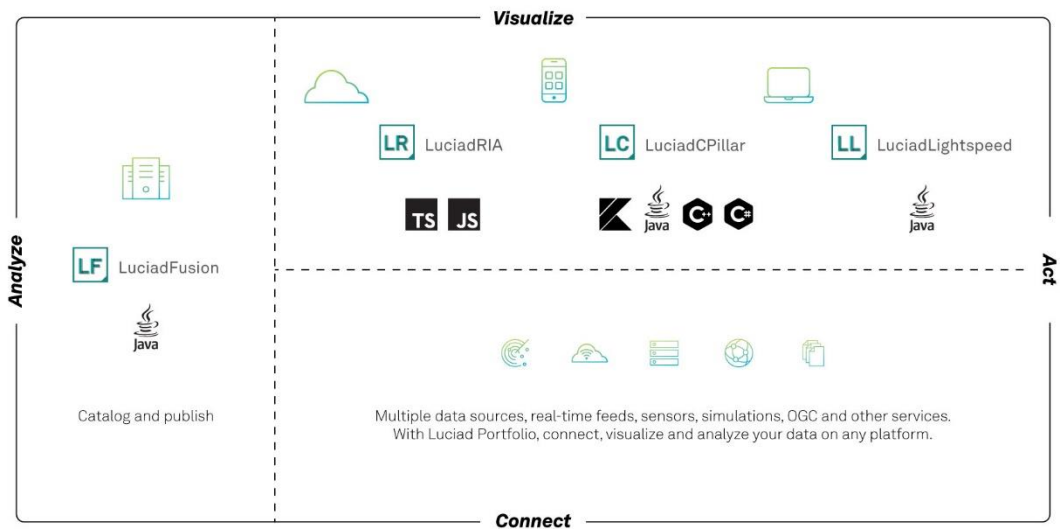

Figure 1: The Luciad portfolio

Benefits of new features

Fine-grained configuration to access your data

Access control is an essential part of data publishing and dissemination. LuciadFusion already offers the tools to protect access to data and services. However, for geospatial data, the spatial dimension can be a parameter in defining who can see which data. Geospatial data security is a current topic of research, and typical aspects include granularity and geospatial logic based on the data extent. See for example this quote:

"As an extension of general access control mechanisms in the IT domain, the mechanism for geospatial data access control has its own requirements and characteristics of granularity and geospatial logic."[1]

This release of LuciadFusion includes advanced access control configuration. You can restrict access via two geospatial mechanisms.

The first mechanism allows data access restriction based on scale range. You can specify the minimum and maximum allowed map scales for accessing data. A typical use case is protecting high-resolution imagery for sensitive locations.

The second mechanism bases access restrictions on areas of interest. You define spatial areas with either the data you want to include, or the data you want to exclude. You also specify how to handle shapes that overlap with the bounds of the spatial area: include, exclude or clip them. Figure 2 illustrates one example where access is restricted to all data strictly within a specified area. All overlapping elements are excluded.
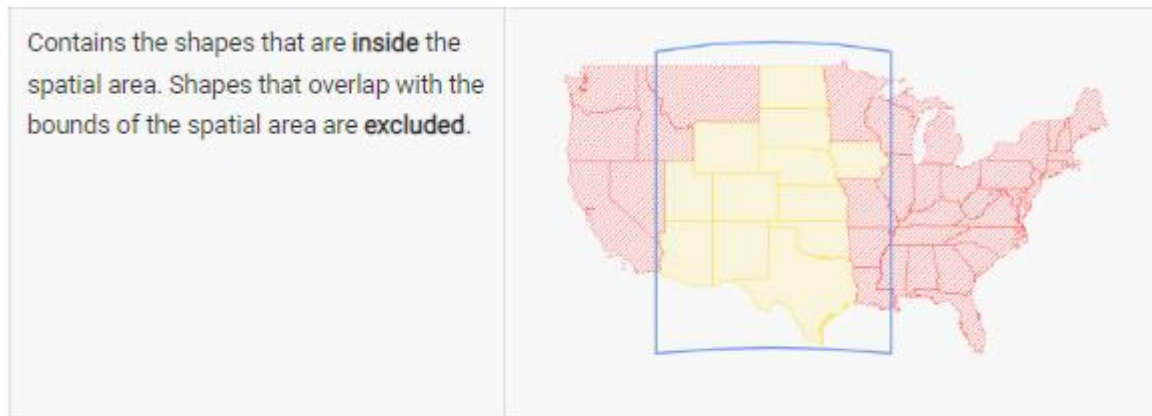

Figure 2: A visual illustration of restricting data based on a clipping area. Only data strictly within the defined area will be accessible.

Geospatial access control is available for a selection of LuciadFusion services. Table 1 lists the available services and the settings that apply.

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[1] J. Lin linjiayuan@gmail.com , Y. Fang , W. Zhang & Z. Huang (2009) Fundamental aspects of access control for geospatial data, International Journal of Digital Earth, 2:3, 275-289, DOI: 10.1080/17538940902818329

Service	Scale access control	Spatial access control				
		Access		OverlappingShapes		
		Inside	Outside	Include	Exclude	Clip
WMS[1]	✓	✓	✓	✓	✓	✓
WMTS[1]	✓	✓	✓	✓	✓	✓
WFS[2]	✗	✓	✓	✓	✓	✗
WCS[3]	✓	✓	✓	✗	✗	✓

Table 1: An overview of LuciadFusion services that support geospatial access control

Articles to get you started

The article "Access control in LuciadFusion" has been extended to include instructions for restricting access based on scale ranges or spatial ranges. The new article "Spatial restrictions in LuciadFusion" adds more details about the definition of restrained areas and how to clip data.

Faster and more compact 3D tiles

The 3D Tiling Engine (See Figure 3), also referred to as Meshup, has been structurally improved. As a result, tiling your data using the 2023.1 release:

- Is faster
- Uses less memory
- Produces smaller output results, using fewer tiles

This not only improves processing time, but also decreases time spent downloading data in the client.

The difference is most noticeable for large datasets, as well as datasets with repeating textures.

Articles to get you started

The updated algorithms are enabled by default. If you are new to this topic, the article "Processing meshes into OGC 3D tiles" will help you get started (see Figure 3).
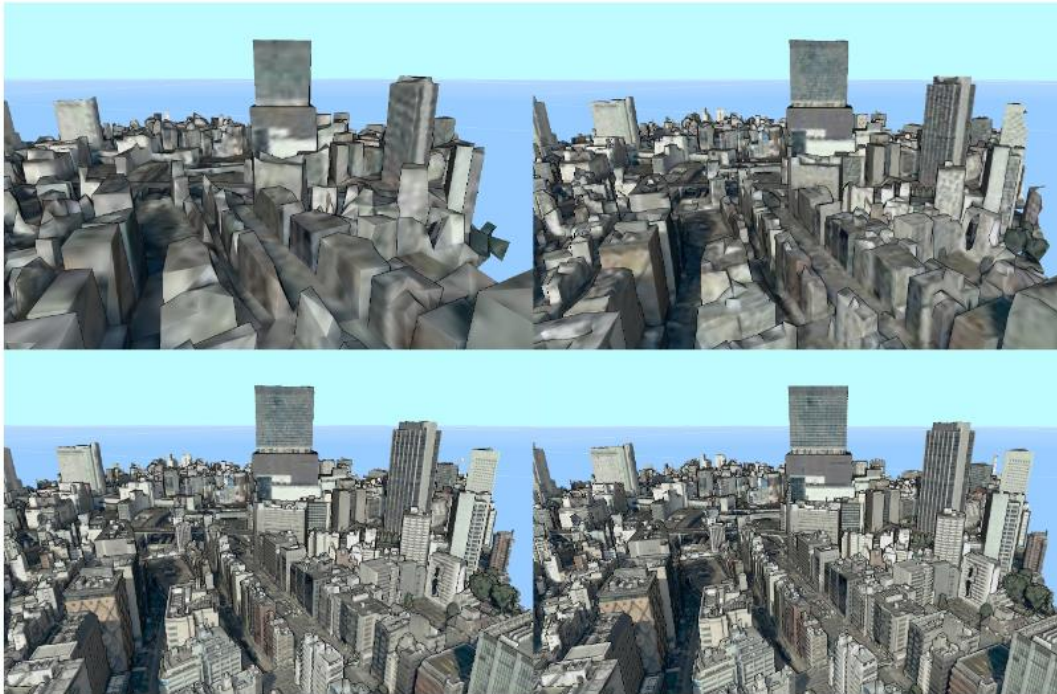
Processing meshes into OGC 3D tiles

Figure 1. Multileveling

ⓘ The information in this guide is only available if you purchased the Infrastructure Standards component.

Figure 3: The guide "Processing meshes into OGC 3D tiles" helps you get started.

Minimum supported Java version

For many years, we have fixed the minimum Java version for LuciadFusion to 8. With this release, we are giving advanced notification that the LuciadFusion 2023.x releases will be the last releases supporting Java 8. For the LuciadFusion 2024.0 release, we plan to raise the minimum version to Java 17 (both Oracle JDK and OpenJDK are and will be supported.)

Going forward we aim to support the latest Java LTS version in our latest releases. The minimum JDK/JRE requirements will never change with a minor upgrade (an upgrade from 2022.0 to 2022.1, for instance) or a patch release of LuciadFusion.

This also applies to LuciadLightspeed.

If you have any further questions or feedback on this topic, please contact the Luciad Product Management team at product.management.luciad.gsp@hexagon.com.

Articles to get you started

The documentation on "Hardware and software requirements" includes a new section that describes our policy and includes an overview of the supported Java versions for the various LuciadFusion product versions.

Java

As a Java API, LuciadFusion requires a JDK for development and a JRE for deployment.

Table 1, "Supported Java versions" gives an overview of the supported Java versions.

Luciad aims to support the latest Java LTS version in its latest releases. The minimum JDK/JRE requirements never change with a minor upgrade (an upgrade from 2022.0 to 2022.1, for instance) or a patch release of LuciadFusion.

Table 1. Supported Java versions

	OracleJDK	OpenJDK
LuciadFusion 2017 and earlier	8	not supported
LuciadFusion 2018 [1]	8, 11	11
LuciadFusion 2019	8, 11	11
LuciadFusion 2020	8, 11	11
LuciadFusion 2021 [2]	8, 11, 17	11, 17
LuciadFusion 2022	8, 11, 17	11, 17
LuciadFusion 2023	8, 11, 17	11, 17
LuciadFusion 2024 [3]	17, 21	17, 21

For users of Mac computers with Apple silicon

Even though you're using an ARM-based processor, download and install a JDK for an x86 64-bit architecture instead of an ARM-based JDK.

1. As of 2018.1
2. As of 2021.1
3. Expected in 2024, actual supported versions can still change

Figure 4: An overview of the supported Java versions (also available in the product documentation)

Security upgrades

The 2023.1 release of LuciadFusion includes several security updates. The release notes provide full details on the updated, removed and added dependencies. Please look for "security updates" in the upgrade considerations.

Product license versioning

Starting from the 2023.1 release, you only need a new product license for a major LuciadFusion product version.

More specifically, for version 2022.0 and 2022.1, you still need separate licenses. If you use your license file for LuciadFusion version 2023.0 with LuciadFusion version 2023.1, it will work. Of course, both product versions must have matching configurations, with an equivalent product name, product tier and options list.

Other improvements

- **OGC Web Coverage Service (WCS) server-side performance improvement:** Un-cached GetCoverage requests are up to 40% faster with this new release
- **DAFIF improvement:** DAFIF Path Point records are now supported. These records are used to store the path to be followed to land on the runway. In the past, a radar (ILS) was used for the final part of the approach before landing on the runway. GPS-based systems rely on a lateral and vertical path that needs to be followed, which is the information stored in Path Point records.
- **Support for Asterix Category 34:** This release adds support for radar status messages, encoded as Asterix Category 34. This category and its description have been added to the article "Overview of the ASTERIX specifications for the supported categories" in the product documentation.
- **LuciadFusion now offers better support for Unicode characters**
- **The LuciadFusion Platform Luciad Tile Service (LTS) can now be used together with custom raster formats.** An example of such data are custom elevation data sources. The article "Registering a model decoder for a custom elevation format as a service" has been added to assist you with this.
- **If the recrawl of data fails, you can now configure LuciadFusion to keep the data entry.** This is useful when data is stored on removable media.
- **LuciadFusion Studio now flexibly accepts non-georeferenced 3D data:** Unreferenced 3D data in the formats BINZ, IFC and OBJ can now be used in an OGC 3D Tiles service in LuciadFusion. (The data will be pre-processed to OGC 3D Tiles when it is published in an OGC 3D Tiles service).
- **LuciadFusion now supports AutoCAD DWG 2018 files**
- **The documentation section on OGC SLD/SE styling has been extended with a new example for styling road data.** See the article "How to style roads" and Figure 5 for an illustration.
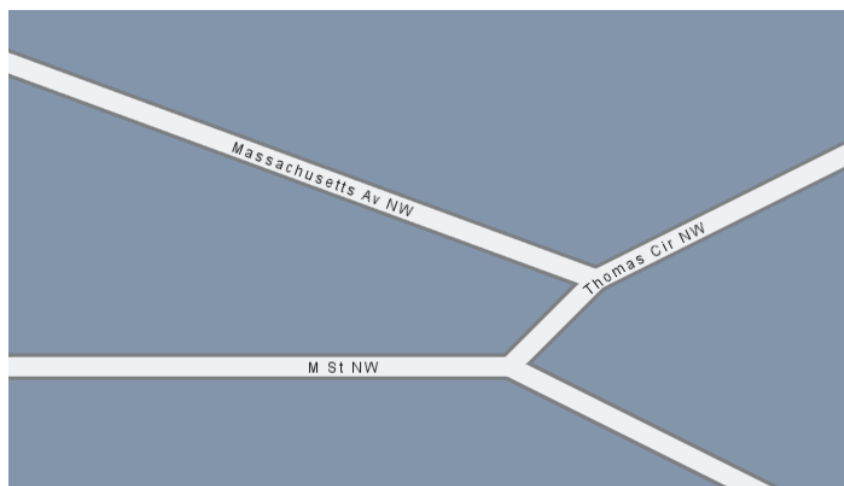

Figure 5: A Road styling with world-sized road widths and labels inside the roads

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