



HEXAGON

Beta release guide
2021.1

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LuciadFusion 2021.1

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About this release

The 2021.1 release of LuciadFusion focuses on 3D user experience via state-of-the-art 3D services. The 3D tiles processing engine is further optimized for fast streaming and added realism via material support.

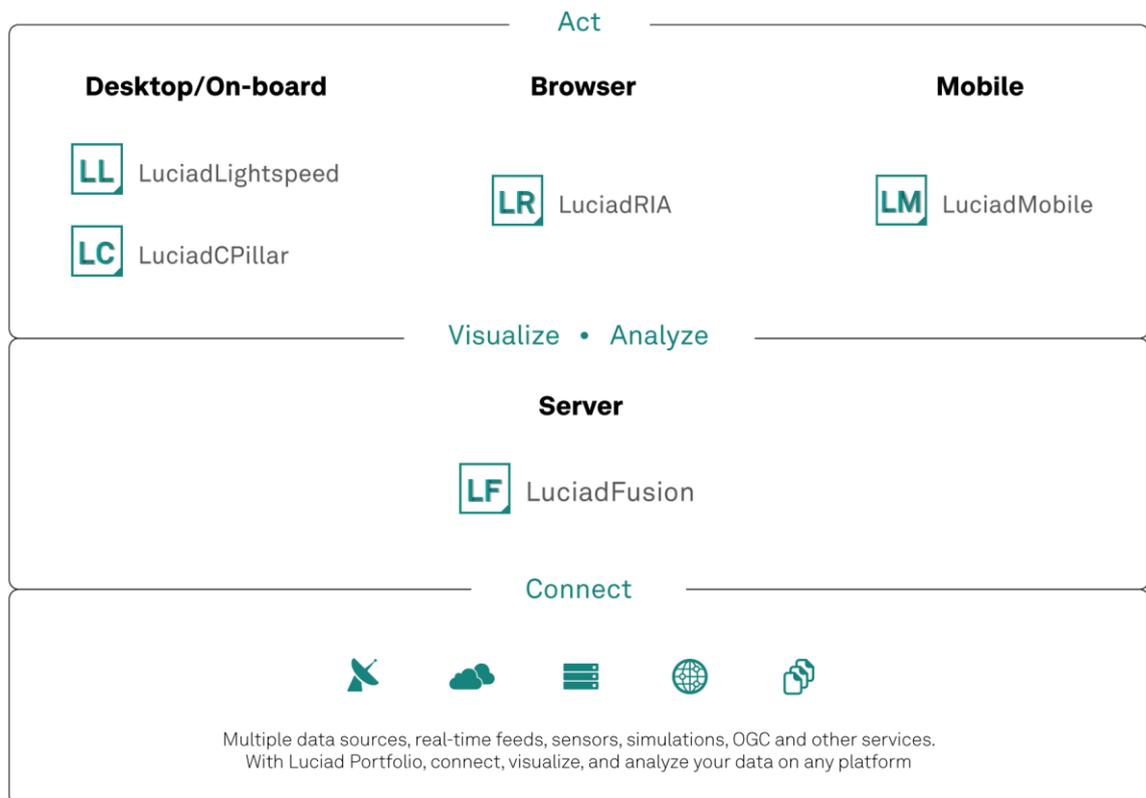


Figure 1: The Luciad Product Portfolio.

Benefits of the new features

Faster tile streaming and realistic visualization with additional 3D tiles processing capabilities

In this release, the 3D Tiles processing engine has been extended with material support tile geometry compression.

Create compact 3D tiles datasets by enabling Draco geometry compression

3D Tiles is an OGC community standard and popular exchange format for 3D information. A typical example of data that is very suitable to be exchanged in 3D tiles format is 3D city models. Despite the efficiency that comes from the tiled and multi-level nature of the data, there are still cases where the amount of data becomes a bottleneck. A solution for that is data compression. For geometry compression, Google's Draco compression library is often used when encoding 3D payload into the glTF format.

LuciadFusion's 3D tiles processing engine has now been extended with the capability to encode meshes as Draco-compressed 3D tiles. The benefit of applying this compression is that the resulting data set is significantly smaller. The conversion time is only slightly higher. It is recommended to apply Draco compression if the client application supports the decoding and visualization of such tiles. Note that LuciadRIA supports rendering of Draco-compressed 3D tiles.

The Draco compression option is integrated into LuciadFusion REST API as well as LuciadFusion Studio. In the REST API, a new *meshCompression* property has been added to the service GET method. The LuciadFusion Studio UI offers an additional *Mesh Compression* option chooser when creating a service of type *OGC3DTiles*.

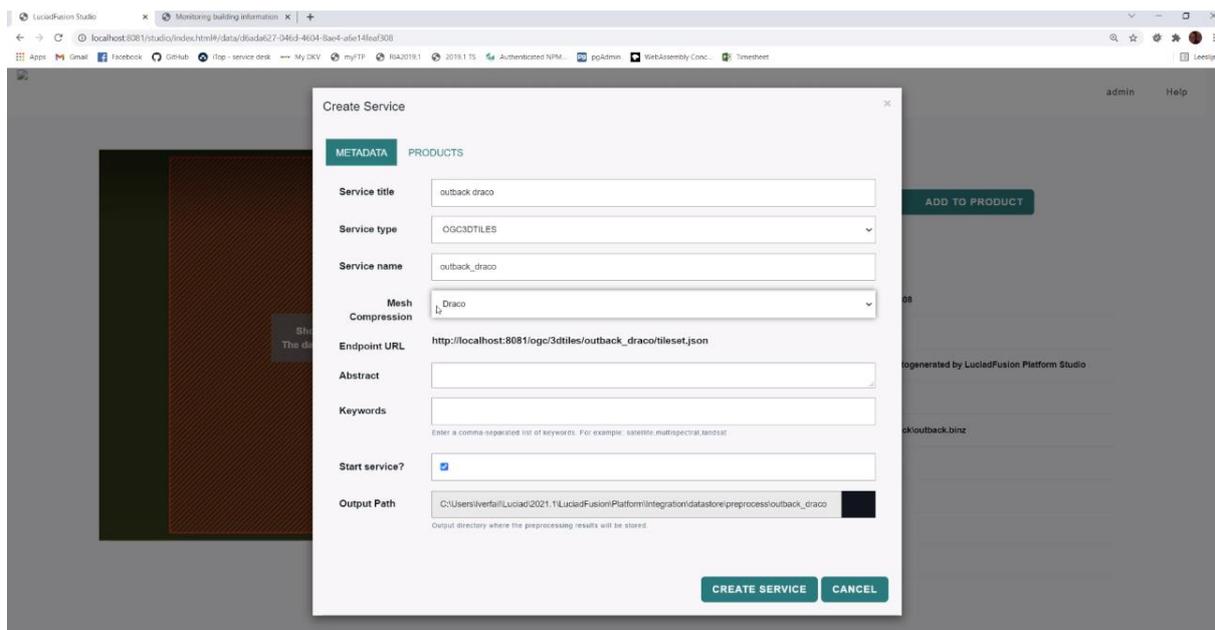


Figure 2: LuciadFusion Studio offers the possibility to enable mesh compression when creating an OGC 3D Tiles service.



Create 3D tiles data sets that preserve material properties

3D data sets become more and more detailed. Textures on data help to distinguish between objects and make clear what an object represents. But there are data sets where no textures are applied and where objects are quite similar in geometry, so the distinction is made by the material. Typical situations where that happens are factories and buildings.

If information on the material like metallic-ness and roughness is present in the 3D objects, this will now be picked up by the LuciadFusion 3D tiles processing engine and encoded within the tiles. Any compatible client can then offer quite realistic rendering of the data. Note that LuciadRIA supports rendering of 3D tiles including material properties.

Because OBJ files typically do not encode a large variety of materials, support for input data in binary GLTF has been added to the processing engine. The GLTF format can contain more material info.

Sample code to get you started

The Command Line Interface (CLI) Meshup sample now includes Draco compression and material support.

The Developer Guide “Processing meshes into OGC 3D tiles” has been extended with a “File formats and material properties” section with guidance on including material properties within the generated OGC 3D Tiles data sets.

Stream CAD and BIM data encoded as Binz efficiently and include material properties for realistic rendering

Typical data where the added value of material support is very high are factories and buildings. Therefore, the Binz tiling engine, part of the Infrastructure Standards option, has been extended with material support.

Moreover, the Binz tiling engine now also offers Draco compression. For the Binz data with its complex geometries, geometry compression results in significantly smaller 3D tiles datasets.

Sample code to get you started

The Binz decoder automatically picks up any material information.

The *samples.decoder.binz.BinzConverter* sample shows how to configure the mesh compression.

Support additional panoramic data: Cycloramas

Since version 2020.1, LuciadFusion supports 360° panoramic imagery. Panoramic imagery in the formats E57 (ASTM E57 3D file format) and Leica Pegasus (by Leica Pegasus scanners) is automatically recognized and discovered via the LuciadFusion crawling capability. A new service type, *PanoramicService* (based on OGC 3D Tiles), was added to stream 360° panoramic imagery data.

With this release, we added dedicated sample code to support GeoCycloramas¹. Even though 2020.1 already included API to add more panoramic image formats, this new sample code greatly simplifies the development task for GeoCycloramas in specific.

¹ <https://www.cyclomedia.com/en/cycloramas>

Sample code to get you started

The sample model decoder for GeoCycloramas is used by the *Panorama Viewer Sample* and the *Panorama Converter CLI* sample.

You can find more background information in the article "How to process panoramic images in a custom format"

Enrich client applications with detailed background data

Operational data is more relevant when shown in context. For that, detailed background data is essential. There are various providers of (imagery) data, and LuciadFusion already offers numerous data connectors to serve imagery via OGC-compliant WMS and WMTS services.

With this release, we enrich our set of connectors with a connector for Open Street Map2 data that is not offered via OGC services, but OpenStreetMap tile servers. This data can be consumed directly by applications that support the format. LuciadFusion can also convert these services into OGC WMS or WMTS.

Sample code to get you started

A dedicated Open Street Map decoder has been added to the LuciadFusion sample *samples.earth.decoder.osm.OpenStreetMapModelDecoder*. The article "How to load data from an OpenStreetMap tile server" provides additional guidance.

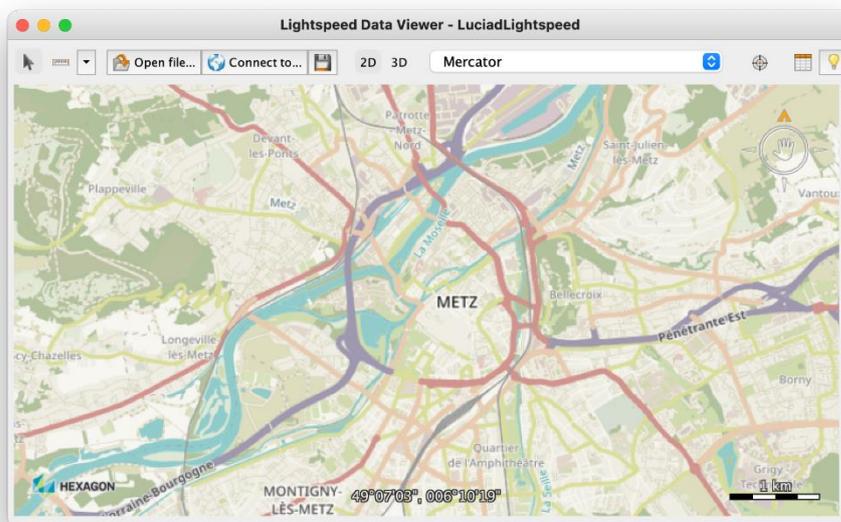


Figure 3: An illustration of the OpenStreetMap data decoder, using LuciadLightspeed for visualization.

Other improvements

- The ECWP service type for LuciadFusion is now also supported on Linux. The corresponding native libraries have been updated.

² <https://www.openstreetmap.org/>



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