Release guide

LuciadLightspeed 2021.1

20 December 2021

Contents

About this release

The 2021.1 release of LuciadLightspeed brings updated support for military grids, additional support for background data and improved tile processing capabilities.
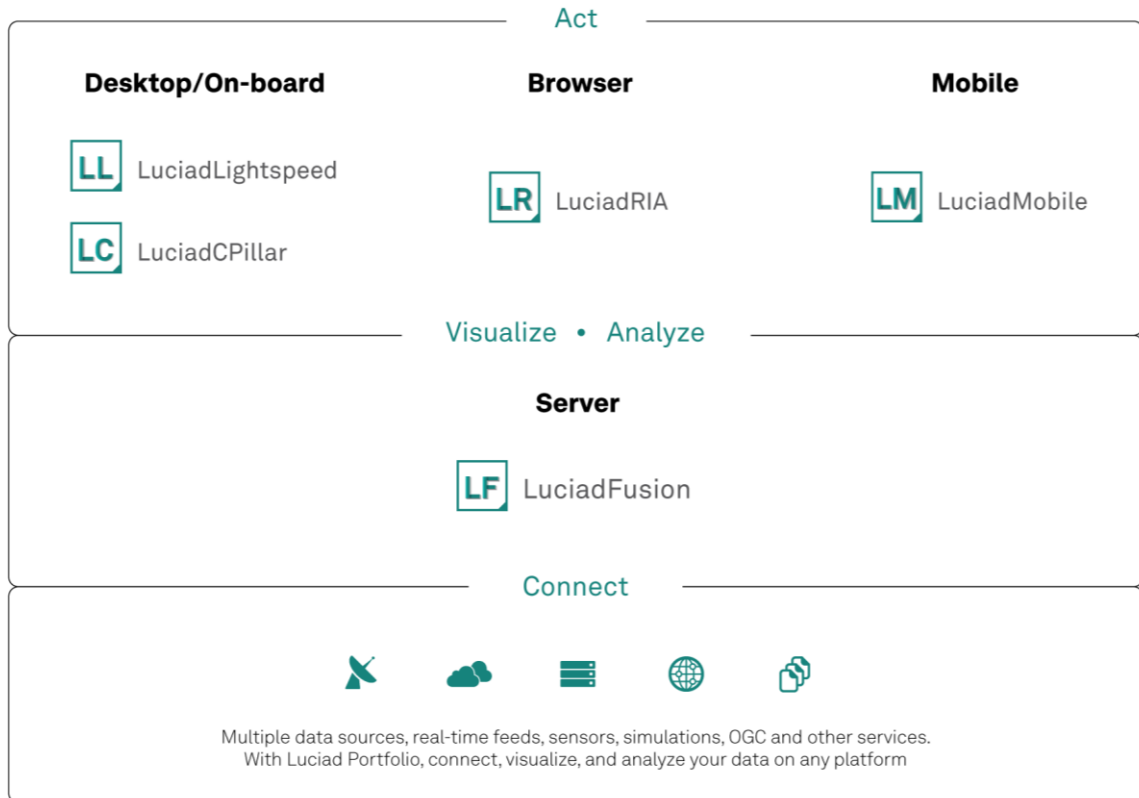

Figure 1:The Luciad Product Portfolio.

Benefits of the new features

Visualize CGRS and GARS military grids

Military grids complement global reference systems. In specific areas, coordinates can become quite precise and long. To avoid confusion, grid systems that specify areas with a combination of letters and numbers have been created. These grids can be global or area-specific for battlefield management purposes.

LuciadLightspeed already supported MGRS grids for both Lightspeed and GXY views and offered sample code for Common Grid Reference System (CGRS) and Global Area Reference System (GARS) grids.

With this release, LuciadLightspeed has been extended with API that supports both the CGRS and GARS formats and the visualization of CGRS and GARS grids on Lightspeed views. With the format API, you can convert lat/long coordinates into CGRS and GARS notation and use methods to parse grid coordinate strings into point objects.
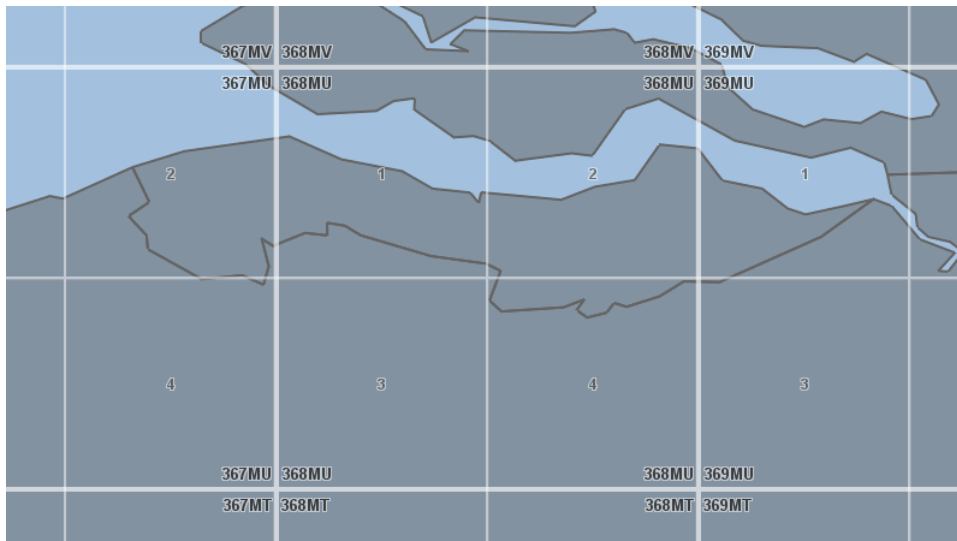

Figure 2: A GARS grid where each cell is split into 15-minute quadrants in the Lightspeed military grid sample.

Upgrade consideration

The military grid support for LuciadLightspeed has been moved to the "Defense Symbology" option. This means that you now need the Defense Symbology option for both the existing MGRS grid support and the new CGRS and GARS grid support. If you have any questions related to this change, please contact Luciad Product Management via product.management.luciad.gsp@hexagon.com.

Enrich client applications with detailed background data

Operational data becomes more relevant when you show it in context. For that, you need detailed background data. There are various providers of such imagery data, and LuciadLightspeed already offers numerous data connectors that allow you to include background imagery. In addition, the OGC WMS and WMTS connectors ensure that you can also include any background data offered through those services.

With this release, we enriched our set of connectors with a connector for OpenStreetMap[1] data that is offered through OpenStreetMap tile servers. LuciadLightspeed can consume that data directly and display it in both the the GXY view and the Lightspeed view.

Sample code to get you started

A dedicated OpenStreetMap decoder has been added to LuciadLightspeed samples:

- *samples.earth.decoder.osm.OpenStreetMapModelDecoder*
- *samples.earth.decoder.osm.OpenStreetMapLayerFactory*
- *samples.lightspeed.decoder.osm.OpenStreetMapLayerFactory.*

More information can be found in the tutorials "Visualize OpenStreetMap raster tiles data on a GXY map" and "Visualize OpenStreetMap raster tiles data on a Lightspeed map."
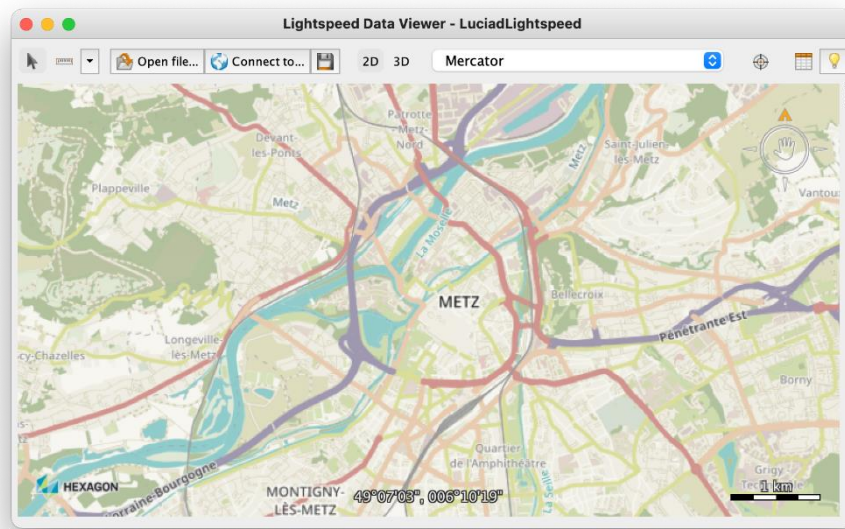

Figure 3: OpenStreetMap background data in the data viewer sample.

Stream tiles faster and visualize them realistically with more 3D tiles processing capabilities

In this release, the 3D tiles processing engine has been extended with material support and 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-leveled nature of the data, there are still cases where the amount of data becomes a bottleneck. Data compression can solve that problem. Google's Draco is a popular library for compressing geometry during the encoding of a 3D payload into the glTF format.

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[1] https://www.openstreetmap.org/

LuciadLightspeed'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, and the conversion time is only slightly longer.

Create 3D tiles data sets that preserve material properties

3D data sets have become more and more detailed and now often include texture information. Visualizing the textures of a data set helps users distinguish between objects and makes clear what each object represents. In the absence of textures, this is less clear.

There are situations where objects are quite similar in geometry. Factory and building data typically consists of geometrically similar objects, for example. Although those objects may look similar in form, we can still tell them apart through their material properties.

If 3D objects offer information on their material, such as metallic-ness and roughness, the LuciadLightspeed 3D tiles processing engine will now pick it up and encode it within the tiles. Any compatible client can then offer quite realistic rendering of the data. Note that LuciadRIA supports the rendering of 3D tiles, including material properties.

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

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.

Other improvements

- Line rounding is now supported for polylines and polygons. Lines and areas can be used to mark exact boundaries and areas. Sometimes, it is necessary to indicate an approximate area or boundary on a map. For that purpose, API has been added in LuciadLightspeed 2021.1 to create rounded polylines and polygons and visualize and edit them.
- LuciadLightspeed now offers an easy way to set up scale ranges for all layer types, especially raster layers. The tutorial "Use scale to change layer visibility" has been created to get you started.
- LuciadLightspeed runs on Java 17 in compatibility mode.
- LuciadLightspeed's 3D tiles processing engine now uses optimized caching, resulting in faster processing.

Upgrade considerations

The Lucy add-on *TLcyLspFallbackFormatAddOn*, which makes a Lucy application with a Lightspeed view fall back on an integrated GXY layer, has been deprecated and has been removed from the default add-on lists.

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