



**HEXAGON**

Release Guide  
2020.1

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# Release Guide

LuciadRIA 2020.1

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# About This Release

The 2020.1 release of LuciadRIA brings the 3D experience to another level with unique 360° panoramic imagery support. In addition, various highly requested improvements have been added, like additional styling for 3D meshes, military grid coordinate transformations, and a non-georeferenced WebGL-based view implementation.

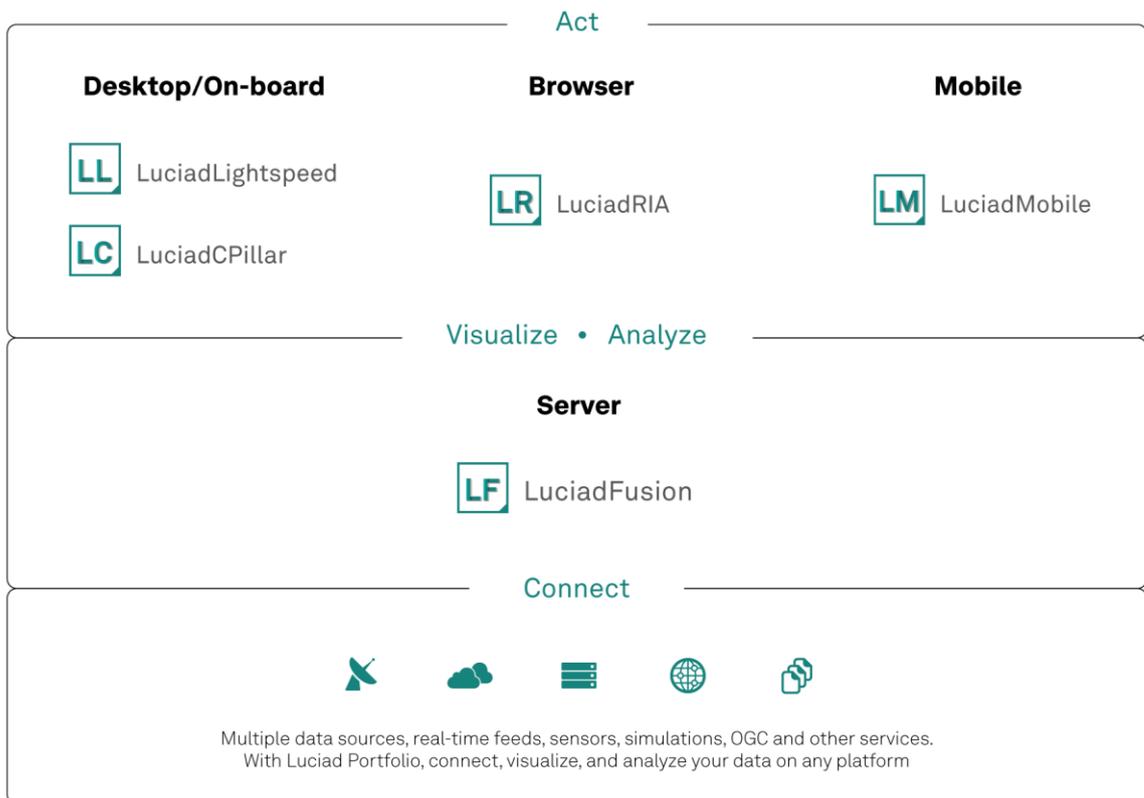


Figure 1: The Luciad Product Portfolio.

# Benefits of the New Features

## Add 360° Panoramic Imagery to Your View

### Why 360° Panoramic Imagery?

If a picture paints a thousand words and a video paints a thousand pictures, what can panoramic imagery achieve?

Looking at regular imagery is like looking at the world through a window and seeing only part of the complete picture.

Panoramic imagery immerses customers and consumers in a way no other medium can. It puts viewers in control of what they want to look at within an image. It allows them to look anywhere — up, down, left, right, or behind.

Local governments, infrastructure, and mining and utility companies benefit from panoramic imagery since it provides complete coverage and detailed information on a site. Panoramic imagery allows remote monitoring of asset conditions and saves time otherwise spent outside investigating. With panoramic imagery, organizations know instantly when and where maintenance is needed. The conditions of roads, railways, and street furniture (e.g. streetlights, billboards, bus stops, power lines) can all be detected from panoramic imagery.

### Panoramic Imagery Is Yet Another Information Layer

LuciadRIA 2020.1 brings support for 360° panoramic images. These are brought into the 3D view as another information layer with no plugin or separate view panel. You can fully integrate panoramic images with any other information present in your 3D view.

As a result, you can see buses moving through the street, get status updates of critical infrastructure items, and even combine panoramic imagery with other 3D datasets like terrain elevation, 3D models, and point clouds.

The measurement tool also works off 360° panoramic images.

### Map the Panoramic Bubble

When 360° panoramic images are brought into an empty view, they are presented as typical “information bubbles,” where you transition from one to the other as you navigate around in an area with multiple 360° captures.

But this is just the start.

If you have 3D information for the same area, like 3D terrain, meshes, or point clouds, the LuciadRIA view will automatically apply projective texturing. This means that the 360° panoramic imagery will be glued to the right locations over the other 3D data. At that moment, the 3D immersive experience is optimal. Distance-based blending of information from different 360° captures combined with the projective texturing results in smooth navigation without transition effects and realistic-looking combination of the panoramic imagery with other data layers.

### Integrated View of Multiple 360° Panoramic Imagery Sources

LuciadRIA allows bringing in multiple 360° panoramic image sources, either directly or served by LuciadFusion. Information from different capturing devices and scans can be combined; for example, data from multiple missions with a car-mounted scanner and a train-mounted scanner can be visualized together.

Powered by LuciadFusion

LuciadFusion now also supports 360° panoramic imagery. Using LuciadFusion Studio, panoramic imagery in the formats E57 (ASTM E57 3D file format) and Leica Pegasus are automatically recognized and discovered via the LuciadFusion crawling capability. After data is discovered, it can be added to data products and prepared for serving. A new service type, Panoramic Service, streams 360° panoramic imagery data. The protocol is based OGC 3D Tiles.

LuciadRIA directly consumes the panoramic imagery services set up and provided via LuciadFusion.

Available for All LuciadRIA Pro Customers

This capability is available as part of the Pro tier of LuciadRIA.

A sample has been added to illustrate the new capability. The below screenshot is taken from this sample.



Figure 2: A new sample has been added illustrating how to add and use 360° panoramic imagery.



Figure 3: Measuring off a 360° panoramic image dataset.

## Cover More Use Cases with Extra Styling Options and Expressions for 3D Meshes

### Mesh Transparency

3D meshes received as OGC 3D Tiles can now be rendered in a transparent way.

### Mesh Outline Styling

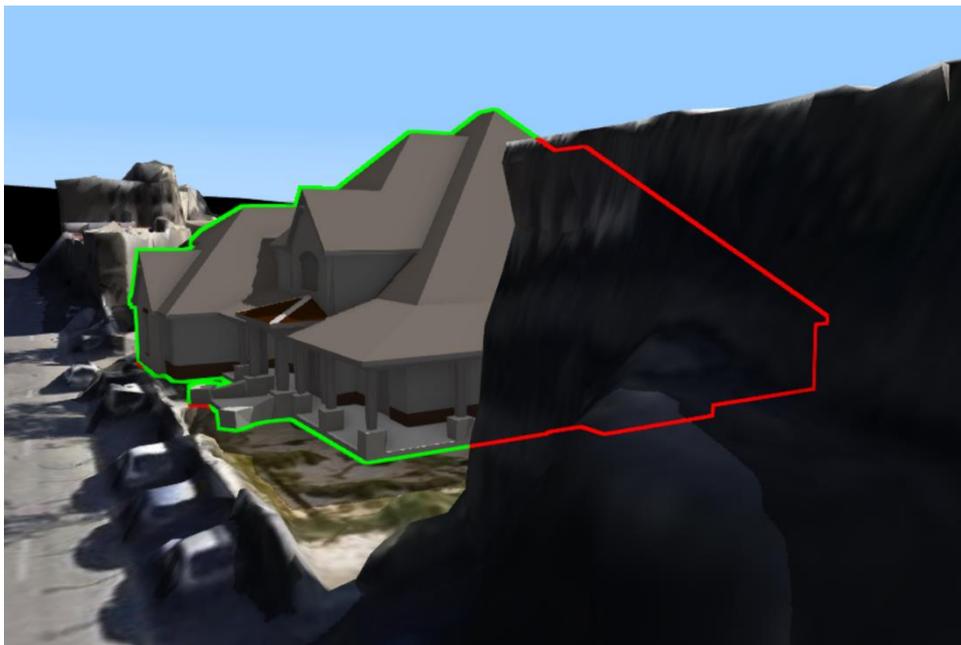
Outline styling for meshes serves as a highlighting style.

### Highlighting Hidden Parts of a Mesh

When selecting or re-locating a 3D mesh dataset, it is useful to see the part of the mesh that is hidden by other elements in the 3D view. The mesh hidden style setting visually indicates the parts of a mesh received as OGC 3D Tiles that are currently not visible because they are covered by other 3D elements in the view.



*Figure 4: Parts of the building hidden by terrain or other structures are shown as a visual aid for planning.*



*Figure 5: The outlines of 3D data elements are shown as a visual aid. Visible and hidden parts of a building are outlined differently.*

## Terrain Flattening

When selecting or re-locating a 3D mesh dataset, you may want to “cut out” part of the terrain to fit it into the new dataset. When constructing a new house, there is a need for digging down a slope, for example. For this, a “terrain flattening” setting has been added to terrain layers. In case of interaction with 3D meshes, the terrain geometry will be lowered for an area covering the footprint of the 3D mesh dataset. This capability improves upon and provides an alternative for the automatic “terrain offset” capability of 3D mesh layers. The terrain flattening is the recommended solution; the terrain offset capability will be deprecated, allowing you to choose the new capability at a convenient moment in time.



Figure 6: When planning the construction of a new building, the terrain is visually flattened as needed to fit the building within the environment.

### Atmospheric Light Scattering

Add realism to your 3D scene by adding atmospheric light. Light scattering creates a realistic impression of the time of the day. This completes the set of LuciadRIA 3D Tiles shading and shadow effects that you can use to present your data at its best.

An illustration of this effect has been added to the OGC 3D Tiles sample.

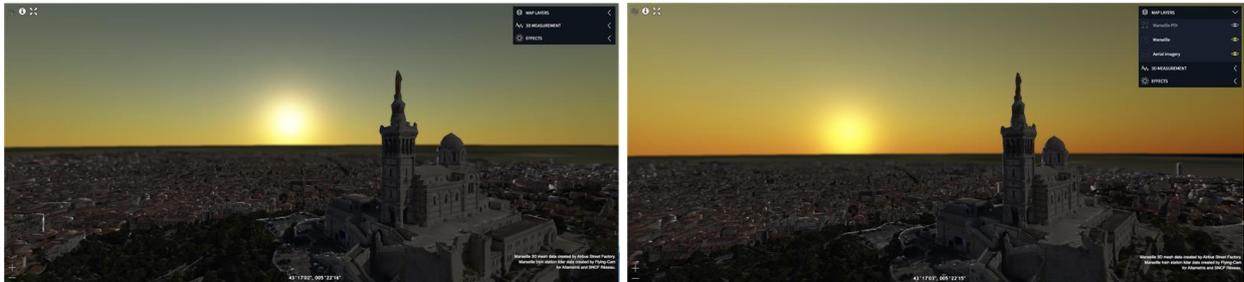


Figure 7: Apply atmospheric light scattering for added realism.

### New Supported KML Features

LuciadRIA 2020.1 comes with improved KML version 2.3 support. New features include:

- KML placemarks: Placemarks are exposed as regular LuciadRIA features (points, lines, or polygons) that expose properties as defined by the KML specification.
- KML geometries: all KML geometries are now supported, except for 3D models.
- KML network links: LuciadRIA now supports decoding and visualization of network links, including network links that can expire or must be refreshed periodically.

- KML ground overlays: these define images draped over the terrain.
- KML containers: containers add hierarchy to your KML document. LuciadRIA exposes document and folder structures in such a way that you can easily build a Feature Tree view of your data (See Figure 8).

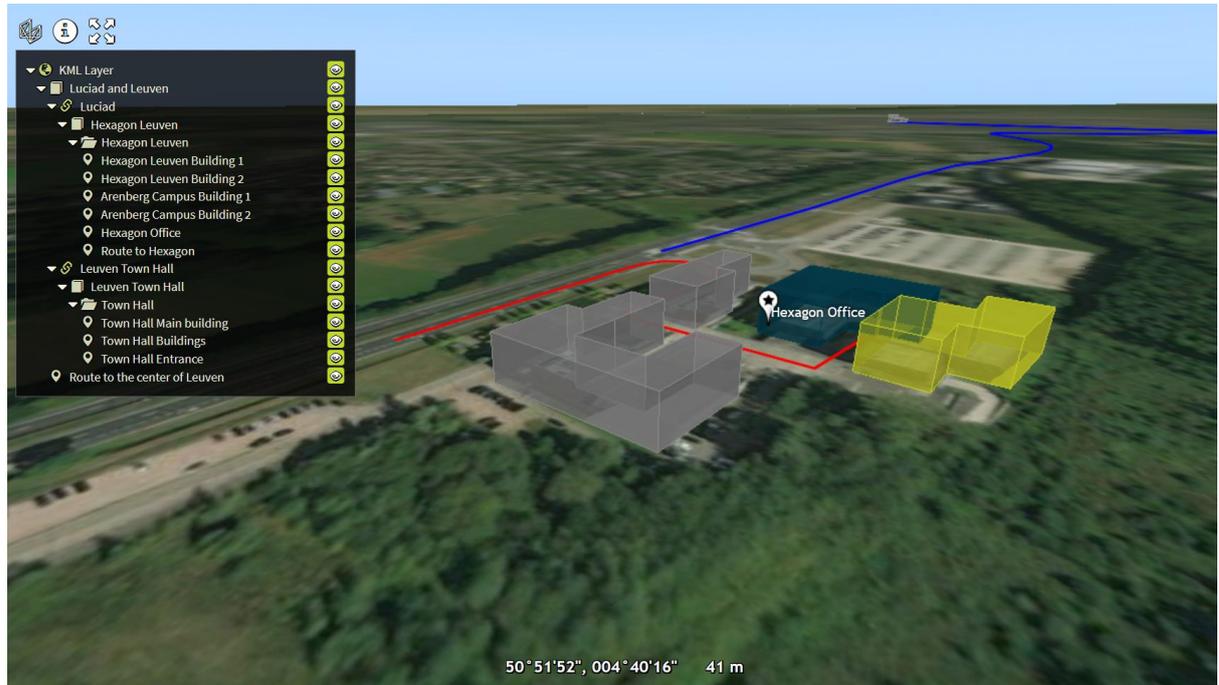


Figure 8: Build a Feature Tree for your data based on the KML document and folder structures.

The new capabilities enrich the existing `KMLModel` and `KMLLayer` classes of LuciadRIA and introduce a dedicated `KMLCodec` that can be used in combination with other Store Implementations. The final release of LuciadRIA 2020.1 will contain an extended sample illustrating these capabilities.

## Military Grid Coordinate Conversion

In the military, coordinate systems other than longitude-latitude notations are used to define locations on earth. The Military Grid Reference System (MGRS) and Global Area Reference System (GARS) are used often.

MGRS is a NATO grid system, based on the UTM/UPS coordinate reference system. An example of an MGRS coordinate, or grid reference, would be 4QFJ12345678.

GARS was developed by the National Geospatial-Intelligence Agency (NGA) for use across the United States Department of Defense. It is a coordinate system based on a longitude-latitude grid. An example of a GARS coordinate would be 006AG39.

The 2020.1 release of LuciadRIA completes coordinate handling, resulting in support for both parsing (reading) and formatting (writing) of coordinates in longitude-latitude, MGRS, and GARS systems, allowing conversions of coordinates between those systems.

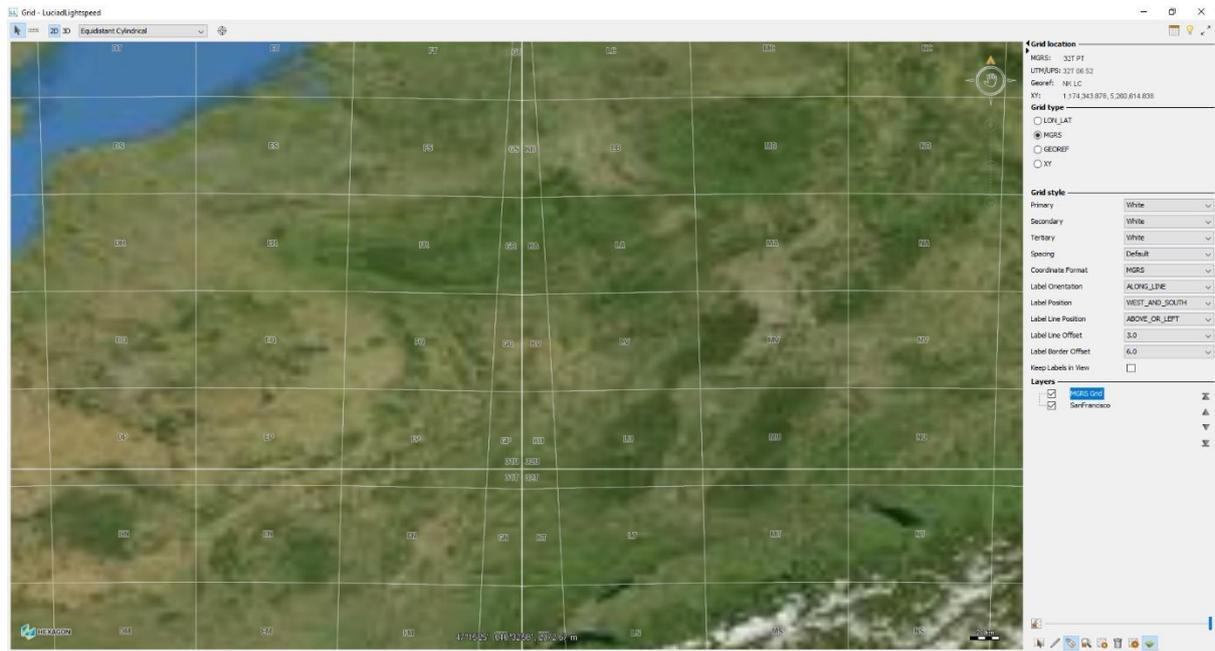


Figure 9: An illustration of a MGRS grid displayed using LuciadLightspeed.

## Cartesian Reference for the WebGL View

The WebGL view now supports cartesian references, a feature previously exclusively available on the Canvas view. Cartesian references can be set to the WebGL view when visualizing any non-georeferenced information like timeseries or other plots or non-georeferenced images. Annotations can be made to the view in this configuration. Note that that the WebGL view in combination with this reference benefits from all styling options, including GPU-powered expression based styling like density plots (See Figure 10 for an illustration).

Navigation also works as it would on a regular georeferenced map. You can pan, zoom, and rotate the map to see your image from different angles and zoom-levels.

The sample “Image Viewer” has been updated to support the WebGL view.

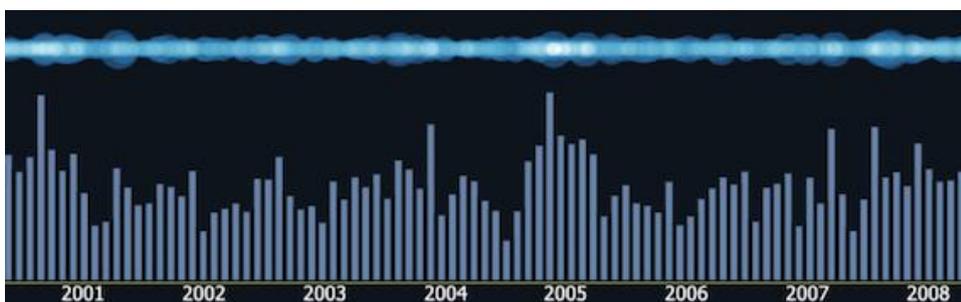


Figure 10: LuciadRIA now also offers a hardware-accelerated non-georeferenced view for plots and graphs.

## Other Improvements

- Build targets compiled for performance.

The LuciadRIA libraries have changed. We now compile them for optimal performance. The benefit is a general performance increase in LuciadRIA (impact may vary depending on your

use case). Note that for deploying LuciadRIA on Internet Explorer, you may need additional integration work. Please contact our product support at [support.luciad.gsp@hexagon.com](mailto:support.luciad.gsp@hexagon.com) for more information.

- LuciadRIA 2020.1 supports 3D icons in GLTF 2.0 format.



*Figure 11: 3D icon support in LuciadRIA is illustrated in a dedicated sample.*

- The LuciadFusion and LuciadLightspeed 3D Tiles Processing Engine has been enhanced. For 3D building data encoded in OBJ (one OBJ file per building) and for data generated by IFCCConvert, building IDs are automatically added to the resulting 3D tiles dataset and service. If you are using such processed tiles as a data source for your LuciadRIA application, you will notice that you have these IDs available for selection and use in expressions.
- Track display performance improvements.

Resulting from our continued focus on performance, the LuciadRIA core rendering capability has again been improved to offer faster track display. Depending on the specific scenario and setup, your track display may be up to 25% faster.



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