Release guide

LuciadRIA 2023.1

14 December 2023

Contents

About this release

The 2023.1 release of LuciadRIA adds new options for data viewing: an orthographic view for 3D data or a projected map wrapped around the date line when viewing your data in 2D. Moreover, BIM data usability has been greatly enhanced, and additional styling options are available. In addition, LuciadRIA now also supports Google's Photorealistic 3D Tiles. As always, this list is completed with a set of more specific enhancements, based on customer requests.
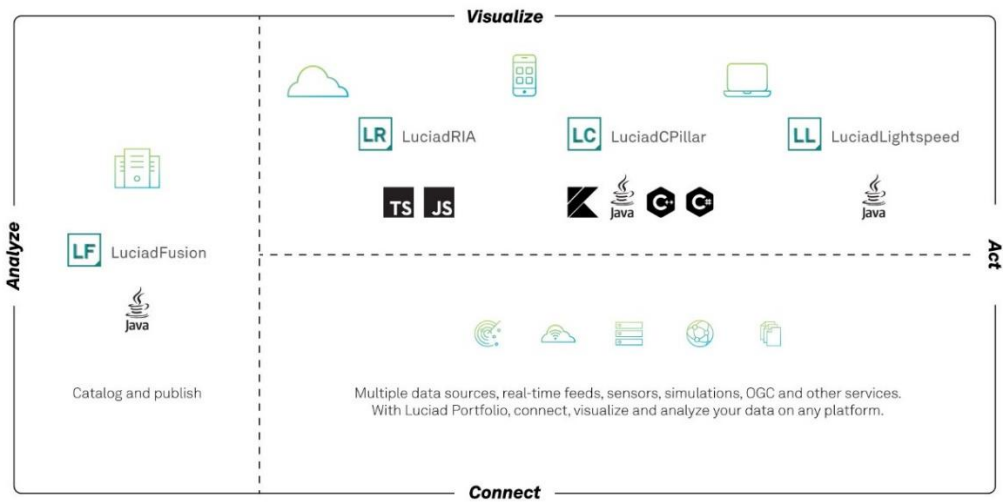

*Figure 1: The Luciad portfolio*

Benefits of new features

Inspect 3D data independent of its geo-location

While the strength of Luciad products lies in bringing together geo-referenced data, there are certain use cases where data visualization is needed in a "cartesian" context. Because the requirements are like the capabilities of LuciadRIA views, we also support these use cases.

In 2D, LuciadRIA already offered a non-georeferenced view for the creation of scatter plots and, notably, vertical intersections of 3D structures. The 2023.1 release adds a specific 3D view configuration for inspecting 3D data outside of its locational context. This view supports both a perspective and an orthographic camera. These camera types are illustrated in Figure 3 and Figure 4, respectively.
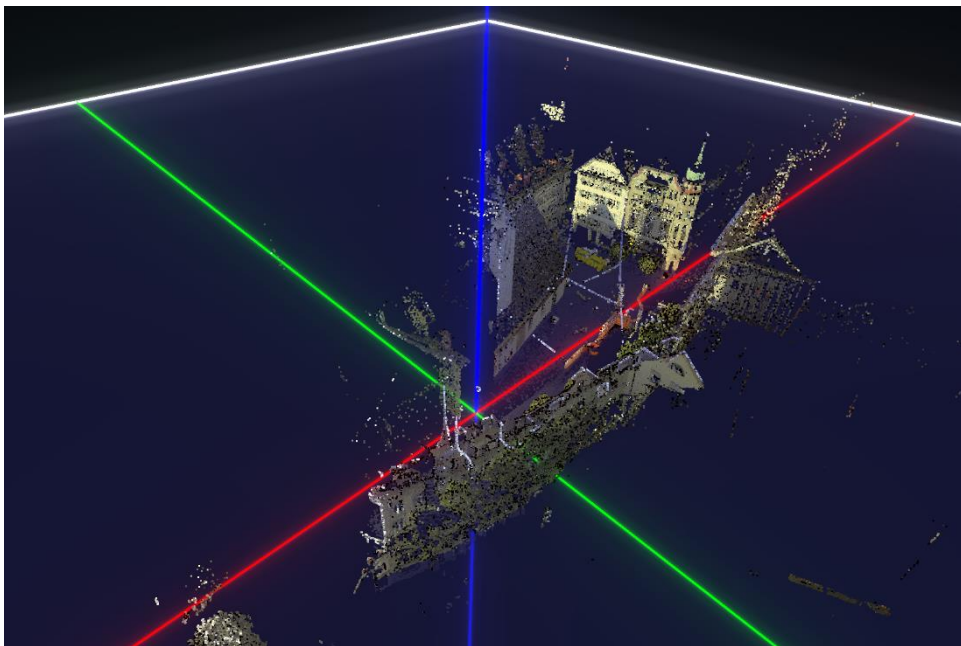
Figure 2: A non-georeferenced point cloud visualized in its local, cartesian 3D reference
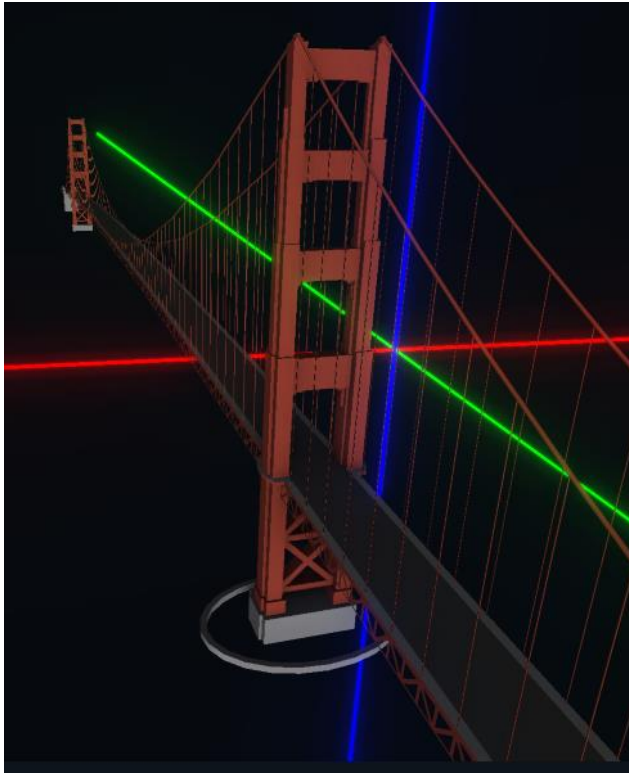
Figure 3: A 3D cartesian view with a perspective camera. Notice how the tower in the background appears much smaller than the one in the foreground.
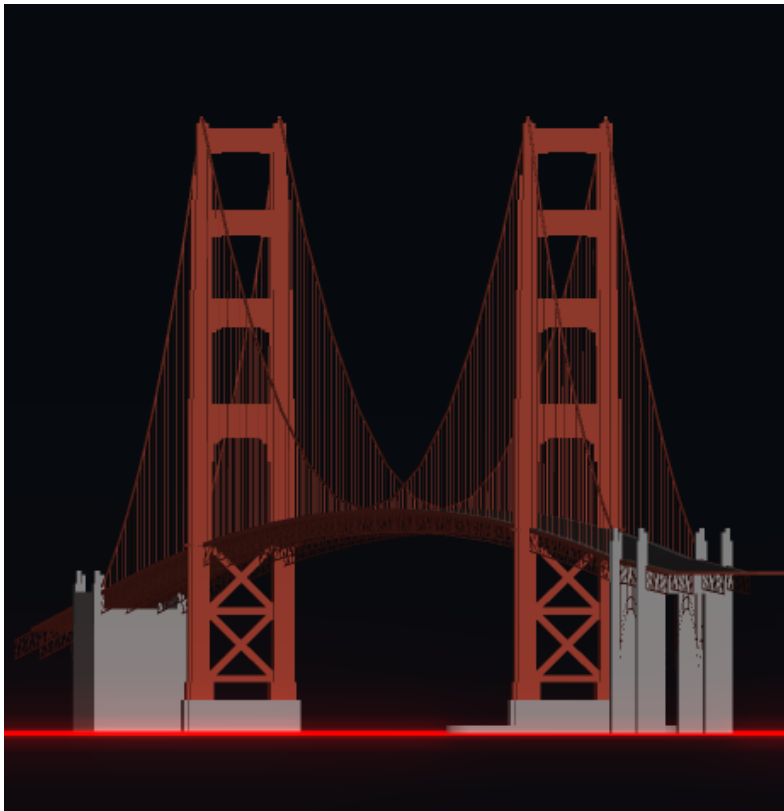
Figure 4: The same scene as Figure 3, but with an orthographic camera. Notice how both towers are the same size, regardless of their distance from the camera. This makes it easier to compare relative sizes and angles.

Sample code/documentation to get you started
The 3D icons sample now has a small asset viewer. It opens when you select a 3D icon on the map. The asset viewer allows you to inspect the 3D icon in its local coordinate system.

The article "Visualizing data in a non-geospatial view" has been updated to cover the visualization of 3D data without a georeference in 3D Cartesian maps with orthographic camera support.

Support for Google 3D Tiles
Earlier this summer, Google announced a new API for Photorealistic 3D Tiles[1], a globe-covering mesh textured with high-resolution imagery. The existing LuciadRIA support for 3D tiles data has been extended to support both OGC 3D tiles that use GLB/glTF as payload and the new Google 3D Tiles API. This new capability takes care of the attribution and display of copyright information.

When bringing this data into a LuciadRIA view, you can benefit from all other LuciadRIA capabilities. For example, you can drape vector data over the Google 3D tiles, insert new objects, apply terrain displacement and more.

Sample code/documentation to get you started
You can try out Google 3D Tiles support in the Data Formats and in the Geolocate OGC 3D tiles samples. All you need to get started is a Google API key.

Figure 5: A view of the Las Vegas Strip in Google Photorealistic 3D Tiles

The "Visualizing Google 3D Tiles" article shows you how to load and visualize Google 3D tiles on a LuciadRIA map with the appropriate attributions.

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[1] https://developers.google.com/maps/documentation/tile/3d-tiles

Infinitely pan around the world

Typically, 2D map references display every location on the Earth only once. In some specific use cases, when data crosses the date line, it would be more convenient to inspect the data by wrapping the projection around the date line, resulting in an "infinite panning around the world" effect. LuciadRIA now supports this for 2D WebGLMap instances with a cylindrical projection, for instance Mercator projection or Equidistant cylindrical projection.

Sample code/documentation to get you started
The new article "Configuring a map to wrap around the date line" guides you in this task.

Figure 6: Inspect weather data crossing the date line by wrapping the projection around the date line.
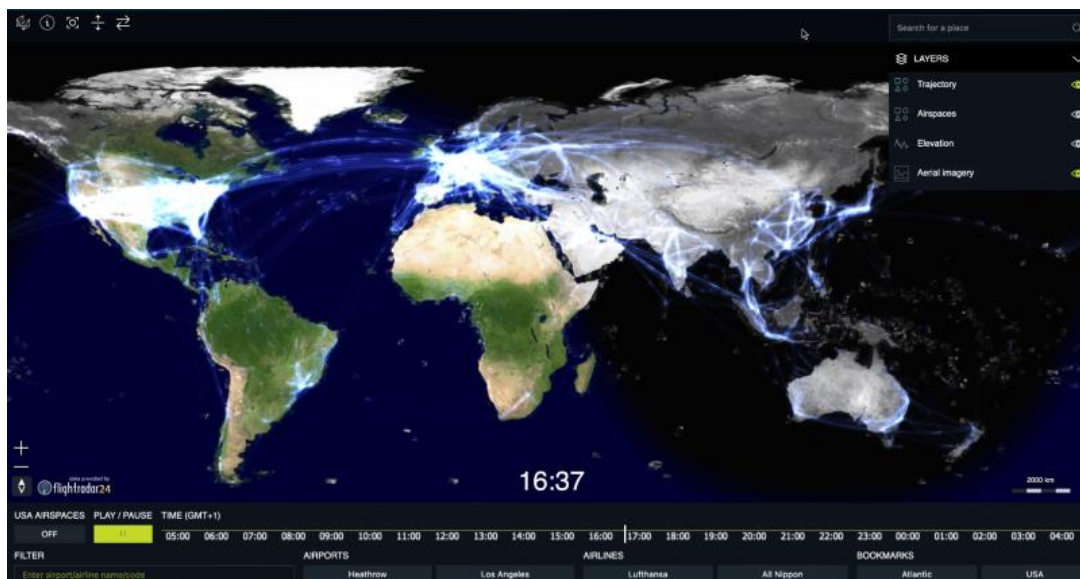

Figure 7: The wrapped view supports all data types, including real-time data.

Improved usability for BIM and CAD datasets

LuciadRIA already offers support for navigation, selection of elements within 3D tiles datasets and various styling options for selected data. However, in certain use cases, like selecting data within complex CAD-like structures, element selection may not present the best user experience.

The 2023.1 release of LuciadRIA offers additional styling options for your selected elements. It reuses existing styling concepts in a new context to introduce occlusion and outline styles for selection. Behind the scenes occlusion styles no longer need a separate layer, which also greatly improves their performance. The need to manage selection yourself (by adding a selected property) has also been removed. Selection is now effectively managed inside the Tileset3DLayer.

These specific selection styles allow you to make sure that your selection does not get occluded by other parts of the geometry. They also remove the need to add transparency to non-selected parts.

The IFC sample shows a sublime new selection style that allows you to always see the selected part in a large dataset, without the loss of depth perception and without the need for transparency. It shows visible selected parts in a selection color of choice, while using an outline for the occluded selected parts in the same color.

The same sample has a new navigation controller, the so-called asset navigation controller. It allows for more user-friendly navigation, reusing well-known concepts of key navigation in other applications. The main benefits are navigating through walls, roofs and floors using keys. When using the mouse, you get visual feedback of the anchor point and type of navigation (panning, rotating or zooming) you are performing.

Sample code/documentation to get you started

The article "Highlighting mesh and point cloud data" includes a new section about using occlusion styling and outline styling for selecting elements within a 3D mesh. It shows you how to create the selection style used in the IFC sample. The screenshot below illustrates this, with the selection of plumbing in the sample. The camera is inside one of the bathrooms, which makes the toilet and sink visible. Their piping disappears in the floors and walls but is still visualized with the selected occluded outline style.
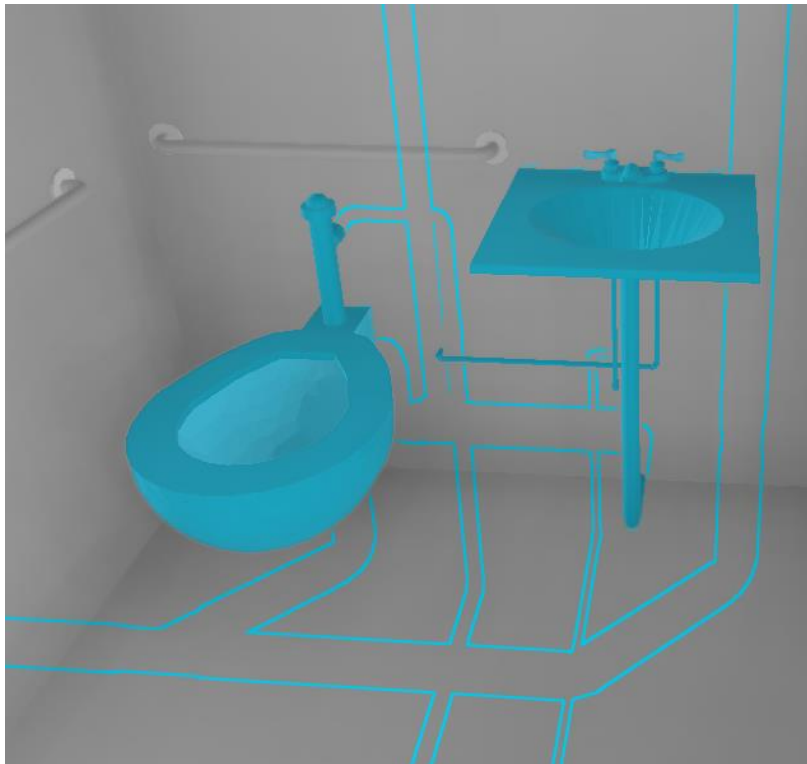
Figure 8: The new selection style is illustrated in the IFC sample.

Additional styling capabilities

This release of LuciadRIA adds additional styling capabilities: fog on 3D maps and raster effects.

Fog can now be added to your map when it is configured for 3D. You can configure the color of the fog, the density or thickness of the fog and if you want, the color of the sunlight seen through the fog. In addition, you can subtly make the fog less dense higher above the earth, simulating a dense fog that is limited to lower altitudes.

The user experience can be further tailored by defining minimum and maximum camera height or viewing distance at which the fog is enabled or disabled.

The second set of new styling options applies to raster data. Imagery data is typically brought into the operational picture as background or reference data, not to be altered by users. However, depending on the other information in the view, the combined picture can be enhanced by slightly adapting the rendering of the image. With a different contrast or opacity, business data overlaid on the image may be clearer for the human observer. LuciadRIA now offers a RasterStyle object, grouping a set of styling settings allowing you to alter contrast, brightness and opacity and set a modulation color.

Sample code/documentation to get you started
The article "Configuring WebGL Map effects" has been extended with a section about the fog effect. The article "Visualizing and styling raster data" contains additional information on the new raster style settings.

Figure 9:A 3D scene without (left) and with (right) fog enabled

Product license versioning

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

More specifically, for version 2022.0 and 2022.1, you still need separate licenses. If you use your license file for LuciadRIA version 2023.0 with LuciadRIA 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

- **LuciadRIA TypeDoc improvements:** The LuciadRIA TypeDoc has been improved for better developer experience. This includes a series of small fixes and improvements related to external links like Promise/HTMLImageElement, the navigation menu and a dark mode.
- **The LuciadRIA sample code got slightly reorganized for better reuse of components.** The 3D samples like the OGC 3D tiles sample have additional controllers: a cross-section controller and slicing box controllers.
- **LuciadRIA now supports KMZ data with bundled image resources.** This supports use cases like ground/screen overlays, placemark icons and images in balloons.
- **Support for HSPC pack files**: HSPC Pack files are now supported on HSPCTilesModel and TileSet3DLayer

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