Release guide

LuciadRIA 2024.1

14 January 2025

Contents

About this release

LuciadRIA 2024.1 adds support for draping video footage on the map, offers a convenient projection switch and adds support for high-resolution screens.

This release also marks the end of the 2D non-WebGL map introduced in 2012. Moving forward, we will focus on WebGLMap.

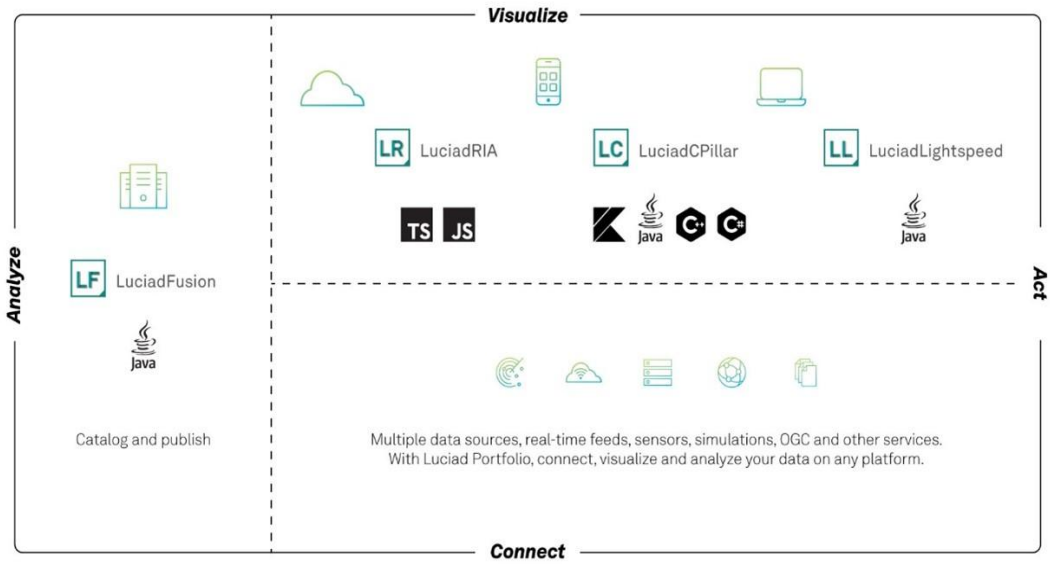

Figure 1 The Luciad portfolio

2D non-WebGL map end of life announcement

LuciadRIA was released in 2012 with a 2D map based on an HTML5 Canvas. In 2016, the WebGL-powered hybrid 2D/3D map was introduced, leveraging WebGL support in most browsers. Moving forward, we will focus solely on WebGLMap. WebGLMap offers all the capabilities of a non-WebGL map and brings much more to the table.

As previously announced, the 2025.0 release will mark the end of the non-WebGL Canvas Map, in favor of the hardware-accelerated WebGL Map only. This means that the 2024.1 release (and possible future 2024.x minor upgrades) will be the last to contain the 2D Canvas Map.

The 2024 version of LuciadRIA will be actively maintained until the release of version 2027. Contact the Luciad Product Management team at product.management.luciad.gsp@hexagon.com if you plan to extend your maintenance on LuciadRIA 2024 beyond 2027 so we are aware of your project.

You can find more information here.

Benefits of new features

Video draping

Video data is an important contributor to situational awareness. Using the previous versions of LuciadRIA, it was already possible to show video in a separate component in the browser, via custom coding. For georeferenced videos, there is added value in enhancing static terrain or background data by adding the video footage to the map as illustrated in Figure 2. The draping of video footage on other data or terrain was already available in our desktop product LuciadLightspeed. It has now made its way into LuciadRIA.

Figure 2 An illustration of video footage of our Leuven office area visualized in LuciadRIA

Note that this capability is part of the "Panoramic Imagery" option of LuciadRIA, which is included in the Pro tier of the product.

Sample code/documentation to get you started

To guide you in adding video to your LuciadRIA map view, the article “How to visualize panoramic video footage” was added to documentation. The new sample "Video panorama" illustrates this in more detail; see Figure 3.

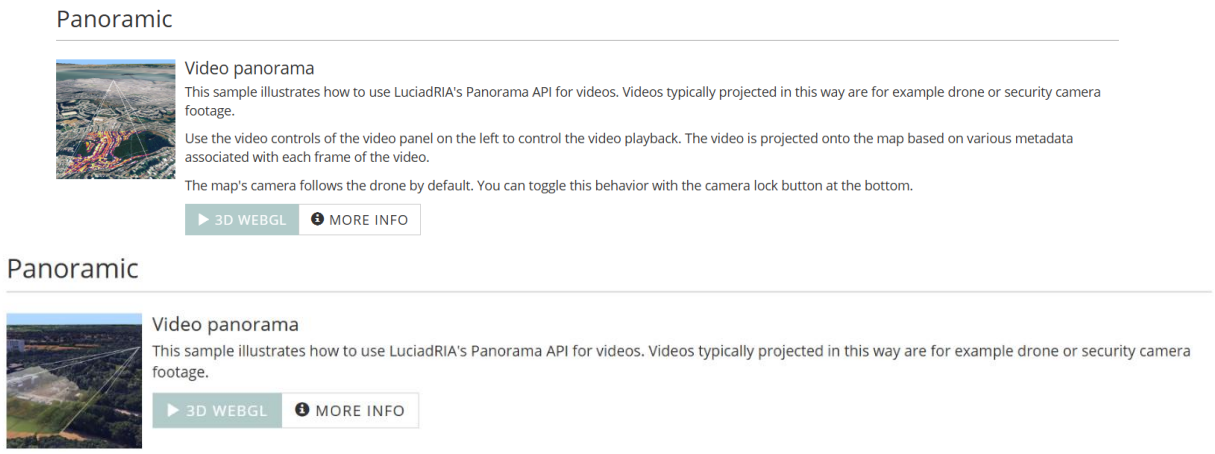

Figure 3 The new Video panorama sample illustrates the integration of video footage in the LuciadRIA view.

Improved WebGL view

The 2024.1 release brings a few important improvements to the LuciadRIA WebGL view.

Projection switch

This release includes a convenience API to change the map reference at runtime. This means the map state, including all previously added data, will be kept, with the only change being the visual representation reference. Using this API, you can let the user of your application switch between 2D and 3D, for example, with a simple click of a button.

The implementation is very straightforward. You can now set the reference of WebGLMap after the map has been created, instead of only at construction time.

During a map reference switch, parts of the map are destroyed and recreated, which has the following effects:

The visible layers can unload and quickly reload

After the reference switch, *map.controller* is set to null and *map.defaultController* is set to a new *DefaultController*

Map creation options that are not supported in the new reference will be lost; for example, if you switch a map with the *wrapAroundWorld:true* setting to a 3D reference and then back to a 2D reference, *wrapAroundWorld* will be *false*

The camera state is also saved before switching and restored after switching, if possible.

Note that you cannot switch from or to a non-geospatial projection.

Sample code/documentation to get you started

To illustrate the map projection switch, many of the LuciadRIA samples now include a 2D/3D switch in the graphical user interface (GUI); see Figure 4.

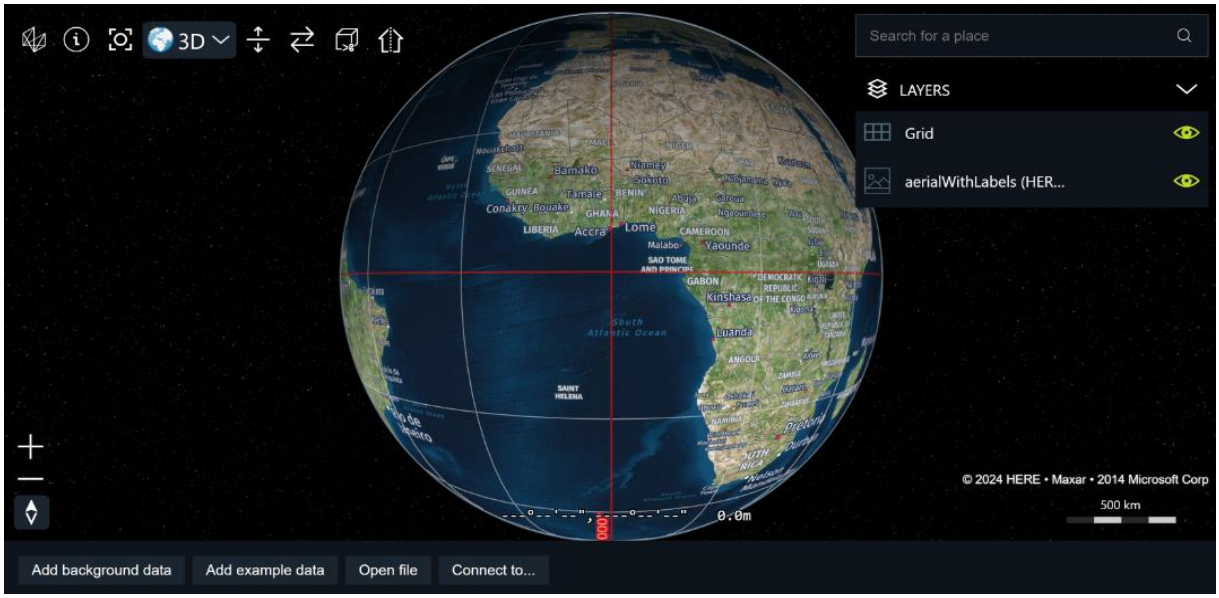

Figure 4 Many of the samples feature a "2D/3D switch" in the GUI, illustrating the map projection switch in LuciadRIA.

HiDPI support

High-resolution screens, such as WQHD or 4K screens, offer a higher pixel density than regular screens. This pixel density can now be considered to achieve sharper results on your data. This effect is called display scaling. The effect of display scaling is illustrated in Figure 5 and Figure 6.

Figure 5 A LuciadRIA-based application shown on a high-resolution screen, without application of display scaling

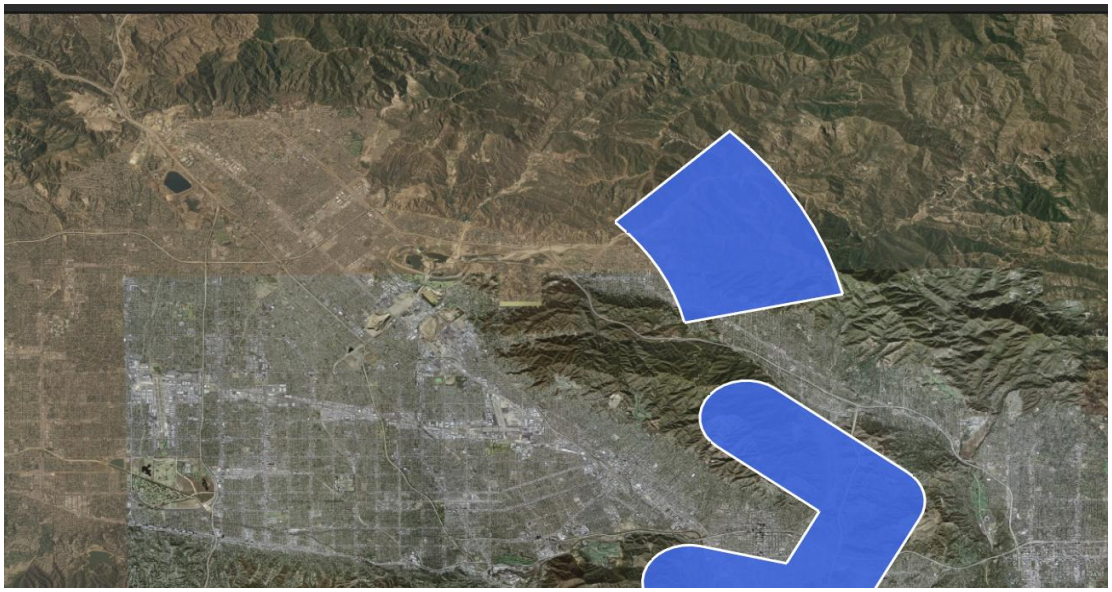

Figure 6 A LuciadRIA-based application shown on a high-resolution screen, with application of display scaling

Sample code/documentation to get you started

To guide you while enabling display scaling on high-resolution screens, the article "Display scaling (HiDPI) in LuciadRIA" has been added to the documentation.

3D Tiles 1.1 completeness

LuciadRIA 2024.1 continues the 2024.0 initiative to upgrade our 3D Tiles decoder to OGC 3D Tiles 1.1. Version 2024.1 brings support to instancing for OGC 3D Tiles. Moreover, it supports PNTS/GLB/glTF payloads for the visualization of point clouds. A PNTS payload can have Draco compression.

Finally, LuciadRIA now also supports metadata according to the `EXT_structural_metadata` extension.

The complete list of supported features and remaining limitations is documented with the class `OGC3DTilesModel`.

Sample code/documentation to get you started

The section "Data Formats: OGC 3D Tiles" has been brought up to date with the latest improvements and extensions.

New tools in LuciadRIA Toolbox

The LuciadRIA Toolbox was introduced in the 2023.1 release, and we keep adding new components to it that are usable out of the box. This release will not be any different as we introduce the Tours tool.

Tours

The Tours tool allows you to create video footage of your scene. You can use this tool to create a path, which the virtual camera will follow while recording.

The tool consists mostly of the following classes:

- TourPathSupport: To create and edit tour paths
- TourPlayerSupport: To play tours
- TourRecorderSupport: To record tours

Sample code/documentation to get you started

The article "Use the LuciadRIA Toolbox" provides an overview of the available tools in the LuciadRIA Toolbox and includes links to the relevant classes to get you started.

Other improvements

Restful WMTS
LuciadRIA now supports Restful WMTS services, on top of the previously supported Key-Value-Pair approach. This includes all previously supported operations. *WMTSCapabilities* can now detect if the two encoding methods are supported. You can then select the one you want.

OGC SLD improvements
We added support for the vendor option "inclusion." To demonstrate its usage, a "Legend" tool was added to the LuciadRIA Toolbox. You can also find reference to this new tool in the article "Use the LuciadRIA Toolbox."

BIM sample improvements
We have updated the BIM sample:

- It was renamed into "BIM Viewer"
- We added predefined datasets coming from BINZ, Revit, Navisworks and IFC
- The sample can now be used to load custom, converted datasets; those can also be unreferenced
- We added the ability to load the dataset's geometry only, leaving out the feature metadata

Bézier curve geometry
We added support in our *ShapeFactory* for Bézier curves. Bézier curves consist of curves defined by a set of control points. Those curves can either be cubic or quadratic. Both types are now supported. The Create and Edit sample allows you to create and edit these shapes interactively. See Figure 7.

Create and Edit

The Create and Edit sample illustrates how to create vector shapes on the map or modify existing ones via (freehand) map drawing. LuciadRIA supports points, polylines, polygons, circles, ellipses, circular arcs, elliptical arcs, arc bands, geo buffers and extruded shapes.

There are 2 themes in this sample:

- **The "Default" theme**: This theme demonstrates the out-of-the-box editing capabilities of LuciadRIA.
- **The "Custom" theme**: This theme demonstrates how you can customize editing and creation in LuciadRIA.

Functionality in both themes

Select an object to start editing it.

When editing the shape, you can drag the entire shape or move individual vertices by moving the handles. To insert vertices in a polyline, polygon or geo buffer, select the small handle in the middle of the line segment. To delete vertices in a polyline, polygon or geo buffer, press down and hold one editing handles of the shape's points. You can also hold down the Ctrl button, and click on a point's handle to delete it. To finish the editing, click on the map outside the shape.

When editing an extruded shape, a panel opens that shows the shape's minimum and maximum height. This panel is synchronized with edits you do on the map.

You can undo and redo shape edits by pressing the undo/redo buttons at the bottom of the page. Alternatively, you can press CTRL+Z and CTRL+Y to undo and redo shape edits. On Mac machines, you can also use CMD+Z to undo and CMD+SHIFT+Z to redo.

Default theme

Click one of the buttons in the toolbar at the bottom to start creating a new shape. You can create and edit the following shapes: a point, polyline, polygon, circle by 3 points, circle by center point, ellipse, circular arc by 3 points, circular arc by center point, circular arc by bulge, elliptical arc, arc band, geo buffer, as well as quadratic and cubic Bézier curves. To finish creating the object, click on the map outside the shape. For polylines, polygons, and geo buffers, double-click to finish.

Figure 7 The Create and Edit sample now also includes support for Bézier curves.

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