



BROWSER

LuciadRIA

V2018.0

DATA SHEET



HEXAGON
GEOSPATIAL

LUCIAD

LuciadRIA is the answer to today's demands for powerful, lightweight applications in the browser. Driven by today's most advanced web technologies, LuciadRIA uses WebGL, HTML 5 and Javascript to deliver desktop-like performance to your web applications.

Developers can create interactive C2 and location intelligence applications thanks to the clean design, modular structure and powerful visual analytics capabilities that can be plugged in. Using its configurable API, you can add support for custom data feeds, add your own symbology or match user interaction and look and feel to your company's needs and style. LuciadRIA offers a single visualization API for 2D and 3D, with or without hardware acceleration.

With Luciad's Browser solution, you can expect high performance and retained accuracy, with desktop-like visualization of imagery, satellite pictures, vector-based data and dynamic content, such as tracks. Connect to your data via (OGC) web services or drag and drop common file formats. Data can be explored in a 2D or 3D map view or vertical intersection view. Combine with a timeline view for 4D analysis.

WHO NEEDS LUCIAD'S BROWSER SOLUTION?

These are just a few examples of why users turn to LuciadRIA for their geospatial data challenges:

- You need to build a mission-critical web-based solution that handles geospatial data with the accuracy required for mission planning
- You want to build a standards-based, interoperable web-based solution that handles 2D and 3D
- You work with defense symbology, including MS2525 and APP6, in a browser application
- You need to visually analyze millions of events or locations, straight from the browser
- You are faced with real-time dynamic data, such as flights, vessels or people with tens of thousands of moving assets
- You need the interactivity of a desktop solution, right in the browser without plugins, that provides client-side analytics
- You want to build a high performance web solution that exploits the graphics hardware as optimally as possible for 2D and 3D, while also working in software mode
- You deal with data and maps in different projections (including 3D, but also 2D polar projections) and do not want to go through the process of extract-transform-load (ETL)

LUCIADRIA BROWSER APPLICATION

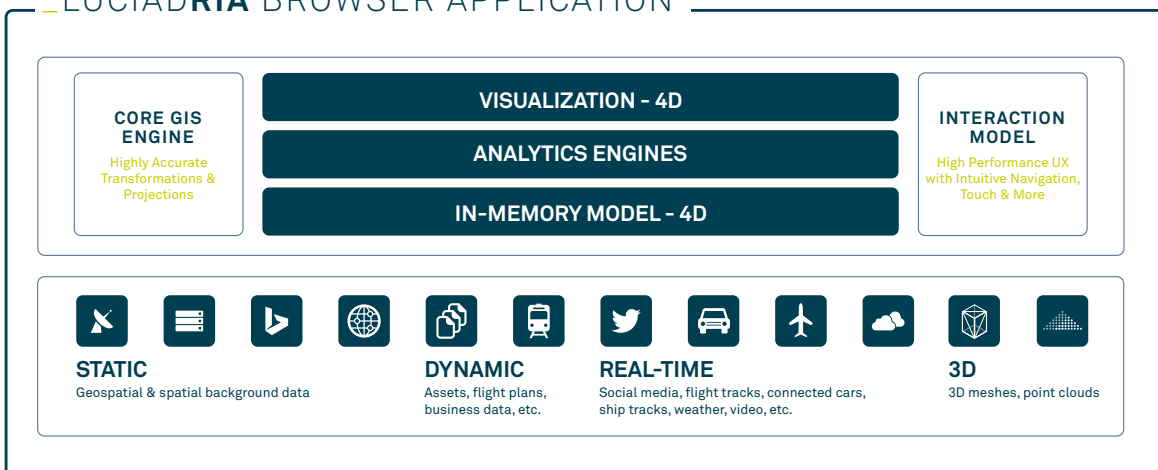


Figure 1 - Luciad's browser solution can connect to hundreds of data sources. The pure HTML5, WebGL, Javascript solution comes with a core GIS engine and visual analytics capabilities for beautiful visualization and powerful data analysis.

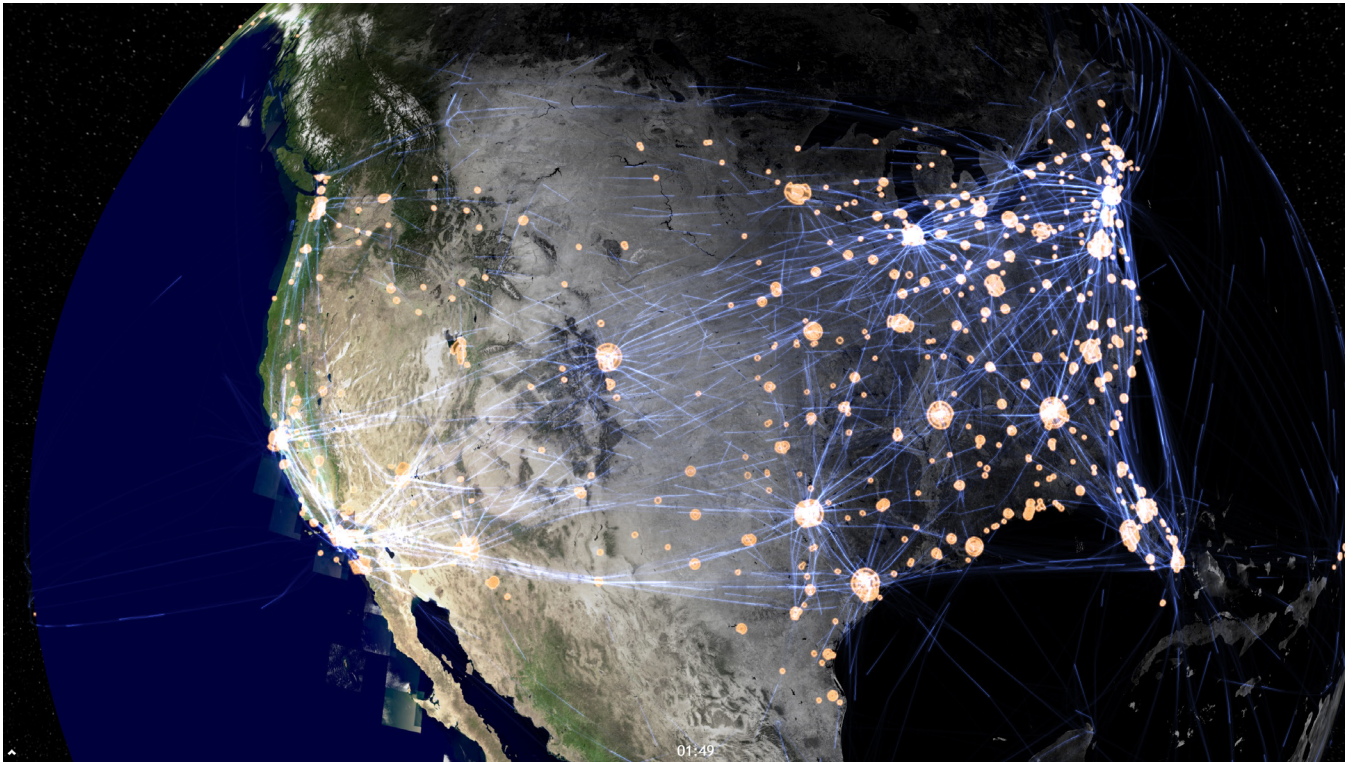


Figure 2 - Luciad's browser solution can handle tens of thousands of tracks and millions of recorded positions, switching between 2D and 3D views with the click of your mouse. To see a live demo visit 3d.luciad.com.

KEY BENEFITS

BEST-IN-CLASS PERFORMANCE	Offers unprecedented user experience similar to LuciadLightspeed within an HTML 5-equipped browser. If the device supports WebGL, this can be exploited for an even better performance.
RETAINED GEOSPATIAL POSITIONING ACCURACY	Precision on world scale for visualization, transformation and calculation of any data. All geodetic calculations are performed on the client side.
DESKTOP-LIKE EXPERIENCE	Full application running in a browser, enabling desktop-like experience that includes visualization of imagery, vector-based data and dynamic content, such as tracks or annotations.
NO PLUG-INS	Compatible with any HTML5-capable browser including mobile browsers, no plug-ins to be installed.
CUSTOMIZABLE	Straightforward development of interactive browser-based user interfaces, including editing of content and map annotations. One single API allows configuration for 2D software rendering, 2D and 3D WebGL-based rendering, depending on the target platform. The product allows you to meet your requirements 100%. Integrates in any environment (such as SharePoint or cloud-based environments).

OVERVIEW

The LuciadRIA options have been organized into product tiers. Depending on the needs of your organization, you can opt for LuciadRIA Essential or Pro. From the Pro tier, you can still extend the functionality available to you with defense symbology.

	ESSENTIAL	PRO
FUNCTIONALITY		
Core GIS Engine	✓	✓
Geospatial Reference Models	✓	✓
Transformation and Projection Engine	✓	✓
4D Cartesian & Geodesic Geometry Model	✓	✓
CPU 2D Visualization Engine	✓	✓
GPU 2D/3D Visualization Engine	✓	✓
Customizable Symbology	✓	✓
2D/3D/4D Interaction Model	✓	✓
Vertical, Profile & Timeline Views	✓	✓
Visual Analytics	✓	✓
Raster Connectors	✓	✓
Vector Connectors	✓	✓
Point Clouds & Reality Meshes	✓	✓
OGC Standards	✓	✓
Advanced GIS Engine	✗	✓
Defense Symbology	✗	○

FUNCTIONAL SPECIFICATION

Below is a high-level, non-exhaustive overview of the components available in LuciadRIA. You can use the functionality of these components either out-of-the-box or extend them to meet your advanced requirements.



CORE GIS ENGINE

GEOSPATIAL REFERENCE MODELS

TRANSFORMATION AND PROJECTION ENGINE

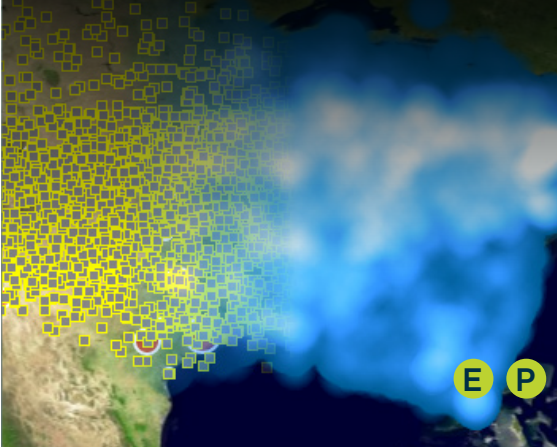
- Perform on-the-fly map transformations in the browser.
- Visualize data in any EPSG map projection. Visualize accurate geodetic lines and warp raster data.
- Support for MGRS coordinate formatting.

4D CARTESIAN & GEODESIC GEOMETRY MODEL



- Model any data format
- Load big data intelligently, load data asynchronously (Ajax)
- Represent complex geodetic object geometries with their metadata. Supported geometries include points, polylines, polygons, circles, ellipses, circular arcs, elliptical arcs, circular arc bands and buffers.
- Support for static data as well as dynamic data feeds.

CPU 2D VISUALIZATION ENGINE GPU 2D/3D VISUALIZATION ENGINE CUSTOMIZABLE SYMBOLOGY



- Visualize data in a multi-layered 2D or 3D view, and add a lon-lat grid.
- Apply flexible styling (2D and 3D icons, meshes, line styles, fill styles, transparency...) to your data, and customize it using the OGC-defined Styled Layer Descriptor/Symbology Encoding (SLD/SE) standards.
- Create extremely versatile labels, with options for styling and decluttering. High-performance imagery rendering, using multi-leveling and tiling techniques, is integrated in the view.
- Draping of any data, including vector data and dynamic data, on terrain.
- Apply lighting effects to simulate light sources realistically.
- Dynamically display thousands of moving tracks and generate interactive and dynamic heat maps.

2D/3D/4D INTERACTION MODEL

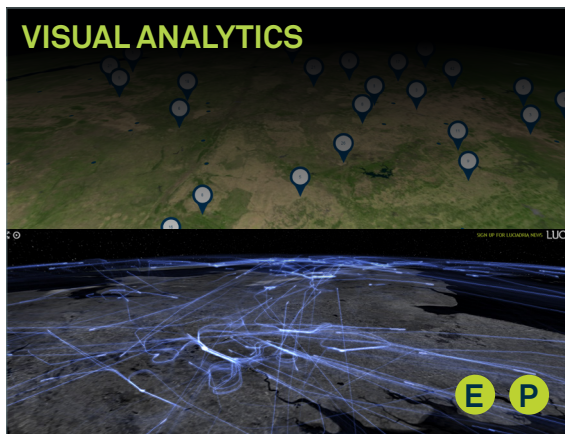
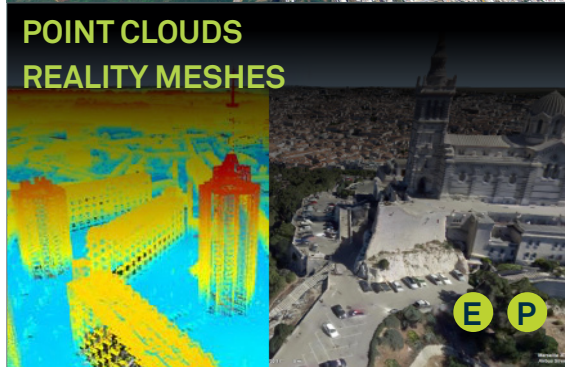


- Ready-to-use controller functionality includes standard controls (zoom, pan, select), freehand drawing, editing, multi-touch support (including Microsoft Pointer events and Gesture events) and snapping. You can easily create other controllers for custom interaction.

VERTICAL, PROFILE AND TIMELINE VIEWS



- Cartesian views with the ability to display any kind of quantitative data (e.g., altitudes, distances, speed values, time). These views can be configured with a reference that displays these quantities in a certain unit of measure (e.g., flight level, meters, nautical miles). A wide range of customizing options is available for the annotation of the view axes. Concrete examples of these views are provided in the form of a vertical view and timeline view.

VISUAL ANALYTICS 	Rapidly gain a thorough understanding of your geospatial data using advanced visual analytics tools. Configure clustering algorithms to aggregate a multitude of data objects into easily distinguishable clusters based on their properties. Analyze trajectory information and plot information by applying filters and parameterized styles, or interactively and visually explore them simulated over time. Create heat maps based on static as well as dynamic data.
RASTER CONNECTORS VECTOR CONNECTORS 	Access both raster and vector data. Raster data: LuciadFusion Tile Service, Bing Maps, Google Maps, OGC WMS, OGC WMTS Vector data: GeoJSON, gITF
POINT CLOUDS REALITY MESHES 	- Connect to and visualize unlimited point clouds and reality meshes. - Smart loading of 3D tiles. - GPU-based visualization. - Expression-based styling and filtering of point clouds. - Combine 3D data with terrain, other geodata, annotations and measurements. - Supports OSGB, LAS, LAZ, OGC 3D Tiles. Out-of-the-box native support for: OSGB, LAS, LAZ, OGC 3D Tiles
OGC STANDARDS 	Access data through common data exchange standards. OGC: GML, KML, Filter, Simple Features, Symbology Encoding, WFS, WMS, WMTS
ADVANCED GIS ENGINE 	Client-side constructive geometry calculations allow the creation and visualization of union, intersection and difference between sets of shapes
DEFENSE SYMBOLOGY 	Client-side creation, visualization and editing of all tactical graphics from military standards, with configurable and customizable symbol styling and graphics stroking. Symbology standards: APP-6A, APP-6B, APP-6C, MS2525b, MS2525c

E Included in Essential **A** Included in Advanced **P** Included in Pro

A Optional in Advanced **P** Optional in Pro

In addition to these options, LuciadRIA offers many application capabilities. These are ready-to-use implementations for developers of common use cases in your domain. These application capabilities are supported by LuciadFusion-based Server services. Below is a non-exhaustive overview:

- Gazetteer search
- Fast real-time track display
- Image viewer
- Annotation drawing and sharing
- Compatible with any UI framework (AngularJS, React)
- Application state store and restore
- Google Web Toolkit (GWT) integration
- LuciadFusion data support through GeoJSON services
- LuciadFusion symbology service for military icons
- LuciadFusion track service

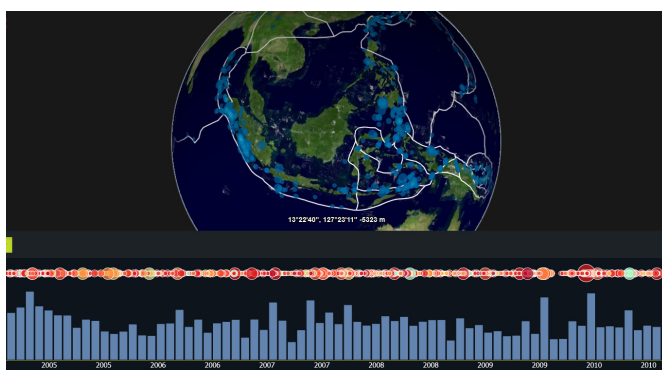


Figure 3 - Visualizing the density of earthquake events with time filtering

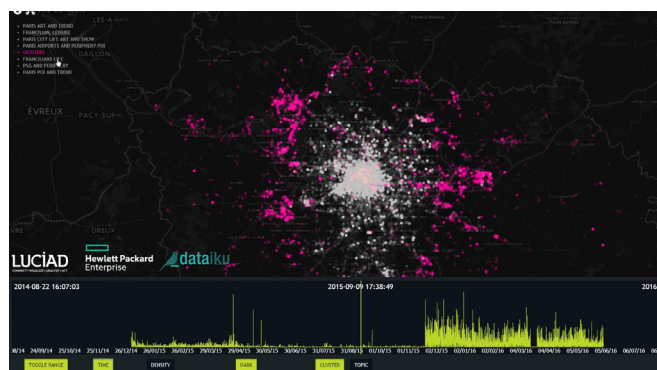


Figure 4 - Analyzing and visualizing spikes in Twitter message activity as clusters on the map

MORE INFORMATION

LuciadRIA requires:

- Any HTML5-capable browser

LuciadRIA comes with:

- Code samples for all components, running live on dev.luciad.com
- A convenient sample launcher
- Developer's guides with clear explanations and description of best practices
- API reference offering detailed description of all interfaces and classes
- Release notes to see what is new
- Technical notes to consult technical requirements and device support reporting tool
- A declaration file and instructions for TypeScript development.

To learn more or schedule a demo, check out the Luciad Developer Platform at dev.luciad.com or contact us at info.luciad.gsp@hexagon.com.



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