

Leica Virtual Explorer™  
Architect  
**Product Description**



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# Leica Virtual Explorer™ Architect

## Overview

By leveraging 3D visualization capabilities integrated with a strong array of editing, analysis and presentation tools, Leica Virtual Explorer Architect allows the unmatched communication and representation of GIS data. A highly efficient design allows mass amounts of spatial information to be compiled into an interactive and realistic planetary viewing environment. Leica Virtual Explorer Architect contains all necessary tools to rapidly assemble and smoothly explore comprehensive 3D terrain visualizations.

Leica Virtual Explorer Architect can be used as a stand alone 3D analysis tool, or as an authoring tool for the creation of scenes for global web-distribution using Leica Virtual Explorer Server.

Users can perform a number of tasks, including:

- Assemble a rich, photo-realistic 3D backdrop of a digital world with unlimited aerial and satellite images, geographic terrain layers, and GIS vector data.
- Smoothly explore the 3D scene controlling speed, altitude and viewing angle using mouse and keyboard controls.
- Customize the appearance of the 3D view with Logo Layers, Text Boxes and 2D Pointers.
- Use a broad array of editing tools to convey an exact understanding of spatial relationships.
- Query feature attribute information and open hyperlinks using the Attribute Display feature.
- Use the Geocoding Tool to quickly find locations around the globe by searching street addresses and area codes.
- Use the Database Search Tool to query vector databases and other GIS layers.
- Animate any layer, 3D model or object added to the scene to trigger its appearance and movement over time.
- Save the scene definition for serving using the Leica Virtual Explorer Server.
- Leica Virtual Explorer DVD add-on is supported to distribute scenes via CD and DVD.

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## Key Features

### Visualize 3D Geographic Data

- Leica Virtual Explorer scenes can be quickly and easily created or customized at any time using the Layer tree:
  - Add, remove and customize the display order of a wide variety of geospatial layers.
  - Reproject geospatial information on the fly.
  - Independently toggle any layer on and off.
  - Customize the appearance and properties of each layer.
  - Perform routine commands on each layer.
  - "Jump to" each layer.
- 3D Textured Models:
  - Import realistic textured 3D models (3D Studio Max, Multigen Openflight and IMAGINE VirtualGIS® model layers).
  - Use Model Optimizer to optimize fully textured geo-referenced models for speed or quality for efficient web streaming.
  - Interactively place models on 3D terrain using point and click style tools:
    - Model Placer: Place a single 3D model with user specified size at a digitized point or precise, keyboard-entered location.
    - Model Coverage – Linear: Place a user specified quantity and size of 3D models uniformly along a digitized line with a customizable height variation.
    - Model Coverage – Polygonal: Place user-specified quantity and size of 3D models randomly within a digitized polygon with a customizable height variation.
    - Bush: Create a user-digitized, closed wooded area with customizable height.
    - Fence: Create a user-digitized extruded, linear feature.
  - Interactively digitize an animation flight path for a 3D model with user-specified flight height and duration.
  - Attach hyperlinks to 3D models enabling local files to be launched or to link to a web page.
  - Define surrounding-cube images to provide an encompassing environment.
  - Support for VirtualGIS Projects and Flight Paths
  - Save 3D scenes for uploading to Leica Virtual Explorer Servers.
- Terrain geometry or topographic surface:
  - Add any raster data in the ERDAS IMAGINE image file format (.img).
  - Add topographic elevation data to scene.
  - Supports other raster formats directly through raster DLLs (GIF, GRID, GeoTIFF, etc.).
  - Render greater terrain detail seamlessly as it comes closer through multi-resolution morphing.
  - Access terrain in its native formats through VirtualDEM technology which enables multi-resolution and multi-source DEMs to be rendered seamlessly without the need to pre-process.
- 3D raster drape:
  - Display raster images over a built-in base map or customized base map.
  - Support of aerial photography, satellite imagery, scanned maps and thematic images.
  - Accent raster layers by applying image masks
  - Customize the pyramid layer behavior of each individual raster layer.
  - Customize each raster's band combination.
  - Enhance raster images by applying histogram stretches.
  - Dynamically apply cut/crop/feather operations to raster surfaces upon scene creation or independently apply to streamed scenes.
  - Adjusts contrast/brightness/color of individual raster layers on-the-fly.
  - Automatically control the visibility of each raster surface is automatically controlled depending on its distance to the surface with distance toggling.
- 3D vector drape/overlay:
  - Overlay vector features over 3D surfaces.
  - Drape vector features on 3D surfaces.
  - Support ESRI shapefile format GIS feature data.
  - Customize the display colors of each individual vector feature.
  - Automatically label vector features with a user-selected attribute.
  - Create buildings by extruding 2D vector GIS feature sources in the "Z" direction using a user-selected attribute as the height and defining texture images to apply to the sides and roofs of extruded polygons.
  - Open 3D shapefiles, such as those produced by ERDAS Stereo Analyst® and the Leica Geosystems range of GPS surveying instruments.
  - Automatically place symbols using vector features.
  - Control the level of detail for vector features through distance-based thinning and generalization for faster rendering.
  - Supports layer-based symbology for vectors.
  - Retain vector attributes with streaming geometry.
  - Provides scripted vector attribute querying.
  - Attach hyperlinks to vector features enabling local files to be launched or to link to a web page.

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## Visual Navigation

- Mouse-operated 3D angular pan, zoom and flight control.
- Five unique navigation modes including interactive pivoting around a defined target point.
- Customize each navigation mode (speed scale, minimum height, maximum height) or create new navigation modes with different properties.
- Enter keyboard location parameters for precise positioning.
- User-defined flight paths:
  - Manual digitizing in a 3D view.
  - Keyboard entry of precise flight path vertices.
  - 3D editing and update in the 3D view.
  - Record and playback path flown.
  - View in directions independent of user flight direction.
- Automatically “fly to” selected raster images, vector layers or individual vector features and other GIS features in scene.
- Automatically “fly to” animated objects or follow animation flight paths.
- Save unlimited Favorite Places in a catalog for future return.

## GIS Analysis

Leica Virtual Explorer allows GIS users to fully analyze their data with its broad array of tools useful for GIS analysis:

- Investigate attributes of any GIS data layer or individual feature:
  - Display attribute information on screen by selecting features with mouse.
  - Display attribute information of GIS features in tabular form.
  - Query attribute information using custom filters or script filters.
  - Automatically “fly to” queried GIS features.
  - Change the display color of queried vector features in 3D view.
- Quickly find a location of interest using a built in geocoding service or by adding a custom geocoding service.
- Perform vector database searches for attribute information on several files at once.

## Animation

- Animation graphical timeline editor for:
  - Animating raster and terrain layer display properties.
  - Animating vector display properties including symbology, feature labels and layer offset.
  - Animating navigation modes to create flight paths and movement properties.
  - Animating text boxes, 2D pointers, and logo layers to change the 3D viewer appearance over time.
  - Digitizing animation flight paths for 3D models.
  - Digitizing an Animated Pencil annotation to animate the snail trail of an object or event.
  - Editing flight path of 3D models and enter precise coordinates using keyboard.
  - Configuring camera properties for 3D model animations along flight line.
  - Editing keyframe and timeline.
  - Setting speed for each animation.
  - Looping, reversing or stopping each path at the end.
- Create unlimited number of separate animations.
- Play controls, including play, pause, increase play speed, decrease play speed, jump to next key frame and jump to previous key frame.
- Render animation to a movie format.

## Custom Scripts and Events

- Create custom scripts to:
  - Create custom objects.
  - Customize the behavior of new or existing objects.
  - Call actions.
- Use Events for the easy and assisted creation of scripts.
- Activate user-defined scripts and events with a variety of triggers:
  - Start up of Leica Virtual Explorer scenes.
  - Upon rendering the 3D view.
  - Shutdown of Leica Virtual Explorer scenes.
  - Entry of a proximity box.
  - Exit of a proximity box.
  - Upon clicking the proximity box.
  - Upon double-clicking the proximity box.

## Analysis Tools

- **Intervisibility:**
  - Interactively perform intervisibility and threat analysis.
  - Point and click to determine which observers have line-of-site to a particular location.
  - Define single or multiple observation or signal initiation points.
  - Precisely define position, viewing range and color.
  - Generate viewshed domes interactively within the 3D viewer.
  - Attach hyperlinks enabling local files to be launched or to link to a web page.
- **Flood analysis:**
  - Add water layer(s) to the scene with customized color.
  - Fill depression in the DEM to differing heights.
- **Interactively place "billboarded" labels using mouse click or precisely configure position, pointer size and text scale using keyboard entry.**
- **Interactively place "billboarded" symbols using mouse click or precisely configure position and size using keyboard entry.**
- **Interactively measure slope distances on the 3D terrain configuring the number of intermediate points used in the distance calculation.**
- **Interactively measure ground distances along the 3D surface.**
- **Mark up the 3D terrain with Overlay Tools (filled circle, wire circle, line, polygon and freehand pencil).**
- **Attach hyperlinks to all analysis tools enabling local files to be launched or to link to a web page.**

## Annotation Tools

Customize the appearance of the 3D window:

- **Logo:**
  - Paste a 2D image over the 3D view.
  - Give credit for movie by giving company's logo or name.
  - Create "foregrounds", such as cockpits.
- **Paste a 2D Pointer over the 3D view labeling spatial feature that comes into view.**
- **Place a Text Box over the 3D view to display information with customizable text properties.**
- **All annotation tools are highly customizable:**
  - Modify the size and position even after the object is placed.
  - Personalize the background properties of opacity, background color, border color and background image.
  - Customize entrance and exit effects including delay and duration.
  - Play movies in background.
  - Customize text size, position, font, color, display style and marquee speed.

## About Leica Geosystems Geospatial Imaging Division

When building image-based maps, you need reliable measurements and solutions for your entire workflow. So when it has to be right, more geospatial professionals trust Leica Geosystems Geospatial Imaging, LLC to help them collect, analyze, and present spatial information. Leica Geosystems is powering geospatial imaging by putting precise imaging to work. Its broad array of photogrammetry and remote sensing software solutions capture data efficiently, reference imagery accurately, measure and analyze easily and present spatial information, even in 3D. Those who use Leica Geosystems Geospatial Imaging products every day trust them for their precision, their seamless integration, and their superior customer support. Delivering geospatial imaging solutions with precision, integration, and service from Leica Geosystems.

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