

# GEO3D - Geographical Visualizations

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Geographical capabilities are needed in many enterprise systems, especially in security and defense systems. They are used in mobile devices as well as at command and control centers.

### What is it

GEO3D is simple and open system which allows for real-time visualization of large geographical data. It runs on Windows, Linux and even mobile devices. It has a direct support for basic data formats. Other data formats and new functionality might be added using the Geo3D plug-in system. Geo3D is easily embeddable into other applications and enterprise systems.

### How it works

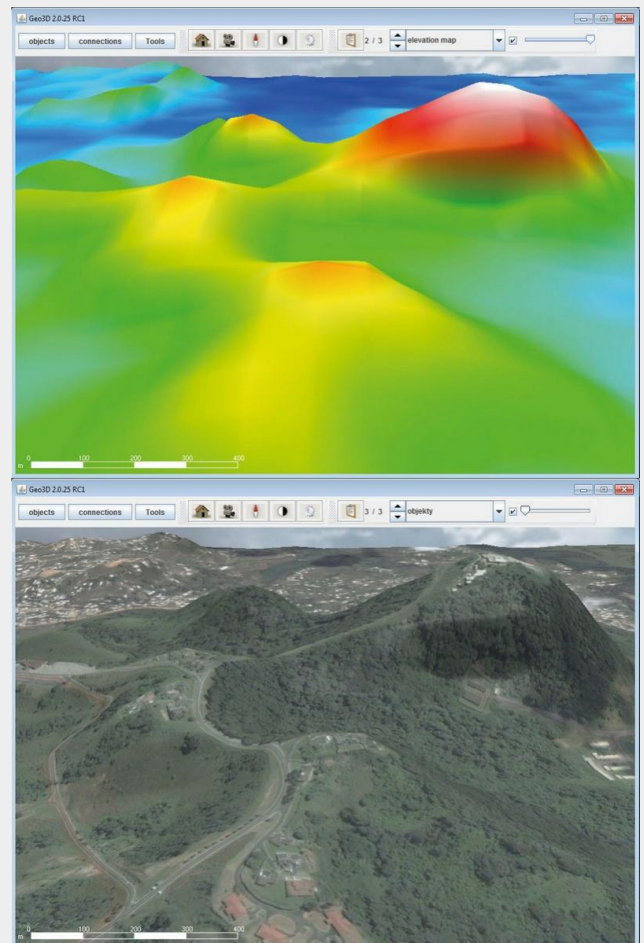
GEO3D visualizes geographical data in three basic types of layers: Elevation layer, Map layer and Object layer.

### Elevation layer

-is represented by a digital terrain model which together with real-time lighting increases user's experience and provides convenient look at map and object layers. The digital terrain model can be created from elevation data in different coordinate systems, projections and formats, such as SRTM or DTED.

### Map layers

-are basically raster images stretched on elevation model. Multiple layers can be visually combined together using user-adjustable transparency. This combination is possible even when source map data uses different coordinate systems and projections. Map layers are static or dynamic depending on their source data. Static source data, such as air/satellite photo or scanned topographical maps are stored locally or downloaded from intranet/internet servers. G can cache downloaded maps and allow viewing them later when server connection is not available.

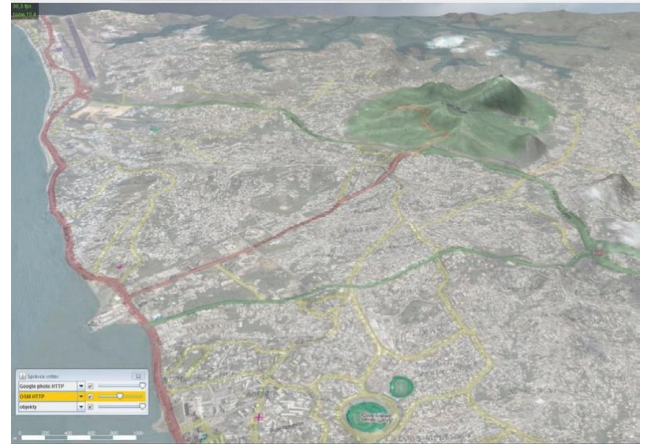
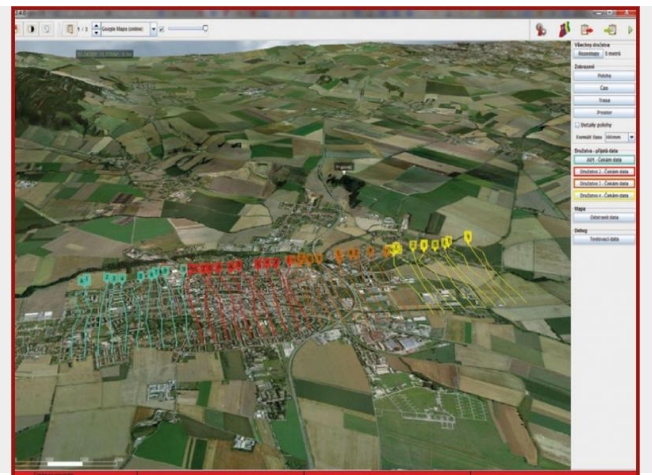


Dynamic map layers are created on the fly from vector maps or as a result of geographical calculations and analysis.

### Object layer

Icons, poly-lines, polygons and other geometrical objects as well as 3D models are visible on the top of map layers. Objects have attributes such as name, position and also custom attributes depending on what the object represents. Object attributes can be edited, added or removed depending on user's rights. Objects can be read, written to file, database or application server in number of formats such as XML, KML or other formats.

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### Tools

There are already some basic tools such as object attribute editor, distance measurements, elevation profile.

### Integration and extension

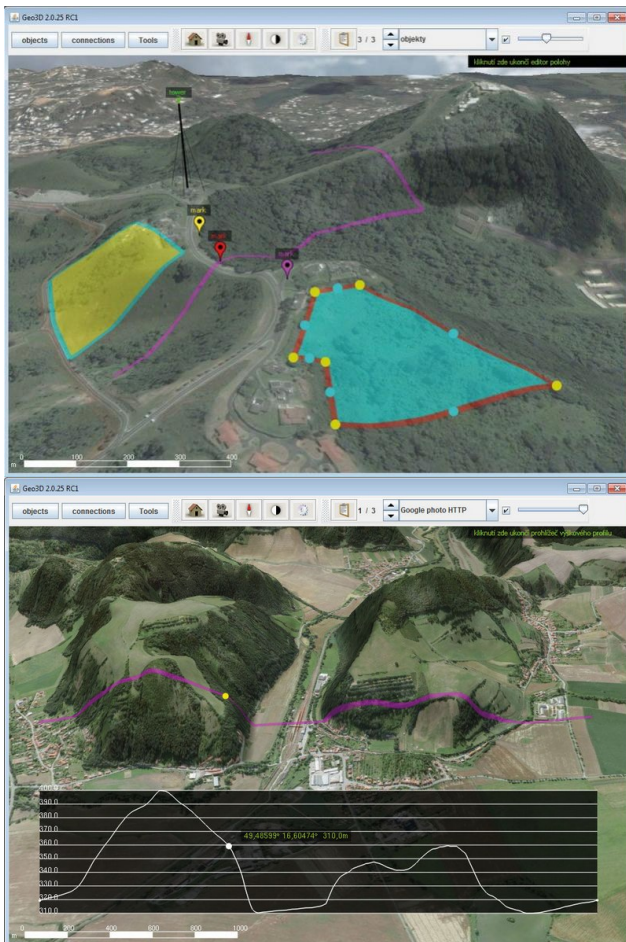
GEO3D can be easily embedded into applications written in Java or it can run as a standalone application. GEO3D can be extended using the plug-in system. There are three types of major areas: Connectivity and data formats, Custom visualizations and Custom tools. GEO3D can be easily embedded into applications written in Java or it can run as a standalone application. GEO3D can be extended using the plug-in system. There are three types of major areas: Connectivity and data formats, Custom visualizations and Custom tools.

### Connectivity and data formats

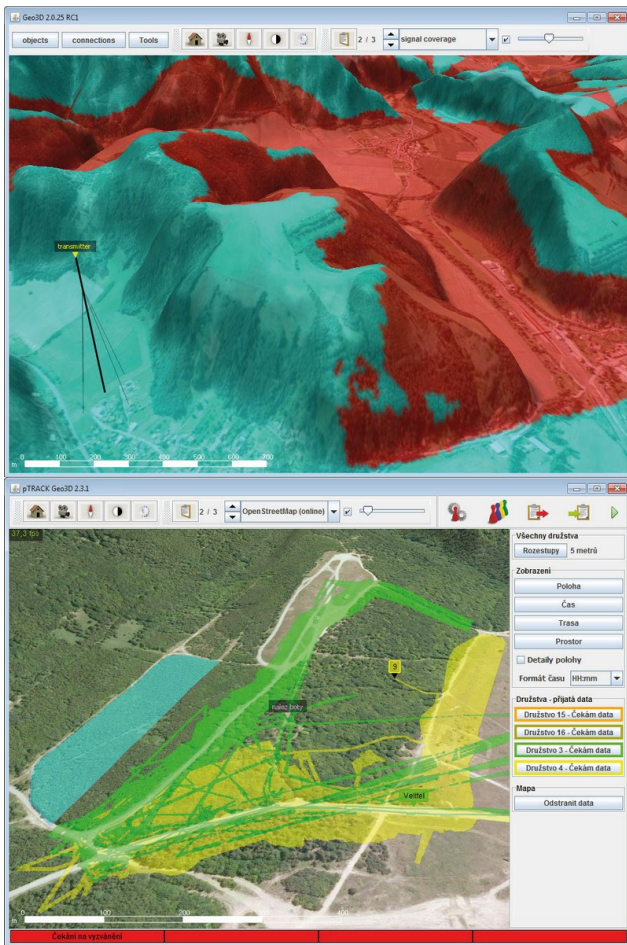
Extend the ability to load new maps and also read and write objects. The new data format, as well as new data source such as file, device, DBMS or other server, can be implemented.

### Custom visualization

It is easy to add the types of custom objects and implement its 2D rendering into a map layer or 3D rendering into an object layer. The object can be visualized depending on its attributes. An example is an object representing radio







transmitter. The transmitter's height, antenna size and direction are object attributes provided by server and optionally accessible to a user. Any change of these attributes is immediately visible on the transmitter 3D model in the map.

### Custom tools

Allow to interact with a user and process and visualize geographical data. Custom tools have access to all types of layers. One example is GEO3D plug-in which calculates radio signal coverage. When a user relocates an object representing a radio transmitter, or changes its parameters, its signal coverage is recalculated and displayed in a dynamic map layers.

### Integration example SYMON

Modular ESM/COMINT system SYMON is used for very fast automated radio reconnaissance, direction finding, monitoring, technical analysis and localization of radio signals of interest in HF, VHF and UHF frequency bands.

### pTRACK

Is an application for tracking rescue units searching for missing people. It can calculate and visualize the explored area depending on varying visibility and terrain.

### Summary

- ✓ Visualizes elevation model using real-time lighting
- ✓ Visualizes multiple map layers at the same time with adjustable transparency
- ✓ Supports many map formats, projections, coordinate systems and data sources
- ✓ Supports map caching and off-line use of maps which are downloaded from an on-line source
- ✓ Visualizes objects (points, poly-lines, polygons, icons, 3D models or custom objects)
- ✓ Supports multiple object formats and sources (servers, files, GPS devices, ...)
- ✓ Provides tools to move objects and edit its attributes (name, color, or any user-defined)
- ✓ Provides tools (elevation profile, radio signal coverage and custom tools)
- ✓ Extendable by custom plug-ins and easy to integrate into applications or systems

For more information, please fill out the [form](#)

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