

Course code: **WEBGIS**

Course title: **Development of WebGIS applications on the basis of PostGIS, Geoserver, OpenLayers and QGIS**

Days: 3

Description:

Course intended for:

The training is dedicated for programmers wanting to get familiar with the issue of development of Web-based geographic information systems.

Course objective:

The training objective is to get the participants familiar with theoretical and practical aspects of development of a Web-based geographic information system based on PostgreSQL + PostGIS, GeoServer and OpenLayers.

The training participants will learn to:

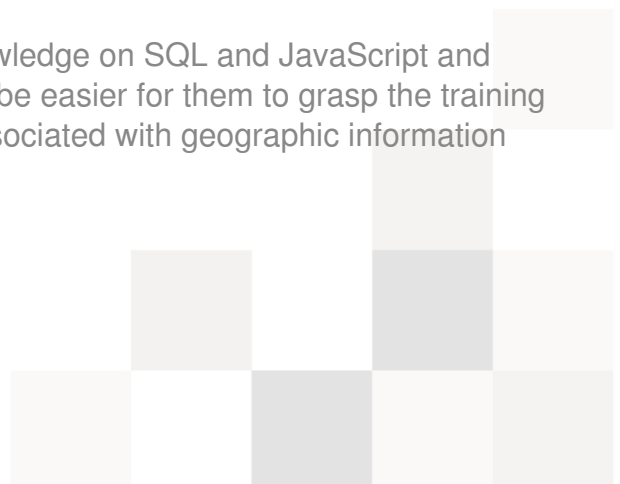
- Store and process spatial data using the PostgreSQL database
- Effectively share spatial data using WMS and WFS protocols,
- Present spatial data on Web pages using JavaScript (OpenLayers, GeoExt) libraries,
- Integrate individual components of the WebGIS environment.

After the training, the participants will be able to develop on their own a geographic information system operating in the Web environment.

Requirements:

The participants are required to have the basic knowledge on SQL and JavaScript and familiarity with Web application development. It will be easier for them to grasp the training material, if they have basic knowledge of issues associated with geographic information systems.

Course parameters:



3*8 hours (3*7 net hours) of lectures and workshops (with a visible emphasis on workshops).

Group size: no more than 10 participants.

Course curriculum:

1. Introduction to GIS and WebGIS
2. Discussing of platforms
3. Storing and management of spatial data in PostgreSQL + PostGIS
 - PostGIS installation
 - Development of a spatial database
 - Vector spatial data in PostGIS
 - OpenGIS and Simple Features Specification for SQL
 - Geometric objects
 - Geometric metadata
 - Systems of coordinates
 - Spatial indexes
 - import and export of spatial data
 - raster images in the database
 - functions
 - operators
 - constructors
 - spatial queries
4. Publication of spatial data on the Internet using the GeoServer
 - installation

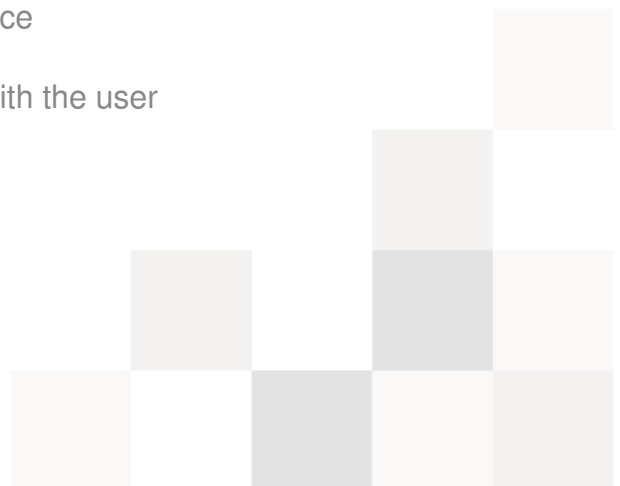


- system variables
- configuration file and data folders
- user interface
- spatial data sources (vectors, rasters, databases, services)
- publishing of spatial data using OGC standards (WMS, WFS)
- output data formats
- symbolization based on SLD
- data caching for OGC services (GeoWebCache)
- Users and security
- Add-ons and extensions

5. Database integration with the spatial data server

6. Spatial data publication on the Web page using OpenLayers

- Embedding of an interactive map in the Web page
- Data layers (base layers, overlays)
- Use of open and commercial data sources
 - WMS and WFS
 - Google Maps
 - Bing Maps
 - OpenStreetMap
- Development of the map user interface
 - Responding to interactions with the user
 - Navigation tools
 - Measurement tools



- Map data entry tools
 - Map status information placement
 - Acquisition of attribute information from data presented on the map
 - Handling of systems of coordinates
 - Introduction to GeoExt
7. Use of QGIS for online edition of spatial data, made available in the WebGIS environment

