EuroGeoSource – a web GIS system harmonizing geo-energy and mineral resource databases in Europe

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Abstract

The EuroGeoSource is a project co-financed by the European Union under the Information Communication Technologies Policy Support Programme (ICT PSP), part of the Competitiveness and Innovation Framework Programme (CIP). The project started in 2010 and will last for three years, having the objective of making up a web Geographical Information System (GIS) regarding geo-energy resources (oil, gas, coal etc.), metallic and non-metallic minerals, as well as construction materials (gravel, sand, ornamental stone etc.) from twelve countries: Denmark, the Netherlands, Belgium, Portugal, Spain, Italy, Slovenia, Bulgaria, Romania, Hungary, Poland, Estonia.

The web GIS will incorporate a set of spatial data services according to Open Geospatial Consortium (OGC) specifications. The system will allow users to identify, access, use and reuse in an interoperable and seamless way and for a variety of uses, aggregated geographical information on geo-energy and mineral resources, covering a significant part of Europe and coming from a wide range of sources.

The project uses spatial and attribute information in GIS format on oil, gas and mineral fields in the participating countries, which is typically maintained and stored by the geological surveys. The data will have to be harmonized by defining a common set of attributes for geo-resources objects of the same type. For the key economic and geological parameters, an exchange format has to be agreed, taking into consideration the recommendations of the INSPIRE Directive 2007/2/EC (Infrastructure for Spatial Information in the European Community), as well as existing operational geo-data exchange formats, implemented in previous geo-data projects (e.g. eEarth, eWater, Geomind, OneGeologyEurope).

The system will include three main layers: 1) a central web GIS application, providing access and visualization of the spatial data sets; 2) data delivery services, including Web Map Service (WMS) and specialized web services for translation and delivery of spatial objects attributes; 3) a national database, storing spatial data sets and spatial object attributes.

Typical usage of the EuroGeoSource system based on preliminary analysis of the potential user needs comprises the following steps:

- starting in the central geo-source data catalogue application, where the user can search the available maps from all countries participating in the project and select the language;
- browsing the search result (a list of available maps), consultation in detail of the metadata associated to the data set of interest, followed by adding the data set as a layer to the geo-data viewer;
- consulting the data set layers at different scales and within different contexts (extent, background layers, etc.) in the map viewer;
- gathering detailed economic/reserve information, accessible either free of charge or based on the 'data delivery cost recovery' pricing model, depending on the provider.

A special group of users (e.g. Institute for Energy of the Joint Research Centre of the European Commission or commercial companies) will be able to incorporate the data provided by the EuroGeoSource system into their decision processes or models using special web services that can be offered based on their needs. This option will be made available using advanced content-specific and user-oriented web services in the system.

By developing web services for sharing spatial data between public organizations and authorities (including EC and EU research and policy making institutions), as well as commercial stakeholders, the project will enable the creation of value-added services (such as demand-supply modeling) for the sustainable geo-energy and mineral supply of Europe.