



OneGeology-Europe: architecture, portal and web services to provide a European geological map

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OneGeology-Europe is a large ambitious project to make geological spatial data further known and accessible. The OneGeology-Europe project develops an integrated system of data to create and make accessible for the first time through the internet the geological map of the whole of Europe. The architecture implemented by the project is web services oriented, based on the OGC standards: the geological map is not a centralized database but is composed by several web services, each of them hosted by a European country involved in the project.

Since geological data are elaborated differently from country to country, they are difficult to share. OneGeology-Europe, while providing more detailed and complete information, will foster even beyond the geological community an easier exchange of data within Europe and globally. This implies an important work regarding the harmonization of the data, both model and the content. OneGeology-Europe is characterised by the high technological capacity of the EU Member States, and has the final goal to achieve the harmonisation of European geological survey data according to common standards. As a direct consequence Europe will make a further step in terms of innovation and information dissemination, continuing to play a world leading role in the development of geosciences information.

The scope of the common harmonized data model was defined primarily by the requirements of the geological map of Europe, but in addition users were consulted and the requirements of both INSPIRE and 'high-resolution' geological maps were considered. The data model is based on GeoSciML, developed since 2006 by a group of Geological Surveys. The data providers involved in the project implemented a new component that allows the web services to deliver the geological map expressed into GeoSciML. In order to capture the information describing the geological units of the map of Europe the scope of the data model needs to include lithology; age; genesis and metamorphic character. For high resolution maps physical properties, bedding characteristics and weathering also need to be added.

Furthermore, Geological data held by national geological surveys is generally described in national language of the country. The project has to deal with the multilingual issue, an important requirement of the INSPIRE directive. The project provides a list of harmonized vocabularies, a set of web services to deal with them, and a web site for helping the geoscientists while mapping the terms used into the national datasets into these vocabularies.

The web services provided by each data provider, with the particular component that allows them to deliver the harmonised data model and to handle the multilingualism, are the first part of the architecture. The project also implements a web portal that provides several functionalities. Thanks to the common data model implemented by each web service delivering a part of the geological map, and using OGC SLD standards, the client offers the following option. A user can request for a sub-selection of the map, for instance searching on a particular attribute such as "age is quaternary", and display only the parts of the map according to the filter. Using the web services on the common vocabularies, the data displayed are translated.

The project started September 2008 for two years, with 29 partners from 20 countries (20 partners are Geological Surveys). The budget is 3.25 M€, with a European Commission contribution of 2.6 M€. The paper will describe the technical solutions to implement OneGeology-Europe components: the profile of the common

data model to exchange geological data, the web services to view and access geological data; and a geoportal to provide the user with a user-friendly way to discover, view and access geological data.