

Presentation
Metadata for 3D Geological Models: Definition and Implementation

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Abstract

BRGM (the French geological survey) is France's reference public institution for Earth Science applications which works on management and delivering geosciences data to be used for helps to decision-making for spatial planning, mineral prospecting, groundwater prospecting and protection, pollution control, natural risk prevention and the characterization of local areas.

Some of this data are produced from 3D geological modeling which is now a classical tool to better constrain geometries of complex geological systems and provide a continuous description of the subsurface out of sparse and indirect data. In order to store and deliver geological model production at BRGM, we developed a programming interface distinguishing the storage of the model from the representation of the model: models are stored using native format of the tool used to generate with (software project files). This choice guarantees that there is neither loss of data nor loss of precision. Then, model discretization (e.g. meshes) are generated on demand, depending on representation purposes (1, 2 or 3D gridding). Geological organization works on geomodel management and their representation for delivering and disseminating 3D geological information.

Therefore, it needs to reference and archive geo models and / or representation to access and to deliver information related to.

We propose to define a metadata profile compliant with INSPIRE¹ Directive to describe 3D geological models and their representation. The profile is implemented using the ISO 19115/19139 standard (used for geographic data) (1) to allow web application to edit and to manage data with GeoSource/GeoNetwork application; (2) to ensure interoperability in the delivery. 3D geomodel metadata are indexed by a search engine and displayed in a geoscientific portal such as Infoterre (<http://infoterre.brgm.fr/viewer>). Our approach allows calling the programming interface which queries 3D geological model and retrieves all the topological information from the model to be represented and stored or visualized by using OGC standards.

Our research work is linked to international initiatives (such as (i) OGC²; IUGS / CGI³ for standard and (ii) One Geology⁴ and EPOS⁵ projects to test implementation) to define an interoperable model and to ensure common metadata for geological models.

¹ <http://inspire.ec.europa.eu/>

² <http://www.opengeospatial.org/>

³ <http://www.cgi-iugs.org/>

⁴ <http://www.onegeology.org/>

⁵ <https://www.epos-ip.org/>