Abstract

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The earth resource data exchange model (EarthResourceML) - a tool for delivering INSPIRE and ProMine mineral resource data

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Abstract

The non-energy extractive industry (NEEI) is a significant contributor to the economy of the EU providing metalliferous and non-metalliferous mineral resources to the society as well as direct and indirect employment. The philosophy behind the ProMine Project (EU’s 7th Framework Programme) is to stimulate the extractive industry to deliver new products to manufacturing industry.

A main objective of the ProMine project is to develop a pan-European GIS-based database containing the known and predicted metalliferous and non-metalliferous resources, which together define the strategic reserves (including secondary resources) of the EU.

The earth resource mark-up language (EarthResourceML) is a high-level data exchange standard developed in Australia to facilitate mineral occurrence data transfer between government, industry and other organisations. Previously, there was no easy way to share this data because each geological survey has its own database, each with its own format and sets of attributes and vocabularies, storing information on mineral occurrences, commodities, historical production, reserves and resources, deposit classification, etc.

Web services offer a cost efficient technology that permits transfer of selected data, removing both the inconsistencies between datasets, and the need for data to be regularly uploaded to a centralised database. They offer a chance to access the latest data from the originating agency in a consistent format.

EarthResourceML was developed under the leadership of the Australian Government Geoscience Information Committee (GGIC). It is compatible with GeoSciML, the IUGS developed language for exchange of geological map features, and uses patterns and features common to GeoSciML. GeoSciML is based on ISO and Open Geospatial Consortium (OGC) standards using Geographic Mark-up Language (GML) as an encoding for geographic information.
Key points of the earth resource information model are that it:

1) Describes earth resources independent of associated human activities, such as mining;
2) Caters for descriptions of earth resources using mineral deposit models that describe the actual deposit type; mineral systems that describe the processes associated with deposit formation; and supergene processes;
3) Utilises GeoSciML to describe host and associated materials and geologic events;
4) Describes a Mine as made up of a number of Mining Activities, each producing some commodity;
5) Provides the ability to describe commodity resources and reserves formally or informally.

EarthResourceML has been proposed as a candidate data specification for the INSPIRE Annex 3 Mineral Resources theme.

The ProMine project intends to establish OGC web feature services using EarthResourceML to make the mineral resource data readily available via the web. ProMine will aim to be an early take-up of the INSPIRE Annex 3 technology, demonstrating the advantages gained by making mineral resource data readily available in a common format.

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