



Thematic Working Group Geology & Mineral Resources



Short overview description

Main achievements

Open issues

2 themes: Geology & Mineral Resources

TWG GE-MR



Theme Geology & Mineral Resources



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Contact point



Theme Geology



Definition:

Geology characterised according to composition and structure. Includes bedrock, aquifers and geomorphology.



Theme Geology



Use cases – mainly to provide geological data:

- to detect geo-hazards
- to ensure safe disposal of waste
- to detect ground instability in a flat area
- to look for deep fractured zones (geothermal exploration)
- to check background radiation level changes
- to undertake water balance to ensure compliance with the WFD
- for Groundwater reporting for WFD
- to define significant pressure on groundwater
- to assess corrosivity to underground assets
- to plan tunneling operations safely and effectively



Theme Geology



Legislation:

For the Hydrogeological part of the model : the WFD/GWD
(Water Framework Directive / Groundwater Directive)

Existing standards:

- GeoScienceML (IUGS – International Union of Geological Sciences)
- O&M (ISO/OGC)



Theme Geology



Data model – 3 parts:

- Geology: geologic features (units, faults, landforms)
- Geophysics: surveys, measurements, models
- Hydrogeology: aquifers, groundwater bodies
- *The model does not address 3D Geological models*

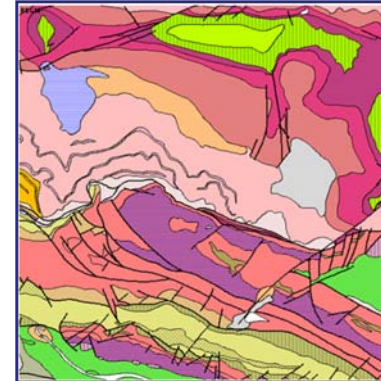
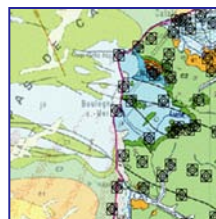


Theme Geology



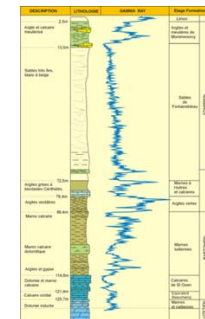
Geology (core model):

- **Geologic units**
Groups of rocks (lithology, ...)
- **Geologic structures**
Faults
- **Geomorphologic features**
Landforms
- **Boreholes**



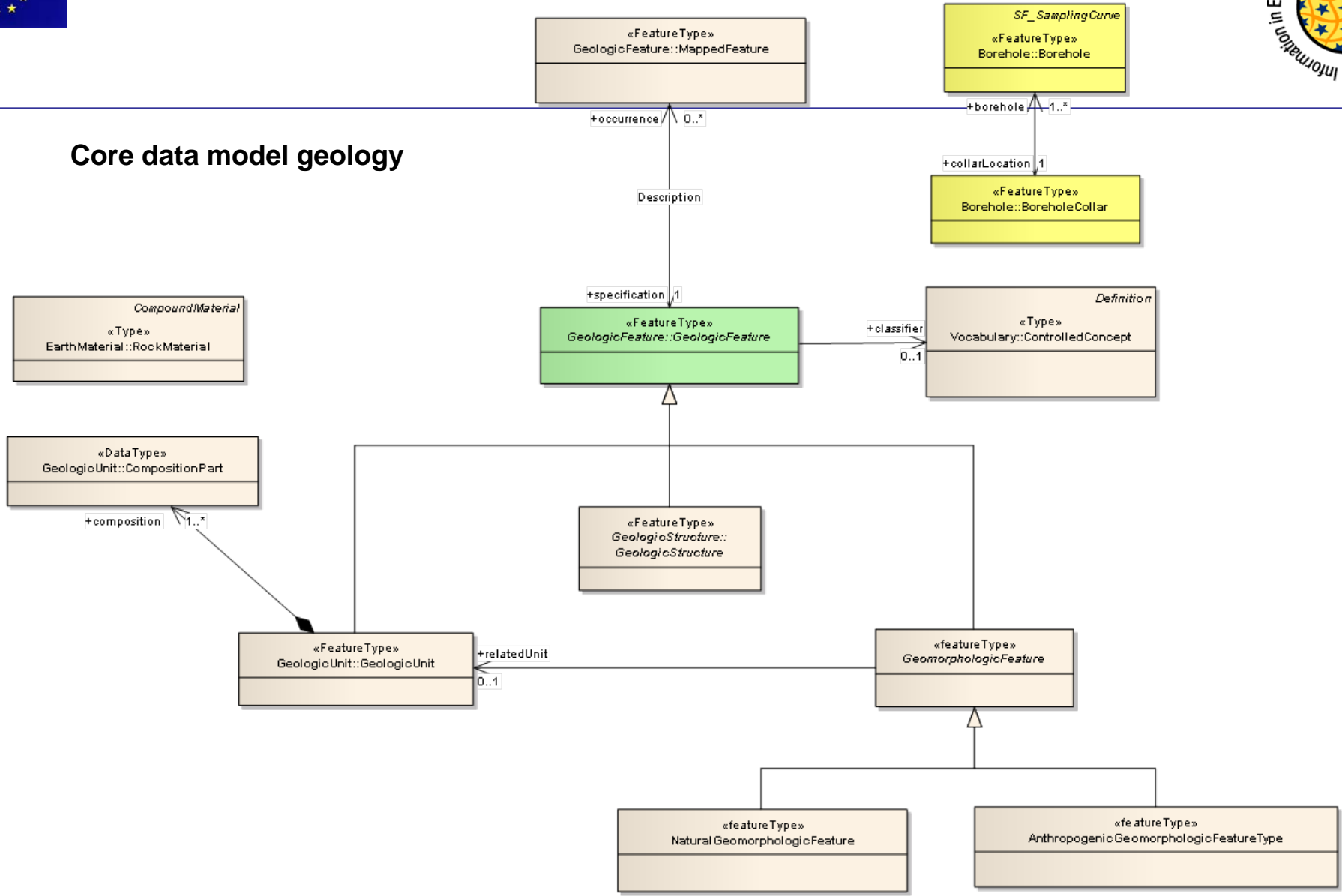
Extension:

More
feature-
types and
properties
to describe
rocks





Core data model geology





Theme Geology



Geophysics (core model):

- **Geoph. Surveys**

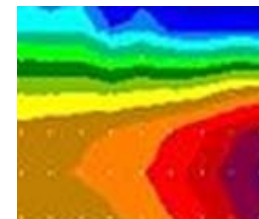
Location, type, ...

- **Geoph. Measurements**

Types: station, profile, 3D meas.

- **Geoph. Models**

Spatial distribution of physical properties



Extension:

More feature-types and properties



Theme Geology



Hydrogeology:

Water system:

- Groundwater Bodies
- Groundwater Flow System

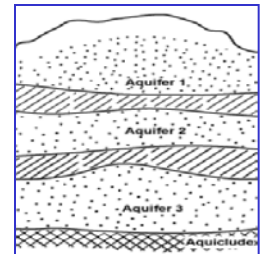
Rock system:

- Hydrogeological units
- Aquifer System (aquifers, aquitards)



Hydrogeological System:

- contains Groundwater Flow Systems
- is formed by Aquifer System



Hydrogeological Objects:

- Natural (vanishing point, spring / seep)
- Man made (water well)



Theme Geology



Issues / to check during comment and testing period:

- Large scope to address underground knowledge
 - => to check the balance between core and extension
- Hydrogeology model:
 - not yet distinction between core / extension
 - not yet compliant with the GCM coverage model
- Data quality description
- Portrayal rules: some standards exist but ...



Theme Mineral Resources



Mineral resources



Theme Mineral Resources



Definition:

Mineral resources including metal ores, industrial minerals, etc., where relevant including depth/height information on the extent of the resource.



Theme Mineral Resources



Use cases:

- Dealing with environmental uncertainties related to mining wastes
- What is the gold potential of Central and Southeastern Europe?
- Where to find Germanium in Europe?
- A manufacturer is looking for the closest producers of Ground Calcium Carbonate (GCC)



Theme Mineral Resources



Legislation:

- Mining Waste Directive
- Raw materials initiative

Existing standards:

- EarthResourceML (IUGS)
- GeoScienceML (IUGS – International Union of Geological Sciences)
- Mineral: International Mineralogical Association



Theme Mineral Resources

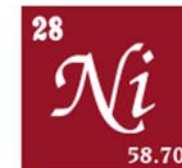


Mineral Resources (core model):

- Earth Resource: natural material of potential economic value
- Mining Feature: working on the Earth Resource

Earth Resource:

- Mineral occurrence
- Commodity and Commodity measure
- Mineral deposit model



Mining Feature:

- Mine
- Mining activity



Theme Mineral Resources



Mineral Resources

Earth Resource:

- Mineral occurrence
- Commodity and Commodity measure
- Mineral deposit model

extension:

- Earth Resource Material
- Mineral system
- Supergene processes
(ex: alteration)

Mining Feature:

- Mine
- Mining activity

- Mined material
- Products
- Mining waste



Theme Mineral Resources



Issues / to check during comment and testing period:

- Balance between core and extension
- Data quality description
- Layers organisation, portrayal rules

Themes Geology & Mineral Resources



We thank you for your attention and your comments