Some personal observations and remarks from the « Subsurface Geology » session

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EuroGeoSurveys

7th EUREGEO

EUropean Congress on REgional GEOscientific Cartography and Information Systems

Geo Management

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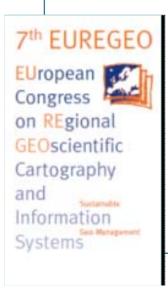Bologna - June 12th – 15th 2012

A BIT MORE TRICKY THAN THIS
interesting voxel model…

Model : why ? what to model ?

> **Provide information / knowledge for political support**

- Earthquake and other geohazards
- Energy (geothermal en
- Use of underground space, underground storage (CCS, gas, hydrogen, compressed air…)
- Conflicts of use

> **At different scales**

- Transnational (Geopotential Rhine)
- National (CCS Germany, UK BGS)
- Regional (Emilia Romagna, Catalunya,…)
- Local (Ravenna)

> **To be used in combination with very diverse data (SWOT analysis for heat pumps, Urban data - BGS…)**

➢ Geological knowledge is only one dimension of the answer to sustainable economic development / "societal" questions

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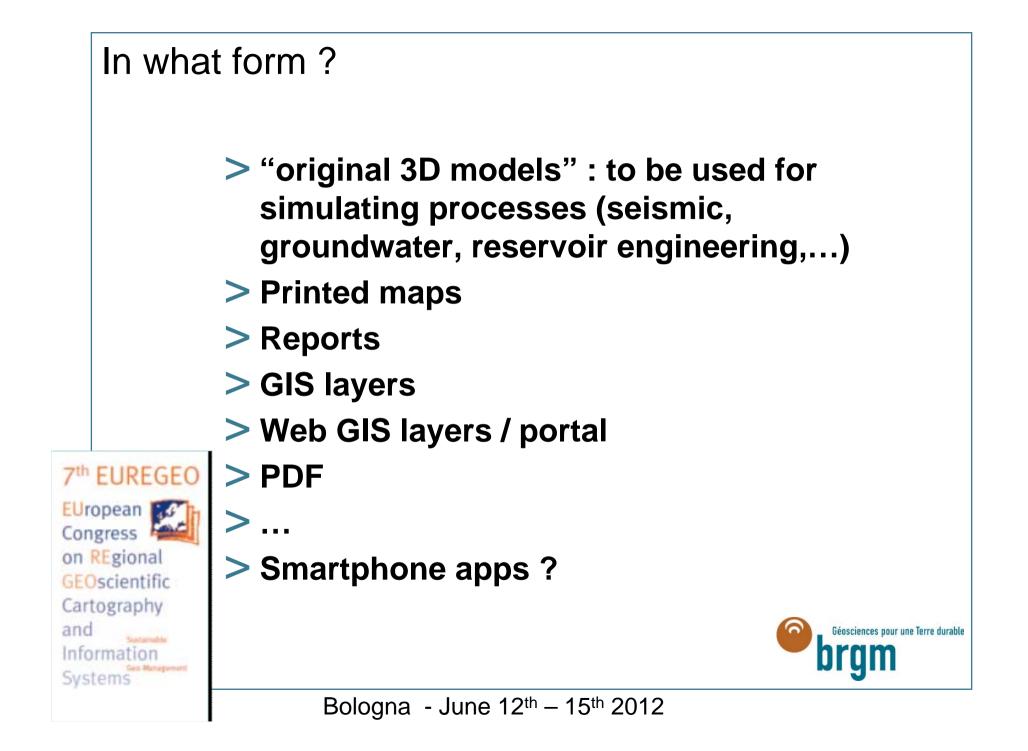brgm

What information?

> **Geometry**

> **Characterisation (less common… Japan !)**

> **Volumetric estimates**

> **Maps ("potential" for…, maps of temperatures,…)**

3D models   or   3D derived information ?

(analogy with meteorology… : very simple information from very complex 4D/5D models that are not visible for the user…)

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In what form ?

> **"original 3D models" : to be used for simulating processes (seismic, groundwater, reservoir engineering,…)**

> **Printed maps**

> **Reports**

> **GIS layers**

> **Web GIS layers / portal**

> **PDF**

> **…**

> **Smartphone apps ?**

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From what data ?

> **(Re-interpreted) boreholes**
  (Harmonisation ?)

> **Interpreted Sections**

> **Seismic**

> **Contour maps**

> **Field data**

> **Insar**

> **…**

"Quality of models" - Accuracy ?

> **… always the same issue…**

> **… did we really made progress ???**

> **Quality = fit for purpose**

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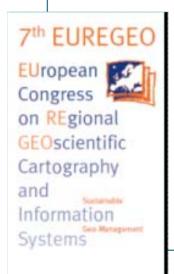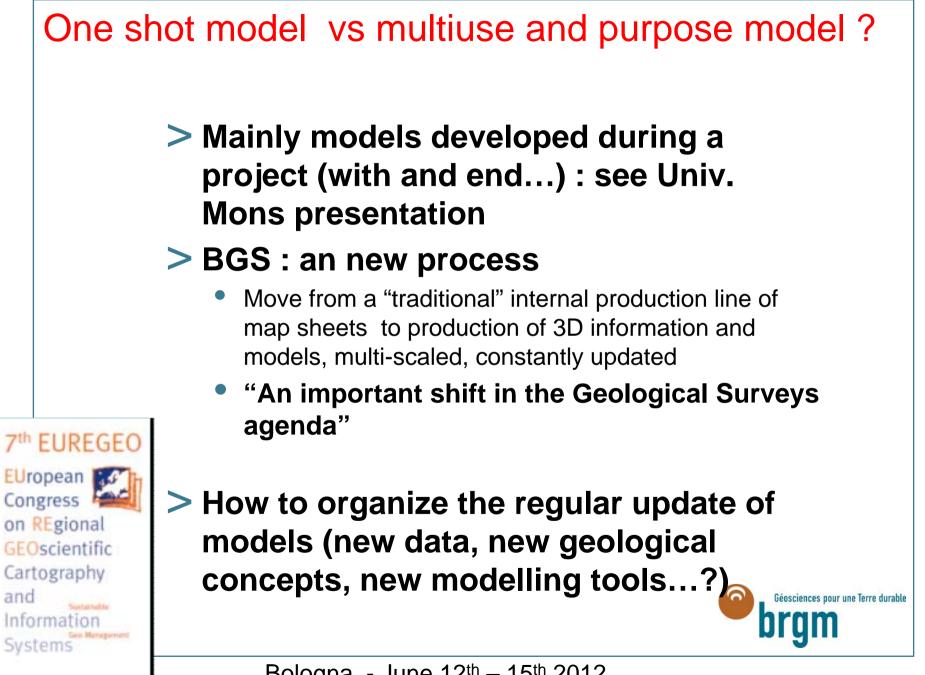Géosciences pour une Terre durable
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2D / 2.5D / 3D / 4D / 5D ? Does it matter ?

> **The end user does not care…**

> **He needs information**

> **… that we derive from our knowledge described in models appropriate to what we have to model (and the data we have)**

> **Very much dependent on the technology that we use…**

Modelling Tools

> **The geologist hand ?**

> **One tool cannot accommodate all needs and conditions (type of geology, type data…)**

> **We need tools that "speak" geology (and not force geologist / geology modellers to adapt they way of thinking…)**

> **… Kriging can provide geologically correct models when taking into account geological interpretation…**

> **Software usually produce nice looking models, and reduce the complexity of the reality…**

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One shot model vs multiuse and purpose model ?

> **Mainly models developed during a project (with and end…) : see Univ. Mons presentation**

> **BGS : an new process**
>   - Move from a "traditional" internal production line of map sheets to production of 3D information and models, multi-scaled, constantly updated
>   - **"An important shift in the Geological Surveys agenda"**

> **How to organize the regular update of models (new data, new geological concepts, new modelling tools…?)**
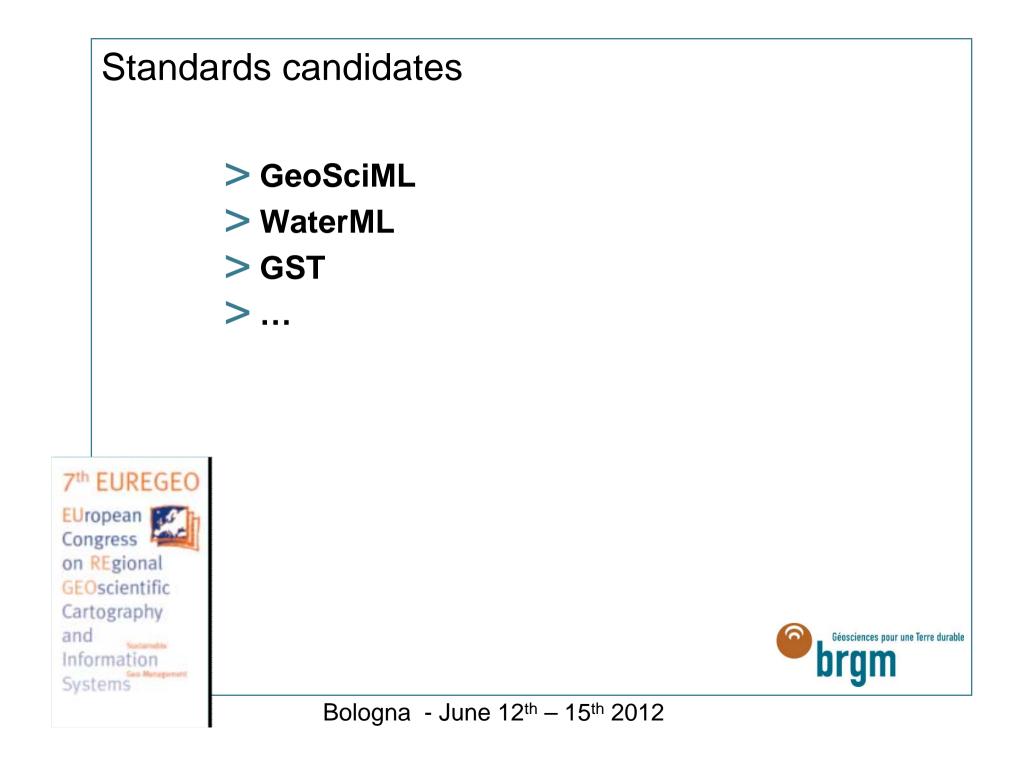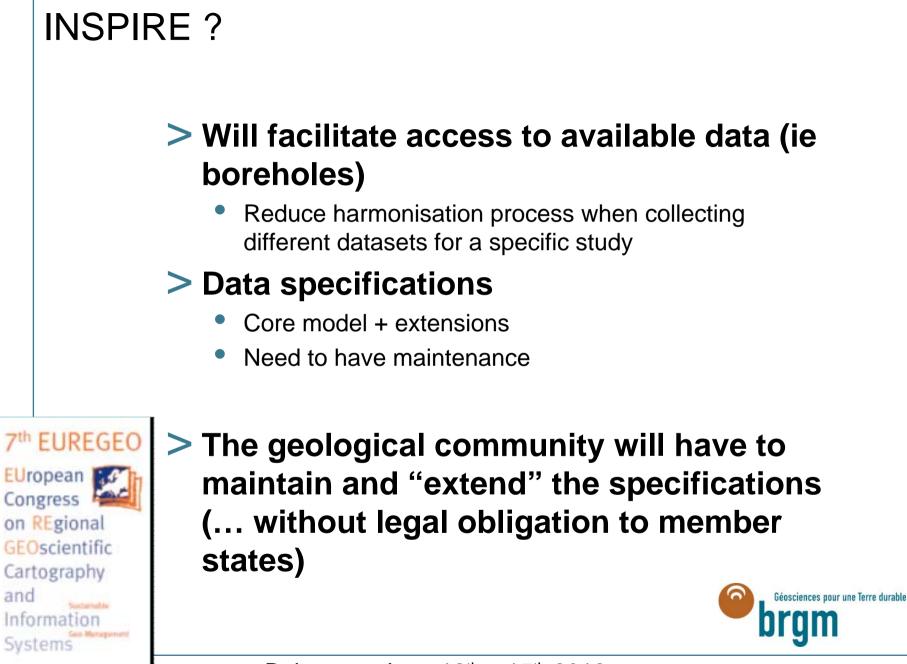
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Models – what do we store ?

> **Final model**
- + metadata (lineage)
- + data
- + "geological conceptual model"
- +modelling software
- + versioning

> **Or only**
- + data
- + "geological conceptual model", … *Canvas ?*

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What about standards / specifications ?

> **Specifications of products ?**
- What "geological" product do we want to deliver ?
- Even "geological maps" were not "standard" products
- First define the "users"…

> **Interoperability standards ?**
- How to deliver / share / store / maintain it ?
- Are the models that we store 100% or 0% dependent on the modelling software that produced them ?

> **There is a "formal" process to produce standards (see OGC)**
- Multi-specialist
- Consensus building process
- Use case derived, with test implementations
- Review / Maintenance procedure

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Standards candidates

> **GeoSciML**

> **WaterML**

> **GST**

> **…**

INSPIRE ?

> **Will facilitate access to available data (ie boreholes)**

- Reduce harmonisation process when collecting different datasets for a specific study

> **Data specifications**

- Core model + extensions
- Need to have maintenance

> **The geological community will have to maintain and "extend" the specifications (… without legal obligation to member states)**

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Data policy ?

> **"raw" data for free**

> **derived data for free ? (meteo model)**

> **Added value data : models ?**

> **Move towards services instead of "data delivery"… ?**

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Towards A 3D geological model of Europe …Is it an achievable target ?

> **Extend the regional intitiatives (Flanders…) to Europe ?**

> **What to model ?**

> **At what scale ? "multi-scale" ?**

> **Do not try to reproduce the "geological mapping per map sheet" production model**

- Be more flexible, more evolutive…
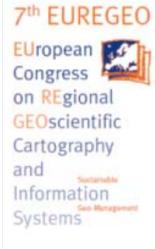- "3D multiscale knowledge" instead of "3D models"

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How to move forward ?

> **Develop sharing of expertise and best practices**

> **Work on standards / specifications**

> **Focus on use when defining products…**

> **And the EuroGeoSurveys EGDI initiative**

  (European Geological Data Infrastructure)…

EuroGeoSurveys : the EGDI initiative

> ## The EGDI initiative

- Follow-up of OneGeology-Europe success
- European Geological Data Infrastructure
- High reslution geological data sets
- "applied geology"datasets
- … and 3D…

> ## A first scoping project

- EGDI-Scope : kick-off next week

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Thank you for your attention

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