

Summary of the ad'hoc meeting Borehole and 3D geosciences

Context

Dedicated to 3D geoscience and boreholes, an OGC/TC ad'hoc meeting was held on June 22nd 2016 in Dublin (Ireland). This was organised by OneGeology Consortium and IUGS/CGI.

About 35 participants in person and 10 remotely attended the meeting. 17 countries were represented, with people coming from geological surveys (2/3) and a mix (1/3) of industry (oil and gas, civil engineering, IT companies) and universities.

A- Borehole :

The session dedicated to boreholes started with five presentations:

First, **“EPOS needs for Borehole – Sylvain Grellet”** presented the H2020 EPOS project and the work that will be done on the drillhole topic, more particularly on drillhole interoperability. Following this, some standards dealing with drillhole exchange formats were presented:

- **GeoSciML v4** by Eric Boisvert (NRCan),
- **GWML v2** by Bruce Simons (CSIRO),
- **BoreholeML** by Rainer Haener (GFZ) ,
- **WITSML** by Jean-François Rainaud (IFPEN).

Discussion followed the talks and mainly dealt with:

- **Exchange format:** need to have a common set of elements identified and none-crossing domain specific additions, to focus on common elements where possible rather than investing too much in dedicated specialist solutions when this isn't necessary.
- **PPDM:** it was noticed that Oil & Gas industry is having a huge effort to use ppdm as a storage solution. Mapping from WITSML and PPDM is straightforward. However, PPDM is used by Energy specialists but not groundwater specialists so in exchanging between one and the other, PPDM might not be the solution.
- **Use case:** oil&gas use case: need to clarify a joint use case and run joint exercise. It was agreed that government bodies and private industry should work together on the use case.

B- 3D modelling

The session dedicated to 3D geomodelling also began with a few presentations.

First, **“3D geological models interoperability: An overview of problems and solutions – Mickaël Beaufils and Christelle Loiselet (BRGM)”** provided a viewpoint on issues and potential solutions for

enhancing interoperability in 3D geomodelling, with a focus on BRGM projects dedicated to this topic.

“End user viewpoint (civil engineering) - Christophe Castaing (EGIS)” pointed out the importance of building a link between infrastructure modelling and especially BIM, and was illustrated by the French project MINND.

“Cross border Geological survey use case - Gerold Diepolder (Bavarian GS)” focused on feedback from the GEOMOL project and dealt with the necessity to provide capacities to combine several local models on a regional study zone (i.e Molasse Basin in GEOMOL project).

“Oil and gas (ResQML) - Jean-François Rainaud (IFPEN)” and **“Geo3DML - Prof. Honggang Qu (GS of China)”**, respectively introduced ResqML and Geo3DML : two candidate standards dedicated to the exchange of 3D geomodelling information. The first one is developed and supported by Energistics, and the second one by the Geological Survey of China.

Finally, **“Technology provider(s) / GST - Paul Gabriel (GiGa)”** focused on the GST tool and its functionality.

The presentations were followed by a question and answer session and discussion. The main topic dealt with the usability of ResqML and Geo3DML to support generic requirements for geoscience modelling. The importance of being compliant with GML was pointed out, and the possibility of a collaborative work has been raised. Questions regarding model updates and exchanges of dynamic models were also discussed.

Discussion in this session identified three potential future workpackages:

- **Metadata for 3D geomodelling:** defining specific format or enhancing existing capabilities to provide interoperable model metadata.
- **On demand model requesting:** defining standardized interface to query 3D models,
- **Links with BIM:** working on the interface between data from above and under the ground.

C– General conclusion & follow up

As a wrap-up of this ad-hoc meeting session, there was consensus in proposing the creation of a DWG dedicated to this topic. This would be a joint DWG with IUGS/CGI (as it was done for the GeoSciML SWG). Connections will also need to be set up with other groups (Earth Science, 3DIM, LandInfra, CityGML,..). OneGeology will be a supporting organization.

The objective is to propose a charter for this new DWG creation to the OGC TC as soon as possible, after validation by the IUGS/CGI.

D – Attendance list

Remote	Name	Organization	Country (of the Organization)
	Athina Trakas	OGC	-
	Bruce Simons	CSIRO	Australia
*	David Lescinsky	Geoscience Australia	Australia
*	Clemens Porpaczy	GS Austria	Austria
*	Frédéric Houbie	Luciad	Belgique
	Boyan Brodaric	GSC	Canada
	Eric Boisvert	NRCAN	Canada
	Yanmei Wu	NRCAN	Canada
*	Qu Honggang	GS China	China
*	Zhang Minghua	GS China	China
*	Lucy Kondrova	CGS	Czech Republic
	Jorgen Tulstrup	GEUS	Denmark
	Michael Pedersen	GEUS	Denmark
	Michael Lutz	JRC	EU
	Mikko Eklund	GTK	Finland
	Christelle Loiselet	BRGM	France
	François Robida	BRGM	France
	Mickaël Beaufile	BRGM	France
	Sylvain Grellet	BRGM	France
*	Christophe Castaing	EGIS	France
	Jean-François Rainaud	IFPEN	France
*	Frederic Pedrinis	LIRIS	France
	Irina Dornblut	BFG GRDC	Germany
	Jurgen Seib	Deutscher Wetterdienst	Germany
	Martin Hammitzsch	GFZ	Germany
	Rainer Haener	GFZ	Germany
	Paul Gabriel	GIGA Infosystems	Germany
	Clemens Portele	Interactive Instruments	Germany
	Peter Baumann	Jacobs University	Germany
	Gerold Diepolder	LFU Bavaria	Germany
	Beatriz Mezo Lopez	GS Ireland	Ireland
	Ted McCormack	GS Ireland	Ireland
	Paolo Perini	ISPRA	Italy
	Marco Pantaloni	ISPRA	Italy
	Alistair Richie	Landcare Research	New-Zealand
	Urszula Stepien	PGI-NRI	Poland
	Lars Kristian Stolen	SGU	Sweden
	Henning Lorenz	Uppsala University	Sweden
	Martin Nayembil	BGS	UK
	Matt Harrison	BGS	UK
	Rachel Heaven	BGS	UK
	Marcus Sen	BGS	UK
*	Liping Di	George Mason University	USA
	Harvey Thorleifson	Minnesota GS	USA