Geophysical Research Abstracts
Vol. 15, EGU2013-4721, 2013
EGU General Assembly 2013

Delivery mechanisms of 3D geological models – a perspective from the British Geological Survey

Ricky Terrington, Antony Myers, Ben Wood, and Baneet Arora
British Geological Survey, Keyworth, Nottingham, United Kingdom (rte@bgs.ac.uk)

The past decade has seen the British Geological Survey (BGS) construct over one hundred 3D geological models using software such as GOCAD®, GSI3D, EarthVision and Petrel across the United Kingdom and overseas. These models have been produced for different purposes and at different scales and resolutions in the shallow and deep subsurface. Alongside the construction of these models, the BGS and its collaborators have developed several options for disseminating these 3D geological models to external partners and the public.

Initially, the standard formats for disseminating these 3D geological models by the BGS comprised of 2D images of cross-sections, GIS raster data and specialised visualisation software such as the LithoFrame Viewer. The LithoFrame Viewer is a thick-client software that allows the user to explore the 3D geometries of the geological units using a 3D interface, and generate synthetic cross-sections and boreholes on the fly. Despite the increased functionality of the LithoFrame Viewer over the other formats, the most popular data formats distributed remained 2D images of cross-sections, CAD based formats (e.g. DWG and DXF) and GIS raster data of surfaces and thicknesses, as these were the types of data that the external partners were most used too.

Since 2009 software for delivering 3D geological models has advanced and types of data available have increased. Feature Manipulation Engine (FME) has been used to increase the number of outputs from 3D geological models. These include:

- 3D PDFs (Adobe Acrobat)
- KMZ/KML (GoogleEarth)
- 3D shapefiles (ESRI)

Alongside these later outputs, the BGS has developed other software such as GroundhogTM and Geovisionary (in collaboration with Virtalis). Groundhog is fully a web based application that allows the user to generate synthetic cross-sections, boreholes and horizontal slices from 3D geological models on the fly. Geovisionary provides some of the most advanced visualisation of 3D geological models in the world with its ability to stream high resolution national and world scale datasets seamlessly.

All of these tools have some technological and visualisation limitations and not one delivery mechanism is suitable for all. The idea from the BGS when it comes to model delivery mechanisms is to offer as many different 3D data formats and delivery options as possible to cover all user requirements. Most importantly, it is about giving the user what they want and engaging with them to encourage the use of the advanced functionality of some of this software so that a deeper understanding about the subsurface is gained. Sometimes this solution might be a high-tech solution via mobile devices, but at other times a print-out of a contour plot might be what is required. In the end it is the consumer that has to be satisfied with the product they are receiving.