Uncertainty in reservoir models

What's next for geoscience data management

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Augmented reality for subsurface - combining real models with computer models
Paradigm experiments with augmented reality in the subsurface

Subsurface software company Paradigm has been experimenting with 'augmented reality'.

First, a 3D graphics company created a physical object - a 3D model of a salt dome that had originally been modeled using Paradigm SKUA modeling software - using a 3D printer.

Then it built a software tool running on an iPad, which takes a video image of the physical salt dome and displays it in 3D on the iPad screen. It then superimposes other geological data modelled using various Paradigm software applications (faults, stratigraphic horizons, well data, stratigraphic features, etc.) on the image.

The iPad augmented reality software was developed by UK 3D graphics company Inition.

The seismic data were processed using Paradigm software Echos, GeoDepth and Earth-Study 360. Channels were detected using VoxelGeo, the structural and stratigraphic model was computed using SKUA UVT Technology, wells were designed with Sysdrill and petrophysical properties were analysed in Geolog.

You can interact with the model (on the iPad screen) by looking at the salt dome from different directions, as well as explore the structural model, plan well trajectories, analyze petrophysical and seismic data, study the geological features, and get a better understanding of the geology. You can even slice through the seismic cube.

"It is augmented reality," says Mélanie Morin, Technical Sales Advisor - Geomodeling, with Paradigm. "It shows how Paradigm solutions offer deeper insight into the subsurface, in a clear, visual manner that audiences can readily understand. The augmented reality experience literally places the geoscientist in the heart of the subsurface model."

Paradigm's augmented reality: the iPad camera makes a video image of the salt dome (which is a physical model printed with a 3D printer). The iPad software adds further information from the subsurface model to the image which is displayed directly on the iPad screen.

Rockeye – seismic visualisation

Rockeye is a new company which has launched in Stavanger, Norway, with software which promises to make it as easy to visualise your seismic (interpreted 2D and 3D SEG-Y files) as it is to play a computer game.

The company is so sure that the software is easy to use, that it is provided with no instruction manual or training.

The software development team have a lot of practise developing software which runs with no manuals - they have also developed hundreds of computer games, with a philosophy that the game needs to hold a small child’s attention to be successful.

Company founder Kjell Jaeger developed the company because he wanted to make the task of loading SEG-Y files less tedious and slow.

You could use it for working with seismic archive data, or helping people work with vast seismic data sets when deciding which license block to bid for.

There are 20 full time programmers in India working on the project, and 2 full time staff in Stavanger, Norway.

The software can take an enormous amount of seismic data - it has been tested with file sizes of over 500GB, which is the size of all the publicly available seismic data for large sections of the North Sea.

You can load SEG-Y data with one click. The software can search through your data store for interpreted SEG-Y data files.

After a short time of processing, you can view the seismic data in a 3D visualiser.

You can take a section (or “cube”) of the data and look at it in more detail, and make drawings or annotation on it.

Most functions can be controlled with a mouse, or you can draw where you think the horizons are on a screen with a pen device.

You can make slices through the seismic, and...