move feature

MOVE 2020 is here!

MOVE 2020 is now part of the Integrated Production Modelling software (IPM) 12.5 release. IPM 12.5 was released on 7th December 2020 and is available for download to all our maintained clients and academic users. There is a single installer with MOVE, RESOLVE, REVEAL, GAP, PROSPER, MBAL, PVTP and OPENSERVER. This is important for the creation and execution of visual workflows that utilise both RESOLVE and MOVE via the Application Programming Interface (API).

The 2020 version of MOVE includes new API developments and MOVE features, as well as improvements to the existing functionality and usability.

MOVE 2020 Highlights

New data format

One of the major additions to 2020 is the new **3D Regular Grid format** which allows users to load and display a range of data types including geostatistical data, attribute data including rock property data, geophysical data including seismic attributes and potential field data including gravity and magnetics.

For users, this provides the ability to integrate and analyse many additional data types in addition to those already supported in MOVE. The incorporation and visualization of data loaded using this new format can improve modelling of the subsurface in many ways. One advantage is that the data can be intersected onto 2D sections and used to better constrain 2D interpretations of the subsurface. It can also be used to improve workflows in the 3D Kinematic Modelling module. For example, velocity cubes based on this format can be used in the 3D Depth Conversion tool and similarly porosity cubes can be used in the 3D Decompaction tool.

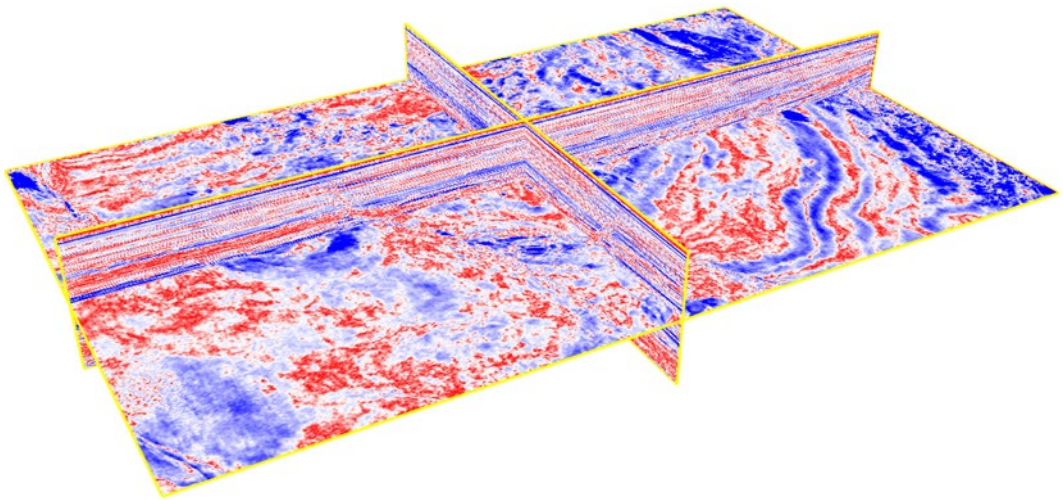

Figure 1: Seismic envelope attribute data loaded into MOVE using 3D Regular Grid format and displayed as a volume with inline, xline and depth slices shown

Integrated modelling

For MOVE 2019, a brand new **API** was developed and introduced, and MOVE 2020 builds further on this.

Petroleum production systems incorporate many modelling domains and specialities. The multi-disciplinary nature of such systems risks isolation of modelling and imposition of artificial boundary conditions. This risks the model deviating from the reality in the field and therefore not being representative and predictive. Integrated modelling is the practice of using technology to remove artificially-imposed boundaries using automated and efficient communication between modelling software tools. This enables automatic review of a model in one domain against models and data from other disciplines, ensuring assumptions are consistent in all components of an integrated model. For geological modelling, integrated modelling will streamline the validation process with any available dynamic production data, as well as enable an efficient update of the reservoir model as understanding evolves.

Integrated modelling is achieved using the API, which provides a two-way gateway for communication between MOVE and external applications. Modelling tasks in MOVE can now be automated. Doing so:

- Increases efficiency.
- Removes subjectivity.
- Makes analyses documented and repeatable.
- Encapsulates knowledge.

New Fault Seal Analysis technique

The Fault Analysis module in MOVE now provides the capability to calculate **Effective Shale Gouge Ratio (ESGR) values** across faults enabling a more comprehensive set of options for calculating fault seal potential. The ESGR algorithm alters the Shale Gouge Ratio (SGR) algorithm to give a greater weighting, for fault rock composition, to units that are more proximal to the part of the fault being examined (Figure 2). The newly implemented algorithm also considers both hanging wall and footwall lithological packages rather than just the hanging wall. In many cases ESGR provides a more realistic prediction of fault rock clay distribution than SGR.

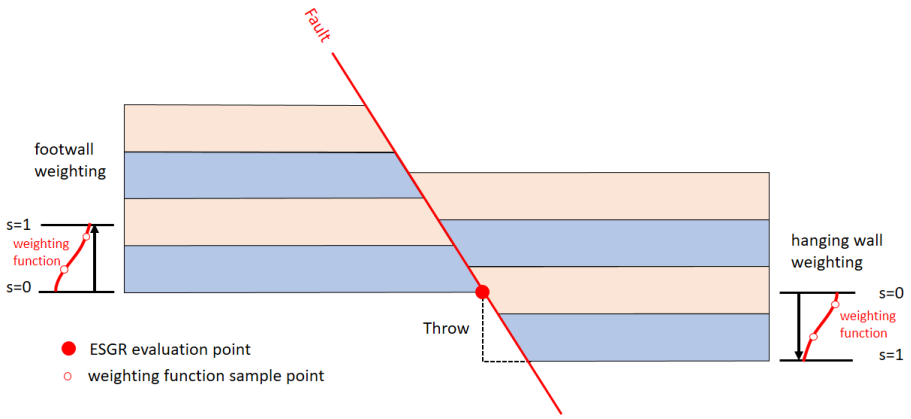

Figure 2: Schematic diagram showing weighting of hanging wall and footwall rock properties for ESRG calculation

New slip zone modelling method

A new **direct solver option** has been added in Fault Response Modelling (FRM) when applying the slip zone modelling technique. This new technique favours accuracy over speed thus providing more accurate results when forward modelling slip on faults. Additionally, this method can solve where the previously implemented conjugate solver does not, ensuring more consistent and reliable results.

The new solver expands the capabilities of the slip zone modelling technique to calculate slip distributions on faults, which can then be used in FRM to calculate the associated displacement, strain and stress in the surrounding rock mass. This approach is used for many extractive industries, and in earthquake studies, to understand the likely behaviour of secondary features, such as fractures, following slip on faults (Figure 3).

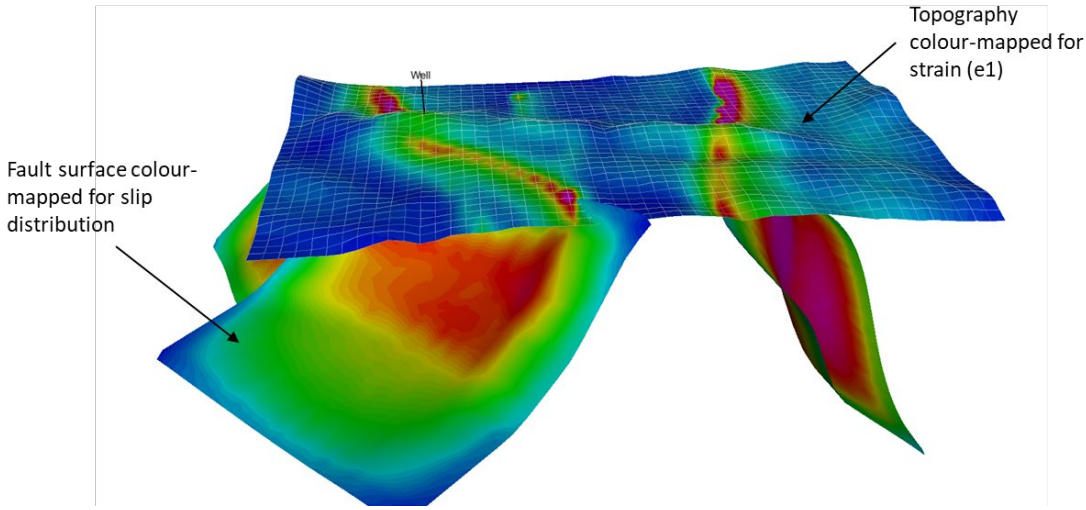

Figure 3: Fault Response Modelling simulation run with slip calculated using the direct solver option.

Model Catalogue Updates

MOVE 2020 includes developments to continue to allow compatibility with Petex's Model Catalogue product (licenced separately).

Model Catalogue is a version control and model management system. This new development provides significant improvements for multiple users that are working on a single MOVE file. A MOVE model can be loaded into Model Catalogue and the contents of the model are registered. The most up-to-date version of a model is maintained and Model Catalogue notifies a user if the model is being worked on by someone else. Once a user has finished working on the model, any changes are tracked and recorded. Users can leave comments for other users outlining the work that has been completed or the changes that have been made.

To find out more about the developments, enhancements and bug fixes in MOVE 2020 please visit the Petex Web User Area.