TI 22 – 71. Technology Example – CoViz Data Visualisation and Analysis Software

A screenshot of a video game

Description automatically generated with medium confidence

**CoViz 4D: Data Visualization and Analysis Software for Reservoir Simulations**

Petroleum engineers have long recognized the value of reservoir simulation software products from companies such as Landmark (Halliburton), Schlumberger, and CMG to model reservoir performance. With volumes of subsurface data and these powerful modelling tools, reservoir engineers create simulations to more closely depict reservoir structural, petrophysical, fluid, and production characteristics. Improved models provide better estimates of reserves and guide economic and operational decisions to maximize recovery.

**CoViz 4D Enhances the Value of Reservoir Simulation Software**

Engineers can obtain even greater value from reservoir simulations by combining models with other relevant subsurface information to[visualize and analyze the data using CoViz® 4D](https://www.dgi.com/coviz-4d-software-for-data-visualization-and-integration/). CoViz 4D allows reservoir engineers to combine reservoir simulations with seismic data, fluid production, well events, microseismic, and other temporal data to obtain a more detailed understanding of the changing response of a reservoir. CoViz 4D includes a rich set of analytic and statistical tools and algorithms that enable an asset team to collaboratively evaluate and interpret data in time snapshots or time sequence animations.

**Conduct Seismic History Matching to Refine Simulation Models**

CoViz 4D also provides cross-plots, regression analysis, other statistical methods to [opens in a new windowcompare time-series seismic responses against a predicted reservoir simulation model](https://www.dgi.com/reservoir-simulation-software-coviz-4d/coviz-4d) to determine if predictions are consistent with seismic monitor surveys.

CoViz 4D uses petrophysical properties, fluid saturations, and pressure data obtained from a reservoir simulation and computes time-variant petroelastic properties (seismic velocity and density) for a reservoir interval. The petroelastic model can then be used in forward modeling of synthetic seismic response of the reservoir under changing reservoir conditions.

By qualitatively and quantitatively [comparing a 4D synthetic response model with actual 4D seismic response dataopens pdf file](https://www.dgi.com/wp-content/uploads/2021/04/dgi_cv4d_oilfield_technology.pdf), asset teams can determine if the current reservoir simulation model needs to be modified to more closely match the 4D seismic data. Whether the modification is as simple as changing the average porosity or as complex as updating a full depositional model of a sandstone reservoir in the simulation, CoViz 4D facilitates the iterative process of refining models for a closer approximation of reservoir performance.

When all data—static and temporal, including simulation models, geology, seismic, wells, annulus recordings, and logs—can be combined and viewed over time, engineers can then explore complex relationships to test various hypotheses, compare scenarios, and develop the appropriate operational strategies to maximize recovery.

Note: This is an extract from the vendors website, please click on the link below to go to the website for further information;

Link: [CoViz 4D: Data Visualization and Analysis Software for Reservoir Simulations (dgi.com)](https://www.dgi.com/reservoir-simulation-software-coviz-4d/)