

Taking a New Look at Interpretation

New modeling and interpretation workflows will be unveiled.

Contributed by Paradigm

With a 25-year track record of delivering innovative software solutions to the oil and gas industry, Paradigm continues this tradition at the 2010 Annual SEG conference in Denver with new technology presentations highlighting its latest breakthroughs in geophysics and geology. Paradigm will host a Redefining Interpretation Media Event at 3 p.m. Tuesday, Oct. 19, in booth 1308, including presentations by the Paradigm leadership team.

Redefining interpretation

Improved collaboration among asset team members has created a need for a new generation of interpretation systems that support multiscale, multidisciplinary workflows with regional to prospect scale scope.

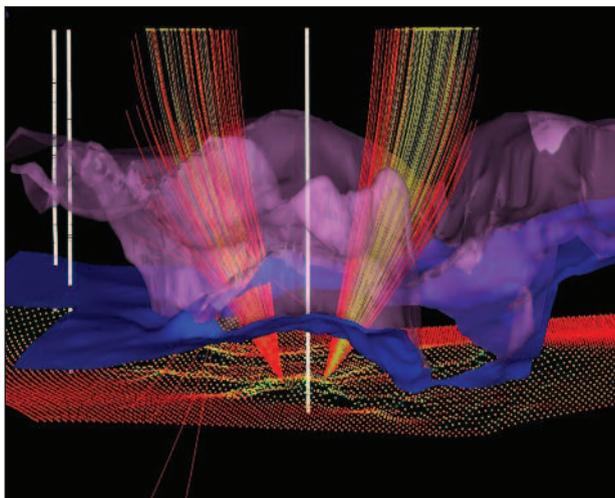
Microseismic, potential fields and cultural data routinely are incorporated in the interpretation scene, but until now, seismic prestack data remained available to interpreters only in views “foreign” to the primary interpretation canvas. Since these gathers are the outcomes of decisions related to sampling subsurface geology, it is imperative that prestack be incorporated seamlessly into the interpretation scene.

Seismic interpretation also depends heavily on the velocity models used to create the subsurface images. New illumination analysis tools allow interpreters to understand the relationship of velocity and seismic acquisition with a seismic data reflector’s position and quality. This will allow real-time decisions and scenario analysis related to the interpretation process.

Seismic and stratigraphic characterization activities are carried out routinely in the interpretation canvas, and they have grown more complex with multisurvey, multiwell, and multiattribute operations.

In support of these objectives and in the spirit of “redefining interpretation,” Paradigm will feature the following technologies in a single interpretation canvas, Paradigm 2011:

- Prestack data in a common interpretation canvas to qualify data assets and prospects;
- Illumination analysis as an interpretation asset;
- Multiattribute and multiwell synthetics to enhance re-



A subsalt illumination shows a ray path through salt.
(Image courtesy of Paradigm)

source plays; and

- High-performance voxel-rendering and seismic facies classification to clarify depositional features.

Data validation

Subsurface modeling is an activity that requires high levels of interactivity and transparency in operation while meeting objectives such as:

- Providing a unified and rigorous foundation for modeling processes that support oilfield life cycles;
- Readily incorporating and honoring available data without compromises; and
- Providing modeling operations seamlessly integrated with other E&P processes (e.g., velocity modeling, spatial modeling, interpretation, and simulation) allowing concurrent validation processes.

In support of these objectives, Paradigm’s technical presentations will feature subsurface modeling themes including:

- Modeling while interpreting as a standard validation procedure;
- Modeling complex stratigraphy during the seismic-to-simulation process; and

- Improving the quality, scalability, and usability of velocity modeling.

Full directional resolution of the seismic method

The exploitation of information from rich and wide-azimuth seismic acquisitions has proven challenging for conventional seismic imaging methods. Approximations such as surface azimuthal sectoring are used to capture signatures of data related to subsurface properties such as fracture orientation.

A more accurate use of azimuthal information has been developed relevant to seismic acquisitions, seismic assets, and seismic interpreters.

A proper decomposition of seismic data results in:

- The highest “directional” resolution from seismic;
- Substantial reduction of uncertainty for the seismic method;
- Full azimuthal data structures carrying acoustic and structural properties; and
- Local and magnified seismic images.

In support of these objectives, Paradigm will feature seismic imaging themes including:

- Multi-azimuth tomography in the angle domain, reducing velocity model uncertainties;
- The need for global and local imaging solutions; and
- Full-azimuth imaging and characterization, enhancing gas shale plays.

Additionally, Paradigm will feature key capabilities of Paradigm Epos, a leading data management solution, designed and developed to facilitate technology-rich workflows across many disciplines, accessing very large and complex datasets. Each presentation will include facets of the flexibility, adaptability, and broad scope of Epos, the only truly distributed data management and interoperability system specifically engineered to address the requirements of exploration and production activity.

The company also will offer private demonstrations of its full solution suite of seismic interpretation, velocity modeling, seismic characterization, and well-calibration capabilities on a 64-bit Windows platform. Paradigm’s Windows version, to be released in mid-2011, will have an identical user interface to that of the Linux platform. ■