



EMERSON™

Paradigm 18

New Dimensions
in Intelligence



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New Dimensions in Intelligence

Oil and gas E&P companies, challenged by the need to handle the massive amounts of data that are now available to them, are in need of advanced technologies to help them optimize their work. The Emerson E&P software solutions group, the leading technological innovator in the business, has included in the Paradigm 18 release solutions aimed at providing more accurate results in less time, and with less effort on the part of the user. Through **automation**, **integration**, **collaboration**, and **product optimization**, Paradigm 18 enhances your work experience and provides the solutions you need in today's rapidly-changing world.

Automation

Machine Learning as a data integrator and process automation tool

- A new unsupervised learning approach for classification of prestack seismic data or using multiple attributes, integrated with geobody detection
- Advanced parameter sampling for sensitivity analysis of all seismic facies classification workflows, to facilitate user understanding of the impact of parameter changes on the workflows

User Experience and Integration

Continued unification of UI and Data Management, from seismic processing to interpretation and modeling.

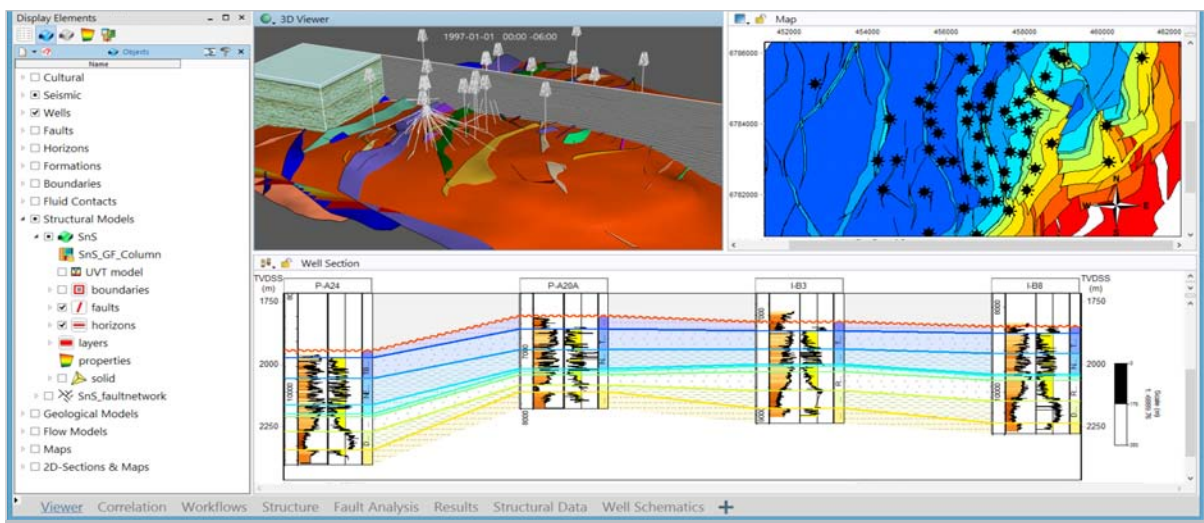
Collaboration

Support for applications running on the Cloud, allowing remote teams to work together more efficiently.

Optimization

High-resolution Seismic Processing and Imaging

- Model-based ground roll modeling and attenuation based on estimation of near surface parameters
- Radon-based modeling in 5D data reconstruction, for improved signal representation
- Tomography-enabled support for large datasets in conjunction with high-resolution tomographic update grids for more accurate velocity models
- Significant reduction in memory consumption and project run times
- Geologically-constrained velocity models with model-based tomography solutions that honor faults and multi-valued surfaces
- Time preserving tomography workflow support for complex models to facilitate the minimization of misties between well markers and the structural model in depth (SKUA-GOCAD™ and GeoDepth™ integration)



- ▲ A common UI framework for seismic interpretation, geologic interpretation and modeling activities, improving the experience of geologists working in the Epos environment

- A new orthorhombic workflow available for application to full-azimuth gathers in EarthStudy 360™, for more reliable estimates of fracture orientation and stress

High-resolution Seismic Interpretation

- New interpretation workflows for interval attributes, Spectral Decomposition and Dip-steered enhancement attributes in SeisEarth™ Integrated Canvas
- Flattening and unflattening of interpretation and seismic attribute volumes in paleospace in support of a stronger interpretation-modeling workflow (SKUA-GOCAD)
- A new stratigraphic context that enables users to group selections of active well data, marker priorities, and marker assignments with the Epos™ interpretation database, and switch between them using a one-stop mechanism, for easy sharing of selections with colleagues

Quantitative Seismic Interpretation and Reservoir Characterization

- Automatic QSI parameter optimization at all well locations
- Crossplot overlay creation and display
- Gridless geostatistics (SKUA-GOCAD) for stratigraphically constrained property modeling on unstructured grids and meshless objects

Geomechanics, Well Bore Stability and Production Logging

- A unique ability to decompose the seismic wavefield into full-azimuth reflectivity and directivity gathers, to accurately determine subsurface stress and recover low energy faults and fractures
- Major updates to Geolog™ geomechanics, engineering and production modules, including the generation of new modeled borehole failure images showing breakout width and tensile fractures; and new cement evaluation functionality

- Hybrid grids (SKUA-GOCAD) combining the benefits of structured and unstructured grids in support of flow simulation and geomechanics simulation workflows

Productivity Enhancements

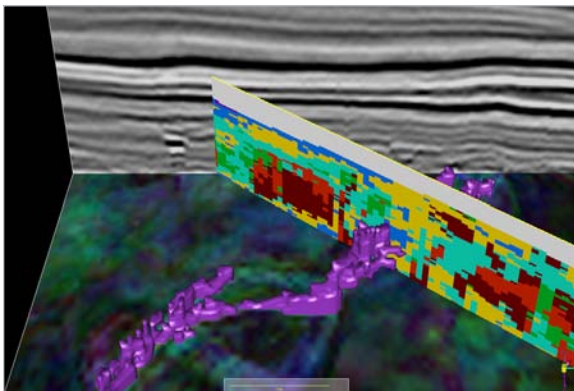
- New seismic file parallel I/O capabilities providing improved throughput for seismic processing and imaging workflows
- Re-engineering of many geophysical imaging and tomography applications to support large data and high-resolution (grid) imaging and velocity modeling objectives
- Significant productivity improvements for velocity model updating and imaging of multi-line 2D seismic surveys
- Optimized modeling workflows for handling large numbers of wells
- Common UI framework for seismic interpretation, geologic interpretation and modeling activities
- Streamlined structural model construction and validation by optimizing model size and providing comprehensive assistance for model quality control

Uncertainty Capture

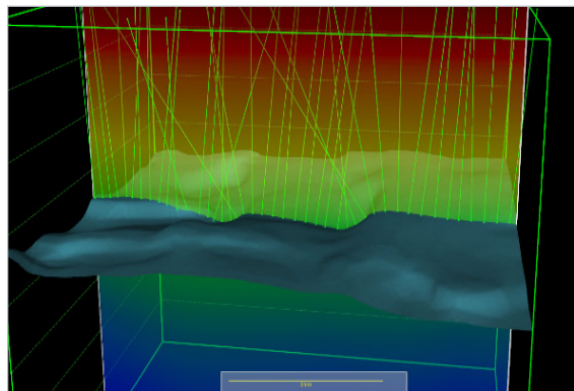
- Generalization of petrophysical uncertainty, enabling most Geolog modules and Loglans to run in Monte Carlo mode

Data and Open Systems

- New wavelet-based prestack seismic file compression providing improved flexibility for seismic processing and imaging workflows
- Python programming support in Geolog
- Infrastructure support for all types of 3D seismic gathers
- Extended access to Web-based Open Source and GIS data sources



▲ Sub-volume detection and spectral decomposition attribute



▲ Ray-based re-depting in GeoDepth: A simple and accurate workflow for measuring depth velocity model uncertainty



The Emerson E&P Advantage

- Artificial intelligence capabilities enable quick and reliable identification of hydrocarbon bearing facies.
- Unification of the user interface and data management eases the user experience.
- Support for applications running on the Cloud makes it easier than ever for remote teams to work together.
- High resolution processing, imaging, interpretation and modeling result techniques result in more accurate earth models.

Interoperability

All Epos™-based applications enable interoperability with third-party data stores, including:

- RESQML 2.0.1
- OpenWorks® R5000.10
- GeoFrame® 2012
- Petrel* 2017 & 2016
- Recall™ 5.4.2

(*is a mark of Schlumberger)

System specifications

This update supports the latest hardware available in the marketplace, while also providing users with more secure versions of Operating Systems.

- 64-bit Red Hat® Enterprise Linux® 6.8 and subsequent minor releases and 7.1 and subsequent minor releases
- Microsoft® Windows 7, 8.1, 10

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