



**EMERSON™**

# Paradigm 19

Leading Science  
Deeper Insights



# Paradigm 19

## Leading Science | Deeper Insights

The Paradigm 19 E&P software release offers new and enhanced functionalities to support Emerson's strategic focus on usability, productivity, automation, performance and collaboration in all E&P software domains, from seismic processing and imaging to reservoir modeling. The result is more efficient workflows, accurate results that reduce uncertainty, and cost savings across our customers' entire organization.

Available both as a cloud-hosted and on-premise solution, Paradigm 19 continues to deliver best-in-breed software applications and workflows while ensuring maximum flexibility, scalability and performance at all levels of use.

### Workflows for Interpreters

Using a workflow-driven user interface, the Emerson portfolio of Workflows for Interpreters offers unique, best-in-class technologies in the same integrated platform where day-to-day interpretation is performed. Advanced functionalities, such as seismic classification, advanced visualization, geobody picking, quantitative seismic interpretation, and others, are available directly within a comprehensive interpretation environment, with no need to move to specialized software from third-party vendors.

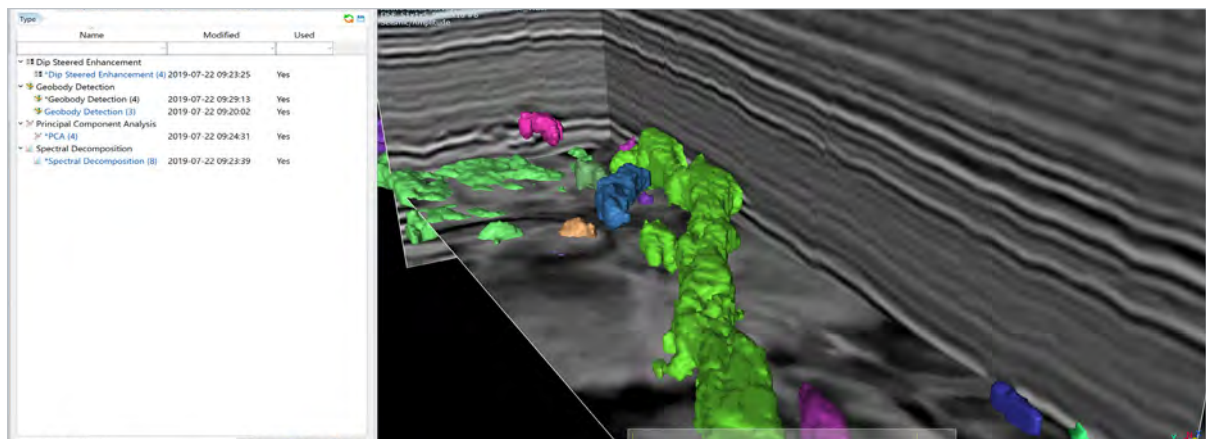
With a seamless workflow, consistent user interfaces, and common viewers, Workflows for Interpreters preclude the need to learn new applications, and eliminate the challenges associated with moving data between platforms, including the risk of data duplication, loss of data integrity, etc. The integrated workflow improves productivity while also enabling faster product adoption and a reduced learning curve.

### Enhanced Automation

Artificial intelligence capabilities enable quick and reliable identification of geologic facies from seismic and wellbore data.

### High-resolution Seismic Processing and Imaging

- A new framework for running parallel tomography jobs with different parameters enhances productivity and understanding of sensitivities and uncertainty.
- New ability to vary the tomography grid with depth enables high resolution shallow modeling, providing a leap in model quality and productivity
- Dramatically reduced I/O initialization time improves EarthStudy 360 productivity, particularly important for cloud runs.
- A new converted wave imaging mode in EarthStudy 360 delivers substantial improvements in areas below gas clouds or salt domes.
- Significant extensions to 3D Kirchhoff migration workflows, including a new OVT binning application.
- Additional usability and productivity when handling large numbers of 2D lines.
- New options for seismic noise attenuation by radial trace transformation, seismic residual statics solutions, and seismic survey merging by 5D data reconstruction.



- ▲ Workflows for Interpreters employ a workflow-driven user interface while offering best-in-class technologies in the same integrated platform where day-to-day interpretation is performed.

## High-resolution Seismic Interpretation

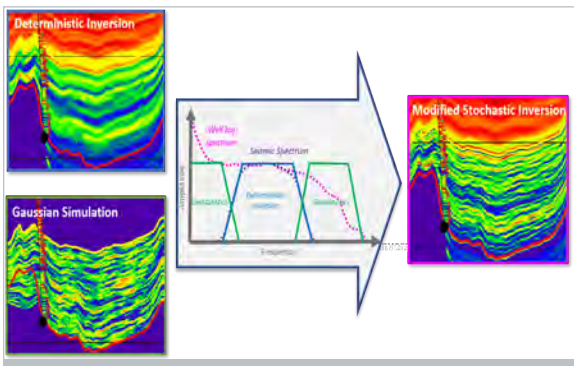
- New Workflows for Interpreters: Principal Component Analysis and Multi-body Geobody Detection (created by migrating Stratimagic™ and VoxelGeo™ functionalities into the Integrated Canvas).
- Chained workflows: The ability to chain workflows together adds efficiency to the overall interpretation workflow and marks a significant step towards automation and retrieval of repeating workflows.
- Import and display of outcrop data in 2D interpretation windows, to validate and guide interpretations in poor-quality onshore seismic data.
- Optimized performance when working with very large seismic data sets and/or large, multi-survey projects.

## Quantitative Seismic Interpretation

- A new, groundbreaking stochastic inversion workflow (Modified Stochastic Inversion – MSI), demonstrating excellent performance and the ability to handle very complex sub-surface structures.
- 3D Geostatistical Operations workflow enabling the creation of log volumes using SKUA/GOCAD technology.
- Enhancements to rock physics analysis, including a powerful multi-attribute crossplotting capability that boosts productivity and improves the user experience.

## Formation Evaluation

- Increased efficiency through new data query and visualization tools, including a new timeline view showing operational events for a well; these lead to vastly improved information management productivity.
- Improved user experience when setting up a real-time geosteering environment through streaming WITSML data directly into the Geolog™ Geosteer™ module.
- Early detection of hydrocarbons present in the drilled formations through the addition of a new mud gas analysis module, enabling safer drilling through early detection of gas kicks.



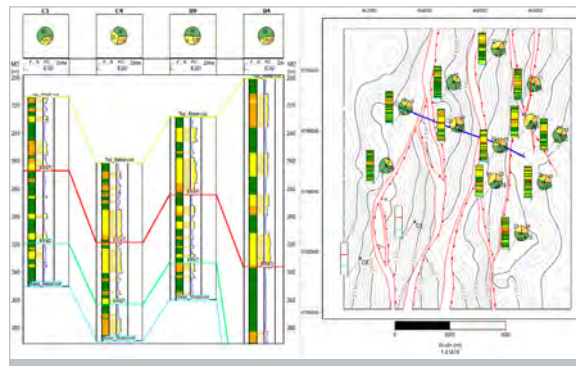
- ▲ The innovative MSI workflow creates multiple high-frequency realizations of the reservoir that match the seismic data.

## Geological Modeling

- Streamlined automation in SKUA-GOCAD™, enhancing the ability to re-run all reservoir workflows for fast model update and uncertainty quantification, considerably reducing time-to-business decisions.
- A combination of Jacta reservoir risk assessment, SKUA structural uncertainty (faults and horizons), and SKUA-GOCAD's dynamic modeling workflows, to enable systematic, comprehensive, and rigorous reservoir uncertainty analysis. This automation enables SKUA-GOCAD to become a core component of Big Loop™.
- Refine SKUA-GOCAD UVT-based models to better fit high-resolution input data. Use to construct robust models, boosting confidence and empowering model-centric geophysical workflows such as tomography and stratigraphy-constrained velocity modeling.
- A new 3D factorial kriging algorithm which decomposes a property into multiple components based on spatial analysis of the input signal, allowing a reduction in both noise levels and seismic acquisition footprints.
- Improved data flow between SKUA-GOCAD and Epos for well markers and stratigraphic data, increasing efficiency and facilitating collaboration between users.
- Enhanced usability for various 2D displays, significantly reducing the number of mouse clicks needed to perform specific tasks.

## Data Management and Open Systems

- Audit trail for well operations performed in Epos applications.
- Seismic collections and seismic maturity labeling and tracking.
- Line List activation from Session Manager.
- Unique seismic identifier.
- Recent and survey sessions.
- Deployment of Python environment as a part of Geolog installation.



- ▲ 2D displays in SKUA-GOCAD and StratEarth improve ease of use and ensure better data visualization, QC and interpretation.



## The Emerson E&P Advantage

- Automation delivers high productivity with less effort by the user.
- Uncompromising science ensures maximum information about the subsurface, resulting in more accurate models.
- Full support for cloud-hosted and desktop solutions reduces costs while supporting flexibility and scalability.
- Artificial intelligence capabilities enable quick and reliable identification of geologic facies from seismic and wellbore data.

## Interoperability

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

- RESQML 2.0.1
- OpenWorks® R5000.10
- GeoFrame® 2012
- Petrel\* 2019 & 2018
- 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

[www.emerson.com/EPsoftware](http://www.emerson.com/EPsoftware)

The Emerson logo is a trademark and service mark of Emerson Electric Co. Paradigm and/or other Paradigm products referenced herein are registered trademarks of one of the Emerson family of companies. All other marks are the property of their respective owners. © 2019 Emerson Electric Co. All rights reserved.