

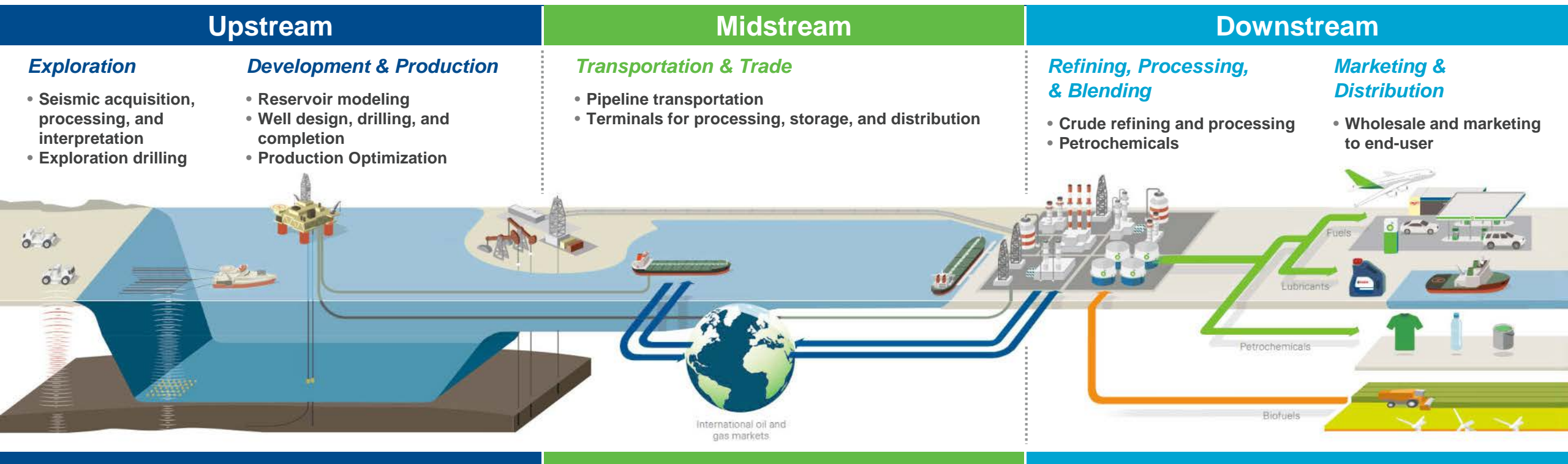
# Emerson E&P Software Quantitative Seismic Interpretation (QSI)

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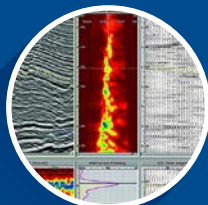


# Emerson Oil & Gas Value Chain

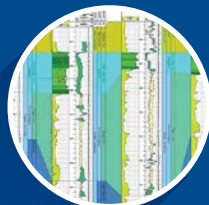
## Exploration and Production Software



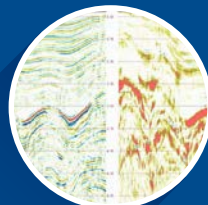
## Exploration & Production Software



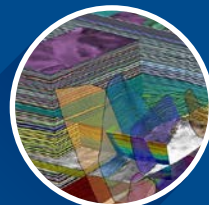
Processing & Imaging



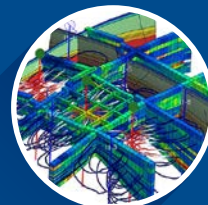
Formation Evaluation



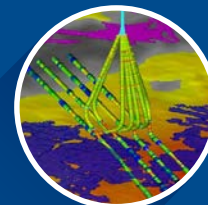
Interpretation



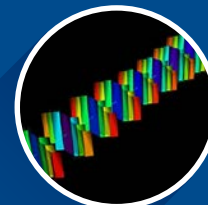
Geologic Modeling



Reservoir Engineering



Drilling

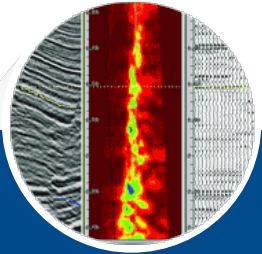


Production Optimization

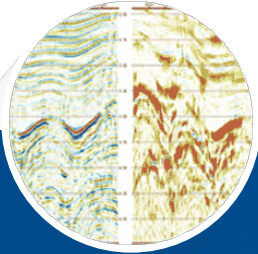
# Emerson E&P Software Portfolio

## Quantitative Seismic Interpretation (QSI) – Anchor Product

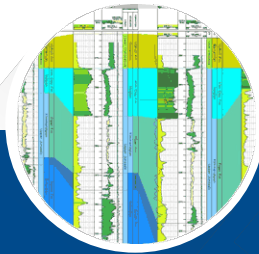
Processing & Imaging



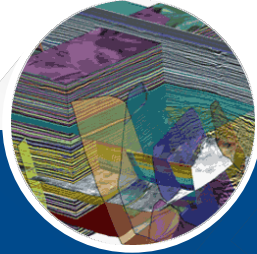
Interpretation



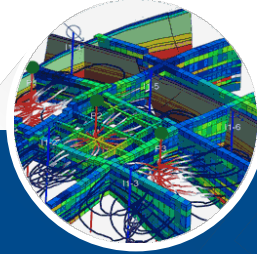
Formation Evaluation



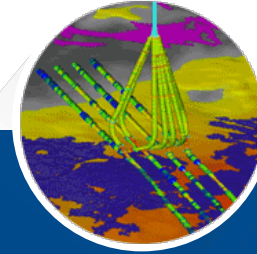
Geologic Modeling



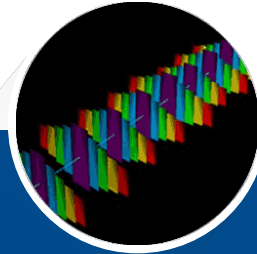
Reservoir Engineering



Drilling



Production Modeling

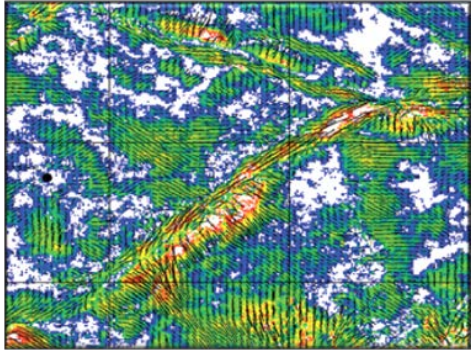


DATA MANAGEMENT & CONNECTIVITY



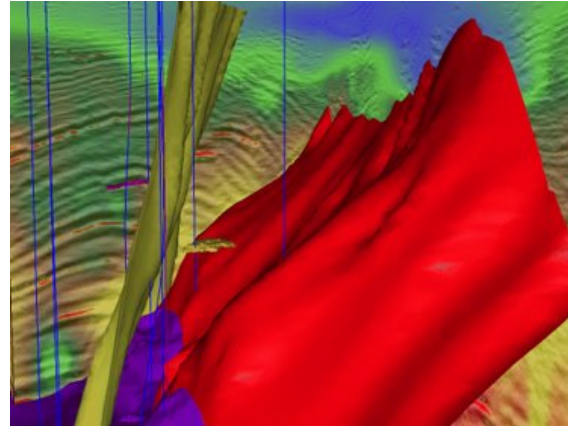
# Quantitative Seismic Interpretation (QSI)

## Azimuthal Fracture Properties



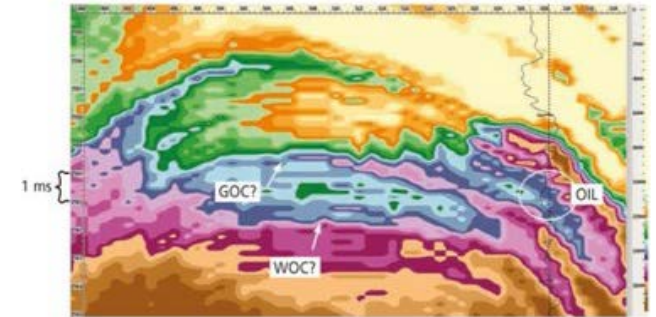
- Dedicated toolkits to characterize fractures for unconventional and other fractured reservoirs from analysis of azimuthal data.
- Uses azimuthal-dependent residual moveout (FastVel™) and/or amplitude variation analysis.
- Provides accurate information about orientation, intensity and density of fracture/tectonic-stress systems.

## Pore Pressure Prediction



- Enables estimation of 3D high-resolution pore pressure volumes from seismic data.
- Dedicated toolkit for 1D pore pressure analysis at well location.
- Guided workflow for 3D pore pressure estimation from seismic velocity.

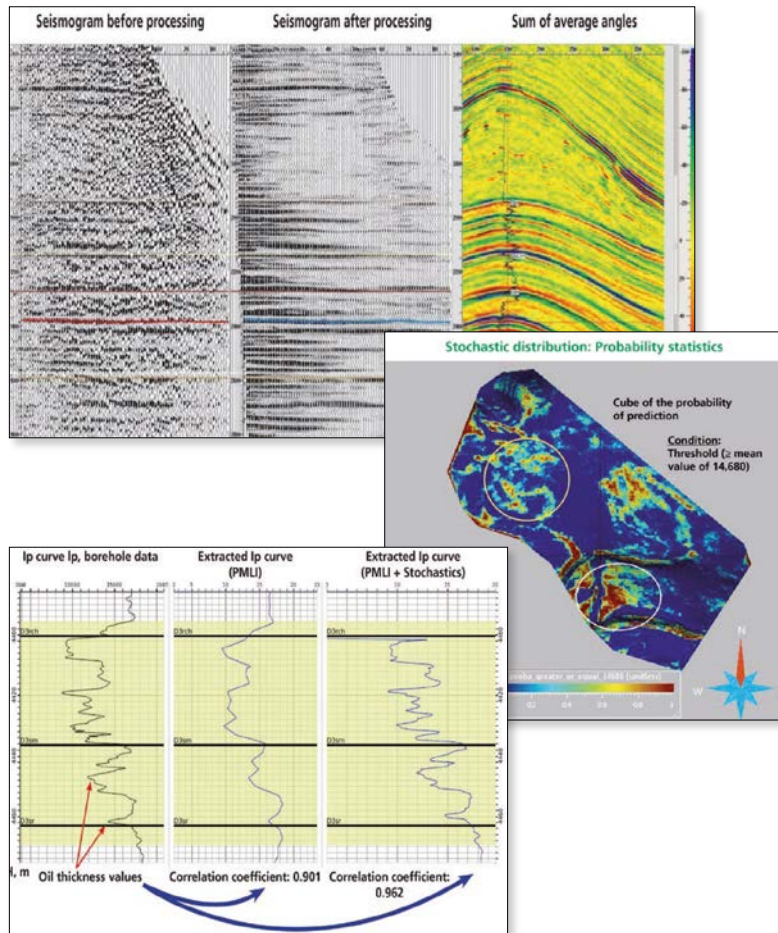
## Rock and Fluid Properties



- Comprehensive toolkit to estimate rock and fluid properties from seismic amplitude.
- Best-in-class seismic-to-well tie utility for clear understanding of fluid/lithology impact on seismic response.
- Extensive seismic preconditioning options and inversion technology ranging from deterministic, neural network and geostatistical.

# Quantitative Seismic Interpretation (QSI) – Customer Success Story

## Ultra thin oil saturated reservoir delineation using pre-stack amplitude inversion with stochastic refinements



### Challenge

- Subsalt reservoir inducing low signal to noise ratio prestack data in target area.
- Deep reservoir (4300m) causing absence of wide-angle data with a maximum of 32deg at reservoir level.
- Delineation of ultra thin, high porosity, oil saturated beds (1-2 m thick) below seismic resolution in a highly fractured area, resulting in patchy localization.

### Solution

- High-quality preconditioning allowed significant noise removal from input data, stabilization of signal waveform and amplitude behavior along offset. Signal-to-noise ratio was increased from 1.5 to 5.3.
- Robust inversion technology provided stable elastic inversion outputs with a resolution of 5 to 9 m.
- Use of geostatistical methods to increase inversion's output resolution to 1-2 m.

### Result

- Good quality high-resolution LambdaRho and MuRho inversion outputs.
- 50 realizations allowed uncertainty analysis of results, for low risk production well placement

# Emerson E&P Software QSI

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Learn more: [www.emerson.com/EPSoftware](http://www.emerson.com/EPSoftware)

Contact us: [EPSinfo@emerson.com](mailto:EPSinfo@emerson.com)

