RokDoc Reservoir Characterization

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Combine 3D and 4D seismic data with powerful rock physics enabled geostatistical and data driven modeling workflows to determine the spatial and temporal rock and fluid distributions from exploration to production settings. Incorporate and validate multiple geocellular models from external sources to develop and optimize engineering models for production forecasting and simulation. Operate in time and depth simultaneously, and perform probabilistic descriptions of the subsurface using powerful post processing tools and workflows for the effective communication of risk.

Benefits

Intuitive
Explore for, develop, prolong field life

- Accessible workflows that support both sparse and dense data
- Cross discipline datasets and solutions for exploration through to life of field surveillance
- Effectively communicate with engineers

Reliable
Fully explore and capture uncertainty

- Integrate multiple data sources, capturing uncertainties
- Extract maximum value through data optimization and conditioning
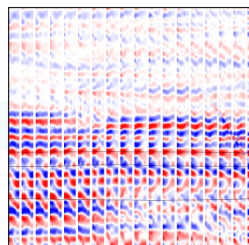- Build and interrogate more models, exploring all viable outcomes

Fast
Efficient and effective solutions

- Recipe based workflows embedded in easy to use GUI's with automated QC's
- Reduce cycle time to generate predictive 3D subsurface models
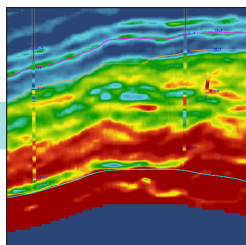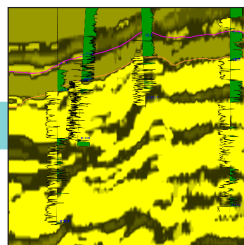- Single platform reduces data transfer and corruption

Capabilities

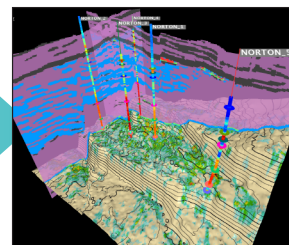Seismic data conditioning tools for pre-inversion seismic optimization
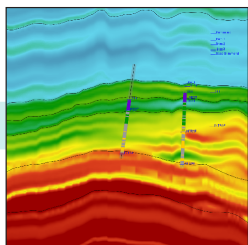
Flexible model building incorporating rock physics, geostatistics, and compaction trends

Interactive post and pre-stack inversion with easy parameters testing and QC tools

Rock Physics driven reservoir properties estimation from inversion results

Robust reservoir characterization prediction with uncertainties calculations

Reservoir Characterization Module Add-ons

| RokDoc Platform	Reservoir Characterization Module		
		SDC Inversion	Interactive 1D seismic data conditioning, post/pre-stack inversion and reservoir property estimates in real time. Key features include; pre-stack trace conditioning (spectral balance, time alignment, scaling etc), colored inversion, post/pre-stack simultaneous inversion, multi-realization analysis and ranking.
		Advanced SDC	Sophisticated 3D based de-noising and pre-conditioning workflows for 3D and 4D seismic data. Key features include: seismic dip estimation, structure oriented filtering, multi-trace 3D/4D post/pre-stack time shift estimation, frequency slice filtering and dip steered AVO gradient stabilization.
		Ji-Fi	Flagship Joint Impedance and Facies Inversion to estimate facies and elastic properties directly from post/pre-stack seismic data. Key features include: fast/flexible prior model construction, spatially varying wavelets, local/global modes, lateral constraints, rigorous well and 3D QC, MPI for cluster computing.
		Reservoir Monitoring	Integrate static and dynamic models with lab, core, well and seismic data to generate and update 4D petro-elastic models. Key features include: connectivity to Petrel*, combine multiple CPG's across a model, seamless 4D data handling, sophisticated geostatistics and rock physics modeling.
		Delivery	RokDoc wrapper for the CSIRO Delivery petro-elastic stochastic inversion engine. Key features include: delivery inverter, invert near-far offset stacks to petrophysical properties N:G, PHIE, Thickness, Delivery analyzer for interrogation of output realizations and computation of statistics.

Technical Features

- Direct connectivity to Petrel*
- Recipe based 3D modeling and characterization
- Utilize well and seismic datasets from RokDoc project database
- Import multiple post/pre-stack seismic datasets and perform basic operations
- On-the-fly depth-time conversion using horizons, velocity, quadratic equation
- Sophisticated stratigraphic age based model construction with geological rules
- Extensive zone based geostatistics including Kriging, Collocated Co-Kriging, Kriging with Trend, Indicator Kriging, etc
- Zone properties definition using rock physics models, depth trends, external properties and more
- 3D Gassmann fluid substitution

- Post/pre-stack synthetic seismic calculation
- Cross-plotting, weighted stacking and cross-plot classification using polygons, polygon indicator/combinations
- Comprehensive post/pre-stack attribute maps
- Fast volume slicing along age, horizons, constant Z
- Sophisticated 3D programmer combining wells, seismic and horizons
- Spectra plot for model properties, seismic and wavelets
- Bayesian classification using 1D, 2D PDF's or depth trends with spatial variation
- Integrated 3D viewer
- AVO Analysis
- Forward/reverse rock physics model transforms
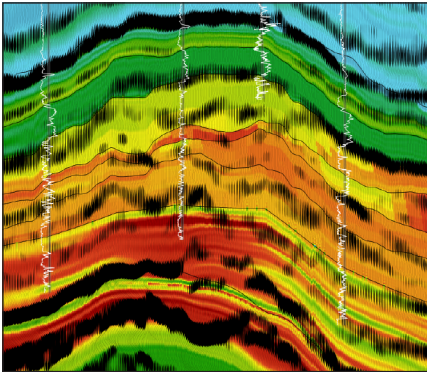
Integration of engineering model data with seismic in depth for sim-2-seis
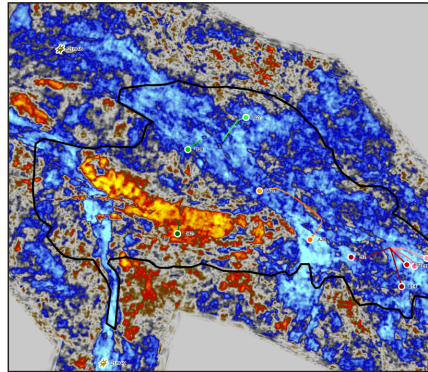
Lithology attribute map generated from pre-stack simultaneous inversion
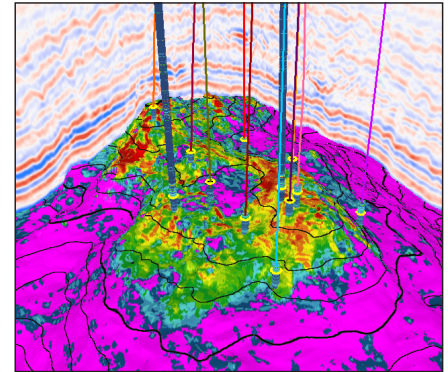
4D seismic anomaly & 3D facies inversion viewed alongside simulator saturation

Supported Data Types

- Raw well logs
- Composite, processed well logs
- Interpreted well logs
- Image Logs (surface sets, DITF)
- Discrete value sets
- Checkshot data
- Directional surveys
- Formation tops / markers
- Core data (PoroPerm, Elastic)
- SCAL (Capcurves)
- Litho / chronostratigraphy schemes

- Mud logs
- Pressure data (MDT, RFT etc)
- Integrity data (FIT, LOT etc)
- Drilling event data
- Breakouts
- VSP (zero offset/walk-around)
- Post-stack seismic
- Pre-stack seismic
- Horizons
- Corner Point Grids (CPG's)
- Polygons

Data Import Formats

- LAS
- DLIS
- ASCII
- XLS
- JPEG
- TIFF
- SEG-Y (REG/IRREG)
- ECLIPSE.EGRID
- ECLIPSE.GRDCL
- SGRID

- WVL
- WAV
- WAVE
- Import from secondary project
- Import from external project
- Petrel* Interconnector
- OpenSpirit

Visit www.ikonscience.com or email info@ikonscience.com to discover more and request a demo.

System Requirements

RokDoc is supported on the following operating systems:
64bit Windows: Windows 7, Windows 10
64bit Linux: RHEL 6, RHEL7

Processor / hard disk requirement:
Preferred: dual quad core processor / SSD
Minimum: quad core processor / fast rotational speed HDD

System Memory (RAM) requirement:
Preferred: 64GB
Minimum: 8GB (16GB practical minimum for RokDoc 3D / ChronoSeis)

Graphics card requirement:
Preferred: NVIDIA Quadro K5200 (desktop) / NVIDIA Quadro K5100M (laptop)
Minimum: NVIDIA Quadro K4200 (desktop) / NVIDIA Quadro K3100M (laptop)

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*Mark of SLB