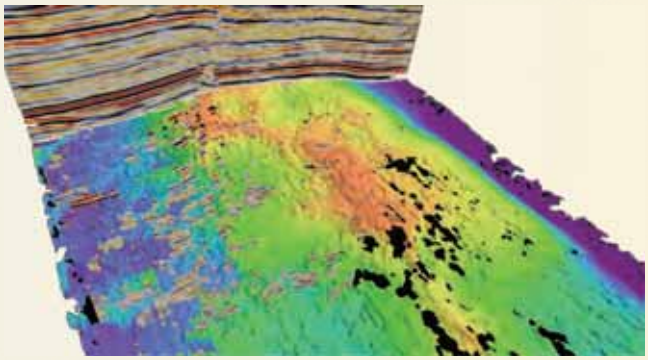
dGB Earth Sciences

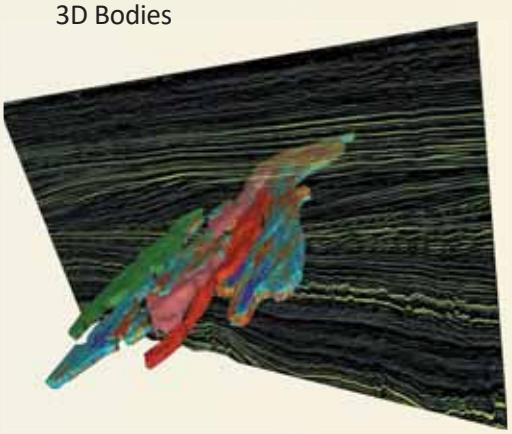
Open

OpendTect is the only seismic interpretation system in the world that is completely Free!
By adopting this unique Open Source business model, dGB is stimulating research and giving the seismic community a vehicle for extracting more information from seismic data and developing new tools - faster, better and unconstrained. All the tools you expect to find in a seismic interpretation system are there. OpendTect can be used for processing, visualization and interpretation of multi-volume 2D, 3D, and 4D pre- and post-stack seismic data.

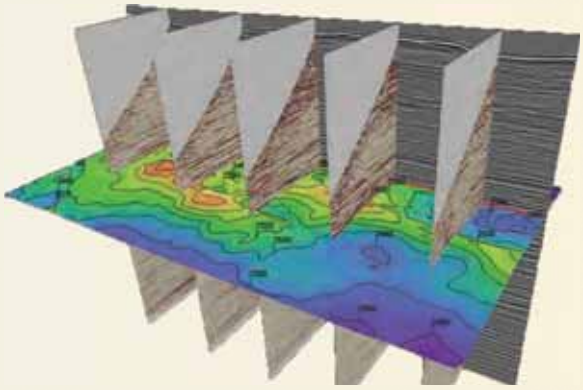
Auto-tracker

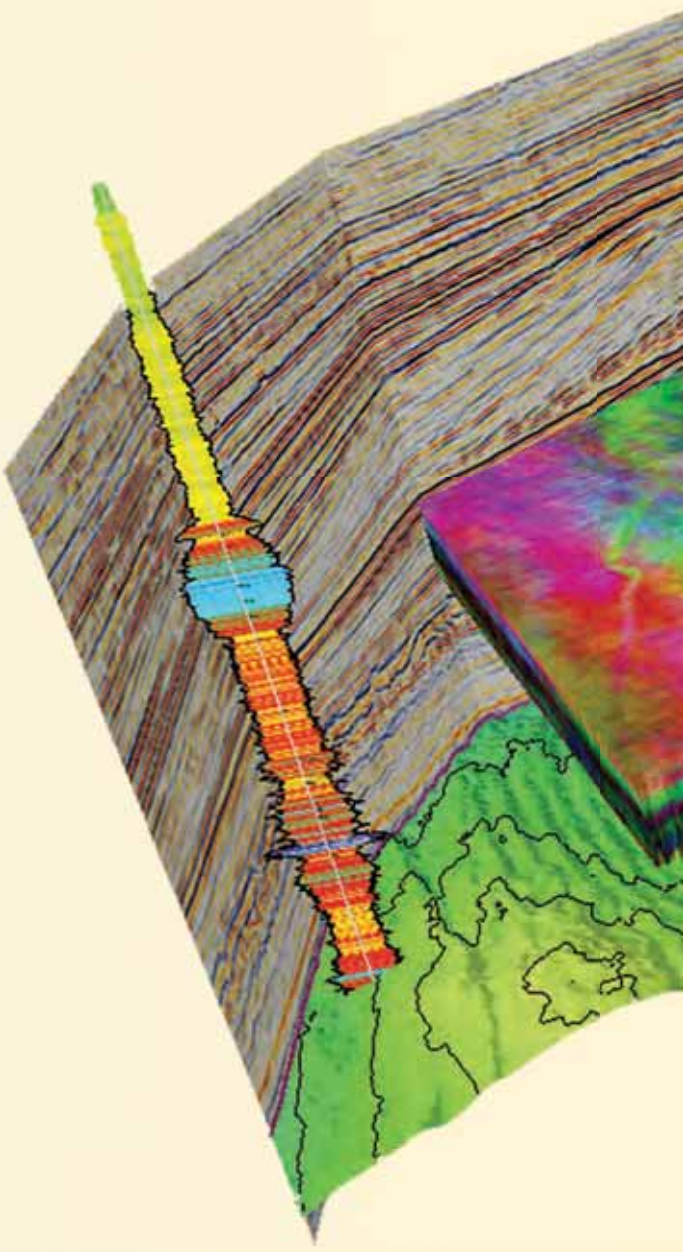


3D Bodies



Pre-stack

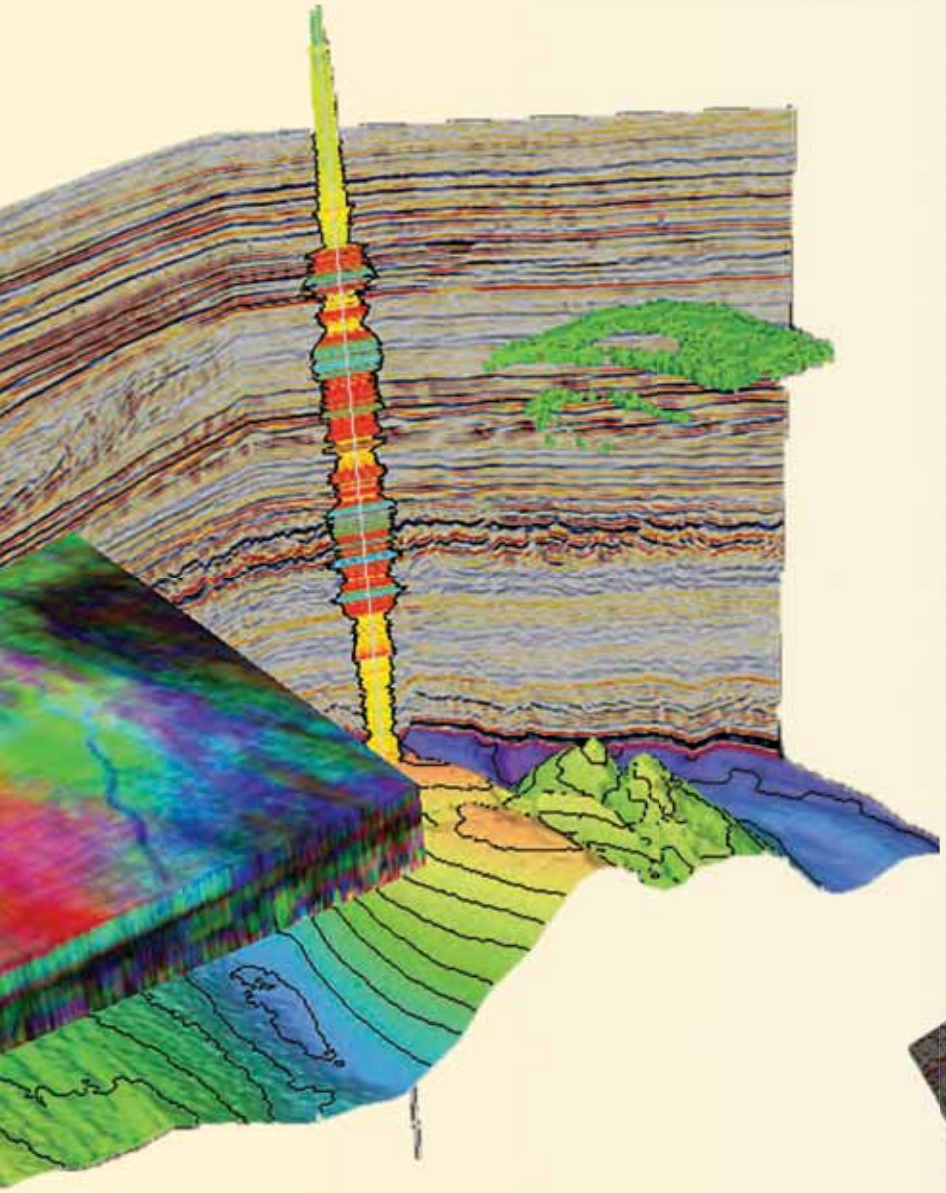




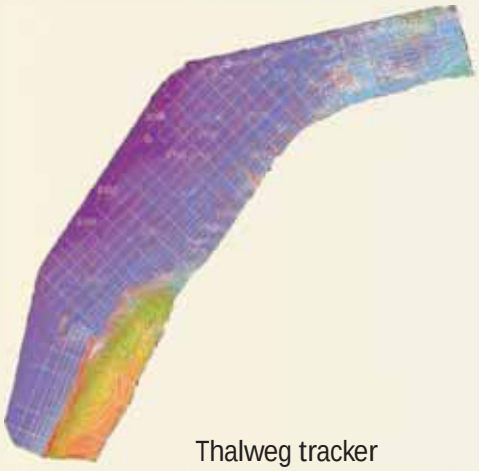
Pro

OpendTect Pro is the commercial layer on top of the free OpendTect software.
Users benefit from the following additional functionality:

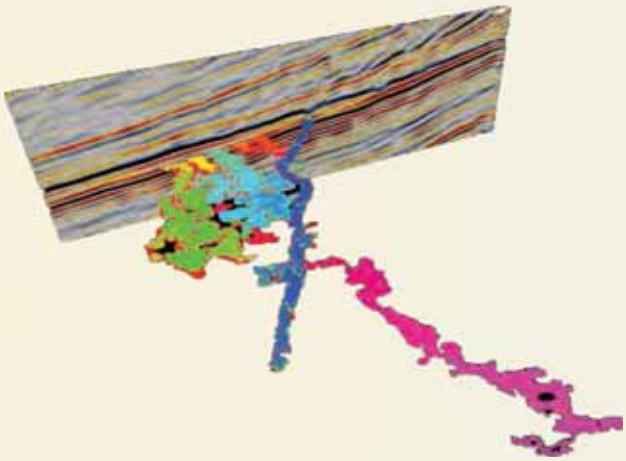
- PetrelDirect: seamless data interaction with Petrel*.
- PDF3D: to grab and share interactive 3D PDF files.
- Basemap with mapping functionality: improves OpendTect's user interaction.
- Ray-Tracer for AVO analysis.
- Thalweg tracker: a 3D horizon / body tracker for seismic facies analysis.
- The option to buy or rent commercial plugins and packages.



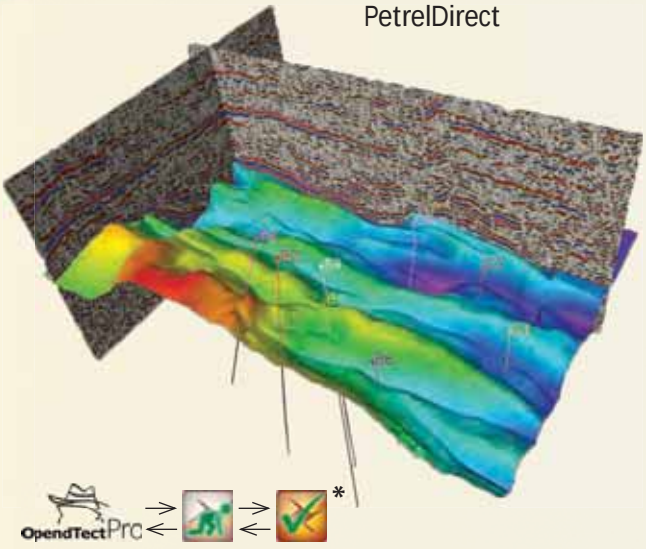
Basemap



Thalweg tracker



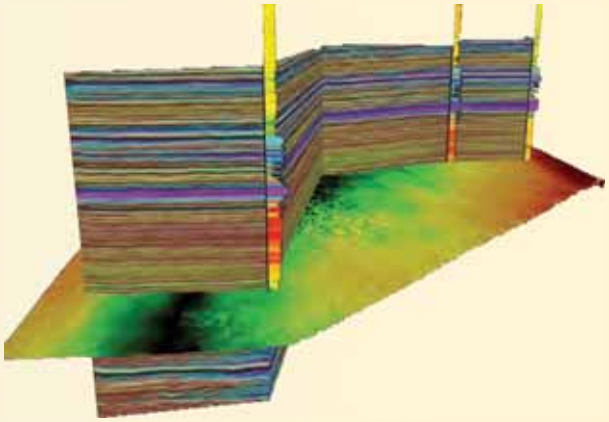
PetrelDirect



* is a mark of Schlumberger

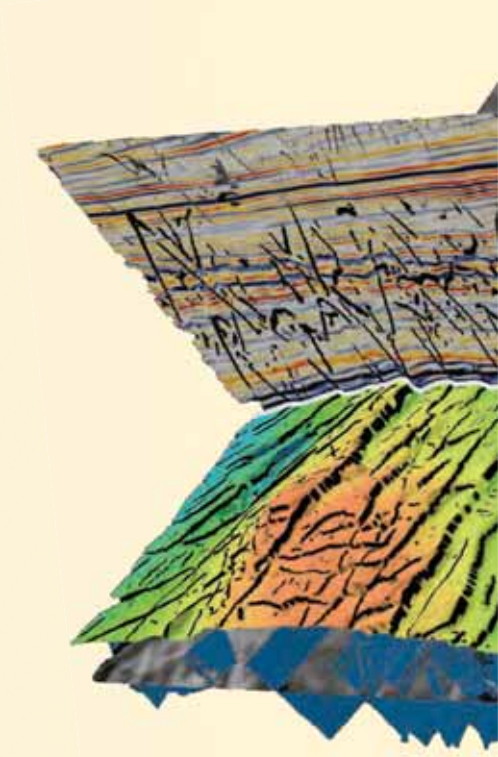
Packages

Geoscience package



- Data enhancement.
- Forward modeling (1D, 2D, 3D) with P, S + multiples.
- Unique HitCube stochastic modeling / inversion approach.
- Neural network-based rock-property predictions.
- Faults and fractures imaging.
- Fluid contact finder.
- HorizonCube: 2D/3D global interpretation technique.
- Systems tracts interpretation, identification of stratigraphic surfaces, base-level reconstruction.

Inversion & rock physics package

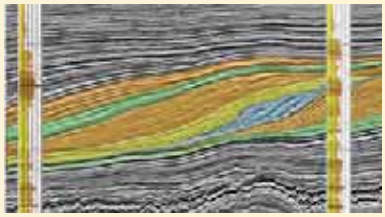


- Data enhancement.
- Quantitative Interpretation workflows.
- Forward modeling (1D, 2D, 3D) with P, S + multiples.
- AVO and AVA attribute analysis.
- Seismic inversion (AI, EI, EEI): colored, deterministic, stochastic.
- Unique HitCube stochastic modeling / inversion approach.
- Neural network-based rock-property predictions.

Attributes & filters package

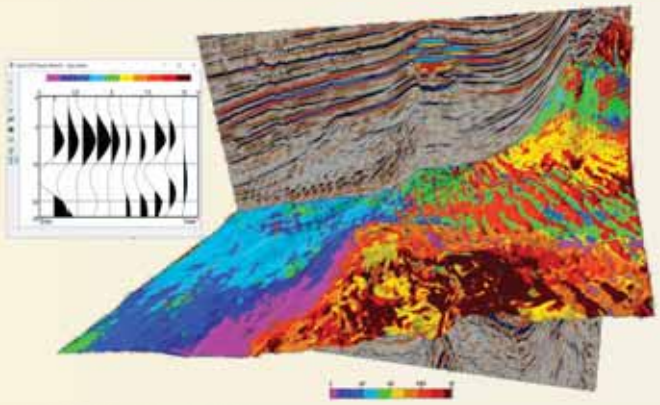
- Data enhancement.
- Qualitative interpretation workflows.
- Interactive multi-volume, multi-attribute data analysis.
- Geological feature extraction using dip-steered attributes and neural networks.
- Chimney Cube hydrocarbon migration analysis.
- Improved prospect ranking.
- Faults and fractures imaging.
- Fluid contact finder.

Sequence stratigraphy package



- Data enhancement.
- HorizonCube: 2D/3D global interpretation technique.
- Systems tracts interpretation, identification of stratigraphic surfaces, base-level reconstruction.
- Wheeler domain transformation.
- Seismic facies mapping with supervised and unsupervised neural networks.
- Interactive HorizonCube-guided well to seismic correlation.

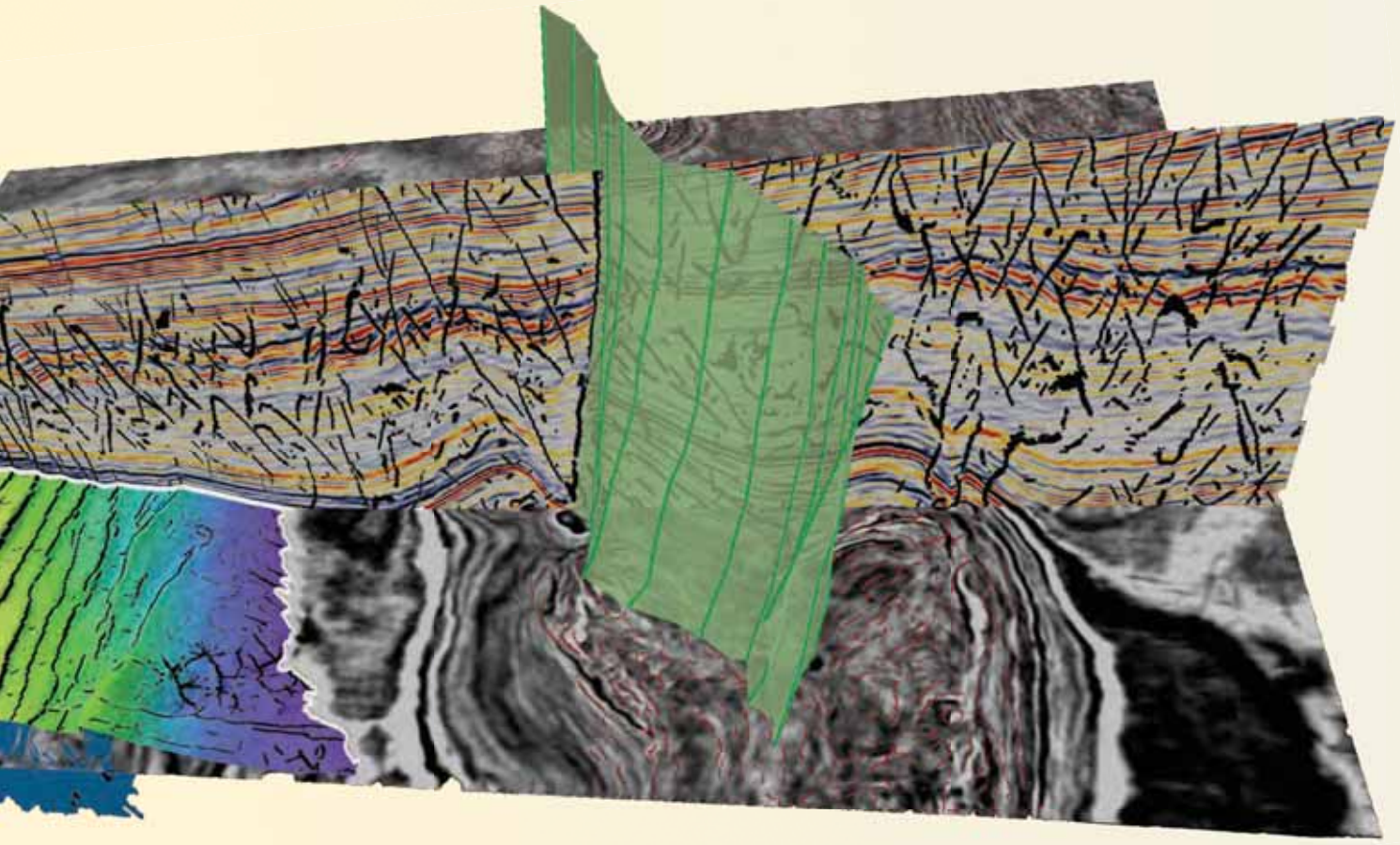
Highlighted New Functionality

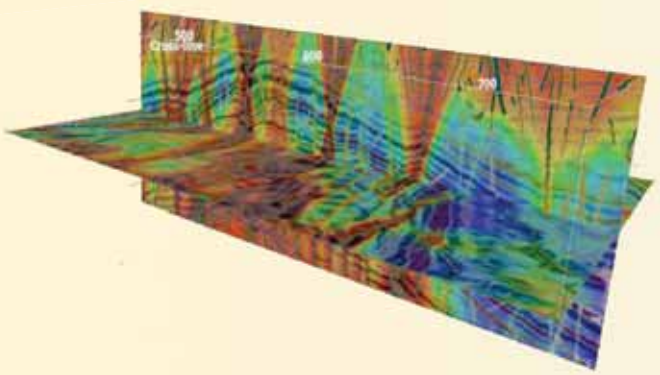


Machine Learning Plugin

- Next generation deep neural network learning
- Supervised and unsupervised machine learning
- MLP network trained on real or synthetic (SynthRock) data
- Python, TensorFlow and Keras integration

Go to our website www.dgbes.com for a full overview of the Machine Learning features.





Fault Extractor

- Fault plane extraction from fault likelihood volumes
- Fault planes from Fault likelihood via “skinning”
- Select skins: on size, manual, on azimuth or dip
- Merge and save selected planes
- Option to save as fault set

Supported Technology

Technology	OpendTect Suite of Software Products						Comments
	OpendTect	OpendTect Pro	Geoscience Package	Sequence Stratigraphy Package	Attributes & Filters Package	Inversion & Rock Physics Package	
Data IO							
SEG-Y, LAS, ASCII	√	√	√	√	√	√	SEG-Y manipulator to edit non-standard SEG-Y
Use SEG-Y "as is"	√	√	√	√	√	√	No data duplication
Batch well and LAS import/export	x	x	√	√	x	√	Simple multi-well and bulk import
Access to Petrel*	x	√	√	√	√	√	Direct link or copy data both ways
Access to SeisWorks and GeoFrame-IESX	x	x	x	√	√	√	Copy data both ways
Viewers							
2D viewers	√	√	√	√	√	√	Wiggle and variable density
3D viewers	√	√	√	√	√	√	Multiple scenes in different domains (time, depth, flattened, ...)
Prestack viewers	√	√	√	√	√	√	In 3D scene and flat viewers
Stereo viewing	√	√	√	√	√	√	Red cyan or quad buffer
Volume rendering	√	√	√	√	√	√	Interactive opacity editing
RGB(A) blending	√	√	√	√	√	√	Volumes, horizons, sections
Logplots	√	√	√	√	√	√	Log viewer
Crossplot	√	√	√	√	√	√	Multi-dimensional crossplot tool
Auto Tracking (2D, 3D, Faults, Objects, ...)							
3D horizon tracker	√	√	√	√	√	√	Amplitude & similarity (dip guided using Dip Steering license)
2D horizon tracker	√	√	√	√	√	√	Amplitude & similarity (dip guided using Dip Steering license)
Unconformity tracker	x	x	√	√	√	√	Inversion based flattening
Seismic facies tracker	x	√	√	√	√	√	Thalweg tracker
3D object tracker	√	√	√	√	√	√	Voxel connectivity filter
Attributes & Filters (Open Source)							
Interactive multi-volume attribute analysis	√	√	√	√	√	√	On-the-fly parameter testing
"Standard" attributes and filters	√	√	√	√	√	√	Energy, similarity, instantaneous attributes, sweetness, ...
Texture attributes	√	√	√	√	√	√	GLCM based texture attributes for geo-morphologies
Spectral decomposition	√	√	√	√	√	√	Short window FFT and CWT
Mathematics & logics	√	√	√	√	√	√	Functions, operators, "IF ... THEN ... ELSE ..." etc.
Attributes from attributes	√	√	√	√	√	√	Create your own attribute by chaining attributes
4D volume alignment	√	√	√	√	√	√	Match delta and delta resample attributes
Pattern recognition	√	√	√	√	√	√	Fingerprint attribute
AVO and AVA attributes	√	√	√	√	√	√	Intercept, gradient and derivatives
Ridge filters	√	√	√	√	√	√	Ridge enhancement filter
General Computing							
Distributed computing & parallelization	√	√	√	√	√	√	For batch processing and fast on-the-fly computation
Mapping, Gridding, Contouring							
Gridding, contouring	√	√	√	√	√	√	Inverse distance, curvature, triangulation
Dip-steered gridding	x	x	√	√	√	√	Interpolates following the seismic dip
Basemap and mapping	x	√	√	√	√	√	Improves OpendTect's user interaction

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Technology	OpendTect Suite of Software Products						Comments
	OpendTect	OpendTect Pro	Geoscience Package	Sequence Stratigraphy Package	Attributes & Filters Package	Inversion & Rock Physics Package	
Wells and Modeling							
Stratigraphic model	√	√	√	√	√	√	Optional model tie stratigraphy to markers and horizons
Wells, markers, logs	√	√	√	√	√	√	IO and basic editing
Synthetic to seismic well tie	√	√	√	√	√	√	Supports stretch & squeeze
Wavelet estimation	√	√	√	√	√	√	Stochastic & deterministic; synthetic wavelets
Prestack synthetics	x	x	√	x	x	√	Zoeppritz solution through "flat-earth": P, S, and multiples
Cross sections, wedge models, volume synthetics	x	x	√	x	x	√	SynthRock plugin; Gassmann fluid replacement
Stochastic pseudowell modeling	x	x	√	x	x	√	SynthRock plugin
Well log correlation	x	x	√	√	x	x	Well Correlation Panel to QC and edit markers
Rock physics library	√	√	√	√	√	√	Compute new logs using "standard" or private equations
General Interpretation							
Velocity Model Building	√	√	√	√	√	√	3D model builder and velocity conversion tools
Time depth conversion	√	√	√	√	√	√	Two way on-the-fly conversion
Stratigraphic flattening	√	√	√	√	√	√	Flattens a 3D scene on a given horizon
Manual interpretation	√	√	√	√	√	√	Points, bodies, polygons, fault sticks, fault planes, ...
Utilities							
Presentation Maker	√	√	√	√	√	√	
Sharing 3D PDF images	x	√	√	√	√	√	Grabs a 3D scene and saves it in a pdf format
Seismic Sequence Stratigraphic Functionality							
2D/3D global interpretation	x	x	√	√	x	√	2D and 3D HorizonCube
2D/3D wheeler transformation	x	x	√	√	x	x	Flattening of seismic using HorizonCube events
2D/3D systems tracts interpretation	x	x	√	√	x	x	SSIS plugin
3D body extraction	x	x	√	√	x	√	Extract 3D bodies from horizon geometries and attributes
Depositional attributes	x	x	√	√	x	√	HorizonCube density and thickness attributes
Multi-horizon visualization & manipulation	x	x	√	√	x	√	2D and 3D HorizonCube sliders
Attributes & Filters (Commercial)							
Structurally oriented filters	x	x	√	√	√	√	Dip-steered median filter, fault enhancement filter, ...
Resolution enhancement filters	x	x	x	√	√	√	Seismic Spectral Blueing
Fault attributes	x	x	√	x	√	x	Thinned fault likelihood, dip-steered similarity, ...
Fracture attributes	x	x	√	x	√	x	Curvature attributes, fracture density, fracture proximity
Stratigraphic attributes	x	x	√	√	√	√	Dip-steered attributes: texture, volume statistics, ...
Hydrocarbon anomaly enhancement	x	x	√	x	√	x	Fluid Contact Finder, Seismic Feature Enhancement
Supervised neural network object detection	x	x	√	√	√	√	Chimney cube, fault cube, salt cube, ...
Unsupervised neural network 3D segmentation	x	x	√	√	√	√	3D seismic facies volume
Unsupervised neural network waveform segments	x	x	√	√	√	√	Seismic facies maps
Quantitative Interpretation Functionality							
Colored inversion AI, EI, EEI	x	x	x	x	x	√	Seismic Coloured Inversion
Net pay prediction	x	x	x	x	x	√	Seismic Net Pay
Seismic consistent low frequency model building	x	x	√	x	x	√	HorizonCube guided low frequency model
Deterministic inversion AI, EI, EEI	x	x	x	x	x	√	Deterministic Inversion
Stochastic Inversion AI, EI, EEI	x	x	x	x	x	√	Multi-Point Stochastic Inversion
HitCube inversion	x	x	√	x	x	√	SynthRock matching stochastic synthetics and real seismic
Neural Network Inversion	x	x	√	√	√	√	Maps seismic (impedances) to rock properties
Bayesian Inversion	√	√	√	√	√	√	Predicts rock properties from probability density functions

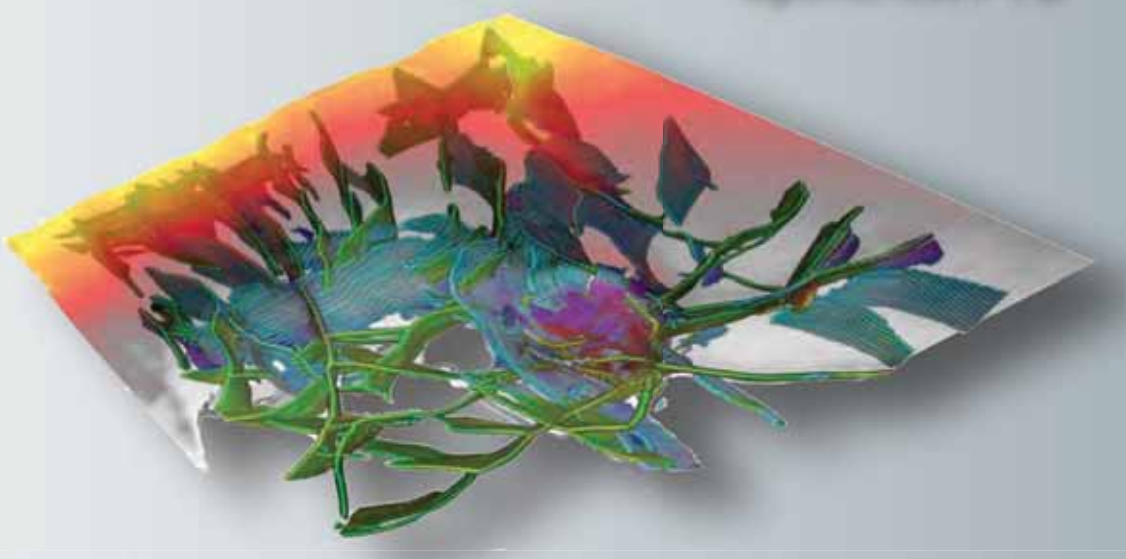
Innovative Seismic Interpretation Software

Free

OpendTect

Commercial

OpendTect Pro



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