

Attributes & Processing

“OpendTect’s attribute calculator and rapid visualization tools help me extract maximum information from our data volumes”

Dave Maness, Maness Petroleum Corporation



OpendTect: Navigating the Attribute Maze

Attributes today are integral to seismic interpretation, revealing otherwise hidden geological information and allowing relevant information to be extracted for integration purposes. As attribute analysis has advanced, so has the need for powerful multi-volume analysis software. dGB Earth Sciences offers just this with OpendTect which is the industry’s most powerful attribute engine and the industry’s sole Open Source attribute processing solution.

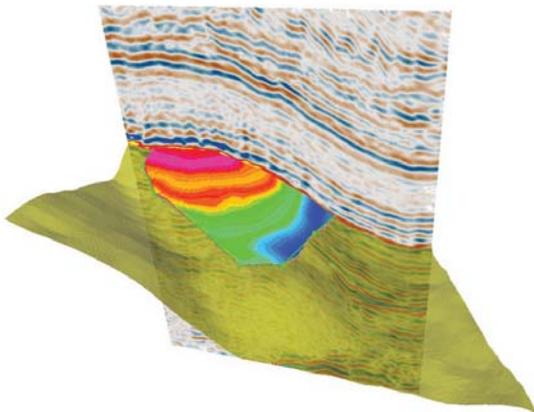
OpendTect – Multi-Volume, Interactive Analysis

Multi-Volume, multi-attribute analysis can be achieved in minutes with a high degree of advanced functionality by calculating attributes on the fly to test attribute parameters.

Commercial plugins

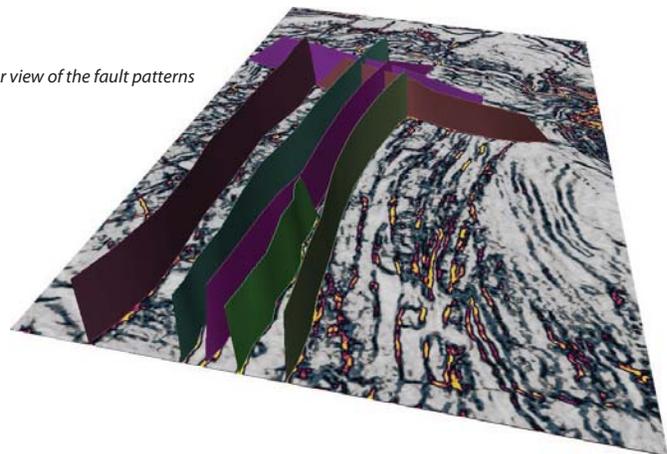
OpendTect can be supplemented by the industry’s most advanced commercial plugins, which include:

- OpendTect Dip-Steering and Neural Networks plugins have proven to extract more geological information from seismic data time and time again. In a recent study for a client, dGB revealed new faults and produced a sharper view of the fault pattern. This completely changes the geological understanding of the reservoir, resolving long-lasting problems.
- OpendTect CCB (Common Contour Binning) pin-points Gas-Water, Gas-Oil and Oil-Water contacts from seismic data only, which saves money by reducing the number of delineation wells needed.



Common Contour Binning

A sharper view of the fault patterns



Attributes & Processing

Attribute analysis requires a geologic mind and a system that supports multi-volume, interactive analysis. That is what OpendTect is all about! You zoom in on your target. You calculate attributes on-the-fly. You test attribute parameters in movie-style fashion. You calculate attributes from attributes. You create your own attributes and filters using math and logic. In other words: the total number of attributes in OpendTect is unlimited. This gives you total freedom to use your full expertise. The commercial plugins to OpendTect give you even more power:

Seismic attribute analysis

Dip-Steering is used to improve multi-trace attributes by extracting attribute inputs along reflectors (e.g. dip-steered similarity) and to calculate unique attributes, such as dip & azimuth, volume-curvature, and variance of the dip.

"Many softwares offer coherency and curvature attributes, but those obtained through OpendTect's dip-steering are really something different"
-Guilherme Fernandes Vasquez, Senior Geophysicist, Petrobras.

Neural Networks are used to combine multiple attributes into meta-attributes for object detection such as chimneys or faults. Neural networks are also used for pattern recognition for seismic facies volumes and horizon-based waveform segmentation. Another application of Neural Networks is the inversion to porosity, Vshale, Sw with training along well tracks.

"OpendTect provides state-of-the-art pattern recognition tools to complement your eyeball quantitatively."
-Leon Thomsen, Principal, Delta Geophysics, former Senior Advisor and Principal Geophysicist, BP, and former S.E.G. President.

CCB (Common Contour Binning) stacks seismic traces along horizon contour lines to highlight subtle hydrocarbon-related seismic anomalies and to accurately pin-point Gas-Water, Gas-Oil and Oil-Water contacts.

Seismic Filters

Seismic Spectral Blueing (SSB) plugin is a technique to optimize the vertical resolution of seismic data by shaping the seismic spectrum without boosting noise.

Dip-Steering is also used for structurally-oriented filters to remove random noise (e.g. dip-steered median filter) and/or to sharpen fault edges (e.g. Fault Enhancement Filter)

Processing

OpendTect features a connection to Madagascar, the Open Source seismic processing package. The processing flow builder of OpendTect enables the user to construct and execute Madagascar processing jobs. Processing flows can start from 2D and 3D pre- and post-stack data in either Madagascar or OpendTect format. Likewise results can be saved in both formats. Data stored in OpendTect format can be further analyzed in OpendTect.

OpendTect, extended with the Velocity Model Building (VMB) and PSDM Kirchhoff and Tomography plugins, offers a complete workflow for Pre-Stack Depth Migration.

The OpendTect Geophysics Attributes & Filters Package includes:

Dip Steering, Neural Networks, Common Contour Binning, Seismic Spectral Blueing, Seismic Feature Enhancement, PDF3D, Workstation Access

The OpendTect Geophysics Velocities & PSDM Package includes:

Velocity Model Building , PSDM Kirchhoff, PSDM Tomography, PDF3D, Workstation Access



Earth Sciences

Nijverheidstraat 11-2
7511 JM Enschede
The Netherlands
Phone: +31 53 4315155
Fax: +31 53-4315104

1 Sugar Creek Center Blvd.
Suite 935
Sugar Land, TX 77478
USA
Phone: +1 281 240 3939
Fax: +1 281 240 3944

310, Gateway Plaza
Hiranandani Gardens
Powai, Mumbai 400 076
India
Phone: +91 22 25704984
Fax: +91 22 25704977

For a complete, multi-volume attribute and seismic interpretation solution contact dGB Earth Sciences at info@dgbes.com

www.dgbes.com