PaleoScan™
2017
The Future of Seismic Interpretation
Product Sheet
Eliis is an innovative geoscience company providing seismic interpretation software and services to the Oil and Gas industry. Our mission is to bring new comprehensive solutions to geoscientists to help them understand better the geology behind the seismic, improve the quality and drastically reduce the time of their interpretation.

Software

PaleoScan™ is an integrated seismic interpretation software offering an innovative workflow that increases productivity and resolution. Thanks to a comprehensive approach, the geological model is built while interpreting the seismic volume. This changes the way to look at seismic data and takes interpretation a step further in the exploration and production process.

Services

Eliis provides a wide range of services, on-site or in-house, from tailor-made solutions to full case studies. Our consultant team has an extensive experience in interpreting seismic data from all over the world. With our input, the clients can better understand the geology and better characterize the reservoirs.

Applications for O&G Workflows

Data Reconnaissance

In frontier exploration, for new ventures and large scale projects, PaleoScan™ allows to quickly assess the hydrocarbon prospectivity of seismic datasets. It is used advantageously in data room environment for peer review and geological evaluation with partners.

Exploration

With PaleoScan™ it is possible to identify prospect at a very early stage of the exploration cycle and to understand potential reservoirs geometry. The tools to map attributes on large number of horizons and to extract geobodies are precious for de-risking drilling decisions.

Development

At development stage, the high level of resolution of PaleoScan™ interpretation gives access to reservoir properties: well markers correlation, advanced seismic to well tie and rock properties prediction are some the quantitative results of the PaleoScan™ workflow.
Core Application

- 2D/3D Interactive Platform
- Horizon/Fault Interpretation
- Geological Time Model
- Stratigraphic Slicing
- Attributes Engine
- Calculator
- Geobodies Extraction
- Volumetrics Calculation
- Well Correlation
- Well Markers QC
- Spectral Blueing
- Colored Inversion

Add-on Modules

**Advanced Interpretation**
- Sequence Stratigraphy
- Wettight Model Building
- Automatic Geobody Extraction
- Color Blending

**Time Depth**
- Seismic to Well Tie
- Velocity Modeling
- Depth Conversion

**Properties Modeling**
- Kriging/Cokriging
- Rock Properties Modeling
- Synthetic Seismic
- Interval Velocities Generation

**Data Connector**
- Petrel®
- Decision Space®
- GeoTeric®

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**Why choose our software?**

**Innovative Solutions**
PaleoScan™ is a new generation of seismic interpretation platform in a fully integrated 2D and 3D environment. It offers a complete range of tools, from data reconnaissance to reservoir characterization, and uses parallel computing in multi-core processors.

**Increase Productivity**
Thanks to computer-aided methodology, you go further and faster in the seismic interpretation. Your results are used for stratigraphic analysis, structural modeling and quantitative interpretation.

**A Comprehensive Approach**
You comprehensively interpret seismic volumes and simultaneously build geological time models. Thanks to real-time modeling and control tools, seismic interpretation goes further along the E&P workflow.

**Integrated Solution**
PaleoScan™ is an integrated solution which manages all the standard formats of seismic data, well, horizon and fault. It also proposes a direct link to Petrel® for a seamless data exchange.

**High Resolution**
You can interpret with sub-seismic resolution. An unlimited number of horizons can be generated from the model to identify prospects, correlate wells and markers, and better characterize reservoirs.

**Excellent Support**
Our geoscience and IT teams based in France (Montpellier), in the United States (Houston) and in Australia (Perth) provide an excellent support either online or onsite. They respond quickly to all clients requests and provide assistance during the release of software patches and new versions.

*Petrel® is a mark of Schlumberger*
**Decision Space® is a mark of Halliburton**
*GeoTeric® is a mark of FTA*
Core Application

Relative Geological Time Model
A comprehensive approach based on a grid made of horizon patches to compute a geological time model.

- Grid made of millions of horizon patches
- Manage peak, trough, zero crossing
- Automatic horizon tracking
- Editing with undo/redo options
- Geological model preview

Horizons and Stratatal Slicing
Generate an unlimited number of horizons to explore the seismic volume beyond seismic resolution.

- Horizon stack generation from the model
- Seismic horizons honoring polarities
- Sub-seismic resolution
- Dynamic flattening from stratatal-slices

Fault Interpretation
Interpret and image faults with a sub-seismic resolution with adapted editing tools.

- Fault patches merging and splitting
- Interactive fault patches merge
- Dip/Azimuth filter with interactive stereonet
- High resolution throw mapping

Geobody Modeling
Identify targets, assess prospectivity, model geobodies and compute volumetrics by stratal-slicing the entire volume.

- Extract geobodies based on amplitude contrasts on the horizon stack
- Automatic or manual contouring
- Volumetrics computation

Full Featured Platform
This new generation of seismic interpretation platform, running under Windows® 64 bit, includes all the necessary tools for a complete interpretation workflow.

- Integrated 2D and 3D environment
- Rapid data screening & co-rendering
- Seismic, horizons, faults, wells, geobodies & culture
- Multi Survey & large dataset handling
- Sessions and custom settings options
Attributes

Surface Attributes
Computed directly from horizons. It allows a detailed analysis of stratigraphic objects and enhance the fault network (Dip angle, Azimuth Variations, Curvature, Deepest descent gradient).

Seismic Attributes
Computed directly from horizons. It allows a detailed analysis of stratigraphic objects and enhance the fault network (Dip angle, Azimuth Variations, Curvature, Deepest descent gradient). Spectral decomposition and frequency filtering are also available.

Geological Attributes
Computed directly from horizons. It allows a detailed analysis of stratigraphic objects and enhance the fault network (Dip angle, Azimuth Variations, Curvature, Deepest descent gradient).

Colored Inversion
Colored Inversion is a quick technique which can be easily applied on seismic data and performs a simple understandable inversion process

*Interactive colored inversion operator creation*
*Real time preview*
*Relative and absolute AI volume computation*

Well Correlation
Use the geological model to build a well correlation panel at any location along the trajectory. Well markers and seismic interpretation can be.

*Interactive display of logs and markers*
*Compare seismic interpretation and well markers*
*Highlight well-seismic miss-ties*
*Flatten logs on horizon or marker*

Cross Plot
Interactive cross plots allow the classification and mapping of geological facies, and the extraction of geobodies.

*Cross plotting of volumes*
*Interactive classification*
*Geobodies extraction and facies volumes generation*
Advanced Interpretation

Sequence Stratigraphy
Build a lithostratigraphic framework and understand the relationships between rocks and stratigraphic evolution, at the early stage of interpretation.

Generate an interactive wheeler diagram
Interpret depositional sequences
Create geological cross sections with lithology
Build sequences in 3D

Watertight Model
After defining layers in the geomodel, a watertight model is created in 3D in a defined zone of interest

Interactive layering
Watertight horizons and faults
Creation of fault polygons
Allan diagram for analysis of sealing properties

Automatic Geobody Extraction
Extract automatically geoboildes from any attribute in a specific layer. Model in 3D stratigraphic traps, channels and fault zones in a user friendly environment.

Select your targets by leveling an attribute
Specify your zone of interest
Automatically extract geoboildes in 3D
Split or merge bodies

Color Blending
Improve the visualization of your prospects with an interactive color blender on volume attributes and surfaces.

Real time frequency filtering
Color blending on volumes, arbitrary lines and horizons
Optimize color resolution
Time Depth

Seismic to well Tie
Interactive seismic to well tie, checkshot, sonic calibration, wavelet extraction and synthetic seismogram generation are included in PaleoScan™.

- Checkshot and sonic calibration
- Wavelet extraction (analytic, deterministic)
- Synthetic seismogram generation
- Interactive stretch and squeeze with undo/redo
- Interval velocity, drift velocity and correlation logs

Velocity Modeling
From the stratigraphic viewer, it is possible to create interactively a velocity model and use it to switch in real time between time and depth domains.

- Define interactively velocity model
- Convert in depth in real time
- Use well velocity data if needed

Depth Stretching
Seismic image can be stretched in real time from time to depth domain by assigning velocity models. Interpretation can be done in both domains interactively because the display of all objects is transformed within the viewer.

- Real time depth stretching of volumes and objects
- Check well calibration
- Control velocity volumes
- Save horizons and volumes in depth domain

Log Depth Adjustment
This tool provides an intuitive and quick way to adjust log data with seismic data in the depth domain. A simple shift or a stretch and squeeze can be applied to the well logs in order to honor well markers and horizons from seismic interpretation depths.

- Log stretch and squeeze in depth
- Adjust depth values with undo/redo
- Honor well markers and seismic interpretation
- Check velocity models
Properties Modeling

Well log information can be populated in the seismic volume using the geological model as guideline. Various methods of propagation, such as inverse distance, kriging and co-kriging, are proposed in an intuitive interface offering real time preview on surface or cross section along wells.

This unique workflow constrained by the geology has numerous domains of application such as seismic inversion, reservoir characterization, geological correlation, velocity model building and synthetic seismic generation.

Propagate well log properties guided by geological time model
Methods: inverse distance, kriging or co-kriging
Predict rock physics distribution
Generate synthetic seismic volumes
Model acoustic impedance to constrain seismic inversion
Constrain velocities volume for time/depth conversion
Real time preview
Intuitive and useful for Quantitative Interpretation applications
The PaleoScan™ data link is an essential module for users who wish to maximize benefits from their PaleoScan™ interpretation. Thanks to a plug-in extension, users can take advantage of PaleoScan™ functionalities by exchanging interpretation results directly between various platforms such as Petrel®, Decision Space® and GeoTeric®. In just a few clicks, it enables seamless data exchange with PaleoScan™. Data are fetched from one application and sent to the other on-demand.

Petrel® - Decision Space® - GeoTeric®

To build your own workflows in a separate environment with various objects and/or functions coming from PaleoScan™ Core application, you can use our APIs and their Software Development Kit (SDK). It is a fully object-oriented class library designed for software developers to embed our technology into any external application and/or software. Requirements: Windows/Microsoft Visual Studio C++ environment.

To communicate directly with the objects from PaleoScan™ projects, you can build your own link with other platforms or programs thanks to the Data I/O API. This API allows you to read and write every object such as volume, horizon, fault, well and log. You can directly point at PaleoScan™ projects and avoid data duplication for a seamless data exchange.

The API gives access to all the functions used to build, edit and preview the "Geological Time Model", as done in PaleoScan™ core application. The API is a key component for adapting to a different environment the methodology of horizon patches propagation.

To share PaleoScan™ projects with colleagues, clients or partners, the PaleoScan Viewer is a light version of PaleoScan Core application. It gives access to most of the functions of the platform such as visualization in 2D and 3D, image blending, synchronization, rapid data screening, cross navigation and real time attributes. Export options in various formats are also available for every object (volume, horizon, fault, well, geobody, layer, multi-Z).
## Core Application Main Features

### 3D Platform
- 2D and 3D SEGY import
- Faults, horizons, wells and culture data I/O
- Data exchange between Paleoscan™ projects
- Data manager
- Sessions Management
- 2D viewer and 3D viewer
- Volumes Blending viewer
- Seismic 3D Cube Visualization
- Volume Sculpting
- Volumes stretch, squeeze and rotation
- Cross Navigation between viewers
- Volumes orientation
- Volumes extraction
- Volumes merging
- UTM conversion (Feet / Meters / etc.)
- Skin Selection: Dark, Light and Vista styles
- Licensing Tool
- Point location: saving / editing

### Horizons
- Horizon Stack Creation
- Horizon Shifting
- Horizon Smoothing
- Horizon Merging
- Horizon and Horizon Stack extraction
- Horizon Lighting
- Isochore Computation
- Horizon Stack Blending Viewer
- Attribute Mapping

### Flattening
- Horizon flattening
- Dynamic flattening from Horizon Stack
- Log viewer flattening
- Interpretation Flattening

### Multi-Z
- Multi-Z Object Picking
- Multi-Z Object Editing
- Multi-Z Smoothing

### Attributes
- Seismic attributes
- Frequency decomposition
- 3D Model Attributes Computation
- Real Time Attributes
- Surface Real Time Attributes
- Spectral Blueing
- Color Inversion
- Smoothing Attribute
- Calculator

### Model Grid and 3D Geomodel
- Model Grid creation
- Automatic horizon interpretation
- Model Grid between Horizons
- Exclusion Zone
- Interpretation along Arbitrary Lines
- 3D Model Creation
- Fast 3D Model

### Geobody
- Geobodies extraction
- Layer creation
- Geobody volumetrics computation
- Geobody and layer Isochore computation

### Cross Plot
- Facies Classification
- Geobodies Extraction
- Facies Volume Creation

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**Add-on Modules Features**

**Advanced Interpretation**

**Sequence Stratigraphy**
- Sequence Creation
- Real Time Wheeler Diagram
- Sequence along Arbitrary Lines
- Sequence extraction:
  - Layers
  - Horizons
  - Horizons stack
  - IsoChore

**Automatic Geobody Extraction**
- Geobody Extraction from Amplitude
- Split / Merge
- Geobody volumetrics computation
- Geobody and layer Isochore computation

**Color Blending**
- Color Blending Volume
- Color Blending Arbitrary Line
- Color Blending Horizon Stack
- Color Blending Horizon

**Watertight Model**
- Horizons/faults
- Fault polygons
- Allan diagram

**Time-Depth**

**Seismic-Well Tie**
- Sonic calibration
- Well Tie Process
- Log Depth Adjustment
- Wavelet creation:
  - Analytic
  - Statistical
  - Deterministic

**Velocity Modeling**
- Layers definition from the model
- Interval Velocities
- Use interval velocities from the wells

**Depth Conversion**
- Real time conversion
- Depth Display:
  - Real time cross-navigation
  - Objects Saving in depth domain:
    - Volumes
    - Horizons

**Properties Modeling**

**Properties Modeling:**
- Inverse Method Distance
- Kriging
- Co-Kriging

**Data Connector**

**Petrel® - Decision Space® - GeoTeric®**
- Faults
- Horizons
- Volumes
- Wells
- Culture Data
- Geobodies - Layers - Multi Z
- 2D Lines