Ocean Software Development Framework for Petrel Geology and Modeling

Access and model the hard facts of your reservoir

BENEFITS AND FEATURES

- Quickly browse through your wells, deviation surveys, plans, log data, well tops, and check shots

- Create well logs (from continuous or discrete logs to bitmap and comment logs)

- Create new attributes for wells and logs

- Add well filters and manage saved searches

- Create checkshot surveys/properties

- Enhance your well display through the well section window application programming interfaces (APIs)

- Create and edit your fault and stratigraphic well tops

- Query and create stratigraphy charts

- Build new structural models using pillar gridding, and build your fault model, horizons, zones, and layers or browse through existing models

- Query and build local grid refinements

- Build new structural framework models

- Use the pillar grid filter service to retrieve filters applied to grid cells and properties in the context of a toggle window

- Use the data analysis services for property analysis, and access and generate model variograms

- Use the facies, petrophysical, and geometrical modeling services to run well-known algorithms such as Kriging or your proprietary algorithms on your pillar grid properties

- Participate with Schlumberger in collaborative and strategic positioning of new technology and services

The Ocean* software development framework provides a rich development environment for geoscientists and engineers wishing to enhance their workflows in domains such as stratigraphy, well design, well data analysis, structural modeling, and property modeling.

You can browse rapidly through your data, design your well trajectories, build your 3D structural models using your own modeling processes, and even extend Petrel* E&P software platform property modeling processes with your own algorithms.

Well design API

As well as letting you quickly browse through your well data and easily retrieve information about your wells and logs, our well design APIs will assist you during your whole well planning and design phase. We offer services to load and create deviation surveys, or plans given a set of predefined inputs such as measured depth, inclination, and azimuth, or given custom trajectory providers (where you specify the input types). With the well design API, you can efficiently manage your surveys and plans, setting your active plan, or definitive survey.
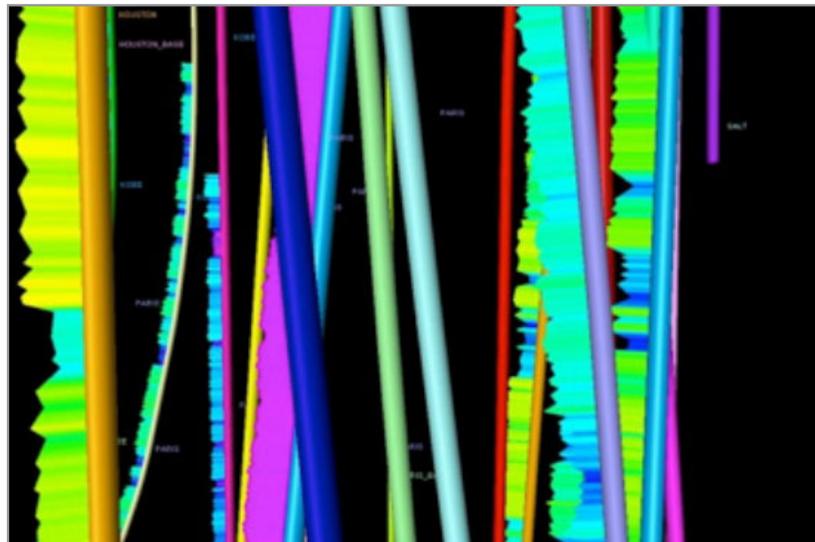
Loading and browsing through well data.

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Logging API

In addition to accessing the well logs, log attributes, and global well logs in your Petrel platform project, you can create new logs to import log data from your own format for synthetic logs or processing. Besides normal log data, you can create or access time series, multi-trace, comment, point, bitmap, and borehole seismogram log data.

The logging API also allows you to browse through your checkshots and create new checkshot surveys and properties. You can then programmatically activate a checkshot and it will become the preferred depth-to-time relationship for your borehole. The borehole transform service allows you to convert positions along the well into various domains using the active time-depth relationship of the borehole.
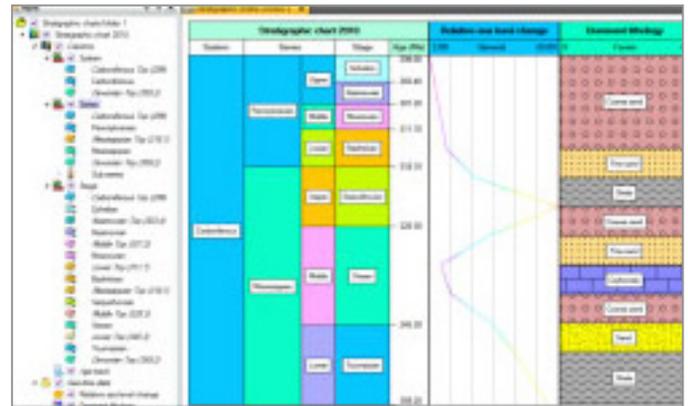
Stratigraphy API

Well tops are the basis for communicating stratigraphic information. With the Ocean framework stratigraphy API, you can easily retrieve well tops information and create your fault and stratigraphic well tops.

The stratigraphic chart API gives you access to all components, columns, and events constituting a stratigraphic chart, allowing you to refine existing charts and create new ones. Set up your lithographic, bio-stratigraphic, chrono-stratigraphic, or general stratigraphic columns and define your events and zones, or create stratigraphic curves to represent geotime data.

Well section display

You can enhance your well data display by customizing the well section API display, adding your own custom data, creating custom tracks, and programmatically creating templates.
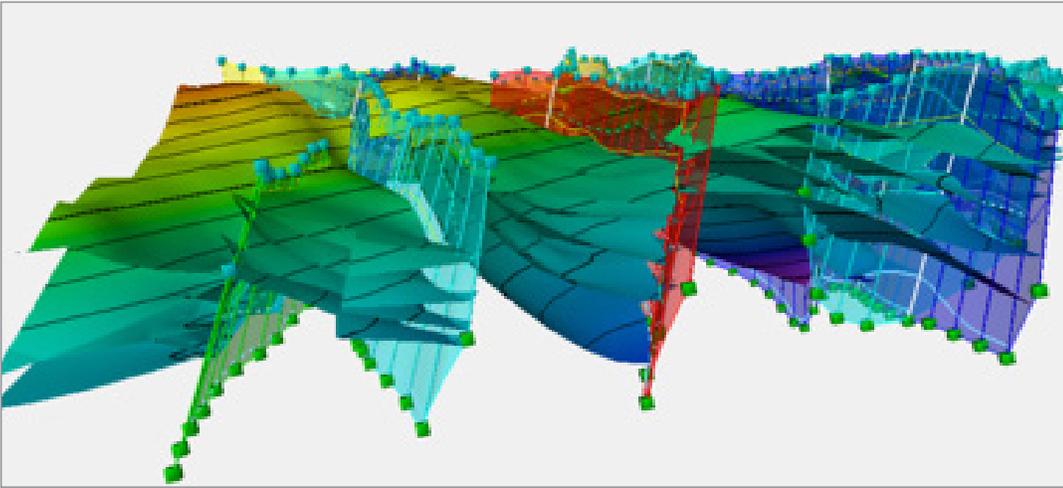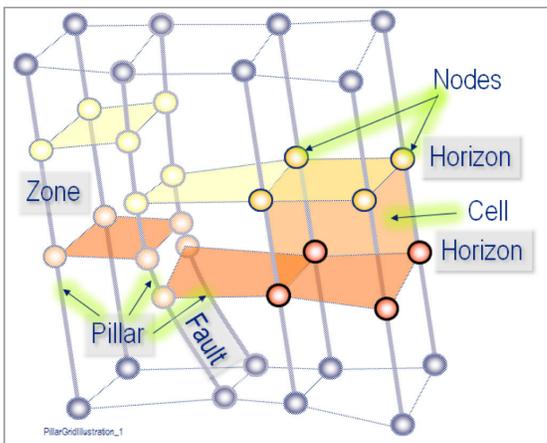

Accessing and creating Stratigraphy charts.
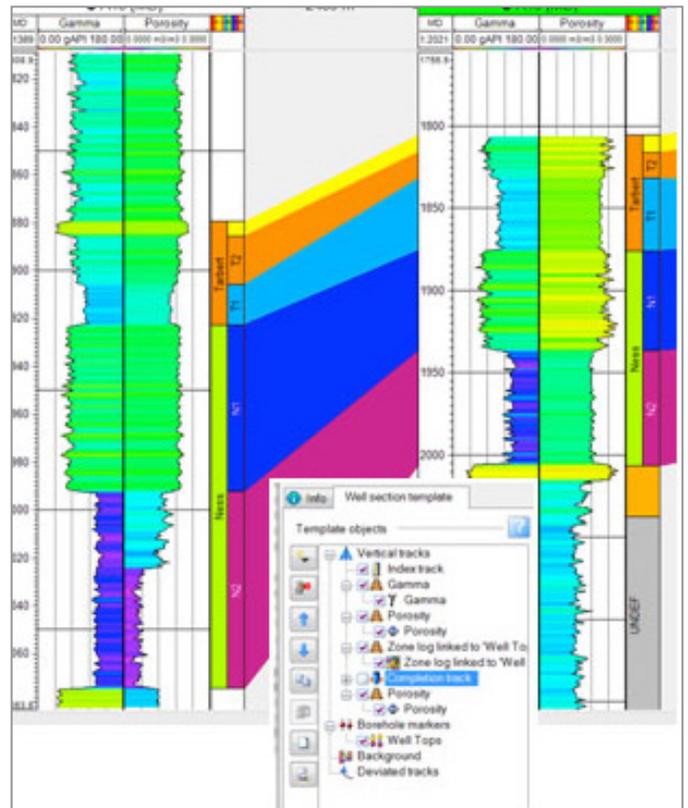
Enhancing well display by rendering custom objects onto the Well Section Window.

Ocean Software Development Framework for Petrel Geology and Modeling

Positioning faults and horizons in pillar grids.

Building reservoir models through corner point gridding, defining the grid geometry and structural elements.

Pillar gridding modeling

The pillar grid API allows you to retrieve pillar grid models with their structural elements such as faults and horizons and create new ones.

You can create your own static reservoir model using existing structural models and a robust pillar grid representation defined by cells, pillars, and nodes.

With the pillar grid API, you can build your model from scratch based on your own modeling workflow. This API lets you define your grid mesh, set up your pillars, and position your faults and horizons. You can then set up layering through the Petrel platform's zone API and position your fluid contacts.

Structural framework modeling

The structural framework API offers read-only access to existing framework models built from the Petrel structural framework processes. You have access to the models and their constituent elements, fault patches, horizon patches, volumetric zones, and zone segments.

The structural framework API allows you to look deep into the fault model by interrogating it for fault patches, fault-fault associations, and fault properties. The extent of the horizon model can be queried by looking at horizon patches and horizon-horizon associations. You can see how the structural model is tied together by looking at the zone model. The zone model includes access to zone segments and surface patches. You can also access sub-geometries of the structural framework model that are common across the fault model and the horizon model, including fault-horizon associations and patch boundaries.
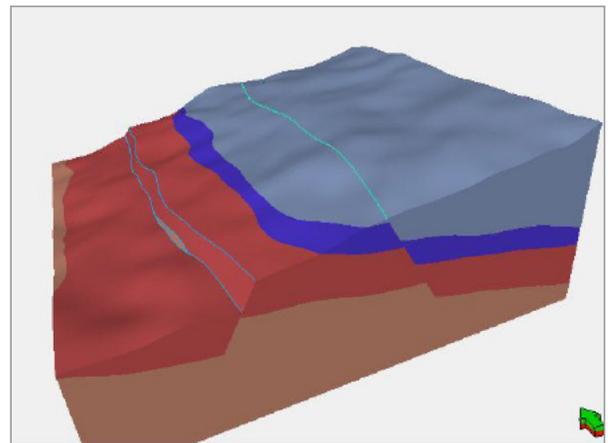
Building complex structural models through volume base modeling.

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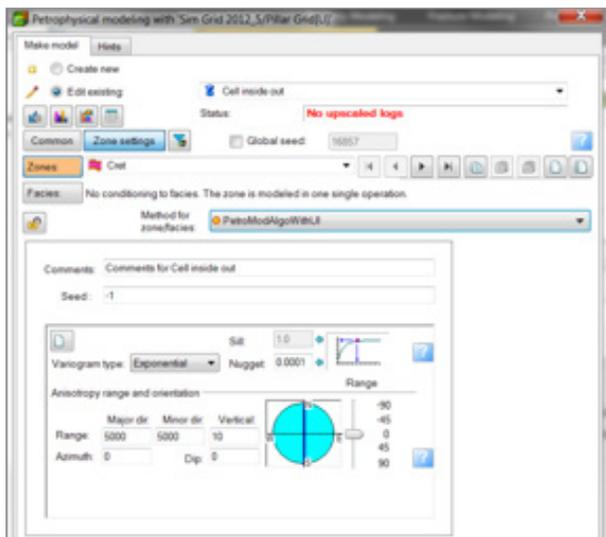
Customized property modeling with custom algorithms integrated to the Petrophysical modeling dialog.

Property modeling and analysis

Continuous and discrete grid properties can be easily retrieved through the property modeling and analysis APIs. You can edit existing properties and populate new ones based on your own aglorithms or through the Petrel platform's property modeling processes.

The property modeling APIs expose facies from the Petrel platform petrophysical and geometrical modeling processes, letting you programmatically set up the zones and facies settings.

Some of the native geometrical and petrophysical modeling algorithms are exposed and can be run programmatically. The facies property modeling APIs expose the sequential indicator simulation and the indicator Kriging algorithms, while the petrophysical property modeling APIs expose the sequential Gaussian, Gaussian random function simulation, and Kriging algorithm.

The APIs also allow plug-ins to extend those processes with their proprietary algorithms and associated user interfaces.

The data analysis APIs facilitate the querying of existing model variograms and the creation of new ones.

Intersection services are also provided to aid the population of properties. Intersections of polylines (e.g., borehole) and planes with grids can be computed. Horizon and plane, and local grid intersections can also be computed.

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