

Environment-Plus

The foundation for Jason® Workbench advanced reservoir characterization applications and workflows

Environment Plus, or **E-Plus™**, combines the most commonly used tools within the **Jason® Workbench** into a single, tightly integrated platform for use in reservoir characterization workflows and studies. Included in this package are the visualization tools, BodyChecking, Crossplots and Histograms, 2D Interpretation, horizon and fault data management, WellTie, and Processing Toolkit.

E-Plus provides a powerful environment for building workflows using **Jason's** advanced inversion tools and delivers all of the core features necessary to begin a quantitative reservoir characterization workflow.

BodyChecking

Jason's BodyChecking application is designed to provide quantitative insights into your reservoir's distribution and geology. Through tight integration with Crossplots and Histograms, relationships between multiple seismic and well properties can be used to reveal a reservoir's geology.

Using the relationships established, a geoscientist can search for subsurface patterns by studying the continuity and connectivity of key reservoir properties, and then correlate the results with known reservoir geology and production information. BodyChecking creates geobodies using input from well, property, solid model and stratigraphic horizon information data. The net pore volume of the bodies identified can also be directly estimated using BodyChecking. A batch capability is provided for analyzing multiple realizations, for instance, from a geostatistical inversion workflow.

WellTie

WellTie is **Jason's** application for well-to-seismic tying and wavelet estimation. It provides a range of functionality capable of meeting the needs of various users. With WellTie, seismic interpreters can increase confidence in their interpretations by quantitatively tying well tops to seismic events. Inversion specialists can extract and QC wavelets to ensure that inversion results match the well data in the seismic bandwidth. Reservoir modelers can use WellTie to verify that their reservoir models match the well properties and tops at the required sampling rate.

WellTie combines the Well Editor and the Wavelets Estimation modules in an interactive, embedded manner. Using one or multiple wells, time/depth curve adjustment and wavelet extraction can be done in an interactive loop, for full stack or AVO/AVA seismic data. For the cases where multiples are a problem, full waveform synthetics can also be generated. Numerous QCs are available to monitor the amount of implied velocity change from the "stretch and squeeze" actions and to assess the quality of the well ties and the extracted wavelets. Backus averaging (effective medium theory) is available to correctly reconcile the fine-scale well log measurement with the coarser seismic scale.

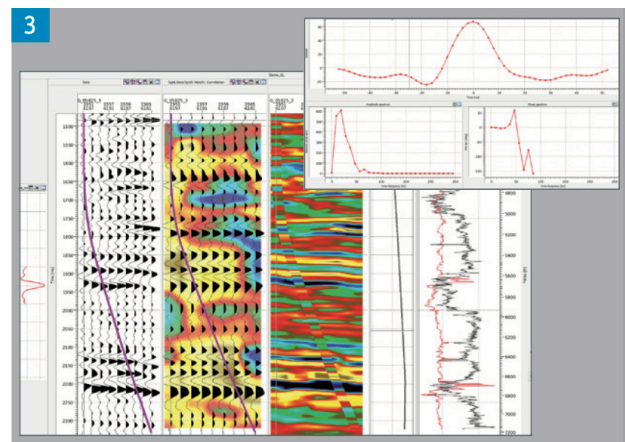
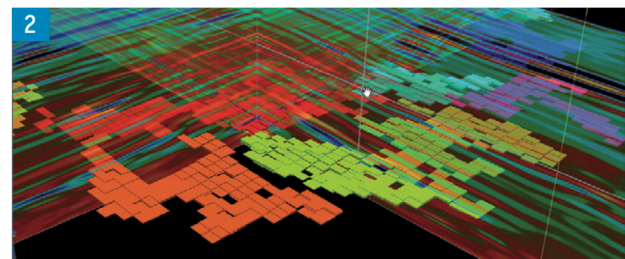
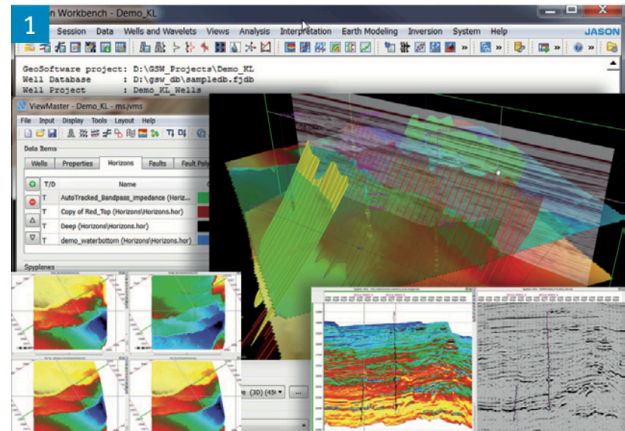


Figure 1. E-Plus provides the data loading, data management and visualization tools for working with any data within the environment. Geoscientists can leverage multi-panel Map and Section view displays during their QI workflows.

Figure 2. BodyChecking reveals the spatial distribution, continuity, connectivity and volumetrics of geologically meaningful reservoir properties.

Figure 3. Well Editor generates well-to-seismic ties using wavelets estimated with Jason's industry-leading wavelet estimation tools. Confidence plots and impedance displays provide critically important QC tools.

Essential tools to analyze data

Crossplots and Histograms

Crossplots and Histograms is fully integrated with **Jason's** Well, Map, Section and 3D Views. Geoscientists can use it to identify and study geologically meaningful relationships between well, model, stratigraphic, horizon and seismic information.

Geoscientists can fit functions to selected data and save these for reuse in other tools within the **Jason Workbench**. Probability distribution functions can be designed and then applied within the **Jason Facies and Fluids Probabilities** or **RockMod®** applications.

Data ranges can be defined to control the display of data within the associated views. Highlighted points shared between the views allow geoscientists to directly assess the meaning of and correlation to other observations. Information captured within polygons and ranges can be used to generate new data.

Processing Toolkit

The Processing Toolkit provides a set of signal processing tools for applying filters, resampling data, scaling data, applying trend balancing to enhance seismic data or acoustic impedance results from **Jason**, and decomposing the data into a 2D time-frequency cube. These processes can be applied to well data, seismic/property data, gather data or wavelet/filter data.

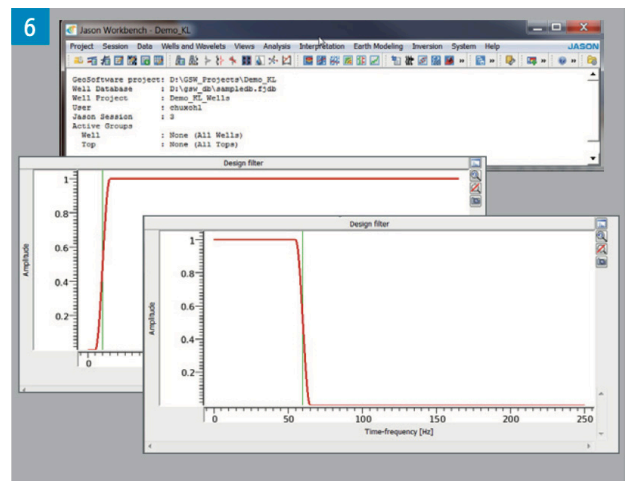
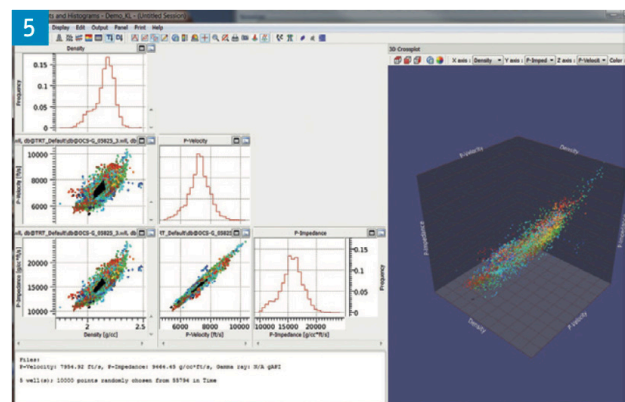
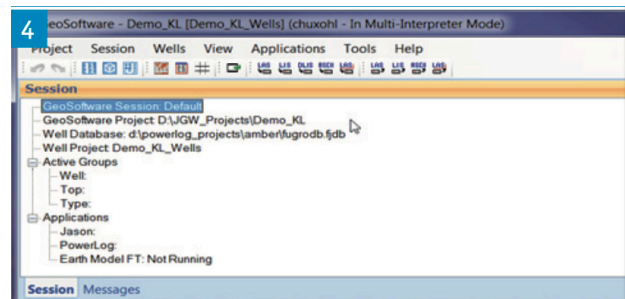


Figure 4. GeoSoftware provides an integrated project, session, and well data management environment for Jason Workbench, PowerLog, and EarthModel.

Figure 5. The Crossplots and Histograms tool, fully integrated with BodyChecking, provides a mechanism for correlating geophysical and geological properties to key reservoir properties and trends.

Figure 6. A variety of utilities are available for creating new, project-specific seismic and well data sets, including high- and low-cut filtering.