Powerful seismic interpretation for your play

A brand new, intuitive and easy-to-use seismic interpretation system with powerful 3D visualization and interpretation capabilities. GVERSE Geophysics enables geoscientists to execute end-to-end workflows for basic interpretation and more advanced geophysical workflows.

Enquiries: +1 855 GGX LMKR (449 5657) I USsales@lmkr.com
Seismic Interpretation Software
Powerful, 2D and 3D seismic interpretation system for rapid prospect generation

GVERSE® Geophysics software is a powerful, fully integrated 2D and 3D seismic interpretation system that provides a full range of fit-for-purpose interpretation capabilities, attribute analysis, and mapping tools. Whether exploring complex structural areas or looking for subtle stratigraphic traps, today’s geoscientist can use the numerous tools offered by GVERSE Geophysics to solve these otherwise challenging problems.

GVERSE Geophysics database along with project management tools when combined with the entire GVERSE GeoGraphix software system, connect data for a complete interpretation without any need for inter-application data transfers.

Key Benefits

**Faster, Better Decisions**
Sharing of geological and geophysical interpretations and data ensures a more efficient asset team. Resulting decisions are faster and more informed – qualities essential to today’s fast-paced E&P environment.

**Blazing Fast 3D Visualization**
GVERSE Geophysics features a 3D viewer that is built on an engine designed and optimized for seismic and related data. It has never been easier to view your seismic sections, horizons, faults, wells and wellbore data, and much more in 3D space. The new LOD format does not compromise performance even with very large seismic files. With features such as voxel rendering and co-blending, you can visualize subsurface structures like never before, gain more insight into your data, and make better decisions for your play.

**Robust & Reliable Depth Conversion**
GVERSE Geophysics provides a versatile suite of depth conversion tools to convert your time data to depth domain. Fast and reliable, our cutting-edge depth conversion algorithms provide an extensive set of options to tackle multiple scenarios. Full integration between our geophysics and geology tools lets you utilize all available data when making key decisions for exploration or field development.

**Ease of Use & True Mobility**
Leverage the latest in technology to minimize your learning curve and focus on what’s important. No more digging through tons of menus and dialogs to find what you are looking for. The multi-screen enabled, ribbon-based interface puts everything you need right in front of you. GVERSE Geophysics supports remote, desktop and mobile environments to accommodate some of the industry’s largest regional projects while reducing need for IT support.
Key Features

Data Loading and Management

- 64-bit support for rapid interpretation in large projects.
- Convert 2D and 3D seismic data from standard SEGY format to our proprietary brick seismic format for optimized data access.
- 2D, 3D or combination projects and multiple data versions for each 2D or 3D survey, along with program groups for 2D lines ensure easy survey management.
- Comprehensive workflows for balancing 2D, 3D and 2D-3D datasets. Automatically calculate phase, gain and time relationships between seismic lines and surveys.

Synthetic Modeling

- No separate license required for basic synthetic modeling.
- Simplified workflow to create or edit synthetic seismograms within the main GVERSE Geophysics application.
- Display seismic, horizons and formation tops in the dedicated synthetic view window.
- Tie synthetic traces with seismic using shift, stretch and squeeze controls in the dedicated window or directly in the 3D viewer.
- Auto-calculate optimum time and phase shifts to maximize correlation between synthetic and seismic.
- Save the synthetic trace and its associated time-depth table in the WellBase database.
- Full set of horizon operations: copy, smooth, snap, merge and dip/azimuth calculation.

3D Visualization and Interpretation

- View 2D and 3D seismic data, horizons, faults, wells and well data, ISOMap layers and much more in our highly optimized 3D viewer.
- Interpret your seismic in 3D. Pick your horizons, faults and geobodies directly in a specialized 3D environment. Quickly mark your structures and instantly see what they look like in the 3D space.
- Use advanced visualization techniques like voxel rendering, blending, selective transparency and much more to get deeper insights into your data.
- Work with very large seismic files without compromising performance using our groundbreaking LOD format.
- Enhance productivity with usability features like multi-screen support, dockable windows, a sleek ribbon-based interface, saving and sharing work as sessions and much more.

Horizon Interpretation

- Use manual, 2D auto-picking, polygon picking and drag-picking modes to quickly mark seed picks for horizons.
- Advanced 3D horizon tracking using correlation or interpolation-based auto-pick methods with validation options.
- Display horizon attribute maps like confidence, pick order and pick type. Edit horizons based on pick attribute criteria.
- Identify and eliminate potential bad picks using pick relationship displays.
- Multi-Z horizon picking for interpretation in thrust-faulted areas (2D seismic only).
- Improved algorithms to build robust and reliable velocity models. GVERSE Geophysics supports four kinds of velocity models based on: velocity surveys of wells, horizons and formation tops combination, structurally interpolated time-depth tables and the ability to use an external seismic volume as a model.
- Dynamic depth conversion incorporates changes to formation picks into the velocity model in real-time, always keeping your seismic
backdrops up-to-date in GVERSE Geomodeling/smartSECTION.

- Switch to Depth Mode in time interpretations and convert time scenes to depth on-the-fly.
- Visualize data from velocity models on seismic sections.
- Automatic velocity calculation at a well location using formation-depth/horizon-time relationships.
- Velocity QC functions with velocity survey graphs comprising overlays.

**Fault Interpretation**

- Pick faults by marking fault segments on 2D displays of vertical and horizontal seismic or directly in the 3D view.
- Automatic fault surface interpolation with robust fault triangulation algorithms delivers accurate and reliable results.
- Assign, un-assign or re-assign fault segments individually or in bulk directly from the seismic section or 3D view.
- Correlation window to assist fault picking in difficult areas or noisy data.
- Automatic fault heave calculation with fault polygons.

**Geobody Interpretation**

- Pick and save structures on seismic and attribute volumes as geobodies.
- Interpolate picks or track seismic signatures automatically.
- Drape data directly on the body or show intersections with seismic sections.
- Use the volumetric calculator to compute the volume of your geobodies.

**Time to Depth Conversion**

- Simple and accurate time-to-depth workflows with unique three-component horizons for time, velocity and depth data. Comprehensive horizon depth conversion options, each tailored to a different problem: average velocity, interval velocity, velocity surveys, horizon/formation combinations, vo and kz (using a geological datum) or directly from the velocity model.

**Attribute and Surface Calculation**

- User-friendly Attribute and Surface calculator comprises multiple attribute options.
- Flexible windowing options to calculate attributes within a time window, between horizons or about a selected horizon.

**Mapping**

- Multiple base maps with a unique set of display parameters and color palettes.
- Contour maps or color density maps of time, depth, velocity or seismic attributes.
- Grid and contour with minimum curvature gridding or inverse distance algorithm for quick, interpretation maps.
- Access to full set of gridding operations when mapping data with geophysical and geological integration (requires GeoAtlas & IsoMap software).
- Planimeter and linear distance tools on Map and 3D views.
- Extract seismic data at well locations and save as a log curve in the active curve set.
- 2D and 3D supported horizon-to-horizon or surface-to-surface calculations.

**Interpreting Geobodies**

- Pick and save structures on seismic and attribute volumes as geobodies.
- Interpolate picks or track seismic signatures automatically.
- Drape data directly on the body or show intersections with seismic sections.
- Use the Volumetrics calculator to compute the volume of your geobodies.
Setting Horizon Pick Attributes

- Display confidence, pick order and pick type maps.
- Edit horizons using pick attribute criteria.
- Identify and eliminate potential bad picks using pick relationship displays.
- Guide your picking by projecting horizon picks onto unpicked sections.

Build Better Velocity Models

- Switch to Depth mode in time interpretations and convert entire time scenes to depth on-the-fly.
- Use improved algorithms to build more robust velocity models.
  - Determine depth values for the interval between two horizons by considering the velocities of current and preceding horizons.
  - Control how velocity pairs are used against each horizon.
  - Incorporate fault polygons within the velocity grid of the selected horizon.
  - Option to set extrapolated or custom velocity below the last horizon while generating a velocity model.
- View measured depth (MD) along wells in time scenes.

Tie Synthetic in 3D

- Shift, stretch and squeeze synthetic traces using different controls within the 3D viewer.
- Auto-calculate optimum time and phase shifts to maximize correlation between synthetic and seismic.
- View changes to interval velocity due to modifications in synthetic.
Enhanced Wells & Well Data Display

- Extract seismic data along a wellbore and save it as a log curve using the context menu. These log curves can be used in various GeoGraphix applications.
- Open an arbline along a deviated wellbore.
- Send wells and well data directly from the main interface to the 3D module.
- Open a well-to-well arbline in Map View.
- Highlight specific wells on maps and 3D scenes using pre-defined filters.
- Display multiple perfs within a completion zone.

Improved Seismic Visualization

- Load seismic volumes to RAM for faster data visualization.
- Compute and compare power spectrums for seismic.
- Overlay wiggles on sections.
- Apply phase rotation and bandpass filters to vertical sections.

Enhanced Usability

- Show contours on horizons in 3D View.
- Horizon/Fault nodes in Interpretation and Scene trees.
- Flatten seismic data in a 3D scene with respect to a selected horizon.
- Mark horizons on flattened seismic sections.
- Display fault polygons on a horizon.
- Processing applied to seismic traces on an open seismic section is also applied to the seismic trace display in SynView during synthetic creation and modification.
- Control interpolation of color display between individual seismic traces.
- Improvements in the Interpretation Browser to make transfer of data between interpretations even easier.
- Quicker access to Data Managers as well as Fault and Geobody segments dialogs.
- Focus on an object in 3D view by double-clicking the associated entry.
- Clip the 3D scene to an area of interest (AOI).
- More control on hiding and removing items from a scene.
- Create and access Horizon and Fault lists from the Horizon/Fault Manager.
- Calculate distance between points or along a path on the map or 3D scene.
- Horizon and fault order defined in Horizon/Fault Managers replicated in the respective.
Optional/Add-on Module

pSTAx® Post-Stack Processing Software

With pSTAx software, geoscientists perform post-stack processing flows directly from the desktop, no external reprocessing necessary. pSTAx can be used as a standalone application supporting SEG-Y formatted seismic data, or in conjunction with GVERSE Geophysics, as geoscientists accomplish input and output using bricked formats.

Standard, post-stack processing functions, such as amplitude scaling, correlations, convolution, filtering, and phase rotation build an ideal desktop environment for the quick and easy evaluation of the effects of new processing flows.

SCAN™

SCAN software is an optional extension of the seismic processing module pSTAx. SCAN calculates Event Similarity Prediction (ESP) similarity volumes as well as Structure Cubes from the input data. With SCAN, the geoscientist readily identifies subtle discontinuities in the seismic data potentially related to geological features. This tool provides a cost-effective alternative to project outsourcing. Key features include:

- Easy identification of linear features such as faults, fractures, reefs and channels.
- Interpretation of subtle discontinuities in seismic data.
- Identification of subtle stratigraphic changes such as channel thickening.

GVERSE Attributes

GVERSE Attributes enables geoscientists to harness the full power of seismic attributes by drastically reducing the time, effort, and disk space required for attribute analysis.

Fast, on-the-fly computation, and real-time visualization of seismic attributes in a multi-pane viewer lets interpreters perform detailed, in-depth attribute analysis quickly and efficiently, maximizing the value of their seismic data.

The multi-paned viewing environment, unmatched by any software in the industry, along with streamlined workflows and high resolution 3D seismic attributes help boost performance. The value of seismic data for seamless interpretation is maximized by fast, on-the-fly visualization of seismic attributes which allows for in-depth attribute analysis with immediate feedback.

Key Benefits

Real-time Visualization of Results

Having intensively minimized processing time, GVERSE Attributes offers an integrated viewer to display attributes for the selected IL/XL/TS computed on-the-fly using GPU. After adjusting attribute parameters and seeing results in real-time, the user can generate the attribute for the entire dataset and load the resulting volume into GVERSE Geophysics (or equivalent interpretation software).

Fast, Powerful 3D Engine

View on-the-fly attributes in 3D to gain deeper insight in your attribute analysis. In addition to computing attributes on inlines, crosslines and timeslices, users can view probes, airblines and horizon surfaces with attributes applied on them in real time to gain more useful information faster and more efficiently.
Effort and Time saving
As compared to traditional tools, GVERSE Attributes allows geoscientists to harness the full power of seismic attributes by drastically reducing the time, effort and disk space required for attribute analysis. Attributes are computed on-the-fly on controlled input data to let users view attributes results before they commit to creating volumes, saving both processing and analysis time. Attribute volumes are created on-demand eliminating the need for intermediate volumes and significantly reducing data and disk management.

Flexibility
Features like the ability to save parameters for all available attributes and saving the complete state of the workspace to a file saves time as the user can resume work from where left off and also be able to share his/her workspace with others. The workspace can contain all the information in the application including the input files, any subsets, the view state (all view panels, attributes displayed on those panels, the seismic IL/XL/TS opened, and the parameters for the attributes displayed) along with any other data.

Integration
The application integrates seamlessly with GGX Discovery as it reads seismic amplitude date from GVERSE Geophysics and exports volume to GVERSE Geophysics.

Key Features
- On-the-fly attributes for any inline, crossline, timeslice, or for probes, horizons and arblines using GPU.
- Compare attributes and parameters quickly and efficiently in multiple panes or in 3D space.
- Compute over 50 physical and geometric attributes, including frequency-tuned attributes using the patented CAPS technique.
- Level of Detail (LOD) encoding for faster performance on large datasets.
- Define mathematical expressions to combine existing attributes and create custom attributes.
- Automatic Fault Extraction attributes to highlight faults.
- Structure Oriented Smoothing to enhance structural features in seismic.
- Change and edit color palette, view histograms and assign default palettes for attributes.
- Co-blending and RGB blending to visualize multiple attributes simultaneously.
- Generate volumes for selected attributes.
- Seamless integration with GVERSE Geophysics.

Requirements
To run the application, you need one of the following operating systems installed on your system:
- Windows® 7 Professional x64
- Windows® 7 Enterprise x64
- Windows® 7 Ultimate x64
- Windows® 10 Professional x64
- Windows® 10 Enterprise x64

Hardware
Minimum
- 2.4 GHz 64-bit processor
- 8 GB RAM
- Any DirectX 11.1 capable card comparable with Nvidia® GeForce GTX 430 with 1GB VRAM. DirectX is not shipped with GeoGraphix 2019.2. You must download and install it separately.
- 1366 x 768 screen resolution

Recommended
- Quad 3.2 GHz 64-bit processor
- 32 GB RAM
- Any DirectX 11.1 capable card comparable with Nvidia® GeForce GTX 1060 with 6GB VRAM. DirectX is not shipped with GeoGraphix 2019.2. You must download and install it separately.
- Solid state hard disk (SSD)
- 1920 x 1080 screen resolution

Licenses
The following licenses are required to run the software:
- GeoGraphix license version 2019.2
- GVERSE® Geophysics license version 2