Release Notes

Attributes

On the fly high resolution seismic attributes in 3D

Release Notes for GVERSE Attributes 2016.1

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Introduction

LMKR is pleased to announce the release of the GVERSE™ Attributes™ 2016.1 software.

This document provides an introduction to GVERSE Attributes features and benefits. It also lists the system requirements necessary to install and run the software.

What is 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, or in an 3D environment, lets interpreters perform detailed, in-depth attribute analysis quickly and efficiently, maximizing the value of their seismic data. GVERSE Attributes is part of the GVERSE application suite by LMKR (http://www.lmkr.com/gverse).

LMKR GVERSE consists of geoscience and engineering solutions focused on workflow optimization and enhancing productivity of teams working on diverse geological and geophysical projects. These applications help cut the processing time required for interpretations resulting in fast, easy to use scalable tools that are inter-operable with other known geoscience software suites; enabling a connected multi skilled workforce.

Main Features

The main features of GVERSE Attributes are as follows:

- On-the-fly computation of attributes for any inline, crossline, timeslice, or for probes, horizons and arblines, using the Graphics Processing Unit (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.
- 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 palettes, view histograms, and assign default color palettes for attributes.
- Co-blending, and RGB blending to visualize multiple attributes simultaneously.
- Generate volumes for selected attributes.
- Loss-less compression of SEG-Y datasets for optimized performance.
- Seamless integration with SeisVision.

Benefits

Using this software, you can compute attributes on-the-fly using the GPU; allowing seismic interpreters to quickly see the results in an integrated viewer for a selected inline, crossline or timeslice and also easily adjust attribute parameters to optimize their results.

- **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 SeisVision (or an 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, the users can view probes, arblines, and horizon surfaces with attributes applied on them in real time to gain useful information faster and more efficiently.
- **Reduced Time and Effort for Attribute Analysis:** 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 user's time. This allows users to resume their work from where they left off, and also share their workspace with others. The workspace contains 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.
- **Seamless integration with GeoGraphix® Discovery:** The application integrates seamlessly with GeoGraphix Discovery as it reads seismic amplitude data from SeisVision, and exports generated volumes to SeisVision.

System Requirements

The following sections list the system requirements for GVERSE Attributes.

Software

The software that must be installed on the system running GVERSE Attributes are as follows:

- Microsoft® .NET 4.5
- NVIDIA Driver version 347.62 or higher
  For optimum performance, use NVIDIA graphics card.
- GeoGraphix Discovery 2015.1.x or 2016.1 is required (for integrated mode only)
- LMKR License Management Tool 2016.1 for Attributes license
  The LMKR License Management Tool (LMT) must be installed to configure the Attributes license.

Operating System

To run GVERSE Attributes, you need one of the following operating systems installed on your system:

- Windows® 7 Professional x64
- Windows® 7 Enterprise x64
- Windows® 7 Ultimate x64

Note: It is recommend to use the latest Microsoft® service packs and security patches.

Hardware

The minimum hardware requirements are as follows:

- 2.4 GHz 64-bit processor
- 8 GB RAM
- Graphics card NVIDIA GeForce 430 or higher with minimum 1GB Dedicated VRAM
  For optimum performance, use NVIDIA graphics card.
- DirectX 11 compatibility of graphics card is required
- 1366 x 768 screen resolution.

The recommended hardware requirements are as follows:

- Quad 3.2 GHz 64-bit
- 32 GB RAM or greater
- High-end NVIDIA GeForce GTX Graphics card X70 - X95 (where X represents GeForce Series 400 onwards) with minimum 2GB dedicated GDDR5 VRAM
  For optimum performance, use NVIDIA graphics card.
- Solid state hard drive (SSD)
- 1920 x 1080 screen resolution.

Licenses

The following license is required to run GVERSE Attributes:

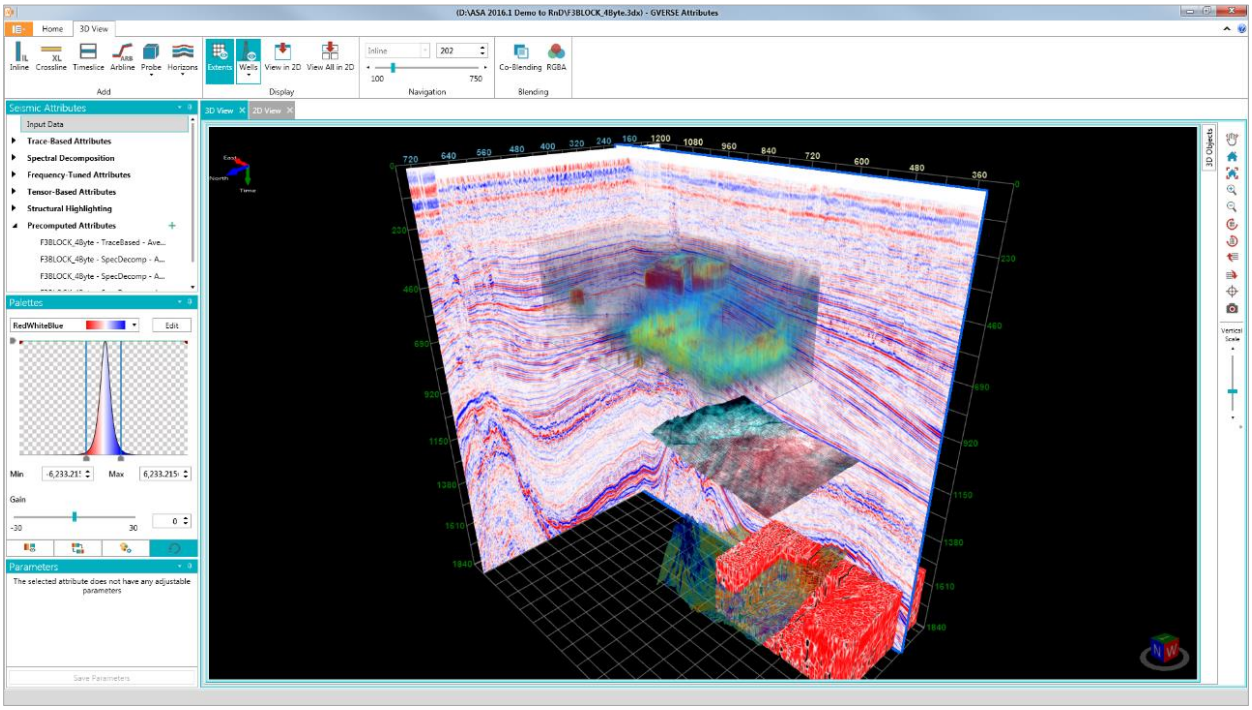
- GVERSE Attributes 2016.1 license
- GeoGraphix Discovery 2015.1.x or 2016.1 license is required for integrated mode only.

Note: Refer to the LMKR Customer Support Portal (http://support.lmkr.com/) for up-to-date information on the requirements.

What's New in 2016.1?

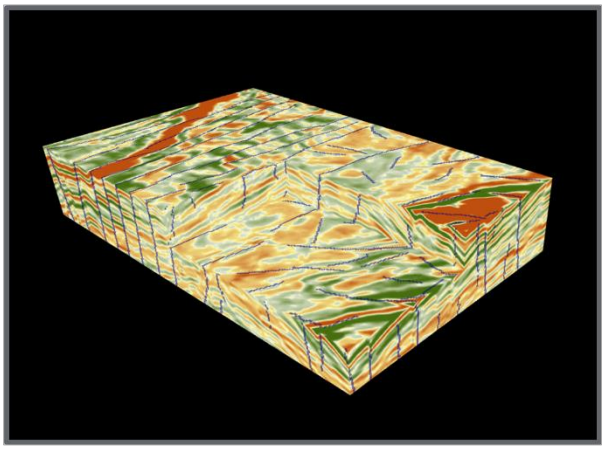
On-The-Fly Attribute Computation and Analysis in 3D

- Compute attributes on-the-fly and analyze them in 3D.
- Voxel rendering for visualization of seismic and attribute volumes.

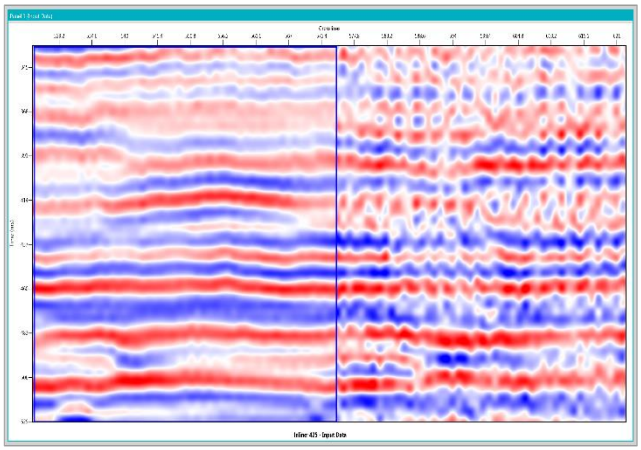


New Attributes to Directly Assist Interpretation

- Highlight faults with fault dip and strike attributes.
- Filter, smooth and highlight structural features in seismic data with Structural Oriented Filtering.



Automatic Fault Extraction



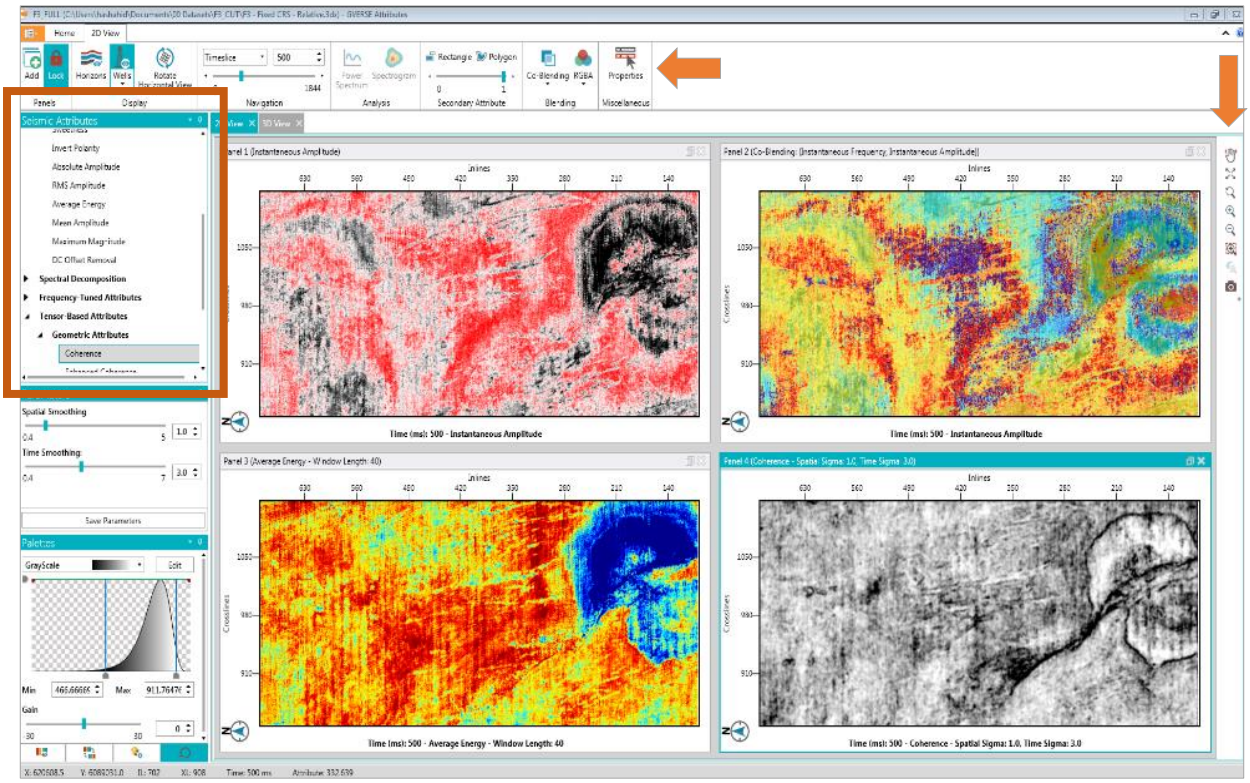
Structural Oriented Filtering

Faster Results on Bigger Datasets

- SEG-Y Compression – Use four times larger SEG-Y datasets with loss-less compression.
- Cache Data – Reuse CAPS data for computationally intensive attributes.

Simpler, More Interactive User Experience

- Powerful color palette control with interactive histogram and transparency support.
- Interactive ribbon and sidebar for quick access.
- Sharper data display at high zoom levels.

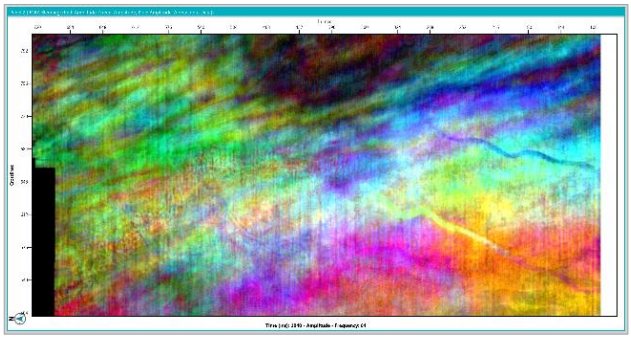


Import External Attribute Volumes

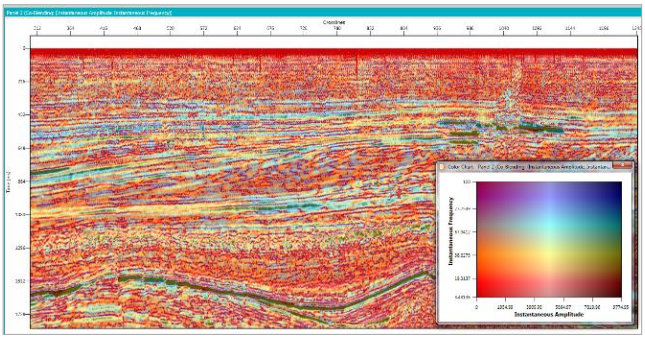
Add attributes generated outside GVERSE Attributes to a workspace.

View Multiple Attributes Simultaneously

Co-blending and RGB blending to view multiple attributes simultaneously.



RGB Blending



Co-Blending

Third Party Applications

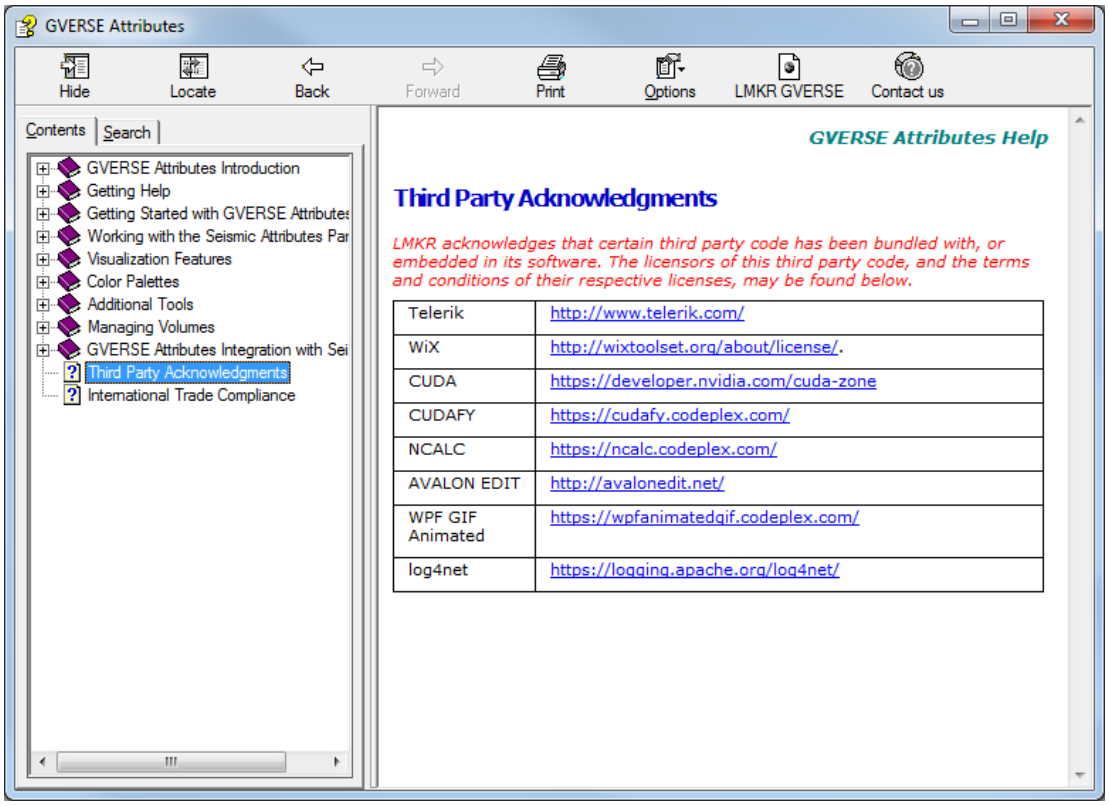
LMKR acknowledges that certain third party code has been bundled with, or embedded in, its software. The licensors of this third party code, and the terms and conditions of their respective licenses, may be found in GVERSE Attributes Help file.

To access the third party license agreements:

1. In the GVERSE Attributes dialog, click .

   The Help window displays.

2. In the **Contents** pane, locate the **Third Party Acknowledgments** help topic as shown in the image below.



International Trade Compliance

This application is manufactured or designed using U.S. origin technology and is therefore subject to the export control laws of the United States. Any use or further disposition of such items is subject to U.S. law. Exports from the United States and any re-export thereafter may require a formal export license authorization from the government. If there are doubts about the requirements of the applicable law, it is recommended that the buyer obtain qualified legal advice. These items cannot be used in the design, production, use, or storage of chemical, biological, or nuclear weapons, or missiles of any kind.

The ECCNs provided here (if available) represent LMKR's opinion of the correct classification for the product today (based on the original software and/or original hardware). Classifications are subject to change. If you have any questions or need assistance please contact us at support@lmkr.com.

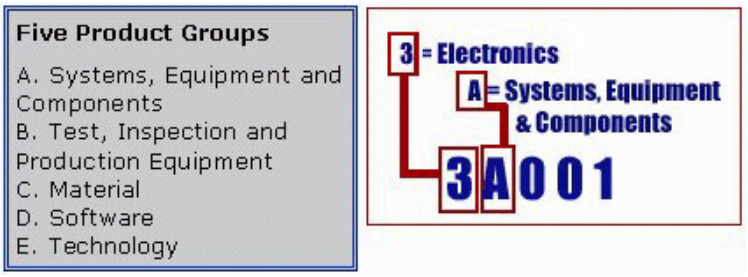
Under the U.S. Export Administration Regulations (EAR), the U.S. Government assigns your organization or client, as exporter/importer of record, responsibility for determining the correct authorization for the item at the time of export/import. Restrictions may apply to shipments based on the products, the customer, or the country of destination, and an export license may be required by the Department of Commerce prior to shipment. The U.S. Bureau of Industry and Security provides a website to assist you with determining the need for a license and with information regarding where to obtain help.

The URL is: http://www.bis.doc.gov.

Definitions

ECCN - Export Control Classification Number - The ECCN is an alpha-numeric code, e.g., 3A001, that describes a particular item or type of item, and shows the controls placed on that item. The CCL (Commerce Control List) is divided into ten broad categories, and each category is further subdivided into five product groups. The CCL is available on the EAR Website.

The following illustration is a sample:



The ECCN number (if available) and License Type for this product are included in the table below. Also included is the date the table was last updated.

Product/Component/R5000	EAR Number	License	Last Updated On
GVERSE Attributes	EAR99	EAR	11/23/2015

Contacting LMKR Support

LMKR is committed to providing the highest level of technical customer support in the industry. With an average tenure of more than thirteen years, our highly trained and experienced staff of technical analysts is comprised of geoscientists, engineers, land professionals, petrophysicists, and system specialists.

Please refer to our Customer Support timings mentioned below to ensure that you have access to our support analysts assigned to your region. When getting in touch with LMKR support, please remember that real-time support will not be available during bank holidays or after office hours. If you do get in touch with LMKR Support outside of work hours, please leave a voice message with a brief description of the issue that you are facing. Your voice message will be used to automatically create a support case for you. This will enable our analysts to attend to your issue and provide you with a resolution as soon as possible

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Helpful Links

Name	Website Address
LMKR Homepage	http://www.lmkr.com
LMKR GVERSE	http://www.lmkr.com/gverse
LMKR Support Portal	http://support.lmkr.com