



Attributes

On the fly high resolution seismic attributes in 3D

Release Notes for GVERSE Attributes 2019.2



© 2001 - 2022 LMKR Holdings. All Rights Reserved.

This publication is copyright protected. No part of this publication may be copied or distributed, transmitted, transcribed, stored in a retrieval system, or translated into any human or computer language, in any form or by any means, electronic, magnetic, manual, or otherwise, or disclosed to third parties without the express written permission of:

LMK Resources Inc. Houston

6051 North Course Drive,

Suite 300,

Houston TX 77072, USA.

Phone: +281-495-5657

FAX: +281-568-7315

Internet:

<http://www.gverse.com/geographix>

Trademark Notice

GVERSE® is a registered trademark of LMKR. WebSteering, Predict3D, Attributes, Connect, Planner, Inversion, Geo+, Geophysics, FieldPlanner, Petrophysics and NOW are trademarks of LMKR.

DecisionSpace, Discovery, GeoGraphix (stylized), GeoGraphix Exploration System, GeoLink, GES, GESXplorer, GMAplus, IsoMap, LeaseMap, LogM, OpenWorks, OpenWorks Well File, PRIZM, SeisVision, XSection, iEnergy are trademarks, registered trademarks or service marks of Landmark Graphics Corporation.

All other trademarks are the property of their respective owners.

Disclaimer

The information contained in this document is subject to change without notice and should not be construed as a commitment by LMKR. We assume no responsibility for any error that may appear in this manual. Some states or jurisdictions do not allow disclaimer of expressed or implied warranties in certain transactions; therefore, this statement may not apply to you.

Contents

- Introduction 1
- What is GVERSE Attributes?..... 1
- Main Features 1
- Benefits 2
- System Requirements 2
- Software 2
- Operating System..... 3
- Hardware 3
- Licenses 3
- What’s New in GVERSE Attributes 2019.2 4
- Third Party Applications..... 5
- International Trade Compliance 6
- Definitions 6
- Contacting LMKR Support..... 7

Introduction

LMKR is pleased to announce the release of the GVERSE® Attributes 2019.2 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 a 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.
- Compute attributes in time or depth domain seismic.
- 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 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 GVERSE Geophysics.

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 GVERSE Geophysics (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 GVERSE Geophysics, and exports generated volumes to GVERSE Geophysics.

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 2019.2 is required (for integrated mode only)
GeoGraphix 2019.2.1 must be installed to avail the new features in GVERSE Attributes 2019.2.
- LMKR License Management Tool 2019.2 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
- Windows® 10 Professional x64
- Windows® 10 Enterprise 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 license version 2019.2
- GeoGaphix license version 2019.2. It is required for integrated mode only.

Note: Refer to the LMKR Customer Support > Knowledge Center > [System Requirements](#) page for up-to-date information on the requirements.

What's New in GVERSE Attributes 2019.2

Depth Domain Support

Attributes can now be calculated for depth domain seismic data. All attributes previously available in time domain can now be computed for depth seismic as well.

Tighter Integration with GVERSE Geophysics

In addition to the sending seismic data directly from any GVERSE Geophysics interpretation, now all horizons and wells in the interpretation can also be transferred seamlessly to GVERSE Attributes.

ASCII Loaders

When importing horizons and well data from sources outside GeoGraphix, the improved loading capabilities can handle an any format of ASCII data.

Extents for Volume Generation

Attributes computed on data subset within the GVERSE Attributes can now be applied to the full extents of the survey. Preview attributes on a subset for faster results and analysis and generate volumes for the entire dataset.

Degree Units Support for Instantaneous Phase Attribute

Units for the Instantaneous Phase attribute have been changed from Radian to Degree.

Color Bar for Spectrogram Chart

A color bar is added to the Spectrogram window to describe colors for each frequency or wavenumber range.

SEG-Y Scalers and Skipped Traces Support

Fixed an issue that ignored the scaler defined in the trace header when loading SEG-Y data.

Third Party Applications

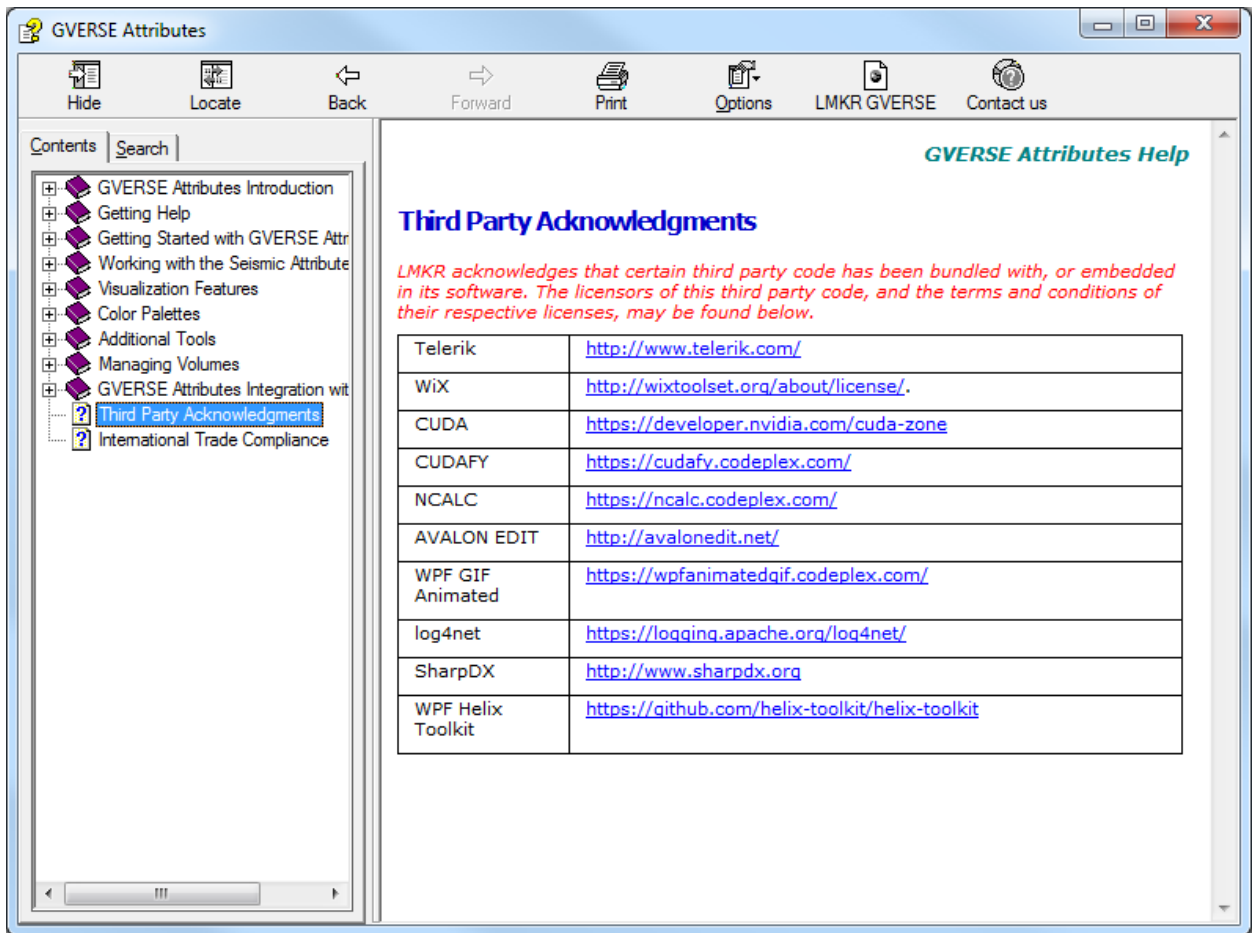
LMKR acknowledges that certain third party code has been bundled with, or embedded in, its software. The licensors of this third party code, and the terms and conditions of their respective licenses, may be found in GVERSE Attributes Help file.

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.

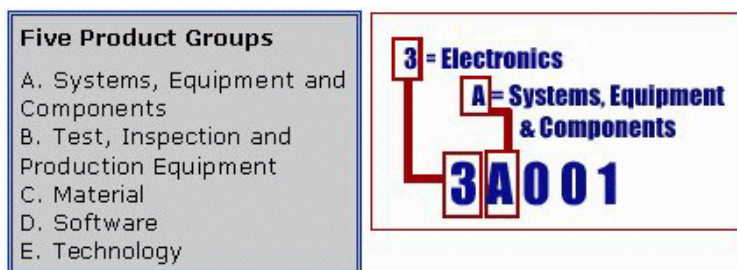
Under the U.S. Export Administration Regulations (EAR), the U.S. Government assigns your organization or client, as exporter/importer of record, responsibility for determining the correct authorization for the item at the time of export/import. Restrictions may apply to shipments based on the products, 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

North & South America	Europe, Middle East & Africa
<p>Monday – Friday 8 am – 6 pm CST* Toll Free (US/Canada) : +1 855 GGX LMKR (449 5657)</p> <p>Colombia: +57 1381 4908</p> <p>United States: +1 303 295 0020</p> <p>Canada: +1 587 233 4004</p> <p><i>*Excluding bank holidays</i></p>	<p>UK: Monday – Friday 8 am – 5 pm* +44 20 3608 8042</p> <p>UAE: Sunday – Thursday (Dubai GMT+4) 8 am – 5 pm* +971 4 3727 999</p> <p><i>*Excluding bank holidays</i></p>
Asia Pacific & Australian Continent	Southwest Asian Countries
<p>Malaysia: Monday – Friday (Kuala Lumpur GMT+8) 9 am – 6 pm* +60 32 300 8777</p> <p><i>*Excluding bank holidays</i></p>	<p>Pakistan: Monday – Friday (Islamabad GMT+5) 9 am – 6 pm* +92 51 209 7400</p> <p><i>*Excluding bank holidays</i></p>

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