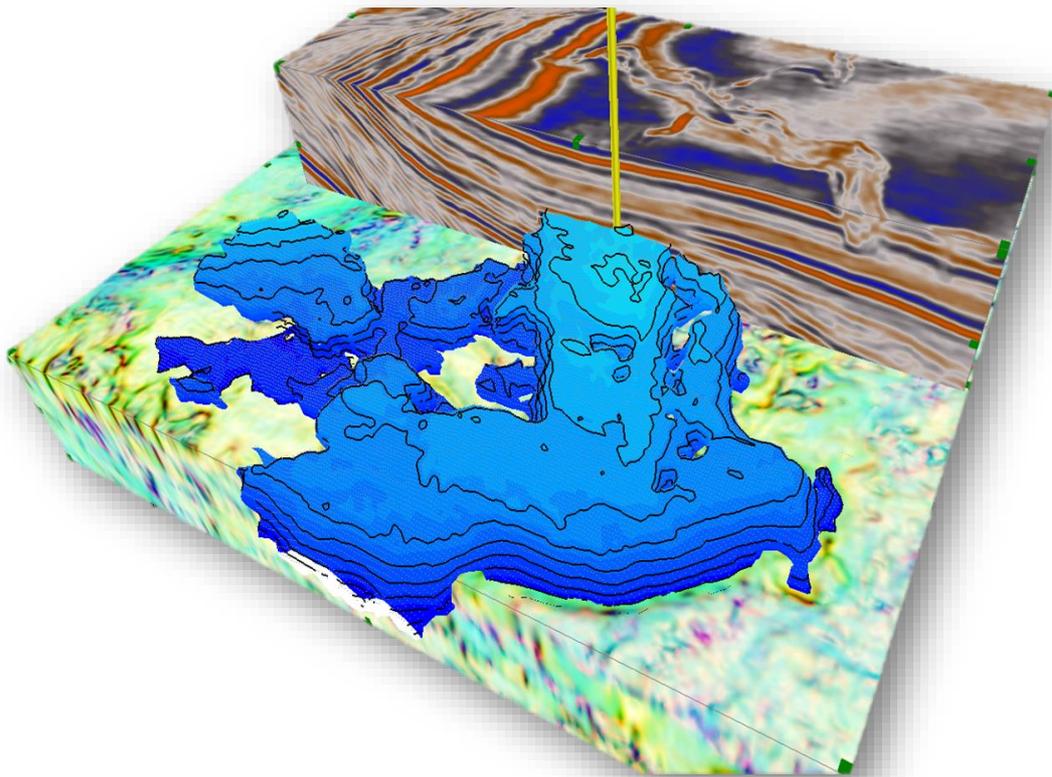


# Getting started with Geoteric

A step by step guide to loading data and setting up your Geoteric Project



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## Introduction

Geoteric supports a complete post-stack seismic interpretation workflow from data conditioning to delineation of the geological elements required to build a 3D model. Based around the Geological Expression approach, Geoteric combines advanced algorithms with intelligent user interface design to ensure the software is easy to use and delivers maximum productivity.

Geoteric gives you the power to interpret 3D seismic data more effectively and efficiently, screen and rank prospects much more quickly and to reveal information from seismic data that has not been seen before. This means your time is spent exploring and understanding the imaged geology allowing full confidence in the geological models you produce.

## Contact Details

All of the material below and lots more information can be found in Geoteric's Help file which can be accessed through the Help menu > Getting Started. The Help contains both topic-specific help as well as some step by step workflow help.

For further help and assistance please feel free to contact the Geoteric support team.

[Support@Geoteric.com](mailto:Support@Geoteric.com)

## Licensing

When you launch Geoteric you will be presented with the following screen to select your license. You can then select the license you need by ticking the box.



Geoteric has a modular licensing system allowing you to select only the modules you need to use for that Geoteric session. Geoteric naturally falls into four categories; Condition, Reveal Interpret and Classify. More details these categories can be found later in this document.

The interpret module is the core module of Geoteric. It is required to be able to access the other modules and also to create projects, visualise results and transfer data with current third parties.

On starting Geoteric the user can select any additional modules they require to interpret.

If you are unable to see a list of licenses then check that the license environment variable called FFALTD\_LICENSE\_FILE is pointing correctly to either the license server or to the folder of the node locked license.

For details on how to setup and configure flexlm to run a floating license please refer to separate document.

## Creating a new Geoteric project

To create a new analysis and load in SEGY data is described below. Alternatively, you can create a project based on an existing Petrel survey, an exported SEGY or .vol file or data from a DecisionSpace survey. See below for more information on some of these options. For full information refer to the Help manual.

Note: If this is the first time you have used Geoteric on that computer, you will be prompted to enter the path to the project directory (e.g. C:\Geoteric Projects) and the path to the Temp directory.

If you are creating a new project from scratch, start the application by clicking on the Geoteric icon on the desktop and select 'Start a new project':



## New Project based on SEGY

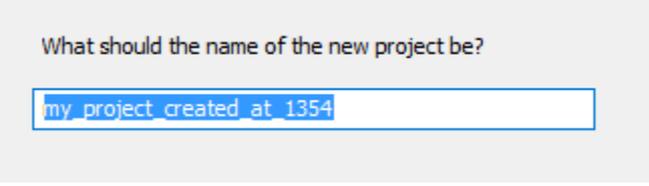
1. Start a new project based on:

2. It should be called:

3. It should be stored at:

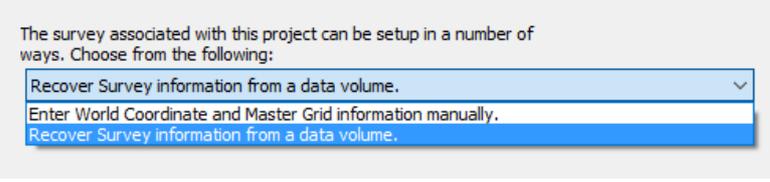
Choosing Based on SEGY will start the project wizard, which has the following input screens.

Give the project a name.



What should the name of the new project be?

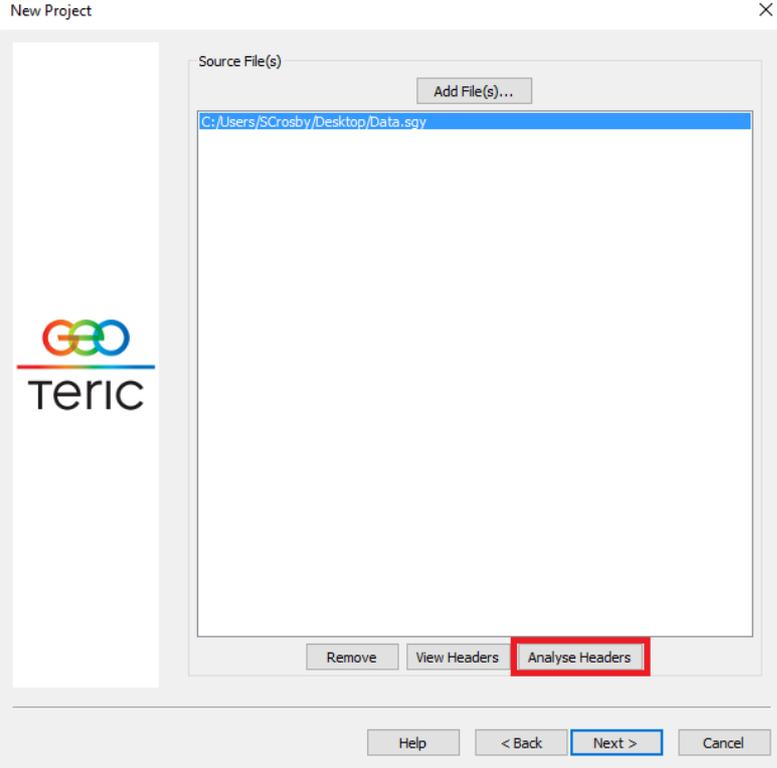
Choose to *Recover Survey Information from a data volume*.



The survey associated with this project can be setup in a number of ways. Choose from the following:

- Recover Survey information from a data volume.
- Enter World Coordinate and Master Grid information manually.
- Recover Survey information from a data volume.

You should always display file header information at this stage using Analyse Headers, to check any value ranges, byte locations, sample intervals and the traces amplitude range.



New Project

Source File(s)

Add File(s)...

C:/Users/SCrosby/Desktop/Data.sgy

Remove View Headers Analyse Headers

Help < Back Next > Cancel

The next screen will show the original sample format which has been extracted from the file header information. This is normally extracted correctly so only change this if you are certain the sample format has been extracted incorrectly.

The following information has been determined from the SEG Y header.  
This value should only be changed if you are certain it is not the correct one.  
An incorrect value here could lead to the SEG Y file not being loaded properly.

Source Sample Format: 32-bit Signed Integer

Confirm the project mode (depth or time) and the units to be used.

Use this page to set the project mode and the units for the Inline, Crossline and the Time/Depth directions.

Mode Selection

Mode: Time

Units Selection

Inline/Crossline: Metres

Time: 2 Milliseconds

And set the input file format: you can use 'Show only Recommended' which will show only the suggested compatible formats, or all of the import formats.

Once the Trace Headers have been analysed, confirm that the grid information is correct. If the World Coordinates have too many or too few digits then the SEG Y scalar needs to be changed below.

Survey Origin Selection

(Inline,Crossline)  
 (1,1)  (345,188)  (345,1)  (1,188)

The SEG Y indicates scalar "1". You can change that here:

Inline Spacing: 33.53 (m)  
 Crossline Spacing: 33.53 (m)

You can choose to load a subset by adjusting the extents of the volume you are loading: the size of the subset is shown below.

The following information has been recovered from the SEG Y dataset.  
 You can choose a subset of data to load.

Inline: 1 to 345  
 Start: 1, End: 345

Crossline: 1 to 188  
 Start: 1, End: 188

Time (ms): 0 to 3000  
 Start: 0.00, End: 3000.00

Size of Subset: 389.42 MBytes  
 Changing the imported sample format on the next page will change the volume size  
 Place top of volume at:  (ms)

You can also choose to shift the volume up or down slightly by setting the time/depth value the top of the volume should align with.

Now, set the scaling on either the full volume or the selected subset. The histogram display can help you avoid clipping and ensuring the scaling of the data is correct.

Enter a name for the volume and modify the default settings as required.

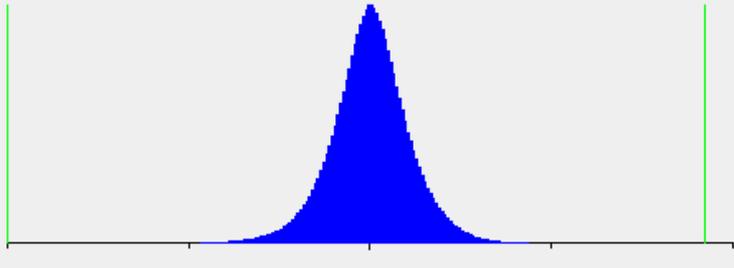
Save Volume as:

Import As :

Scale Type  
 None  Auto  User  Retaining Zero Crossing

Scale :  Offset :

Histogram For Full SEG Y



-2147483648.00 2147483647.00

Clip Min:  Clip Max:

Data Clipped (%):  %

Note! Ensure the histogram is centred otherwise the data will load with the wrong scale which could result in loss of resolution. And then click Finish...

## New Project based on Petrel

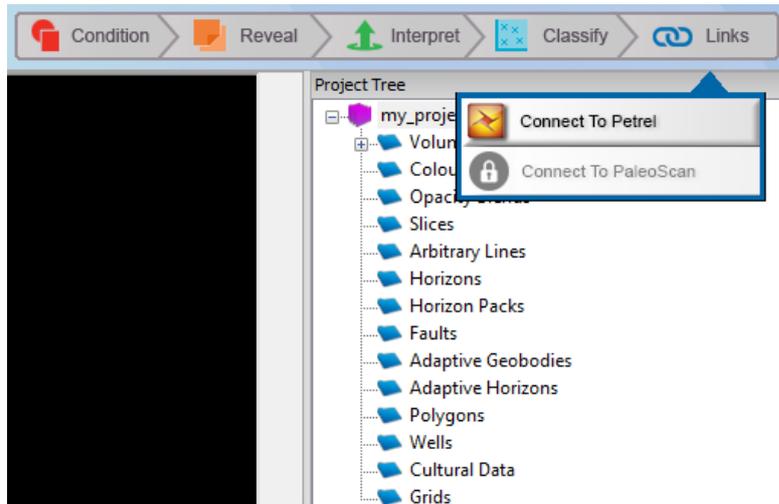
Before creating a new Geoteric project based on a survey in Petrel, please ensure you have installed the compatible Link for Petrel version. The compatible version can always be found within the Geoteric installation folder and is a straightforward Windows installation file. Alternatively it can be installed as a .PIP file from within Petrel. For more information on this please see separate installation document. Available on Windows only.

Also, please ensure that Petrel is up and running with the survey loaded before starting Geoteric.

When Geoteric starts, select 'Start a new Analysis' option, select Petrel on the next screen and fill out the rest of the options similar to above and the wizard will take you through the setup steps.

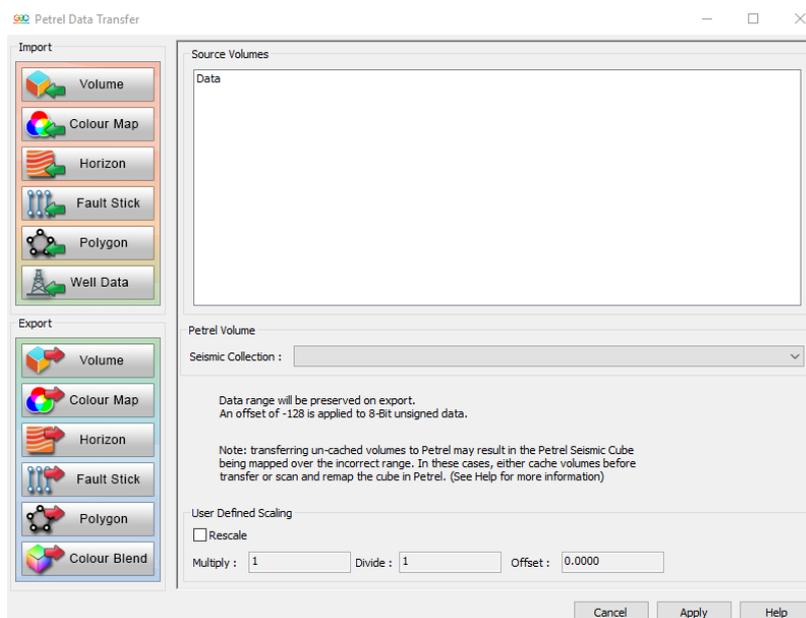
Geoteric is a single survey application so the wizard will ask you to specify a volume reference cube from the Petrel project(s) loaded. The Geoteric project will be created based on the extents and orientation of this volume reference cube.

Once the Geoteric survey is created, go to "Links" workflow button and select "Connect to Petrel".



This will bring up the Link for Petrel transfer window which will allow you to import and export data to your Petrel survey.

For more details on what the types of data that can be imported and exported please refer to Geoteric's Help file.



## New Project based on DecisionSpace

In order to setup a new Geoteric project based on a survey in DecisionSpace, the Link for DecisionSpace will need to be installed. The .jar file needs to be copied to the Staging Area folder and DecisionSpace will pick it up on start-up. For more information on the installation please refer to separate installation notes. Available on both Windows and Linux.

Once installed and the DecisionSpace session is setup with the survey you can right-click on any 3D data volume and "Create a new project in Geoteric".

This will setup a compatible Geoteric project and copy the volume across into Geoteric. For more information on the Link for DecisionSpace please refer to Geoteric's help file.

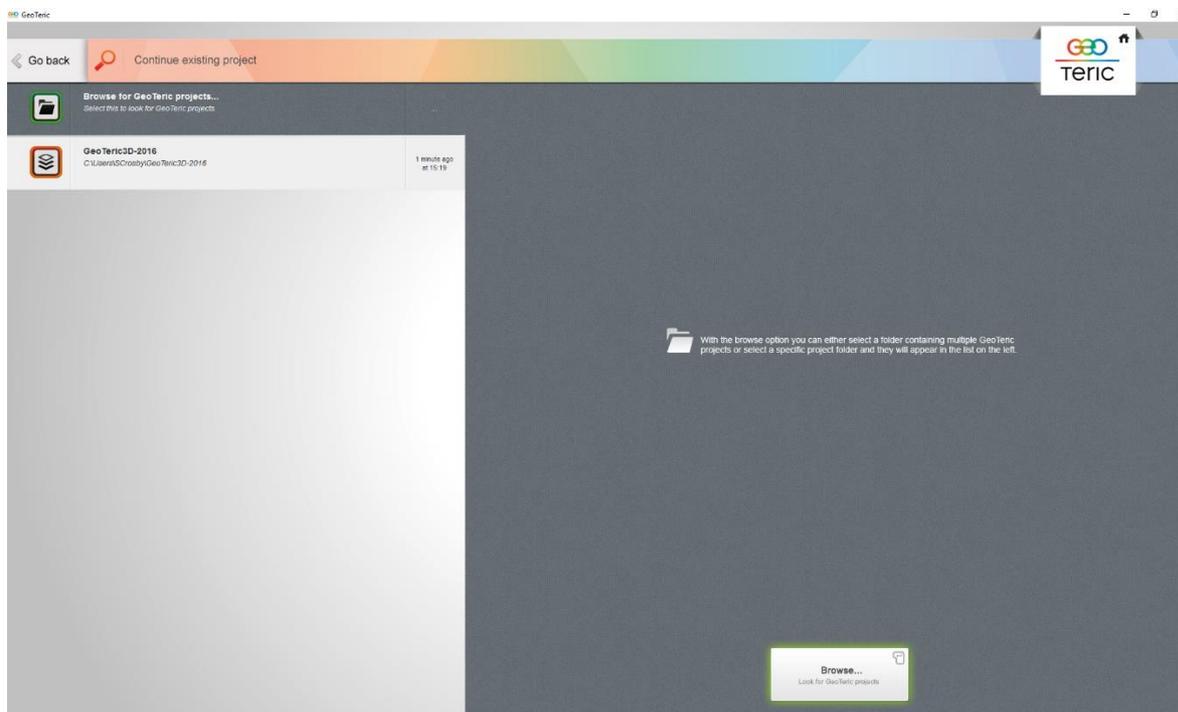
## Opening an existing project:

There is a **Demo Project** associated with Geoteric called **Geoteric3D**, which can be downloaded using the 'View Example results' option when you first start Geoteric.



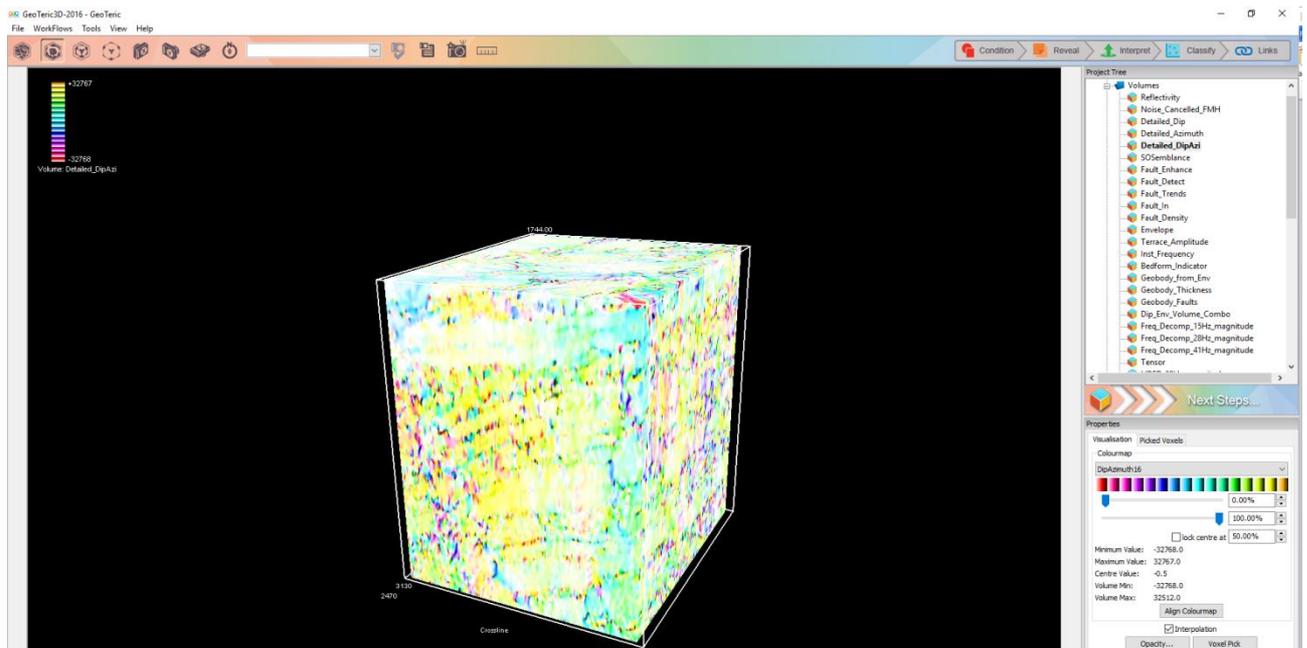
It downloads as a .zip file, which must be unzipped and put in a folder e.g. 'Geoteric projects'. Note: do not put it inside a folder with the same name as the project. When the software starts it will present you with the Geoteric screen.

Select 'Continue an Existing Analysis'. A list of previously opened analyses, ordered by last modified date will appear. If your project isn't showing up here you can click on the 'Browse' option to select the newly unzipped project folder.



## Visualise a volume

To view a volume (e.g. noise cancelled) in the 3d viewer, double click on the volume name in the project tree on the right. The volume will display and the name will turn to bold. Alternatively, right-click on any project items in the tree and select 'Add to Scene'.



Double click on a different volume to view another data volume within the current ROI. Double clicking on the visualised volume will remove the volume from view.

Note! Sometimes the volume appears blank but this could be because the outside of the volume has blank values. Switch on the green probe handles by double-clicking in the 3D viewer and pull the green handles to see what's "inside" the volume.



Toggle to  (or probe) mode by double clicking your left mouse button in the display area. Click and drag the green handles to resize or move the cube as required.

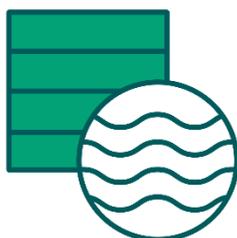


To change to  mode you can double click your left mouse button in the display area. In this mode, you can pan, rotate and zoom. Use the first mouse button to rotate the probe, the second button to pan and both to zoom in and out. Alternatively use the dollies on the left and right of the visualisation window.

*All other project items are visualised in a similar way.*

## Overview of Geoteric Workflows and Tools:

Geoteric contains several workflows and tools to help you achieve your goals. This is just a very brief overview, please refer to Geoteric's Help for more details as well as guidance of usage.



### Condition:

- The first step in a Cognitive Interpretation workflow is to condition the data by removing noise and improving the vertical resolution to reveal the underlying geologic features and for more accurate horizon and fault interpretation.
- Data Conditioning – Using Geoteric’s Interpreter guided Noise Expression tool, the user is able to increase the signal to noise ratio through noise cancellation. A selection of filters and filter lengths allow the user to compare the input data with filtered data to remove the specific type of noise found in the data.
- Spectral Expression – An interpreter guided tool to filter the frequency spectrum. The user is able to apply bandpass filters to remove unwanted frequencies within the data or to enhance the spectrum in order to create a white spectrum for increasing the vertical resolution.



### Reveal:

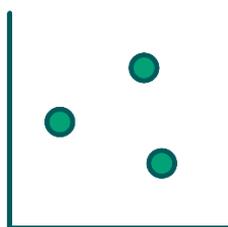
- By revealing the stratigraphic features through Frequency Decomposition, the interpreter is able to gain a rapid understanding of depositional systems through to reservoir scale features.
- Revealing and understanding the geology before you interpret is at the heart of Cognitive Interpretation. Geoteric’s Reveal module contains a comprehensive suite of attributes and volume mathematics tools to allow you to achieve this effectively.
- Frequency Decomposition and RGB Blending – through several Frequency Decomposition algorithms and RGB blending, a unique view of the geologic data can be achieved. Whether it is exploration and high frequency content (Standard Frequency Decomposition) or more detailed reservoir scale analysis (HDFD), RGB blending will reveal the geology within the data.
- Fault Expression – Interpreter guided, interactive tools to gain a more accurate structural interpretation of the data. By customizing the filter sizes of the fault attributes and blending the results into a CMY blend, a more detailed structural interpretation can be obtained.

- Iso-Proportional Slicing and Horizon Packs – Iso-Proportional slicing allows the interpreter to create time conformant slices between horizons. Any attribute or RGB Blend can be mapped to a group of horizons or Iso-Proportional slices and in a time conformant manner rapidly scrolled through horizons to gain a better understanding of the deposition of a geologic feature.



### Interpret:

- Geoteric's Adaptive Interpretation system is a unified interpretation system for both horizons and faults, using very similar controls, easily accessible from the 3D main window.
- The interpretation can be done on reflectivity data, attributes or colour blends either in the 3D scene or in the interpretation window.
- Both Adaptive Horizons and Adaptive Faults give the user a preview of alternate routes using regional structural awareness.
- Adaptive Horizons uses the regional structural awareness to accurately cross events.
- Adaptive Faults allow the surface to easily snap to the data using just a few fault sticks.
- Geologic features can be extracted from the RGB Blends or attributes through the use of Geoteric's interpreter guided Adaptive Geobodies. The data driven growing processes allows the interpreters to manipulate to Geobody as it grows.
- Geoteric also allows the user to easily pick polygons.
- To access the interpretation simply right-click on the volume, slice or blend and the interpretation menu will appear as an option.



### Classify:

- IFC+ allows the interpreter to reveal seismic facies to gain a better understanding of the reservoir for geologic modelling.
- By classifying regions of a Colour Blend and up to 10 attribute volumes a detailed seismic facies volume can be built.

- Well logs can be cross plotted against attributes to determine gain a better understanding of which volumes correlate to well data.

**Links:**

- A new Geoteric project can be started from either loading a sgy file and follow the Start a New Project Wizard or using Geoteric's Link for Petrel or Link for DecisionSpace.
- Link for Petrel or Link for DecisionSpace can be used to transfer volumes, horizons, wells, fault sticks and polygons once a project has been created
- Geoteric also has a Link to PaleoScan which allows you to transfer volumes and horizon surfaces as well as creating new PaleoScan project based on data in Geoteric.