

Quick Terrain Modeler™

Application Notes: Petroleum Exploration

Background:

Petroleum and natural gas exploration frequently involve working in unfamiliar and poorly mapped remote terrain. Associated seismic surveys require extremely accurate spatial knowledge (in X, Y and Z) of the placement of source points and geophones. Airborne LiDAR surveying is the most cost effective method to achieve these results over large areas, particularly heavily wooded areas that prove difficult for GPS surveying. Furthermore, Quick Terrain Modeler can build, visualize, and analyze 3D models created from the gridded seismic data itself, then import Landmark Fault vectors and overlay them on 3-D seismic data.



Figure 1: The Quick Terrain Modeler can build large surface models and/or point clouds of vast areas of terrain. This data can come from LiDAR or seismic sensors.

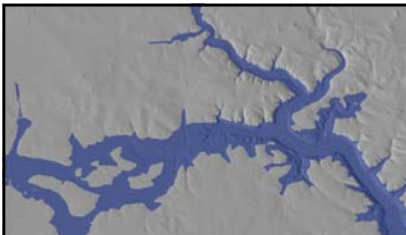


Figure 2: The Quick Terrain Modeler's flood simulation tool gives an intuitive and very rapid view of the impact at various flood stages. Knowledge of various flood stages will impact infrastructure planning.

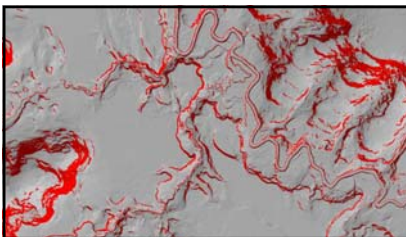


Figure 3: The Quick Terrain Modeler's slope analysis tool is useful for planning remote terrain ingress and other infrastructure planning. The user selects a slope band value (30-90 degrees in the image above) and the Quick Terrain Modeler colors the terrain.

Petroleum Exploration Challenge	Quick Terrain Modeler Solution
LiDAR survey data files are too large to visualize in their entirety.	Quick Terrain Modeler quickly builds huge models (up to 77 mi ² at 1m posting) without decimation or tiling and navigates through models in real time.
Surveyors need to measure and deliver accurate altitude (Z) values for all seismic source/geophone placements.	Quick Terrain Modeler's Point Query Utility measures thousands of Z values on large surface models in seconds.
Engineers need to plan for placement of base camps, roads and other necessary infrastructure.	Quick Terrain Modeler can help identify candidate locations by measuring the size of clearings, distances from existing roads, the flatness of the terrain and potential flood risks.
Engineers have difficulty gridding and visualizing large seismic surveys.	Quick Terrain Modeler can import and visualize enormous gridded models created from seismic data and overlay Landmark fault vectors.
Personnel need access to remote locations that have rugged terrain.	Quick Terrain Modeler's slope analysis tool helps to plan routes through unfamiliar and rugged terrain.
It is difficult to monitor terrain evolution over vast areas.	Quick Terrain Modeler's change detection and volume calculation tools make terrain monitoring and measurement fast and simple.



Figure 4: The Quick Terrain Modeler can overlay aerial imagery onto 3-D terrain models. The Quick Terrain Modeler supports overlay 2-D imagery. User's can create custom AVI fly-throughs for broad distribution.

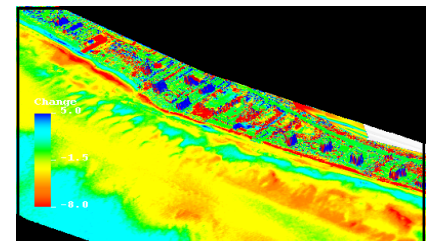


Figure 5: Change detection on two surveys of over 2 million vertices each takes 5 seconds. This tool can very quickly highlight changes in any terrain.

APPLIED IMAGERY

Please Contact:
 Applied Imagery
 8070 Georgia Avenue
 Silver Spring, MD 20910

Phone: +1 301 589 4004
 Fax: +1 301 589 4005
 Email: info@appliedimagery.com
 Web: www.appliedimagery.com