

Quick Terrain Modeler™

Application Notes: Transportation

Background:

Transportation engineers are incorporating LiDAR into their toolkits with increasing frequency. There are many reasons for this. First, LiDAR surveys can cover vast areas without deploying surveying staff into the field. Second, LiDAR is now a trusted, reliable, and proven source of elevation data. Third, there is a growing catalog of available LiDAR survey data. Lastly, software tools like the Quick Terrain Modeler make huge LiDAR surveys useful to a broad cross section of technical and nontechnical users.

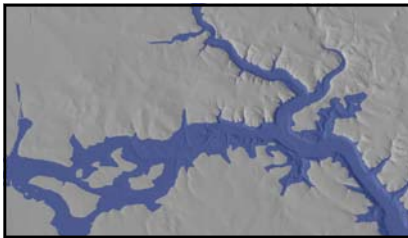


Figure 1: Flood simulation in a terrain. This tool can be used to model impact of rising water on transportation infrastructure. Flood perimeter can be exported as a shape file or DXF polyline.

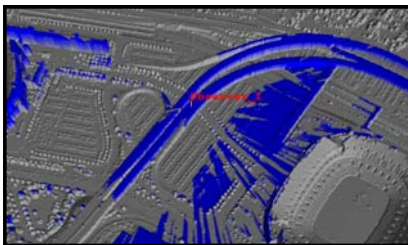


Figure 2: Line of Sight (LOS) analysis for a driver on Route 95 South in Baltimore, MD. Observer height set at 1.2m and target height set at .66m.

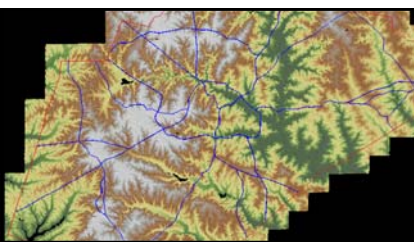


Figure 3: Overlay of Transportation GIS Layers. Existing road and political layers (from existing shape files) can be overlaid on LiDAR elevation models, enabling detailed analysis and emergency planning.

Transportation LiDAR Application	Relevant Quick Terrain Modeler Tools
Basic roadway inventory, maintenance and planning.	Quickly build huge models (up to 77 mi ²) without decimation or tiling, navigate through models in real time. Overlay GIS transportation layers (shape files) on 3D models.
Transportation corridor mapping.	Build contour maps, evaluate impact of high water conditions, measure distances. Use change detection tool to compare sequential surveys of the same area
Landslide and hazard assessment. Cross slope analysis for surface runoff and drainage.	Slope analysis tool and cross section tools quickly find and analyze steep terrain.
Grade and side slope analysis for traffic flow, safety and pollution applications.	Slope analysis and cross section tools can highlight steep grades as well as side slopes.
Evaluation of driver sight distances for safety analysis.	Use line of sight analysis in combination with mensuration tools to determine driver sight distances and stopping sight distances.
Visualization for planning and public debate.	Overlay aerial imagery on 3-D DEM, create AVI fly-through's for wide distribution and playback on standard Windows media players.
Cut and fill volume estimation.	Use the volume calculation tool to estimate volumes volume changes in sequential surveys.

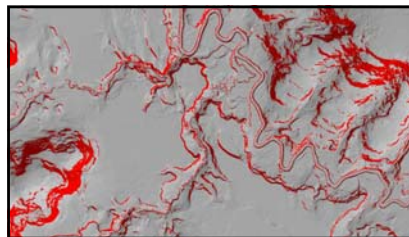


Figure 4: Slope analysis in a terrain. Red areas highlight terrain steeper than 20 degrees. Result can be exported as a GeoTIFF.

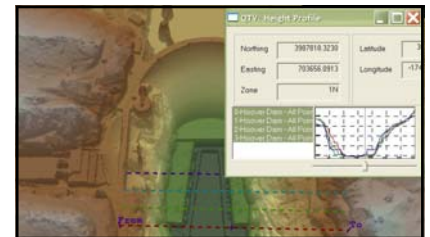


Figure 5: Multiple cross sections taken at regular intervals across the Hoover Dam. Any combination of cross sections can be visualized together. Quick Terrain Modeler can sample and export to other applications.

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