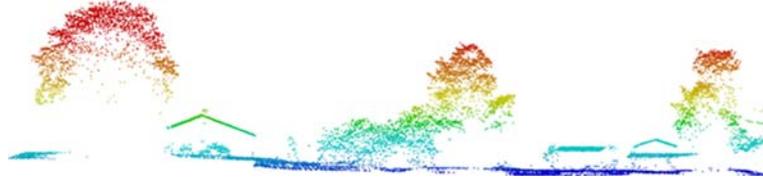# Quick Terrain Modeler
LiDAR Exploitation Software by Applied Imagery

## What's New for Quick Terrain Modeler Version 8.1.1

Applied Imagery is pleased to announce the release of QT Modeler v8.1.1. This is a release that enhances tools introduced in v8.1.0 – Feature Extraction, GRG creation, and imagery streaming to be specific. In addition, v8.1.1 introduces one big new tool for communications analysis - the Horizon Analysis Tool. We appreciate all your feedback and suggestions. Read on for more details.

Horizon Analysis Tool: The Horizon Analysis Tool provides user with a graphical, interactive display of the highest objects/terrain surrounding a user from any given point (i.e., a QTM Marker). The primary purpose of the Horizon Analysis Tool is to evaluate visibility to communications platforms - satellite, fixed, or other. The horizon is displayed as a line on a 2D graph. The X axis represents the azimuth (heading) in degrees and the Y axis represents the elevation (inclination) to the object on the horizon (in degrees). This is a very common way to express an antenna pointing angle - azimuth and elevation. The intent is to forecast visibility between a stationary antenna (at the marker location) and any other known antenna position and determine what objects may potentially obstruct the visibility.

Where?: Right Click on Marker in Layer Tree, Analysis Menu >Horizon Profile Tool, or Add Horizon Tool Button to Button Bar -
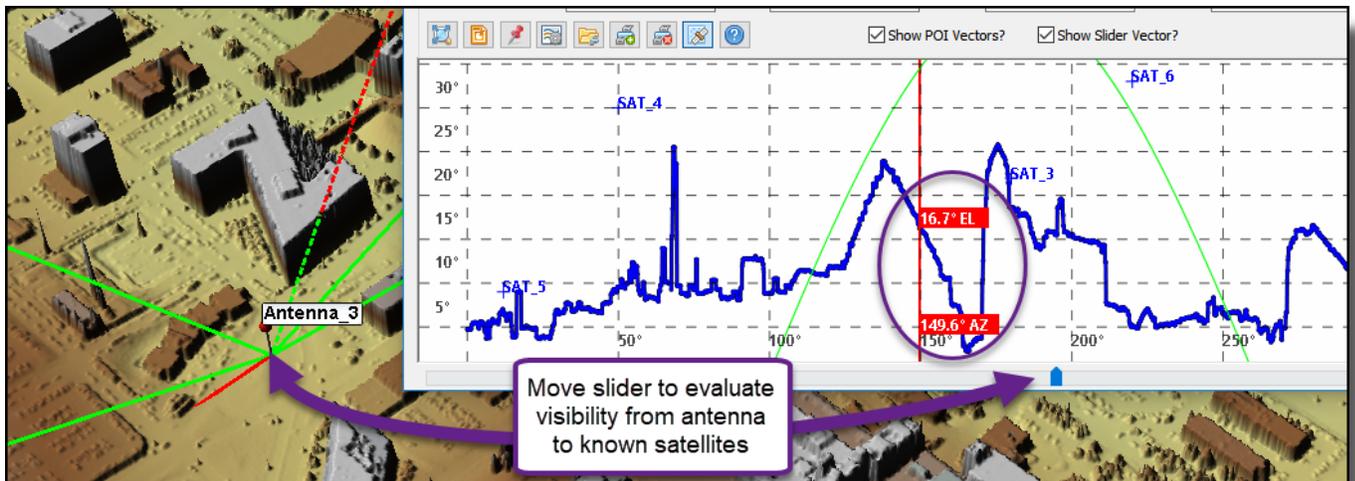

Feature Extraction: We have enhanced the feature extraction tools we introduced in v8.1.0 based on user feedback. We appreciate your feedback and suggestions. The new tools are:

- ***Building Centroids***: Added options to create centroids as vectors and/or markers, which can subsequently be exported as SHP, KML, and other vector formats. Centroid markers will be added to a closed "centroid" folder in the layer tree.

- ***Point Cloud Classification:*** QTM v8.1.1 gives users complete control over which existing classification values to keep and overwrite during QTM's automated process. Configuration window will offer a breakdown of current/existing point classification values.
- ***Maximum Object Size Setting:*** The "Max Object Size" variable adjusts the tiling and overlap settings in the classification algorithm. This slider should be set to the size of the largest object in the scene for consistent classification results.
- ***Density Check:*** QTM now performs a check of data density prior to classification/extraction and warns the user if data density appears problematic, and optionally displays a data density map to evaluate problem areas (Click "Show Me in warning window).
- ***Cancel:*** Added the ability to stop process halfway through.
- ***Selection Area:*** Classification& Extraction now honors selection area (i.e., limits processes to just points inside selection area)
- ***DTM:*** When both a DSM and a DTM are generated, the DTM will be cropped to the DSM (i.e., no longer limited to rectangular shape).
- ***Bug Fixes:***
  - Fixed issue properly handling units conversion when filtering vectors in overlap regions.
    - Should fully override SHP Coordinate System on re-import so you never get popups about vector products from the Feature Extraction/Classification Tool
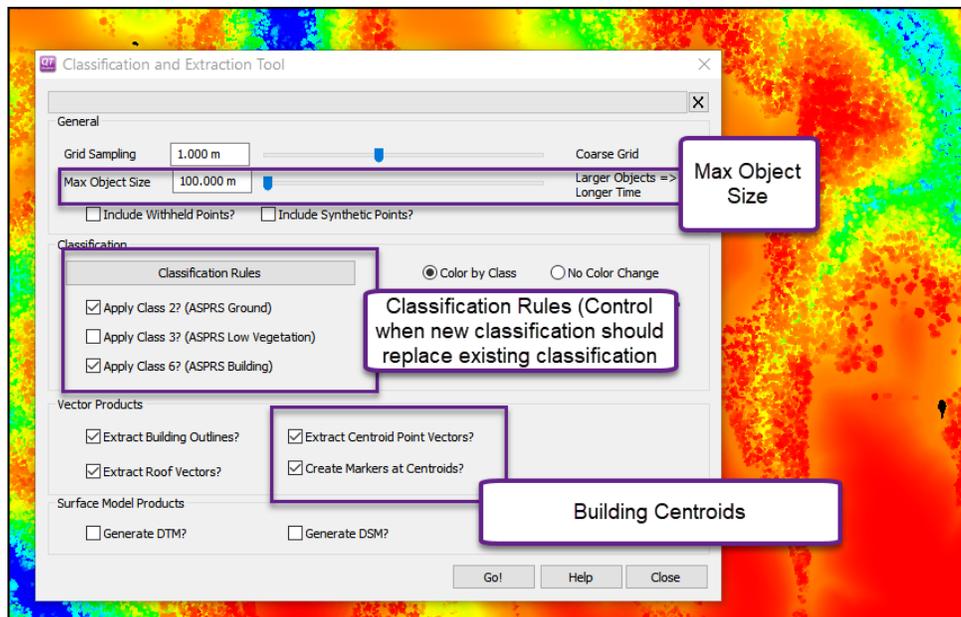

Imagery Streaming: Imagery (i.e., Texture) streaming was introduced in v8.1.0. It enabled a constant "sharpening" of large imagery files as users zoomed and panned around a scene. QTM v8.1.1 builds on these techniques and attempts to strike a better balance between system resources that are simultaneously being used on 3D rendering and imagery streaming, with the v8.1.1 priority being placed on 3D rendering. QTM v8.1.1 will take advantage of multiple CPU cores, multithreading imagery tasks whenever possible and beneficial. Users can still control the number of streaming cores in the Help Menu > System Resources window.
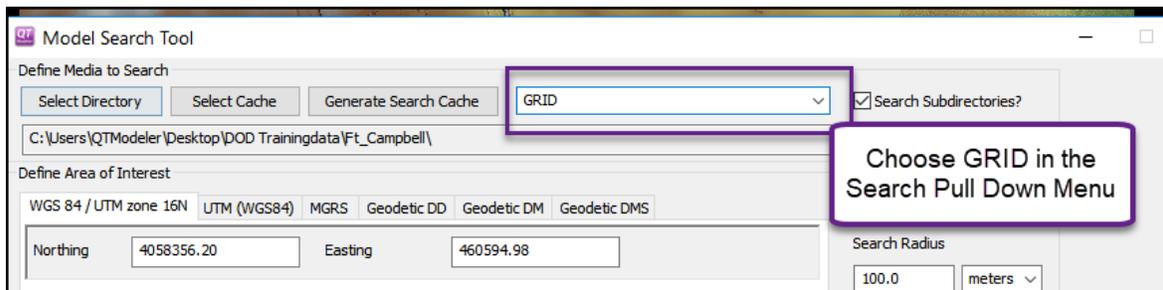
Gridded Reference Graphic (GRG) Tool Enhancements: We tweaked a few things in our new GRG tool. We appreciate your feedback, which was the primary driver for these changes:

- ***New Labeling Choices:*** Added the ability to label by MGRS and Generic (A, AA, numeric) simultaneously.
- ***2 Buttons Are Now Checkboxes:*** Changed "Create Vector on Export" and "Create Traces on Export" to checkboxes. The previous buttons were confusing to users.
- ***Gridlines:*** The "regular" gridlines tool was modified to support some of the GRG labeling choices. The net result to users is that the GRG lines/labels will persist after the GRG window is closed.
- ***MGRS Labels:*** Now "rounds down" to fewer digits when possible (e.g., 35800 becomes 358 if using 100m grid line spacing)
- ***Settings:*** Many more settings are stored in the QTM INI file, remembering GRG settings between QTM sessions.
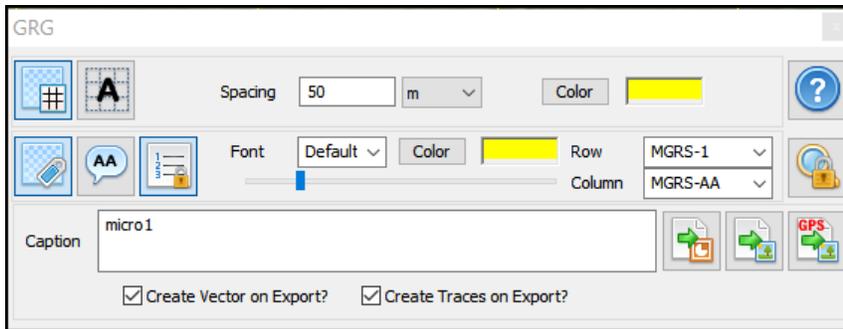
ATAK Export Changes: ATAK export now remembers any images that were exported during the QTM session and offers the user an option to select and export them to ATAK. This will be useful if GRG images and/or custom georegistered images have been generated. Images can be placed in one of three ATAK folders: Imagery, Overlays, or GRG.

New GRID Plugin: QTM v8.1.1's US Government version incorporates the GRID for QTM ("GQ") plugin v2.0.0. This plugin will enable government users with a valid GRID account to search and retrieve data from GRID (Geospatial Repository and Data Management System) – directly from QTM's search interface. The available data will include point clouds, DEM/DSM's, and 2D imagery.

Markers: Introducing automatic building centroid markers increased the likelihood that users would load hundreds or thousands of markers into the scene. New tools and techniques are available to help manage this scenario:

- ***Marker Editing:*** In the Editing Toolbar, there is a new tool to enable cutting many markers simultaneously. Warning: There is no "UNDO" for this function at this time.
- ***Marker Rendering:*** To account for the high number of building centroid markers, marker rendering was revamped. There are two new settings in the Marker Global Options window: Max markers to Draw, and Max Labels to draw, which can control the visual clutter if thousands of building centroid markers are created.

Rendering Limits		
Max Markers to Draw	500	
Max Labels to Draw	50	
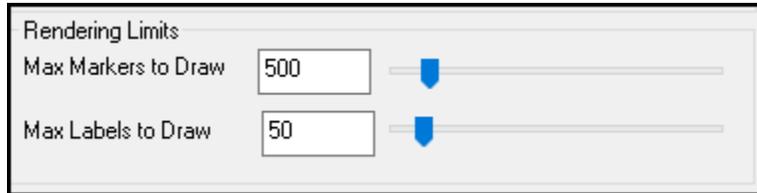
Miscellaneous Tweaks and Enhancements (v8.1.1)

- Vertical Coordinate Systems: Added WGS84-FT and NAVD88-FT to list of supported vertical coordinate systems.
- Imagery File Format: Should now include "*.r0" in NITF file filters
- Google Earth: QTM should no longer re-open GoogleEarth when clearing GE sync KML
- Travel Route Analysis Tool (TRAT): Should no longer override manually entered Traveler/Observer heights unless you move the appropriate slider
- Image Registration Tool: Further work to properly support streaming textures
- Contours: Minimum value is no longer rounded off upon Apply & tweaked scale of minimum value slider
- Profile Analysis Tool (PAT):
  - Split Gridlines and Axis Numbers into separate toggles
  - Added slider control for font size
  - Added tickmarks when Axes Numbers enabled without gridlines
- Feature Manager:
  - Added ability to generate markers from features
  - Now protects itself against crashes when you remove the model that it is viewing
- Legend:
  - Font Size is now user-configurable independently of Legend Size
  - QTM should no longer add numbers to scale outside the bounds of the legend image.
- Show/Hide Models: Now allows any given model to be a part of multiple groups
- AGL Analyst: Added "Maximum Object Size" slider to allow QTM to adjust tile size/overlap as needed
- TRAT/PAT/CSAT:
  - Tabbing in Vector LOS is now marker length aware. It will still run into issues if the marker names are too long (>12 characters), because there isnt' room for that in the display.
  - Attempted to force slider position to stay fixed when resizing window
- LAS/LAZ Export: Export Models: QTM now supports LAS14, LAS14RGB, LAZ14, and LAZ14RGB

- Image Export: Should now pick color encoding options a bit better when exporting to JPG
- Rendering: Added Max Framerate slider to allow throttling how hard QT pushes CPU/GPU
- Batch Scripting: Added support for exporting textures to KMZ
- Search API:
  - Tweaked QT_SEARCH_QUERY_LOAD such that QT maintains a progress bar
  - added progressPct, isCancelled, and isError
- Model Search & Texture Search Now uses QTsearchExtentionList.txt in INI folder to determine what file extension QTM will look at during a search.

Bug Fixes (v8.1.1)

- Fixed issue with RTLOS shaders on AMD/ATI GPUs with recent drivers
- Flight Surfaces:
  - Fixed issue accepting manual edits to orientation
  - Fixed crash vulnerability if surfaces go off edge of model
- QTT generation: A few tweaks to be less susceptible to bad LAS header values
- Fixed issue properly selecting altitude at which to draw texture plates when vectors are in the scene but no terrain.
- ASCII Import: Fixed vulnerability to not ignoring header lines properly
- Markers: "Remove Image" from customization dialog should work properly for multiple model selection
- Gridstats:
  - Removed extra units flag in Title for some gridstats legends
  - Fixed issue properly calculating density in ppm with data not natively in meters