# RELEASE NOTES FOR PHOTOMESH 7.4

About PhotoMesh

Skyline's PhotoMesh fully automates the generation of high-resolution, textured, 3D mesh models from standard 2D photographs, offering a significant reduction in cost and time compared to traditional modeling methods. PhotoMesh's breakthrough technology is based on the highest-performance photogrammetry, computer vision, and computational geometry algorithms. Combining any number of photographs, in a wide range of formats and resolutions, PhotoMesh generates highly-detailed 3D models that can be viewed and queried using TerraExplorer or other 3D and GIS products.
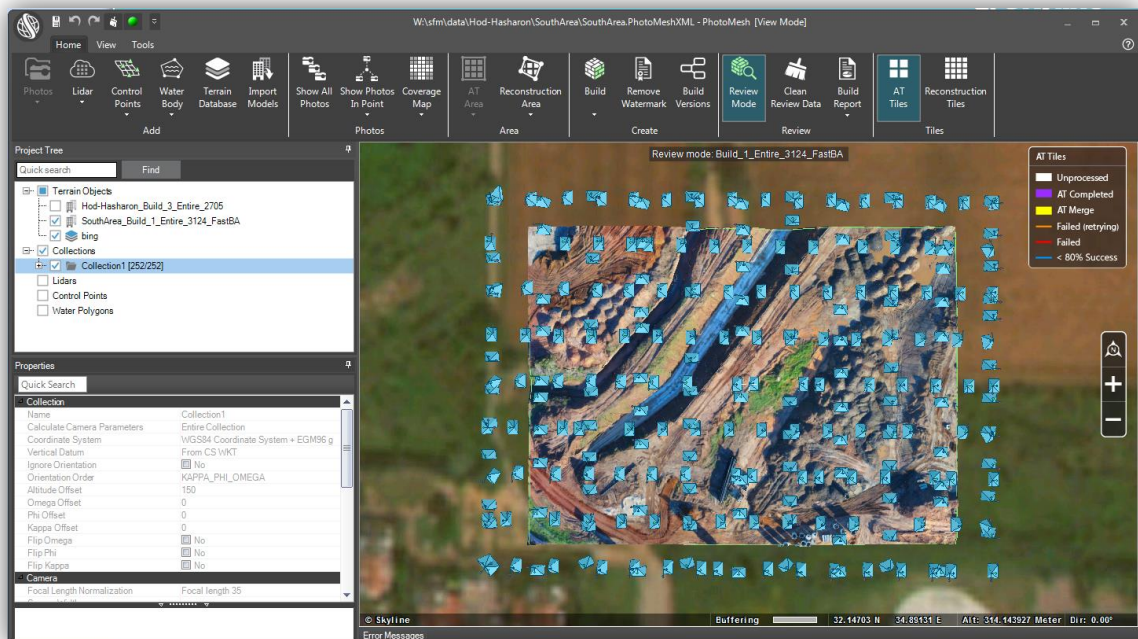
Improved Aerotriangulation Mechanism

- Enhanced algorithm for dividing photos into AT tiles.

- Improved AT process can as much as triple AT processing speeds even of larger projects with no reduction of success rate or AT quality.

- Default number of photos included in each AT tile increased to 2,000.

- "Fast" aerotriangulation mode for calculation of ground control points inserted or edited after the initial aerotriangulation.

- New Export AT option to conveniently export the AT results either as multiple tiles or as a single unified SQLite or XML file.
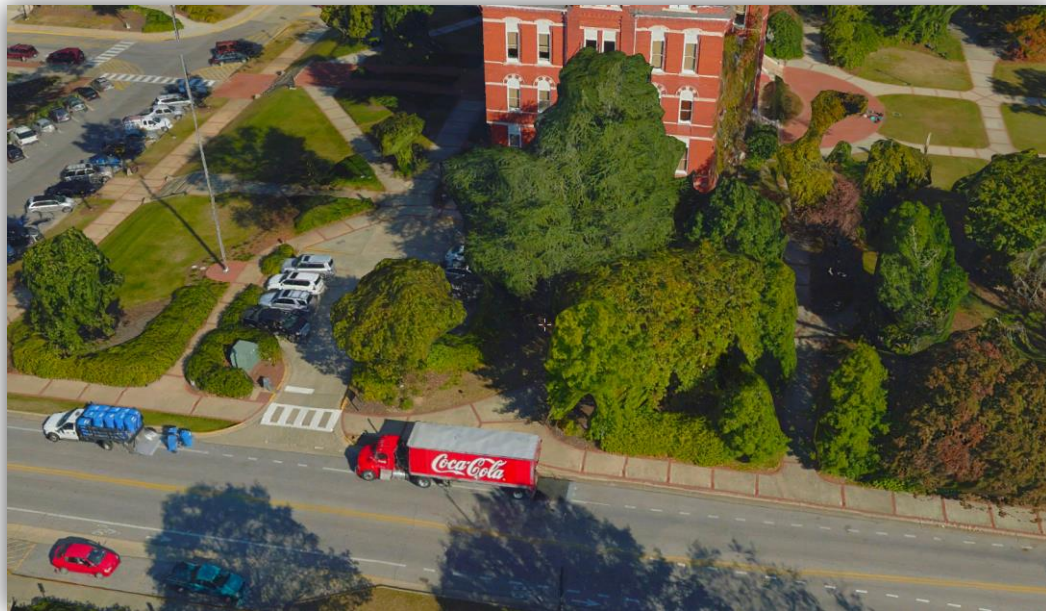
Project Calculation with Custom Coordinate System

PhotoMesh 7.4 enables you run the entire build process without reprojecting your dataset. With PhotoMesh 7.4, you can define your project's internal coordinate system, which, by default, will also be used as the output coordinate system. You can also select the correct vertical datum for your dataset from a list of supported datums.
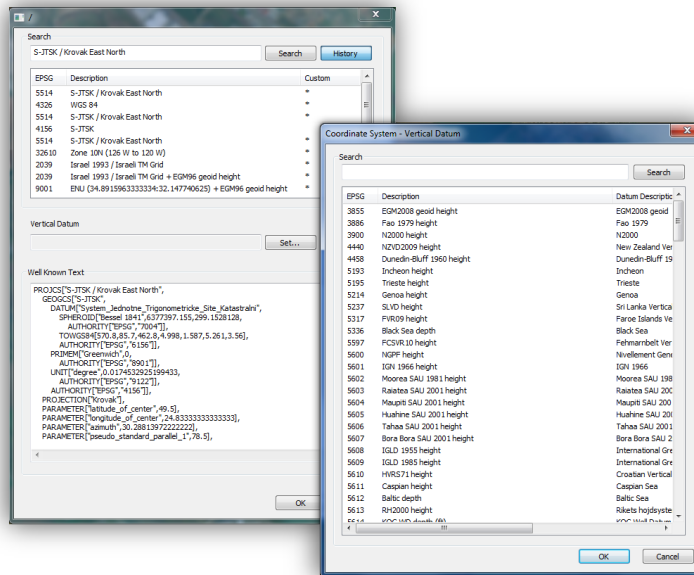
Lidar Data Integration

PhotoMesh 7.4 supports the loading of Lidar (point cloud) data into a project to improve accuracy and quality of the 3D model. The Lidar data is integrated with the point cloud models generated from the photos:

- Supported Lidar formats include: LAS and E57

- Lidar point clouds displayed on 3D map

- Manually match Lidar point clouds and photos using GCP editing tool

- Use Lidar color (if available) for texturing areas not covered by photos

Improved Ground Control Points (GCP) Editor

The redesigned, enhanced control point editor offers better performance and improved usability:

- Information on all the project's control points and detailed information on all the project's related photos all consolidated and displayed in a single table.

- Easily select the GCP to view or edit with detailed property information and error values. GCP's can be sorted and their property values edited directly from the table.

- Multiple display options for related photos (thumbnails or table with detailed information) and several photo filters.

- Improved performance – GCP editor opens in 3-5 seconds.

- Enhanced usability including the ability to add/import GCP's directly from the editor, new keyboard shortcuts, and multi-editing of control points.
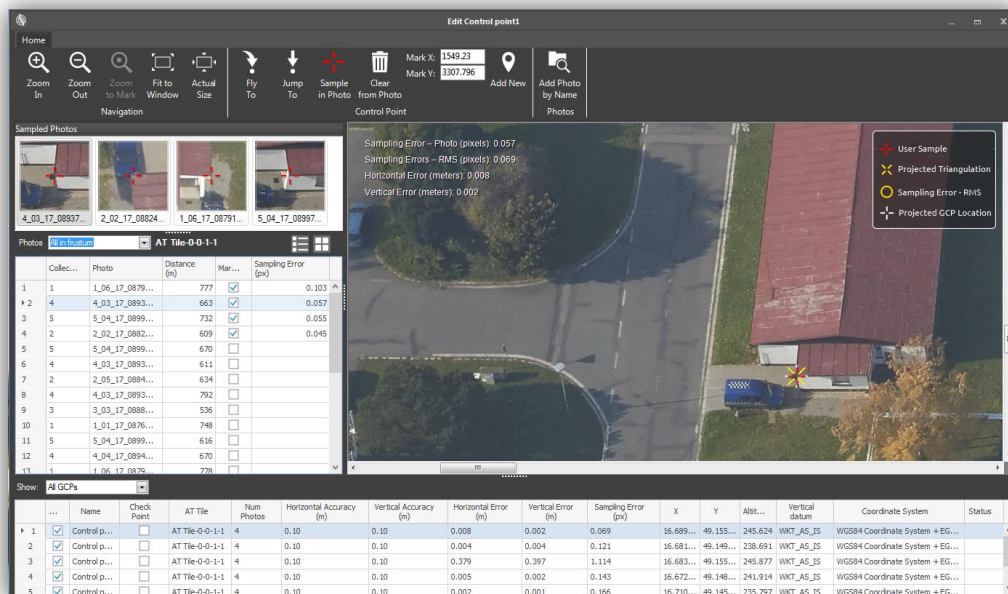

Performance Improvements

PhotoMesh 7.4 significantly reduces build processing time, with performance improvements in all the following build steps:

- Photo preparation

- Model creation

- Texturing

- 3DML creation

- DTM creation

Quality Improvements

PhotoMesh 7.4 features quality improvements in all the following:

▪ Model textures (Enhanced model texturing process entails reduced sub-pixel shifts)

▪ Orthophoto raster output

▪ DSM/DTM raster output
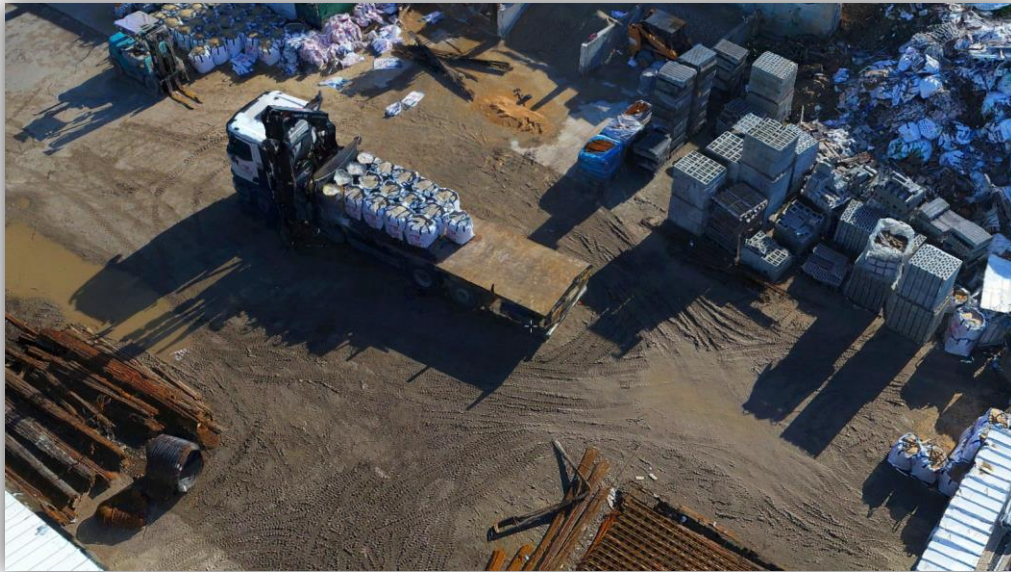
Usability Improvements

- Addition of "Data Preparation" step that converts photos and Lidar LAS files to optimized formats.
- New "Auto" option dynamically calculates, for each 3D point in a point cloud, the minimum number of matches required to generate the point, to produce an optimal point cloud from the available data.
- New "Auto" Correlation Window Size mode calculates optimal window size for correlating between photos and extraction of 3D points.
- Enhanced "Auto" Start mode optimizes the selection of Rebuild steps for a faster, more precise rebuild process.

Increased Output Compatibility

- PhotoMesh's i3s output is now compatible with different ESRI viewers.
- New setting references a DAE/OBJ/OSGB model's coordinates to the project's center. Previously, model's coordinates referenced the coordinate system origin, sometimes resulting in large coordinates. This setting improves the stability of 3D model display in 3rd party viewers that are limited regarding display of large coordinates.
- New option to maintain project coordinate system elevation values in Cesium 3D tiles output, for compatibility with Cesium terrain providers who use geoid elevations, yet declare them as ellipsoid. Previously, elevation values were always reprojected to ellipsoid, as required by the Cesium 3D tiles standard.

SOFTWARE AND HARDWARE REQUIREMENTS

Operating System	Windows® 7 / 8 / 10, Windows® Server 2012 R2 – 64-bit required.
System Memory	16 GB RAM (32 GB recommended).
Video Card	1GB of video memory (2GB or more recommended). Pixel and vertex shader v3.0.
Processor	4 cores (8 cores recommended). PhotoMesh works best in a multi-core environment and can utilize multiple CPU's and hyper-threaded processors.