Terrasolid applications for LiDAR processing

Terrasolid develops software for processing airborne, mobile and UAV LiDAR data and images for everyone who needs to process and utilize 3D LiDAR data and images.

Automatically vectorized and textured 3D city model of Nagoya. Data courtesy of Nakanihon Air Service.

The industry standard for point cloud data processing

Terrasolid´s software suite is unique. You can process both airborne and mobile LiDAR and images in one integrated environment. Unrivaled capabilities for matching of the multiple passes, data calibration, point classification and true ortho production without data conversion and with the ability to return to earlier phases should you find something which needs to be fixed. The software takes full advantage of the trajectory data and enables you reach maximum accuracy. With the Terrasolid applications you can take full advantage of your LiDAR data.

Mobile Mapping
A mobile LiDAR scanner mounted on a car or an airborne scanner operated in a helicopter can provide a dense point cloud depicting highways, their surroundings and the road surface very accurately. Using photographs taken at the same time and control points measured with GPS improves the accuracy and helps to compensate the gaps in the GPS signal caused by tall buildings and trees. Laser scanning can be executed without putting people at risk in the middle of busy traffic. TerraMatch is used to correct the drift of the trajectory at locations, where the accuracy of the trajectory solution is weak due to failures in the GPS signal.

Airborne LiDAR and 3D City Modeling
With Terrasolid applications you can produce a 3D city model automatically by using airborne laser data and images. A small detail model can be created even from a point cloud of less than 2 points per square meter but the more dense point cloud, the more accurate and detailed the 3D model. The best and most accurate result will be obtained by scanning the area from both an air vessel (aeroplane or helicopter) and a ground vehicle, matching the point clouds to each other get buildings scanned from all directions, and using images and signal points to control the quality of the data.

LiDAR system uses an active laser sensor to scan timed pulses of light across the ground and objects on it, and provides accurate position information of wires, structures, vegetation and the ground along the power line corridor. Terrasolid software offers tools for matching the flight lines and classifying the laser points, modeling the ground based on classified points and vectorizing the power line towers, attachments and wires in detail. This data can be integrated into existing databases and utilized in surveying, mapping and monitoring new and existing power line corridors.
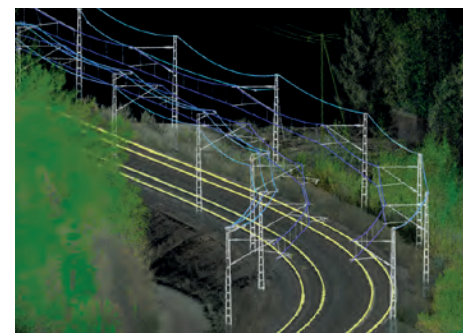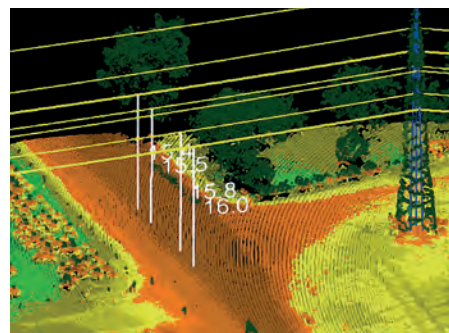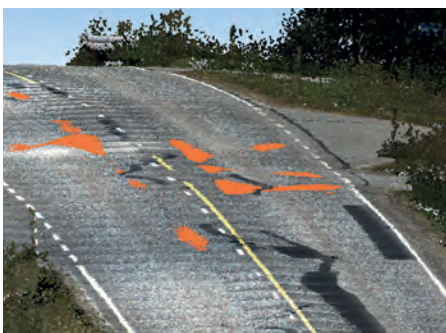
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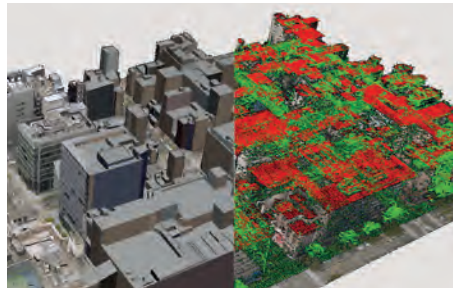
Four modules
for full workflow

TERRASCAN

is a versatile software package for processing raw airborne or mobile LiDAR data. You can view, manipulate and classify the points into classes like ground, vegetation and buildings. There are many different feature extraction and vectorization tools. TerraScan is the industry standard for LiDAR processing.

TERRAPHOTO

produces orthorectified images from airborne images. It is specifically developed to process images, which are taken during a laser-scanning mission. TerraPhoto uses TIN of ground laser points for an accurate projection model. Seamless compatibility with the other Terrasolid applications for LiDAR processing and the complete orthorectification simultaneously with the laser point processing.

TERRAMATCH

is a sophisticated application for calibrating and matching LiDAR data. TerraMatch uses trajectory data and compares overlapping laser strips with each other and corrects orientation parameters to obtain the best fit and improved accuracy. The user can decide whether TerraMatch matches all the data points or only points from selected flight lines.

TERRAMODELER

is a full featured terrain modeling application. It creates surface models (TIN) of ground, soil layers or design elements by reading in laser points, graphical design elements or XYZ text files. There are versatile functions to edit TINs and display them as contours, colored nets, profiles as well as calculate volumes between TINs.
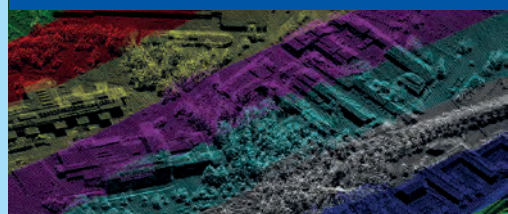
Technical requirements

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TerraScan Import

Import pre-processed laser points and trajectories with TerraScan. Filter low points, stops and other error points. Deduce line numbers to points.
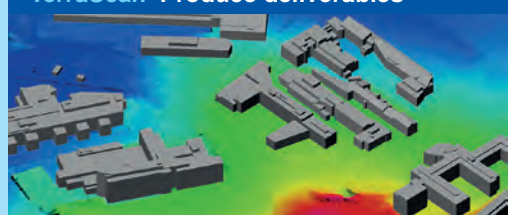
TerraMatch Calibrate & Match

Calibrate scanner and camera orientations and find mismatch angles with TerraMatch.Match multiple flight/drive passes and automatically find tie lines. Cut the overlap. Tie the point clouds to ground reference points.

TerraScan Classify

User rules and macros to classify ground, vegetation layers, buil-dings etc. with TerraScan. Check ground classification with the help of TerraModeler and TerraPhoto using images.
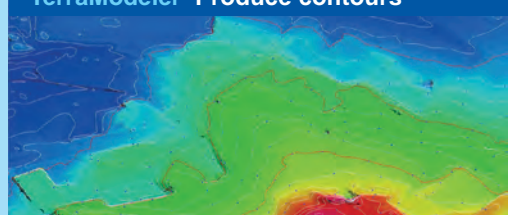
TerraScan Produce deliverables

You can produce different deliverables from the classified point cloud. For example DTM, automatically vectorized 3D building models, vectorize rail geometry, powerlines, over-hanging wires etc.
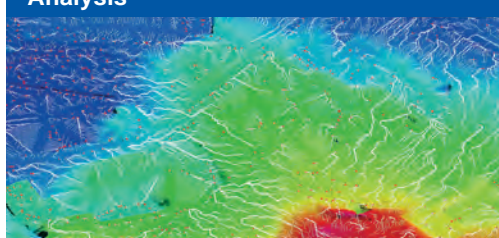
TerraPhoto Create true ortho

With TerraPhoto you can create a true ortho mosaic from the raw images. You can also automatically texturize building walls using oblique images and colorize both airborne and mobile point clouds using images.

TerraModeler Produce contours

Automatically produce contours with full user definable parameters.

Analysis

You can do a number of different analysis using point clouds. On the DTM you can do drainage analysis, on mobile point clouds you can automatically create road slope arrows and display different sight distances such as overtaking minimum visibility or braking minimum visibility.