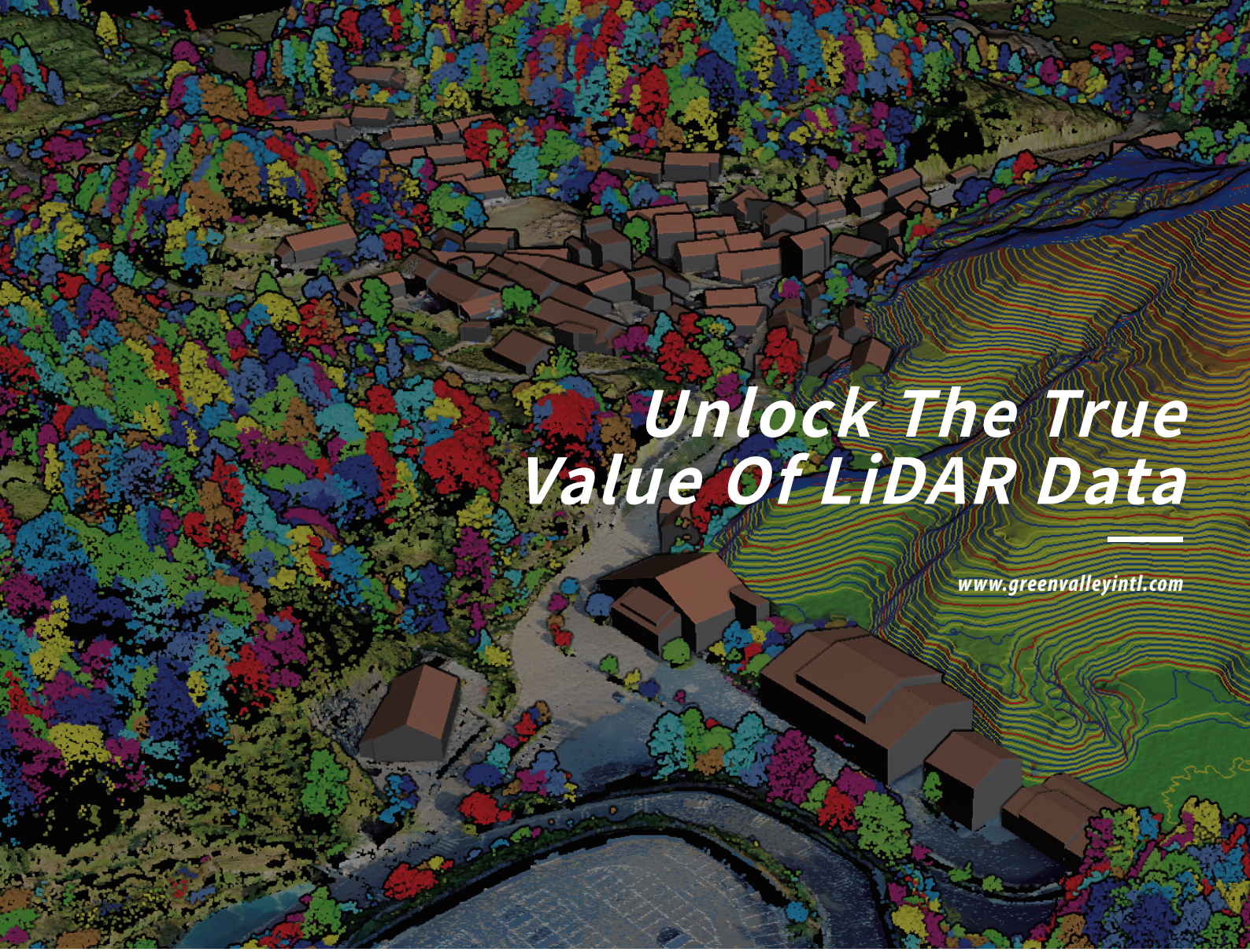


LiDAR360

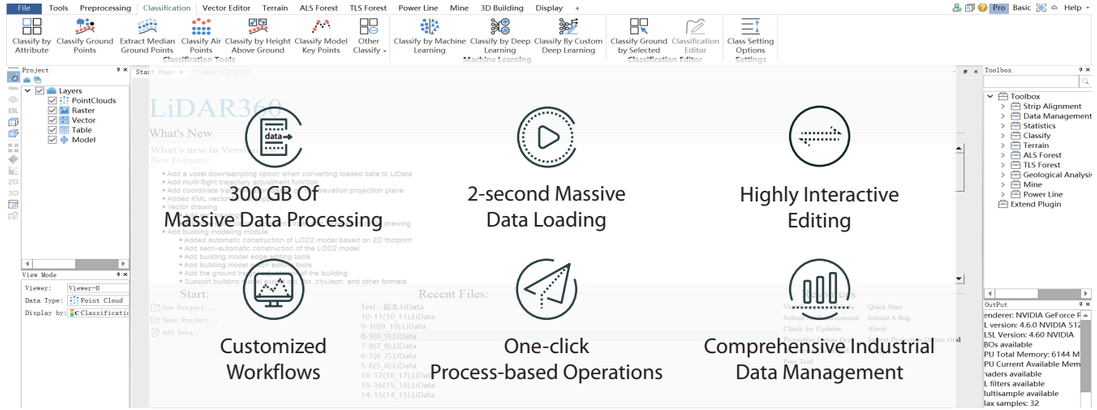
Professional
LiDAR Solutions

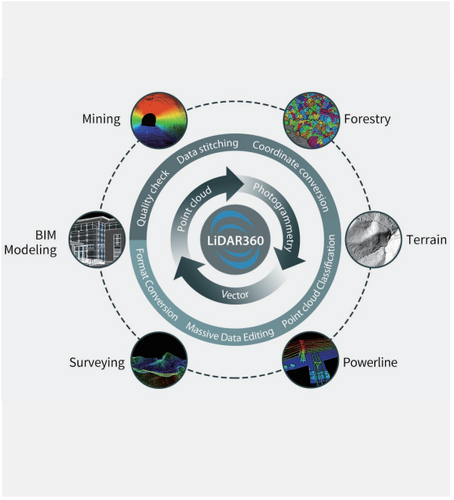
GreenValley International

SOFTWARE

INDUSTRIAL GRADE LIDAR POINT CLOUD PROCESSING PLATFORM

Launched in 2013, LiDAR360 is a professional processing platform for massive point cloud data developed by GreenValley International. The platform employs over ten different types of international leading point cloud algorithms, artificial intelligence, and machine learning to promote the use of LiDAR across the industry and solve users' application problems while unlocking the full potential of their point cloud data. The software can analyze and process massive point cloud data, adapts to multiple platforms and devices, and provides more than 400 functions for efficient support of multi-industry applications. Up to now, the number of downloads has exceeded 100,000 worldwide, and the LiDAR360 is used actively in more than 130 countries and regions, receiving an array of praise from clients, contractors, governments as well as tertiary and research institutions.





Platform Features

- **Pre-processing**
Alignment, segmenting, and de-noising, with single click operations to improve data quality, and results are immediately available

- **Coordinate conversion**
One-click conversion of common coordinate systems; support for custom coordinate systems and multiple conversion methods

- **Point cloud classification**
Automatic classification of ground, buildings, vegetation, and other feature point clouds with deep learning to meet the needs of any category

- **Editing tools**
A variety of semi-automatic and manual editing tools and auxiliary editing functions are available to help produce the desired data results

- **Massive data processing**
Fast loading and processing of terabytes of point cloud data, as well as large-scale and high-density UAV data

- **Multiple data sources**
Support for processing point cloud, vector, raster, and model data in multiple formats and platforms

- **One-click processing**
Provides one-click automated processes for multiple industries to produce industrial-level data products quickly and efficiently

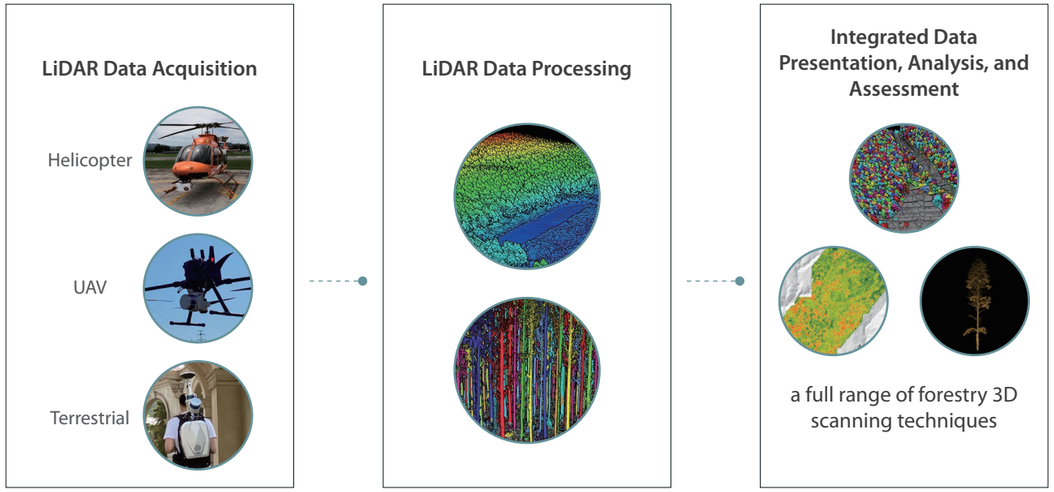
- **Rich editing tools**
Display in both 2D and 3D, editing of data from multiple sources, and fine editing of point clouds, models, raster, and vector data

- **Multi-industry application services**
A variety of analysis and processing tools to solve industry pain points and cover the full life cycle of engineering surveying, topographic mapping, forestry survey, mining survey, construction modeling, and power inspection services

Forestry Surveying

01

LiDAR has unique advantages in forestry surveys. LiDAR360 can automatically extract forest parameters such as canopy density and clearance rate, as well as single tree attributes such as tree height, diameter at breast height, crown width, and trunk volume based on LiDAR point cloud data and conduct intelligent statistical analysis to help sample plot surveys, carbon sink detection, and other applications, providing unparalleled support for forest resource surveys.



Forest Inventory Surveys

In the forestry module of LiDAR360, the main functions of the ground-based and airborne applications are:

· **Classification and extraction of vegetation layers:** separating the terrain and plants in a forest scene for fine segmentation

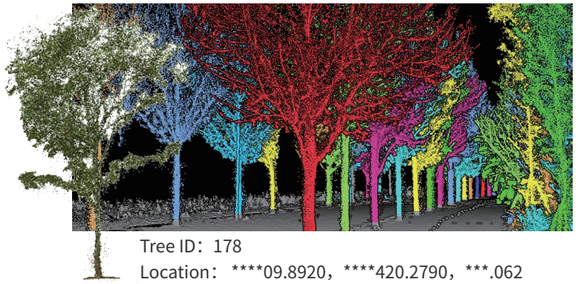
· **Single-tree segmentation:** CHM-based, point cloud-based, and seed point-based segmentation for tree monomerization and parameter extraction

· **Parameter extraction:** automatic extraction of tree monomer parameters, forest community parameters, forest structure change analysis, etc.; can be used to calculate tree trunk volume, calculate forest carbon sink, store timber, etc

· **Forest 3D scene reconstruction:** refined 3D restoration of forest scenes, used to build the basic database of the 3D management platform

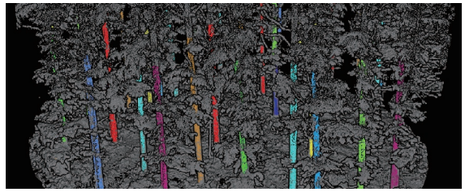
· **Regression analysis:** rapid inversion of biomass, forest stock, forest cover, etc., for use as a basis for scientific research and management decisions

Tree Height (m)	9.1
DBH (cm)	14.3
Crown Diameter (m)	5.2
Crown Diameter E-W (m)	4.5
Crown Diameter N-S (m)	4.8
Crown Area (sqm)	18.3
Crown Volume (cu.m)	53.2
CBH (m)	4.895
Trunk Volume (m)	1.536
Tree Species	Balsam fir
Slope	15°
Slope Direction	221°



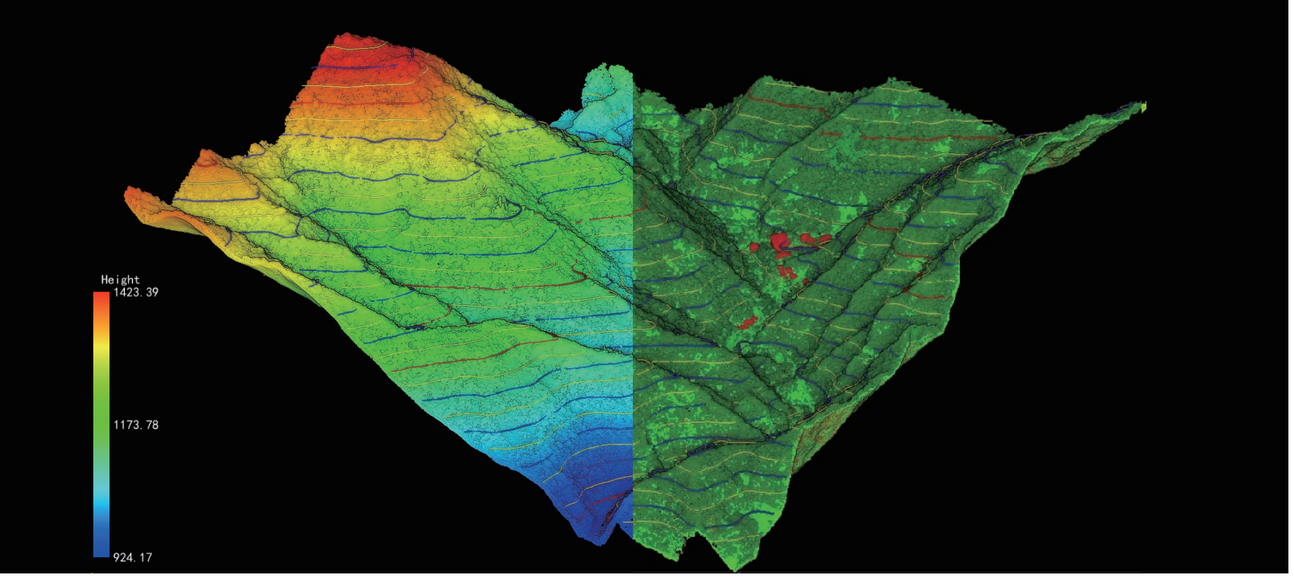
Tree ID：178
Location：****09.8920，****420.2790，***.062

Single Tree Attributes



Trunk Extraction

Forest Modeling



Topographic Mapping

02

LiDAR technology can penetrate parts of the ground and quickly acquire a wide range of high-precision terrain point cloud data in a short period of time, enabling fast, low-cost, and large-area ground measurements.

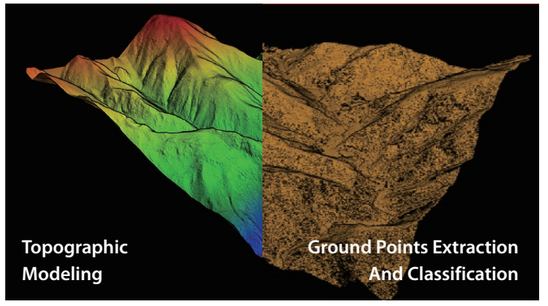
LiDAR360 can automate the processing of terrain observation data, accurately acquire terrain and landscape feature information, produce various data results and high-precision models required for industrial applications, and provide a wealth of analysis tools to help increase the quality and efficiency of terrain mapping.

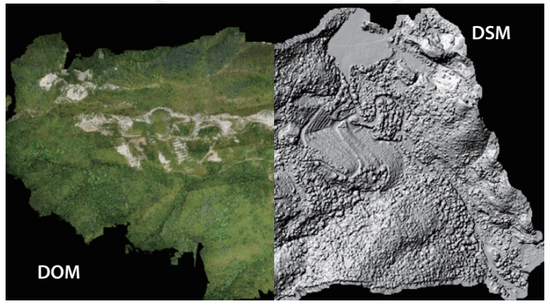
- **Rich topographic results**

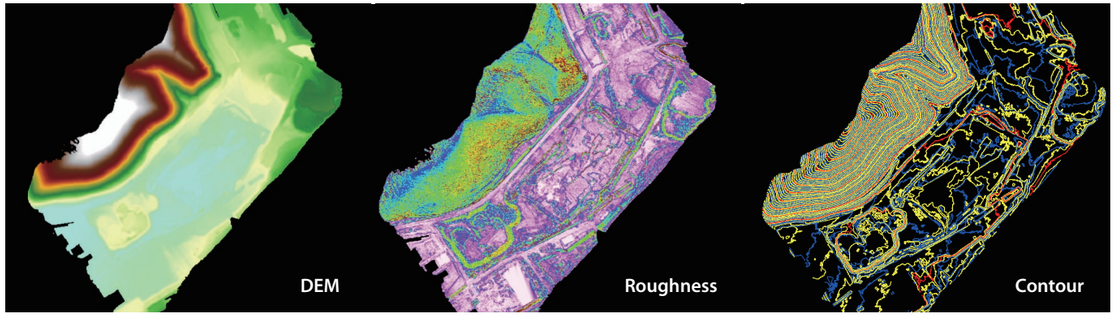
Produce high-precision DEM, DSM, DOM, contour lines, and other standard terrain products based on LiDAR point clouds, analyze terrain slope, slope direction, and mountain shading, and perform quality checks on data results to meet the needs of terrain mapping results and provide support for multi-industry applications.

- **Engineering Surveying**

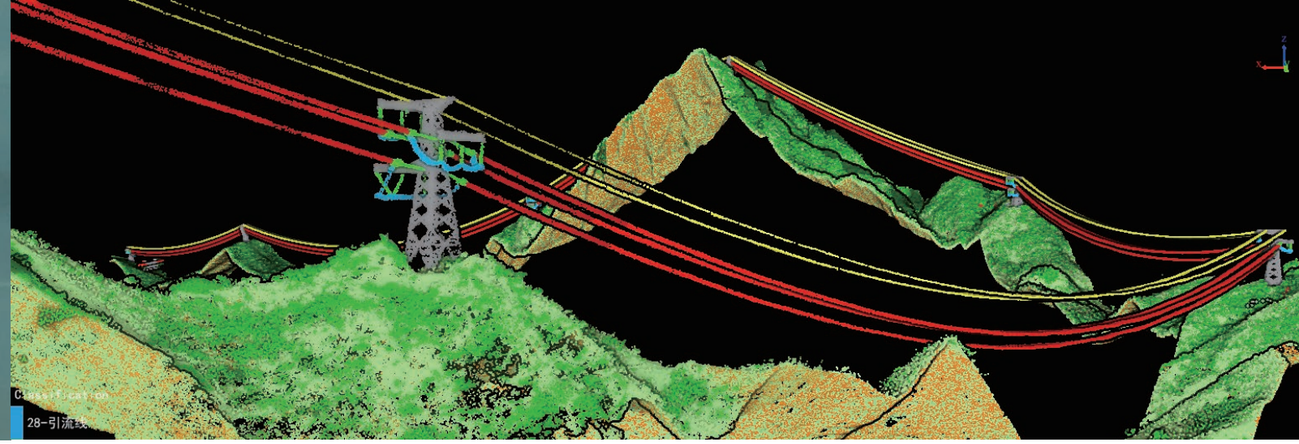
It can quickly analyze over- and under-excavation of earth volume and obtain measurement sections in real time using 3D point cloud data collected in the field. It can be widely used in applications such as highway engineering, railway surveying, urban renovation, and water conservancy engineering.



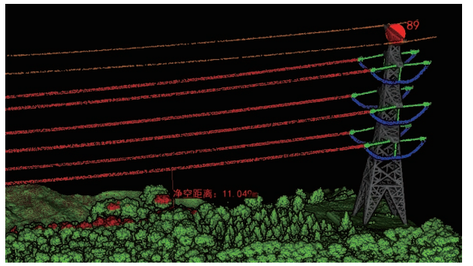


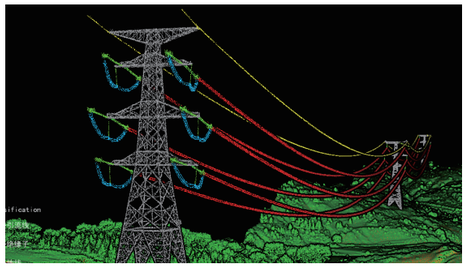


03 Powerline Inspection and Analysis



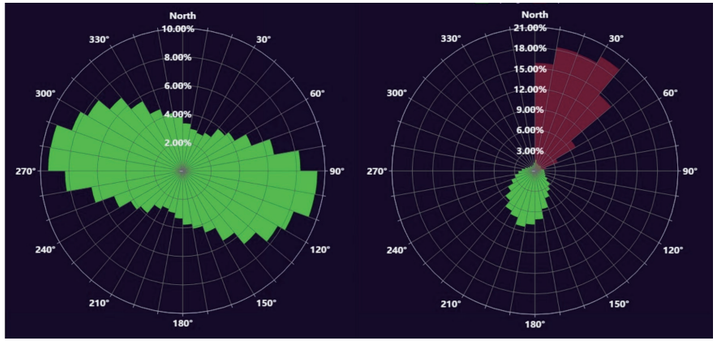
LiDAR360 enables the automatic classification of power line and pylon point clouds, real-time analysis of power line conditions, and the establishment of a sample library of machine learning classification algorithms to accurately and effectively reproduce the topography, geomorphology, and geological conditions within the transmission line corridor. The LiDAR360 software enables unified data management and analysis of transmission line cross-overs, tree barriers, and geology within the transmission line corridor in accordance with relevant transmission line operating regulations, completing a 3D visualization of the transmission line corridor, and enabling rapid and efficient power line hazard detection and identification in the power grid system.



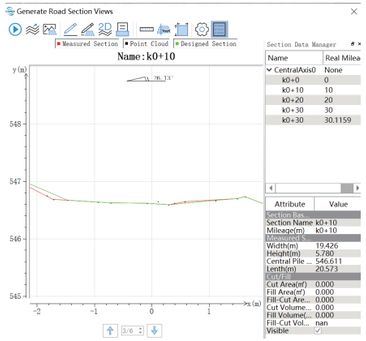


- Highly accurate and precise 3D modeling, identification, and extraction of towers, conductors, tooling components, and underline features.
- Analysis of abnormal conditions within the line channel, such as tree barriers and cross spans; rapid detection of dangerous trees, line, and road cross spans beyond the transmission line's safe distance; accurate calculation of the number of hidden hazards and dangerous distances within the channel environment; and other situations.
- Supports single-tree segmentation of trees in transmission channels, quickly detects the number, location, height, and crown width of hidden tree hazards, and accurately calculates the felling volume of hidden tree hazards, providing guidance for field work on hazard identification in the power grid industry.

LiDAR360 is equipped with a wide range of geological analysis tools such as slope direction, fill flow direction, dip direction, road, geological cross-section, etc. It can generate standard data results, export analysis reports, and import the results into other design and analysis software in a common format for further processing.



Geological Joints



Cross-sectional Analysis

- **Rapid response**

Fast and accurate acquisition of microtopographic features of addressed hazards, such as landslides.

- **Parametric multiplicity**

The extraction of parameters such as surface roughness, slope, and slope direction.

- **Precise extraction**

Precise sensing of subtle changes in terrain features over multi-period data for section analysis and structural surface extraction.

- **Early warning**

A disaster warning analysis can be carried out based on the data results.

- **Surface hydrology**

Flow accumulation and depression filling analysis can be carried out.

04 Geological Analysis

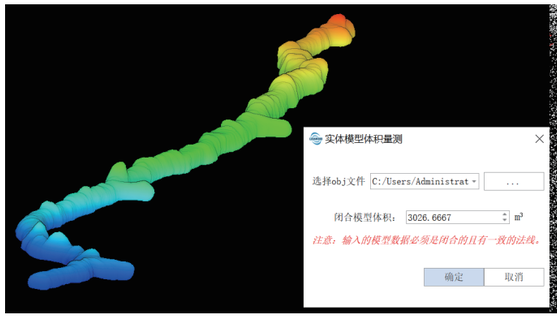
LiDAR is one of the few remote sensing technologies that can penetrate vegetation to obtain ground DEMs. LiDAR360 can accurately extract ground points from LiDAR point clouds and obtain parameters such as slope and slope direction for section and terrain change analysis, providing support for environmental surveys, disaster monitoring, and mining surveys.

05

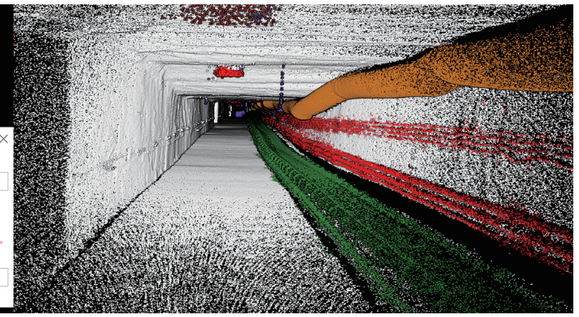
Mine Surveying

Based on the 3D point cloud data obtained from multiple platforms such as airborne and backpack systems, LiDAR360 mining module enables slope line extraction, stockpile volume measurement, and multi-period change analysis of open pit mines, as well as roadway modeling, section analysis, and point cloud classification to meet the needs of applications such as transport step laying, stockpile change monitoring,

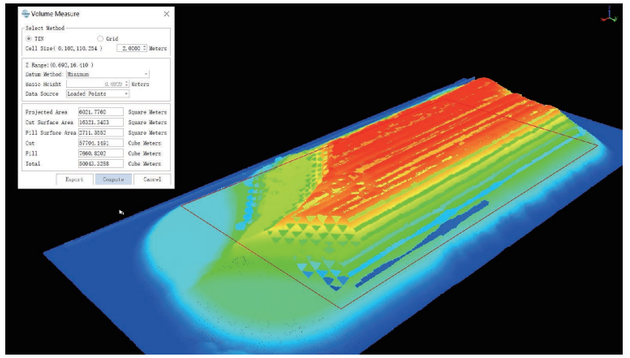
Based on the platform's real-time 3D point cloud data, LiDAR360 enables the detection of mining path transformations in open pit mines, quantitative analysis of mining operations, and assisted decision-making in mining planning. LiDAR360 can also be used for regular inspection and analysis of underground mine tunnels to assist in early warning and decision-making.



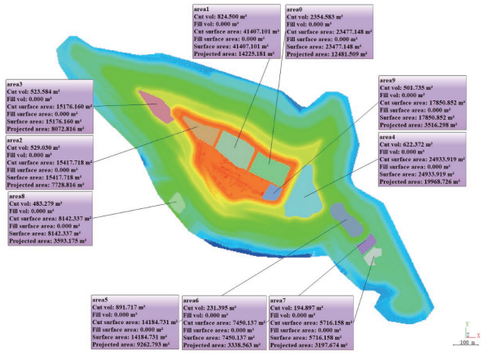
Corridor and tunnel modeling and volume estimation



Corridor and tunnel point cloud classification

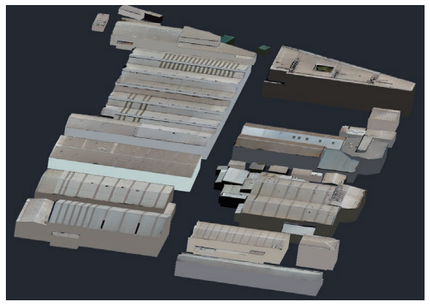


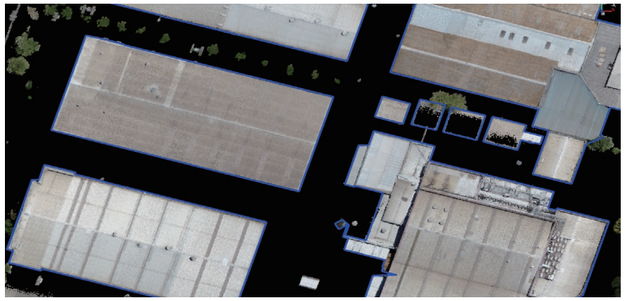
Stockpile volume measurement



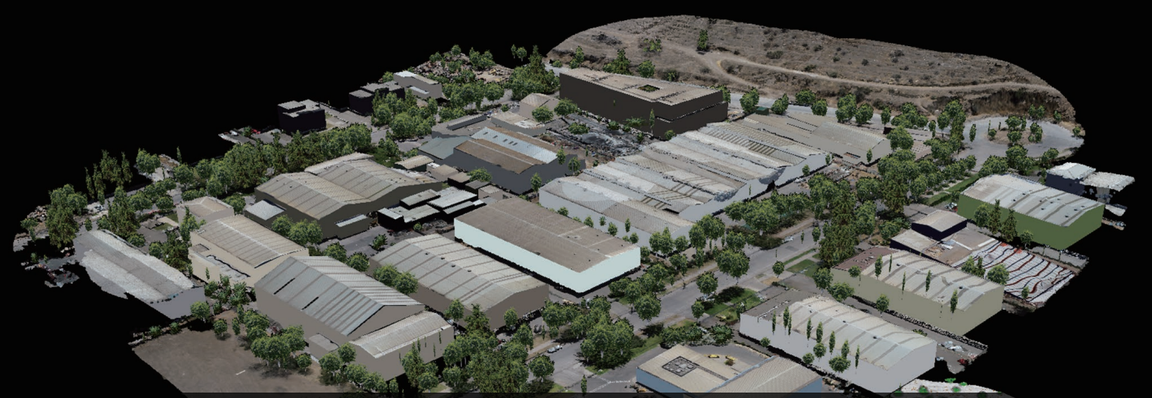
Multi-phase volume change analysis

The LOD building modeling function can be based on point cloud data and building outline vector data. The software provides semi-automatic extraction of building outlines and supports the loading of multiple sources of data in multiple windows for linked display and height filtering to assist in building outlines and model editing to produce the right results.



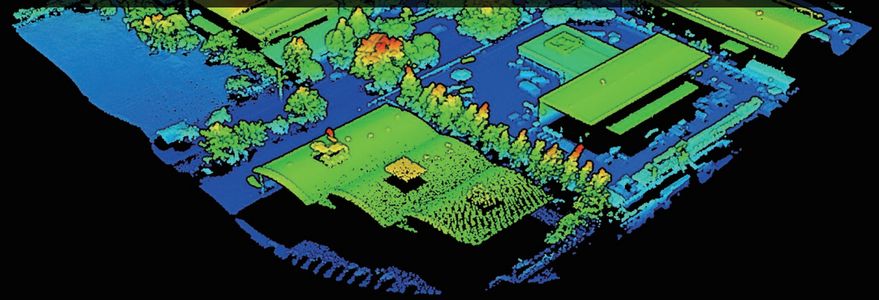


- Generation of terrain models based on ground point clouds
- Tree modeling based on the results of single tree segmentation from vegetation point clouds
- Automatic extraction of building contour lines based on building point clouds and generation of LOD2-level building models



3D Real Scene 06

LiDAR360 identifies ground, vegetation, buildings, and other feature targets from massive point cloud data, and employs intelligent algorithms for terrain and feature scene separation, vegetation, and building target monolithic segmentation and modeling to achieve city-level geographic scene and physical replica restoration, helping real-world 3D construction.



www.greenvalleyintl.com info@greenvalleyintl.com
2120 University Ave. Berkeley, California USA 94704