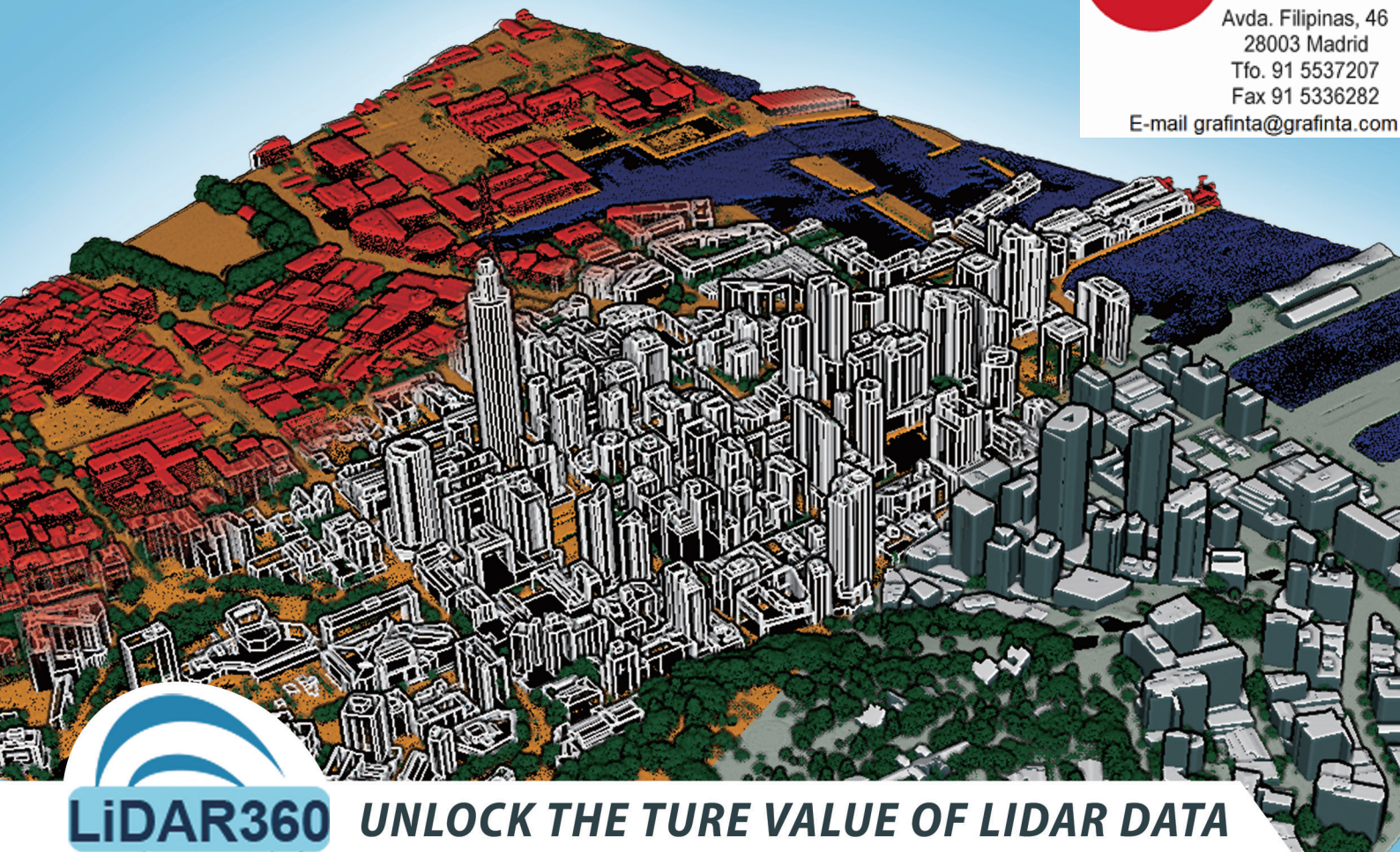




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LiDAR360

UNLOCK THE TRUE VALUE OF LIDAR DATA

LiDAR360

Professional LiDAR Solutions

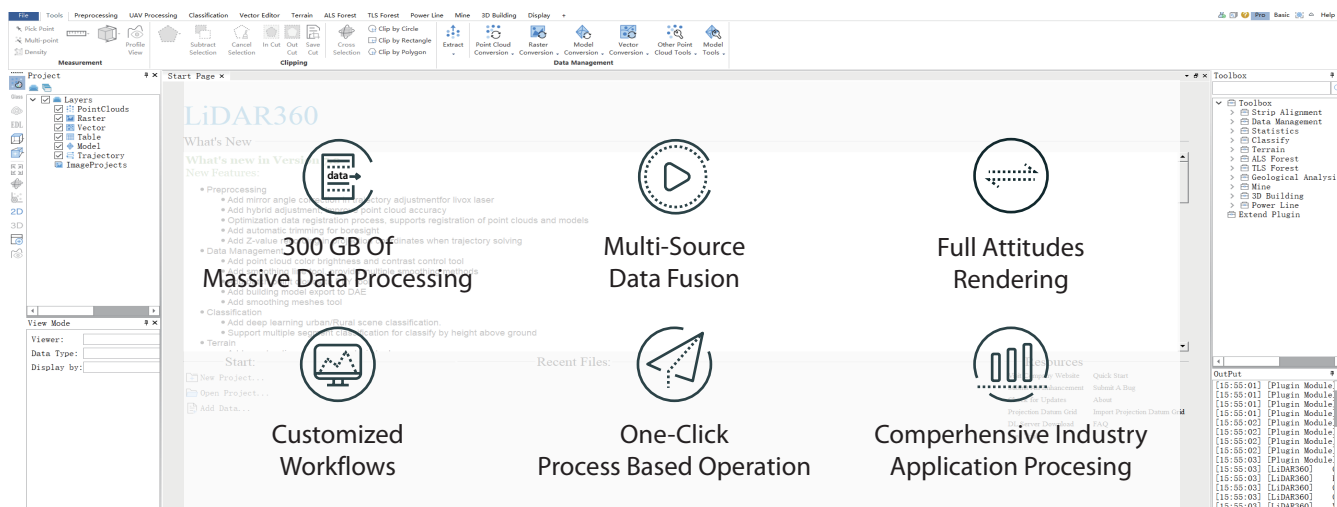
www.greenvalleyintl.com

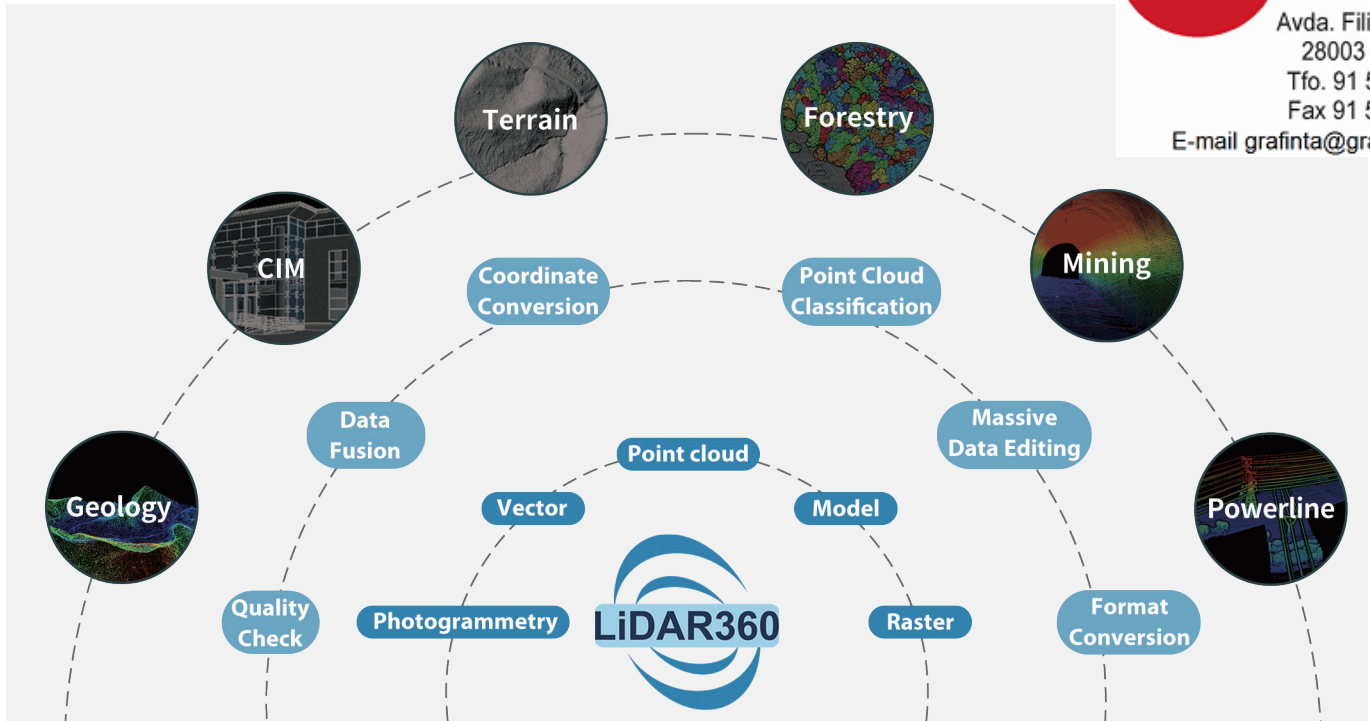


SOFTWARE

PROFESSIONAL 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 700 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

- **Preprocessing**

Solving calibration error, trajectory error and laser sensor error to correcting layered point cloud. Providing hybrid adjustment for multi-source data. Supporting correction by control points and quality inspection.

- **UAV Processing**

One-click operation for UAV point cloud&image process, fully improve ALS data quality.

- **Classification**

Auto-Classification for various features by deep learning. Support AI training for point cloud classification.

- **Editor**

Provide efficient editor tools for point cloud, model, vector and raster, link multi-source data for identification.

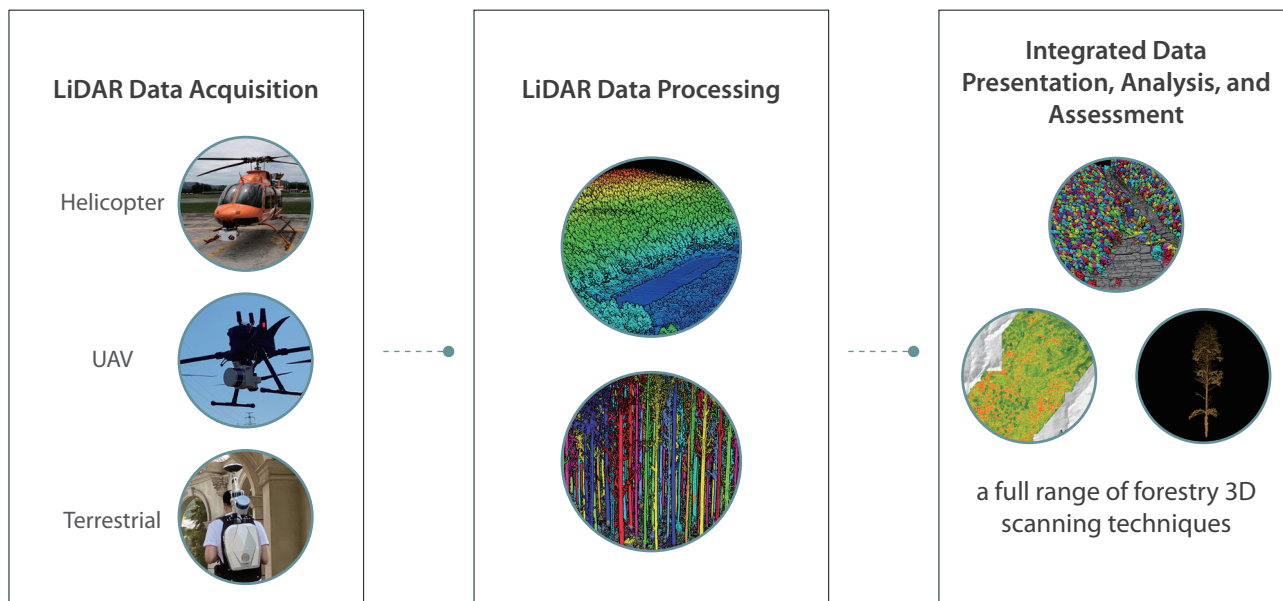
- **Vectorization**

Rich semi-automatic editing tools for 2D/3D vectorization by multi-source data, seamless CAD and GIS data aggregation.

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.

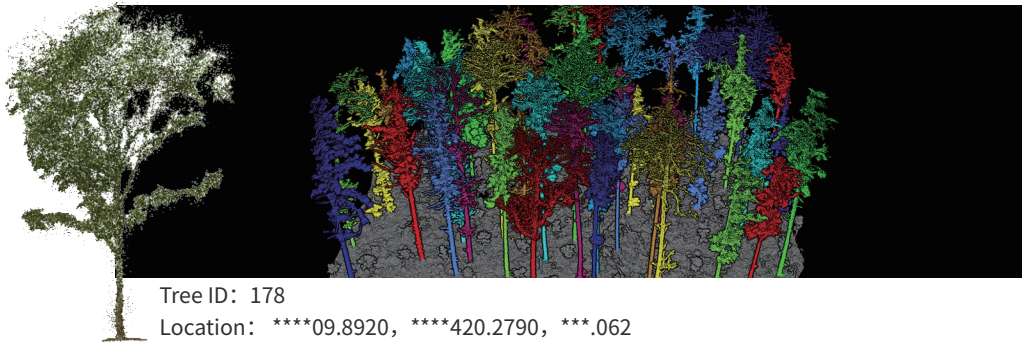


Forest Inventory Surveys

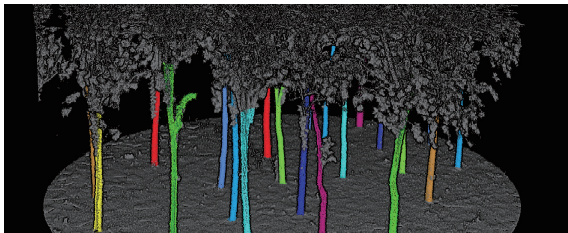
- Segment each tree in the point cloud data, extract Individual tree attributes such as Height, DBH, Crown Area
- Calculate forestry metrics such as Canopy Cover, Gap Fraction and LAI, inversion forestry metrics by regression analysis
- Rich Tools such as Stem Extraction, Tree Species Marker, Biomass Calculation, Individual Tree Report, etc.
- Generate real size models for each tree (supports different tree species).

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°
Biomass	72.32kg



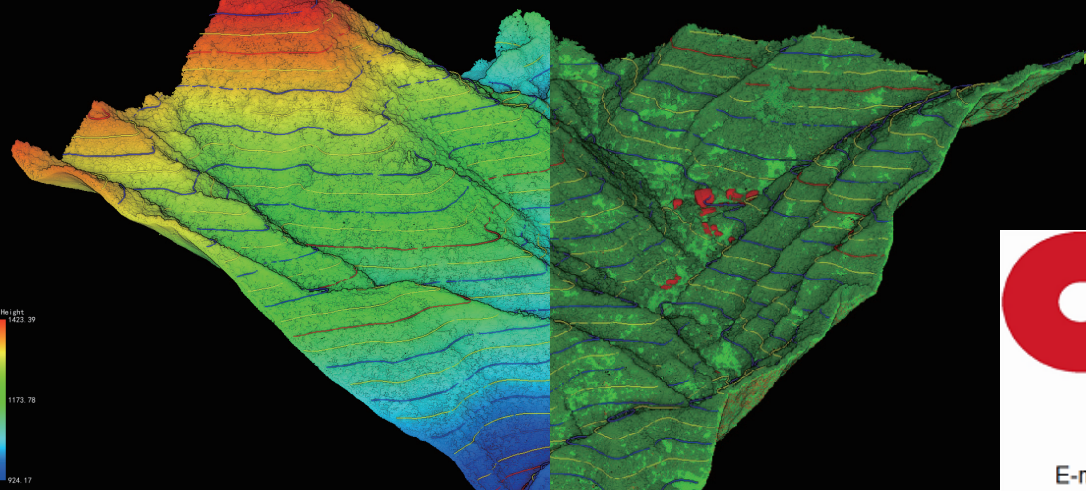
Individual Tree Attributes



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.

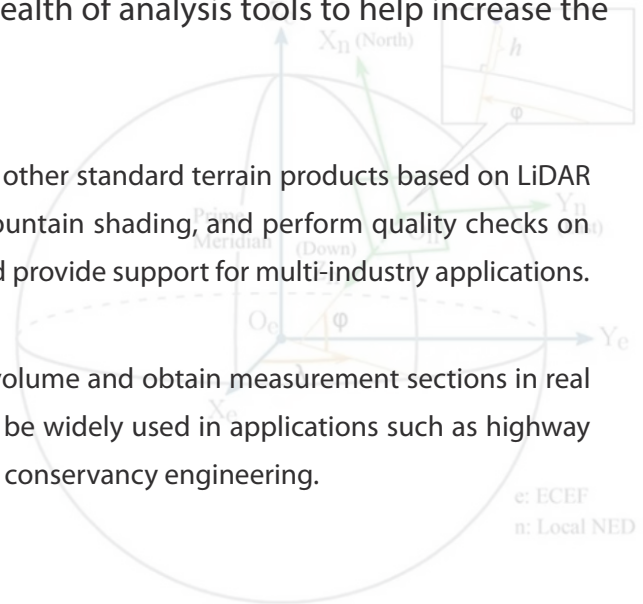
LiDAR360 can automate the processing of terrain observation data, accurately acquire terrain and landscape feature information, produce various data results and high-precision models required for industrial applications, and provide a wealth of analysis tools to help increase the quality and efficiency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

- **Rich topographic results**

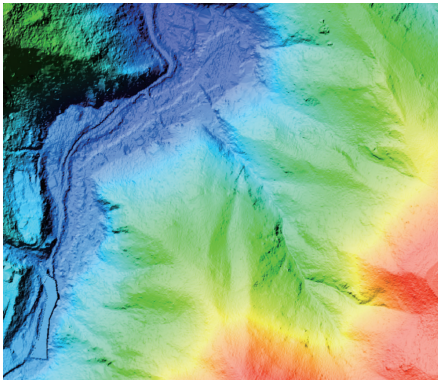
Produce high-precision DEM, DSM, DOM, contour lines, and other standard terrain products based on LiDAR point clouds, analyze terrain slope, slope direction, and mountain shading, and perform quality checks on data results to meet the needs of terrain mapping results and provide support for multi-industry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



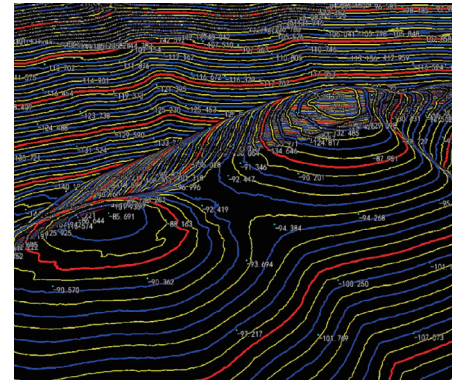
e: ECEF
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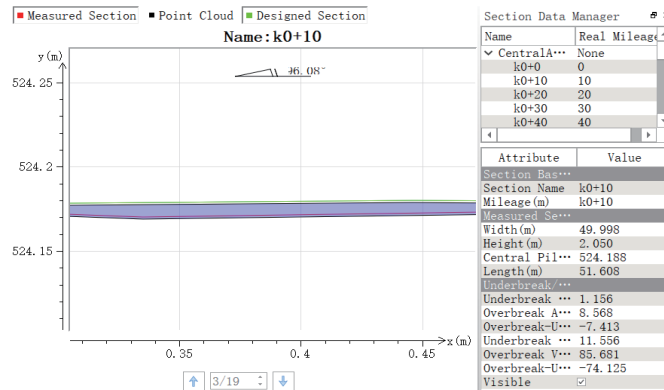
DEM



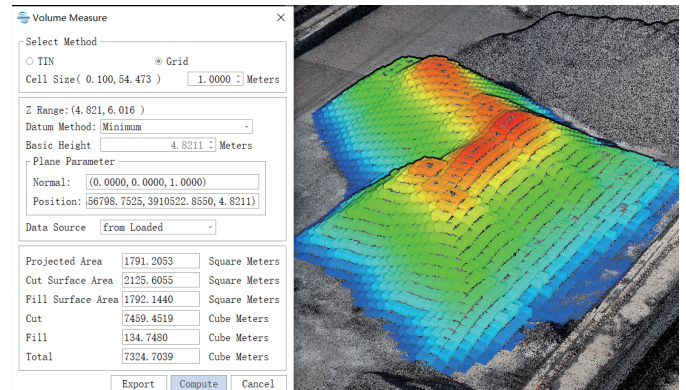
DOM



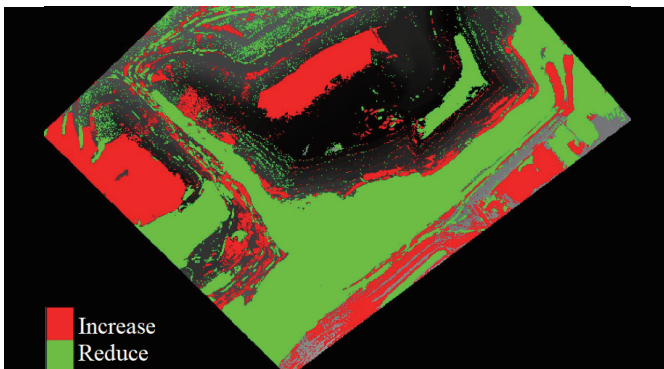
Contour



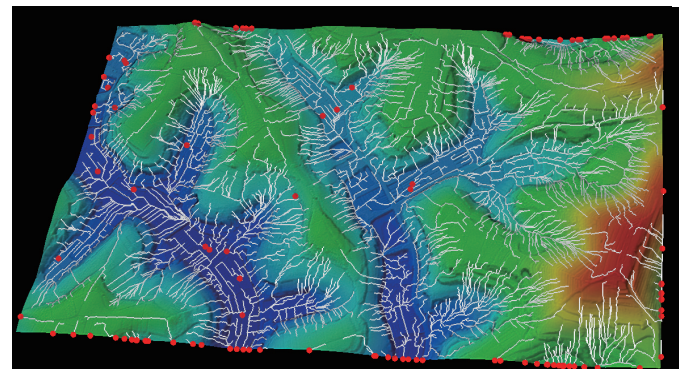
Section Analysis



Volume Measurement



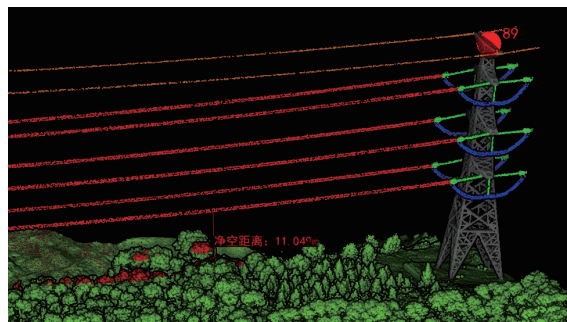
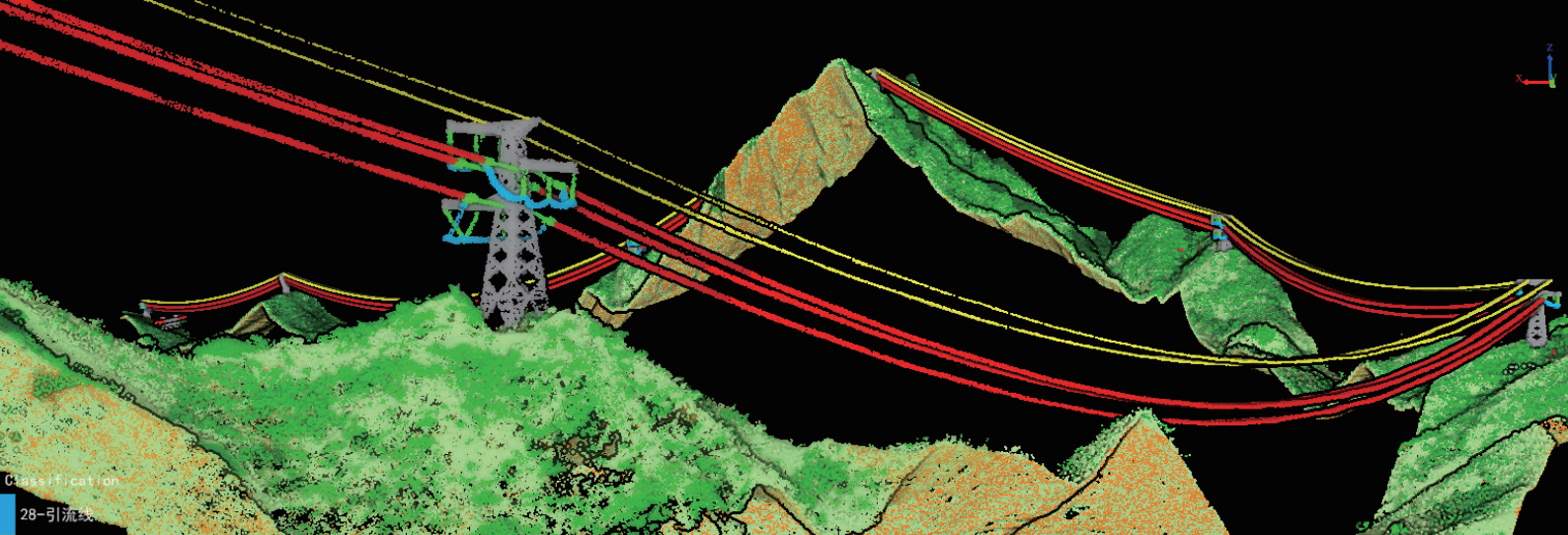
Construction Progress Analysis



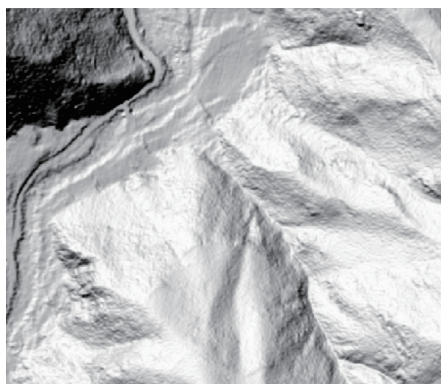
Drainage Analysis

03 ***Powerline Inspection and Analysis***

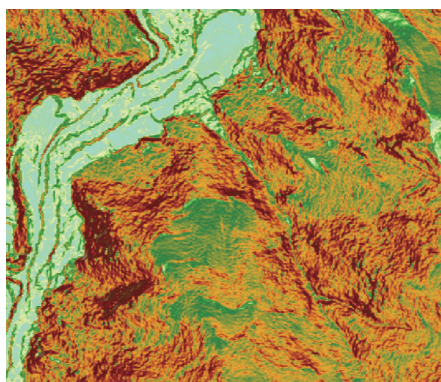
LiDAR360 enables the automatic classification of power line and pylon point clouds, real-time analysis of power line conditions, and the establishment of a sample library of machine learning classification algorithms to accurately and effectively reproduce the topography, geomorphology, and geological 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.



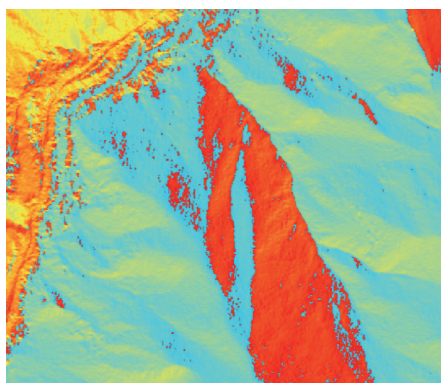
- Highly accurate and precise 3D modeling, identification, and extraction of towers, conductors, tooling components, and underline features.
- Analysis of abnormal conditions within the line channel, such as tree barriers and cross spans; rapid detection of dangerous trees, line, and road cross spans 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.



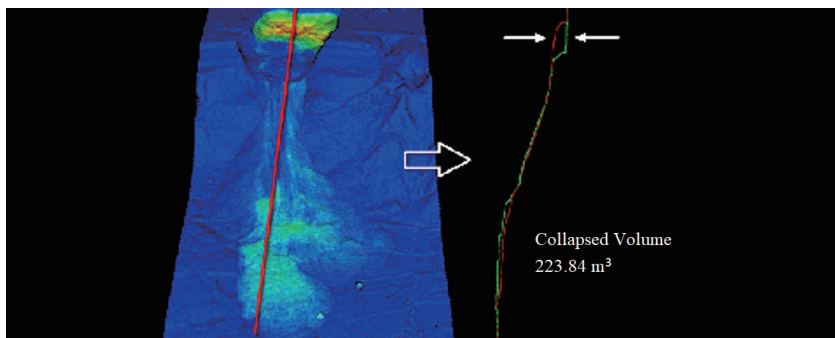
Hillshade



Slope



Aspect



- **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**

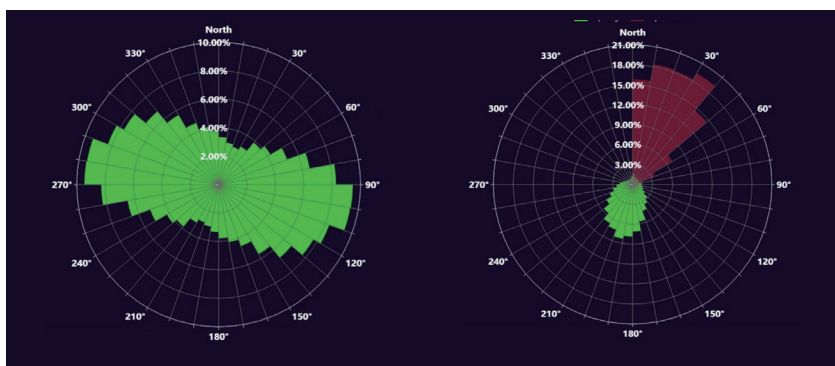
Precise sensing of subtle changes in terrain features over multi-period data for section analysis and structural surface extraction.

- **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.



Geographical Rose Diagram

04

Geological Analysis

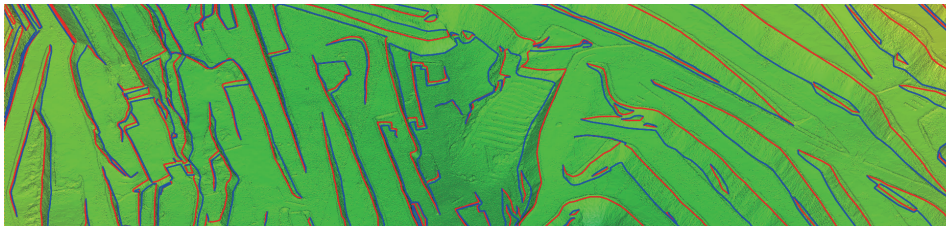
LiDAR is one of the few remote sensing technologies that can penetrate vegetation to obtain ground DEMs. LiDAR360 can accurately extract ground points from LiDAR point clouds and obtain parameters such as slope and slope direction for section and terrain change analysis, providing support for environmental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

05

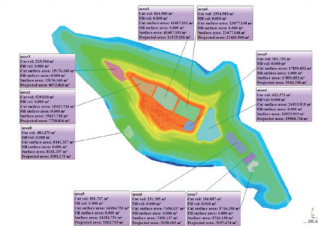
Mine Surveying

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, and construction acceptance, efficiently supporting mining production.

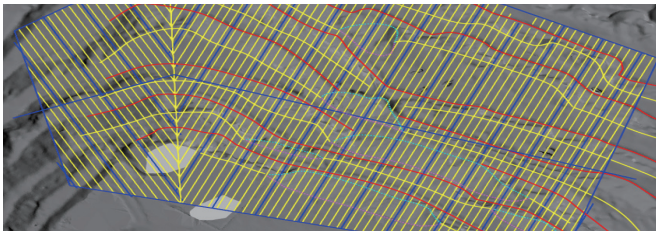
- Production safety analysis, earthwork calculation and volume change analysis for open-pit Mine to Increase productivity.
- Rapid modeling, section analysis and volume calculation for tunnel to help construction.



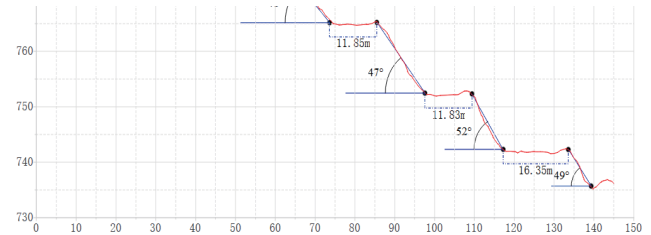
Extract Crests and Toes



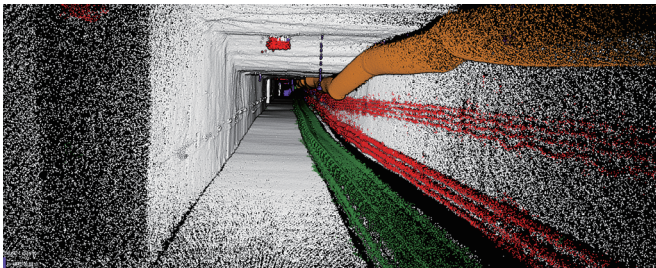
Volume Change Analysis



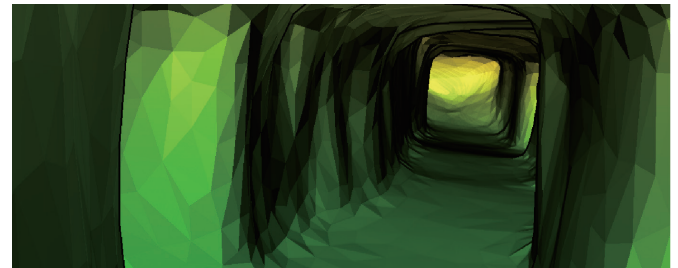
Inter-Ramp Section



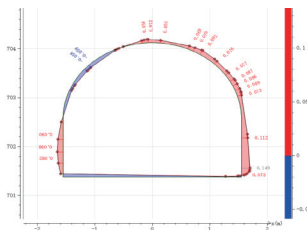
Inter-Ramp Compliance



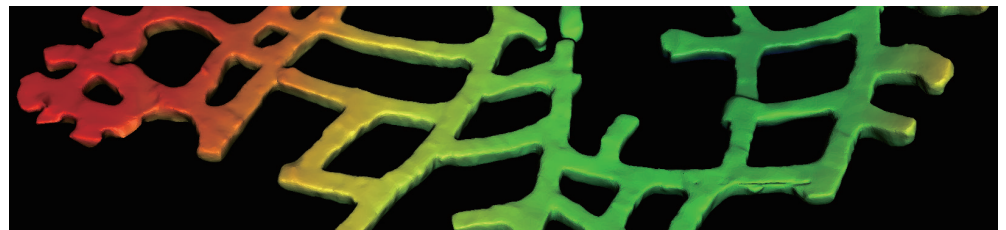
Corridor and tunnel point cloud classification



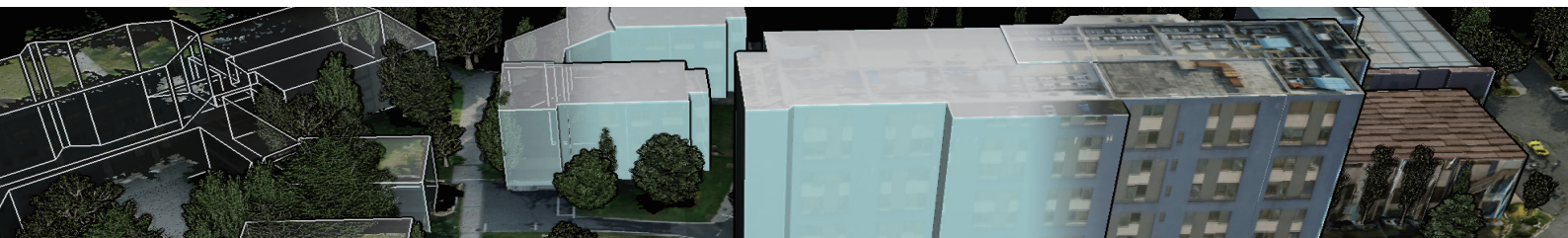
Tunnel Model (Inside)



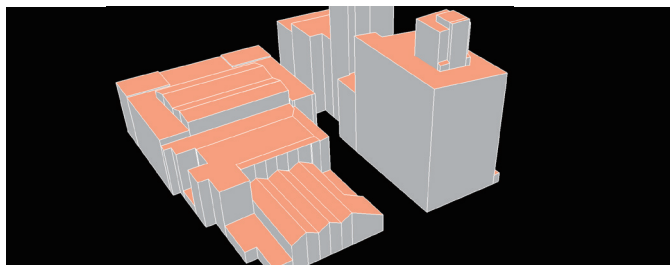
Section Analysis



Tunnel Model (Entirety)



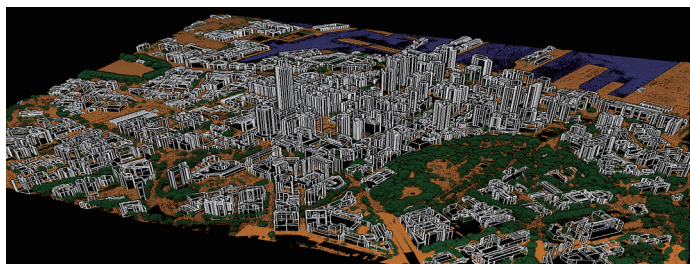
- **Rapid Modeling:** Rapidly automatic modeling for buildings as 10000+ models in 24 minutes by point cloud and building footprint.
- **Attributes Management:** Each building model will inherit the attributes of vector data for urban management and analysis.
- **Automatic Texture Mapping:** Precisely match point clouds and oblique images, and automatically attach textures to building models.
- **Model/Texture Editor:** Inspection and editing functions for models and textures.
- **Attributes Calculate:** Automatically calculating building attributes such as base height, building height, floor area etc.



LOD2.2 Auto-modeling



Automatic Texturing



Rapid Modeling for Large Scenes

	BLDG HEIGHT	EAVE HEIGHT	BASE ELEV	ROOF DIR ^	ROOF AREA	ROOF PERIMETER	FOOTPRINT AREA
1	29.553	22.118	-26.893	17.839	2172.68...	214.488	2146.823
2	6.997	0.989	-4.547	18.449	511.471...	103.066	465.819
3	7.592	5.531	-4.582	19.153	444.500...	97.706	438.296
4	16.188	9.668	-13.548	19.367	3177.89...	248.167	2503.436
5	9.970	5.060	17.950	20.694	703.675...	138.245	702.901
6	6.077	4.891	35.403	22.244	72.0405...	31.415	71.499
7	14.179	3.620	16.291	45.930	1013.85...	144.576	925.127
8	4.250	2.902	27.140	58.066	114.831...	43.122	109.446
9	44.876	32.429	-35.186	60.834	697.885...	100.971	604.379
10	9.246	6.344	-6.276	109.136	1354.19...	175.665	1299.922

Attribute Management



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.



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