
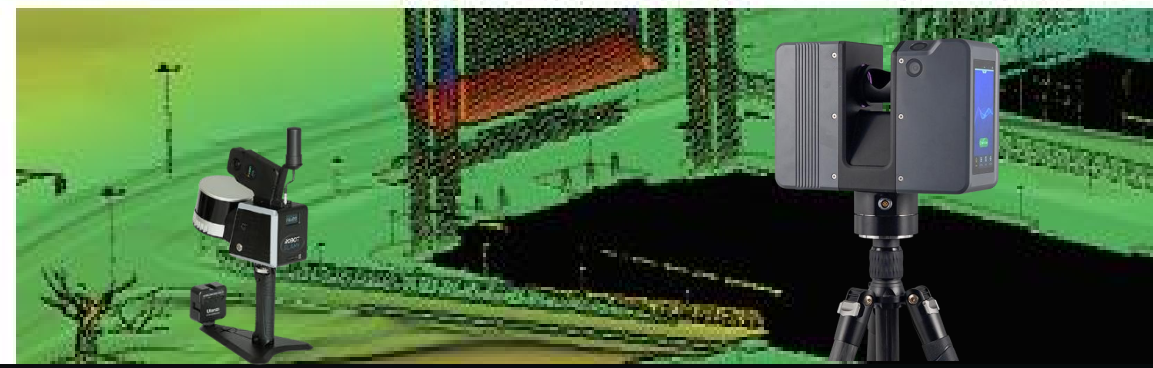
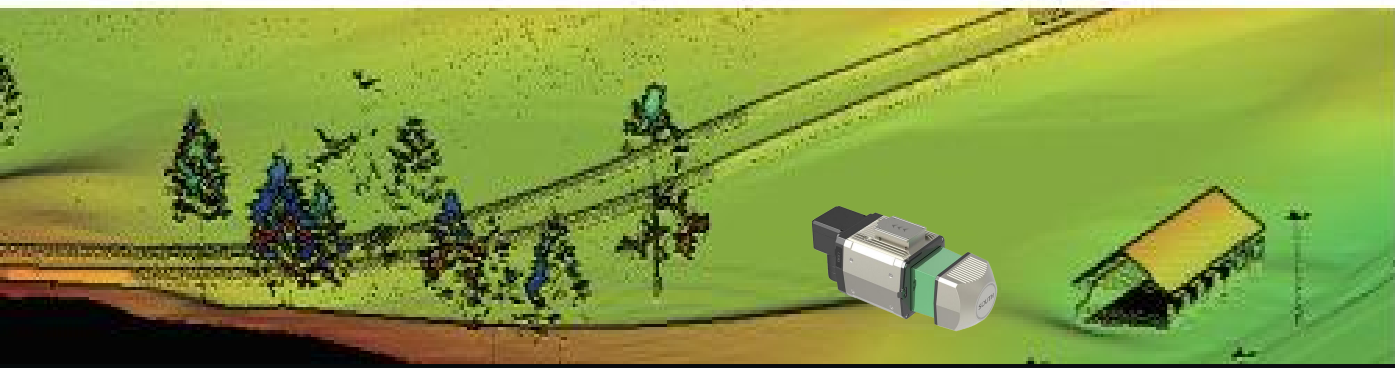


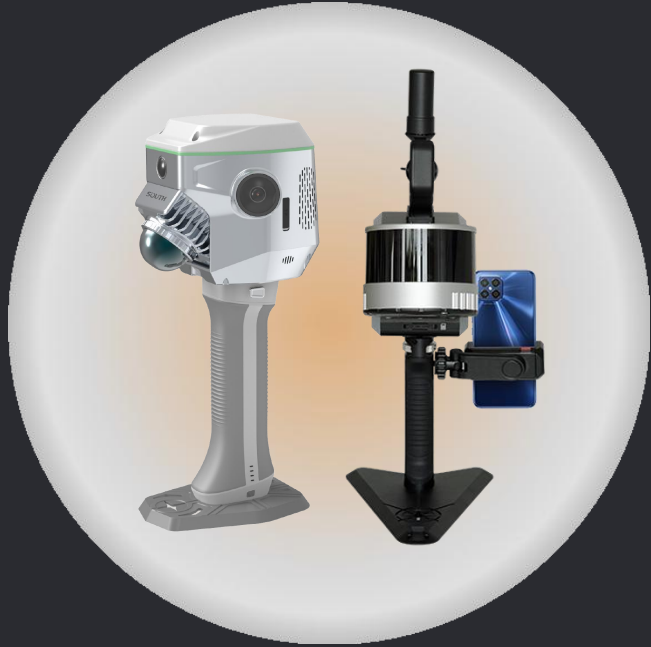
# Looking into *AcuteLas Studio*

 Product Director

 Haiphen Huang



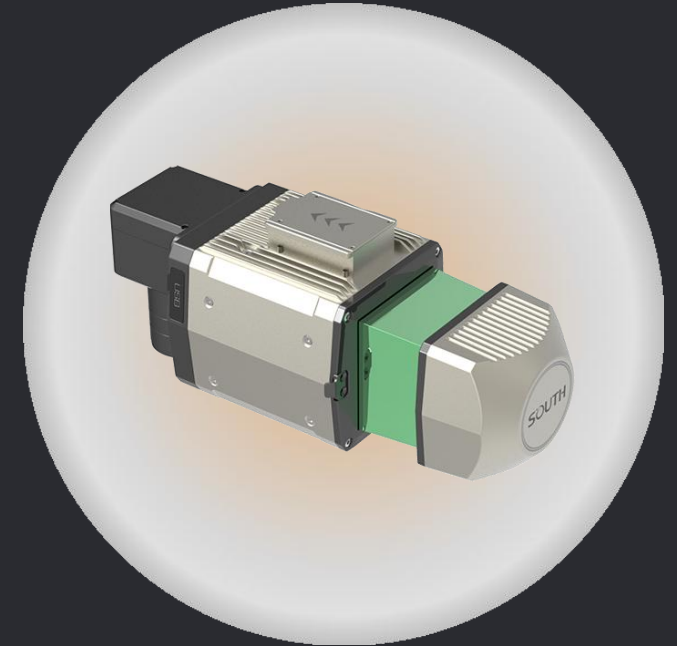
# 01 Complete Range of Scanner Products



**SLAM**  
RobotSLAM/ME



**TLS**  
SPL-1500



**Airborne**  
SA130/SG130

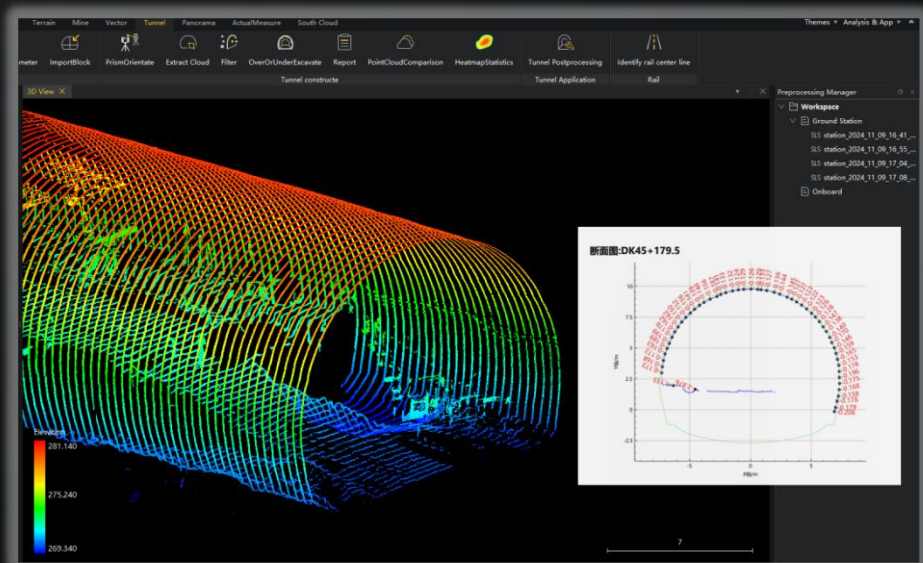
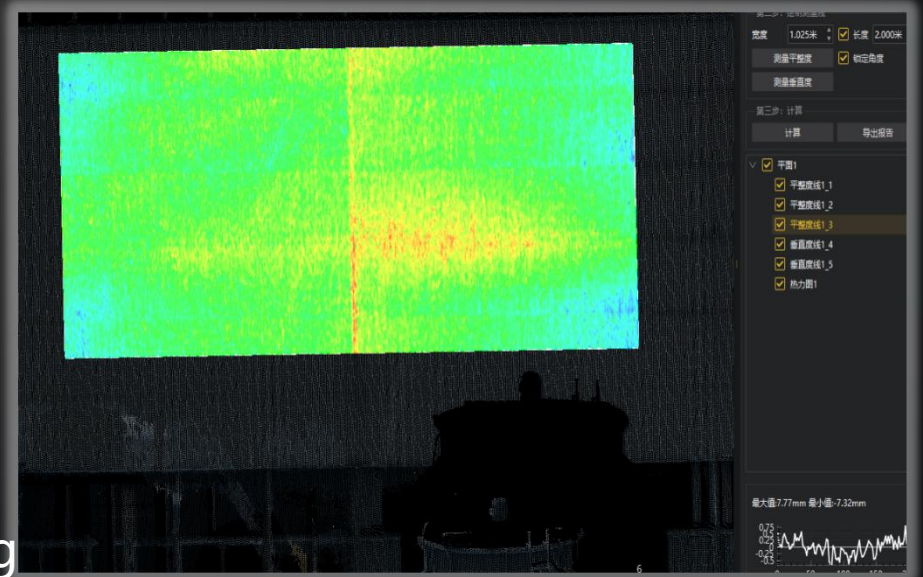
## Multiple Industrial Modules



Professional Modules  
DEM Production  
Profile Extraction  
Power Lines Routing  
Flatness Check  
Tunnelling

### 基础模块

TLS : Point Cloud Registration  
MLS/SLAM : Point Cloud Process & Adjustment

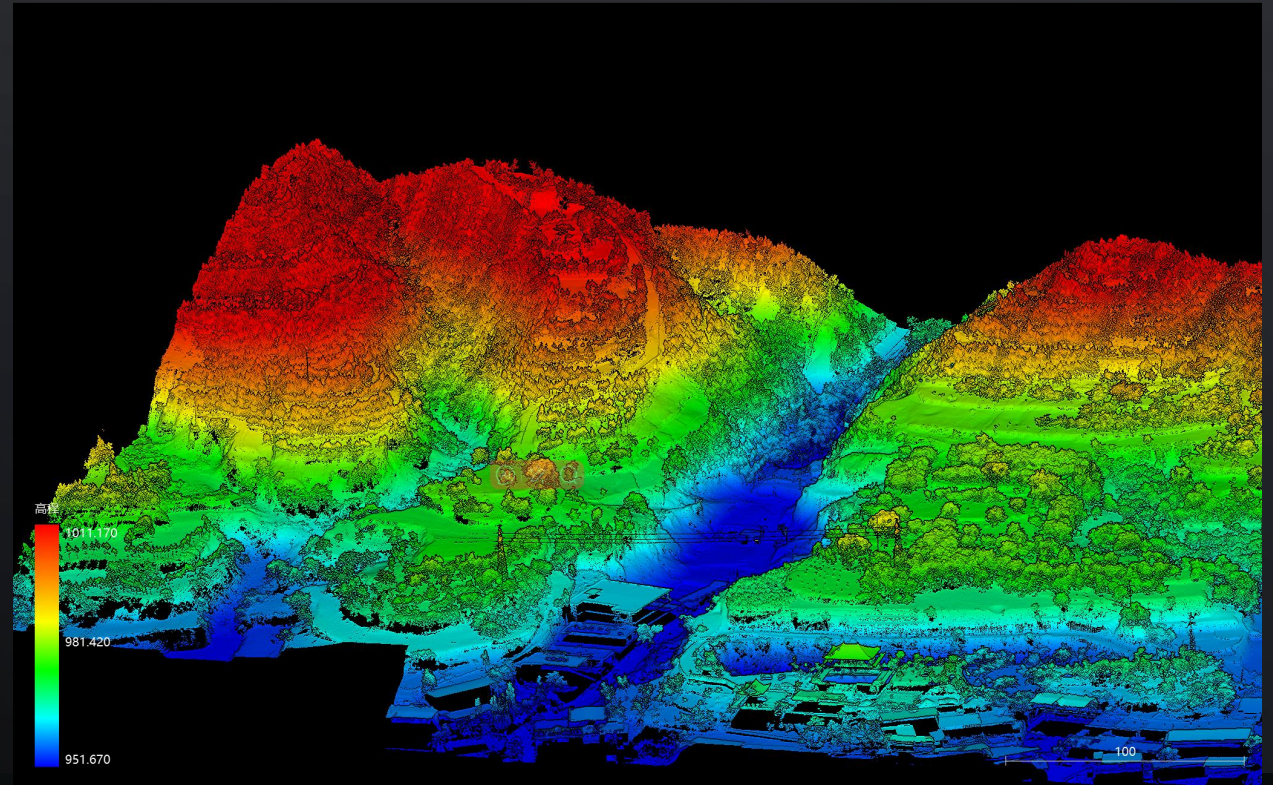




DOM/DEM/DLG

To represent true bare ground surface, point cloud is the most accurate.

**Recommended: airborne**





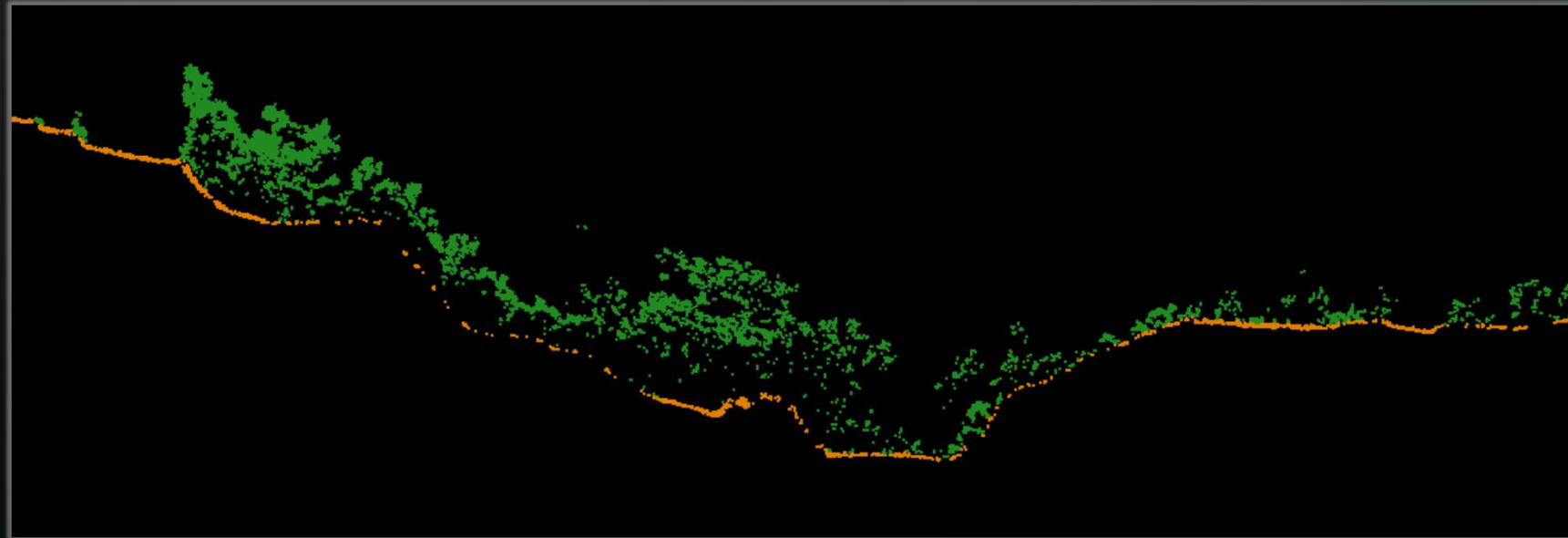
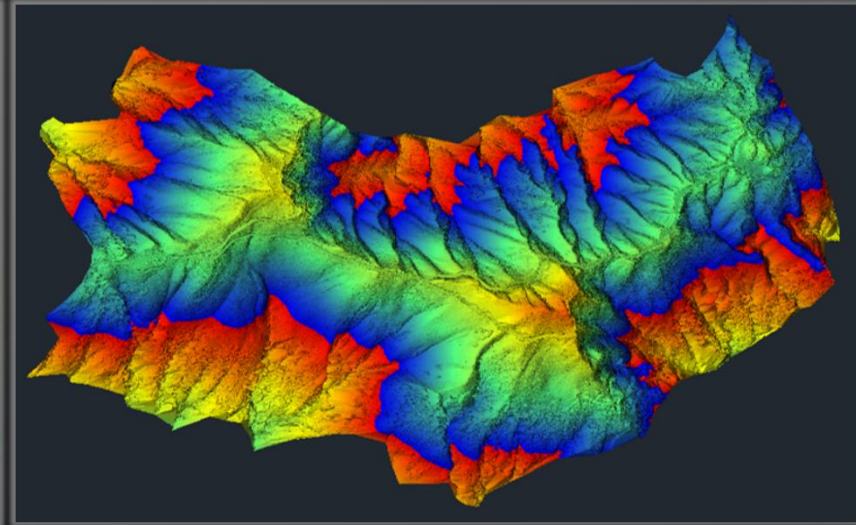
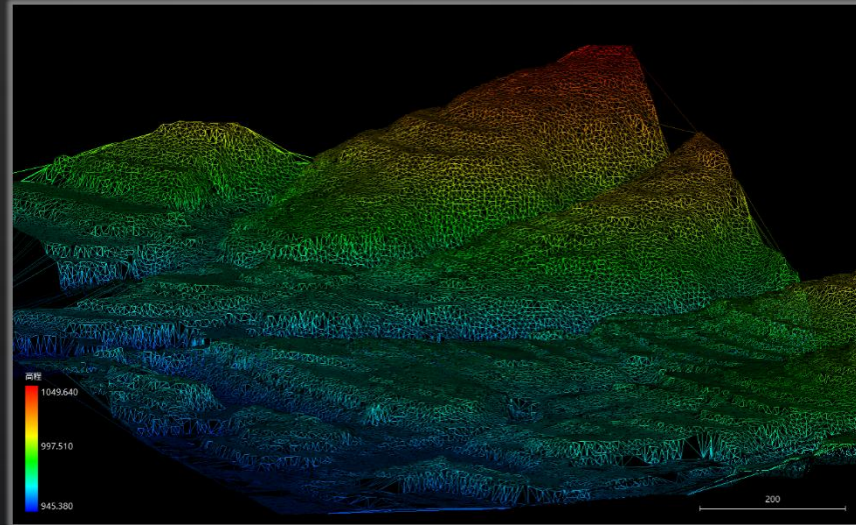
# 03 Geo-information – land title survey

TIN

Intensive Classification

Triangulation Editing

Abundant Outputs





# 03 Geo-information – land title survey

Boundary, façade, and floor plan.

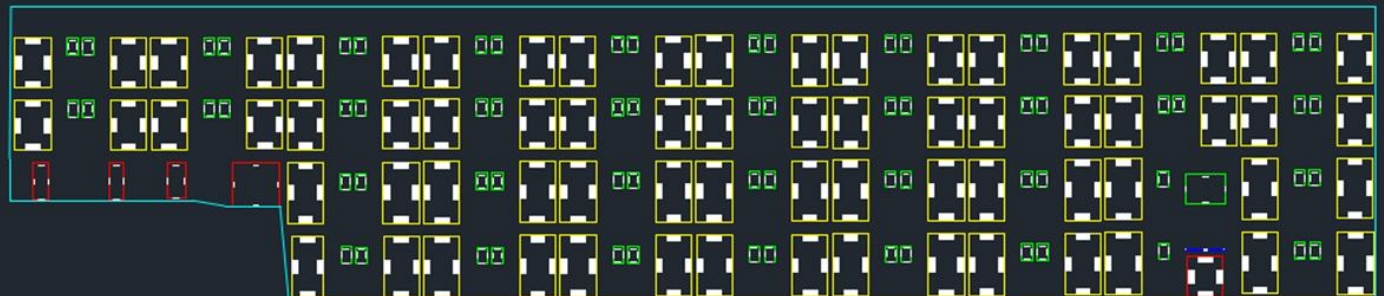
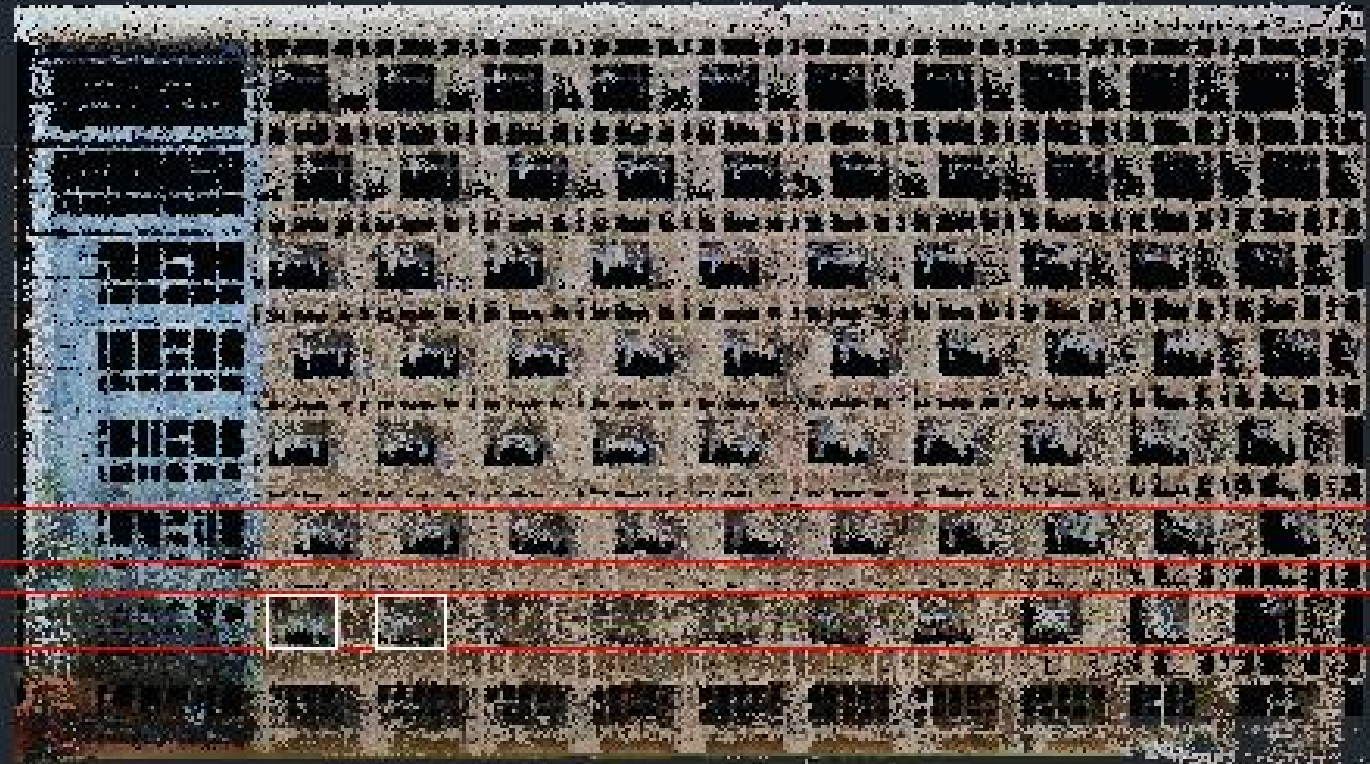
**Recommended: TLS/Airborne/SLAM**



Façade Drawing  
Profile Drawing

Auto-draw Boundary

Outputs DWG/SHP





# 04 Construction Engineering - volume calculation & monitoring

For construction engineering and mining

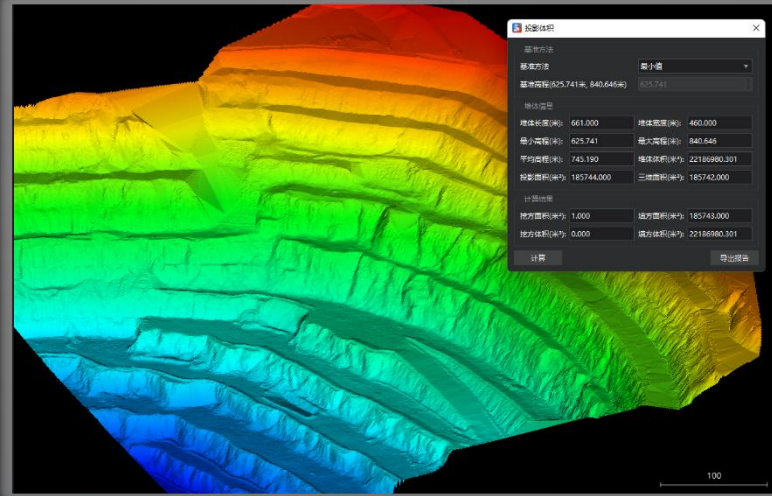
**Recommended: TLS/Airborne**





# 04 Construction Engineering - volume calculation & monitoring

- TIN algorithm
- Ground points to extract
- Triangulation
- Stockpile and irregular calculation
- Before & After comparison
- Heat-map to monitor



### 投影体积报告

模型名称: 裁剪\_20221008\_c1\_h1\_2xR16L\_01\_dem  
基准高程: 625.741米

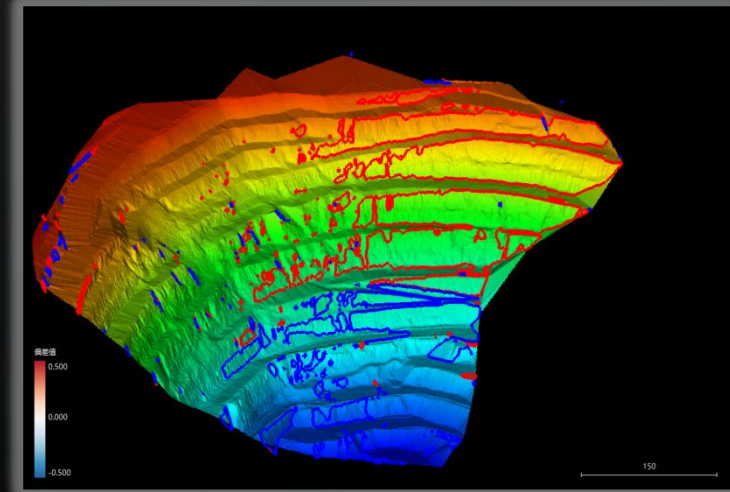
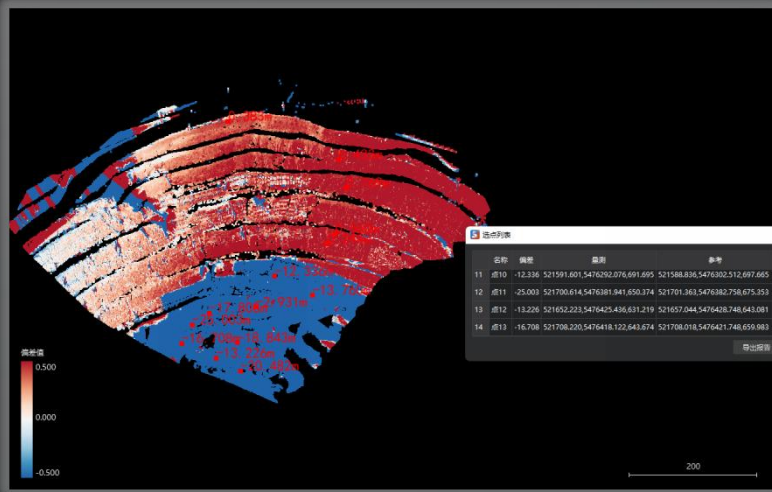
**堆体信息**

堆体长度(米):	661.000	堆体宽度(米):	460.000
最小高程(米):	625.741	最大高程(米):	840.646
平均高程(米):	745.190	堆体体积(米³):	22186980.301
投影面积(米²):	185744.000	三维面积(米²):	185742.000

**计算结果**

挖方面积(米²):	1.000	填方面积(米²):	185743.000
挖方体积(米³):	0.000	填方体积(米³):	22186980.301

Volume Fill/Cut

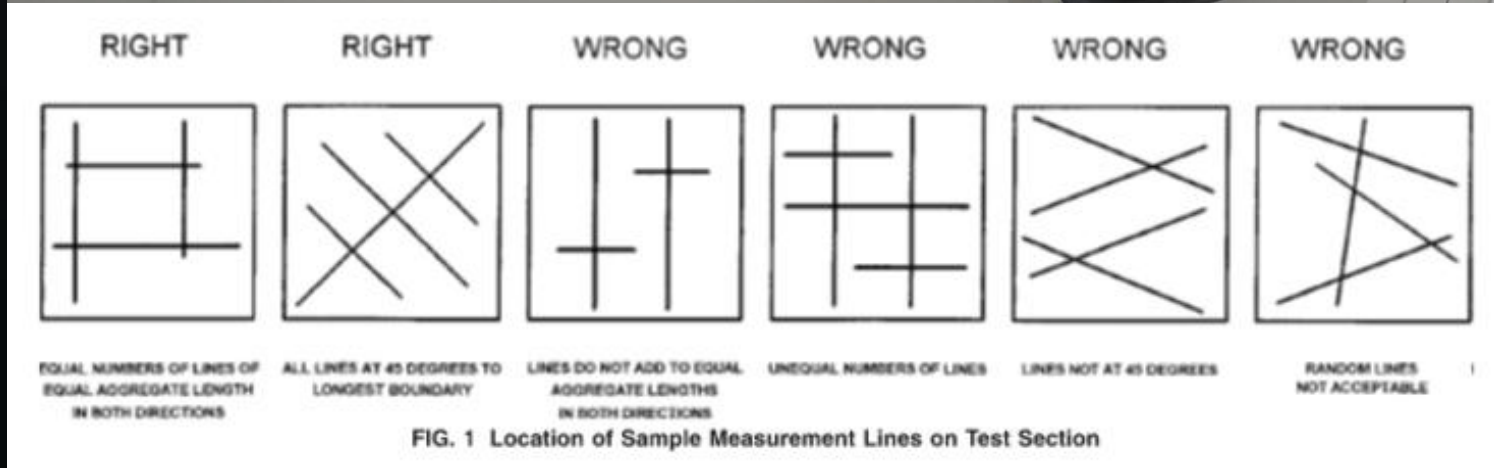


Progress Monitoring

# 04 Construction - flatness & levelness verification

Conventional methods: ruler, crossline laser, etc.

**High labor costs, yet low efficiency**





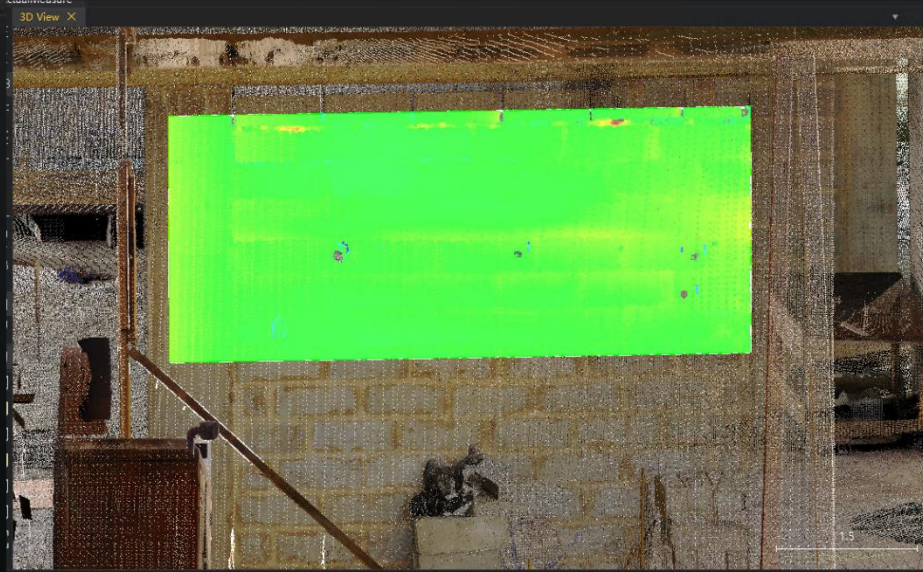
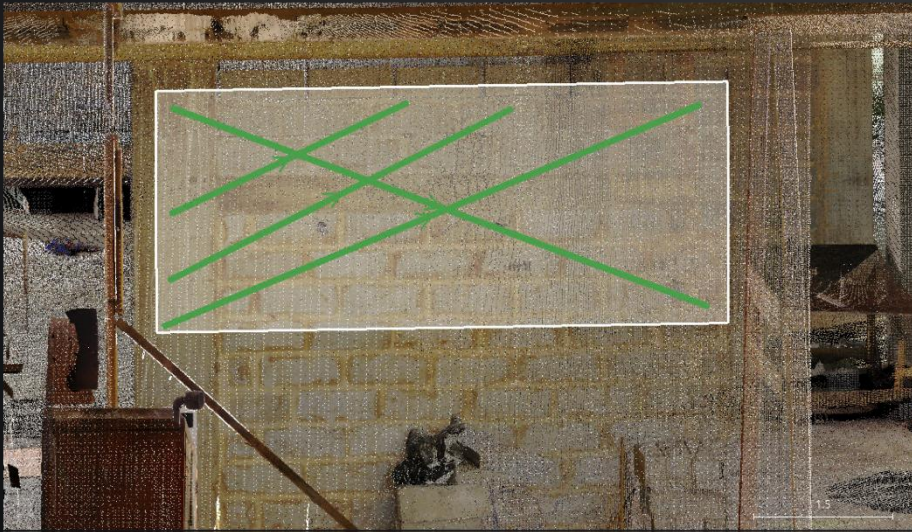
# 04 Construction - flatness & levelness verification

- TLS to deploy





# 04 Construction - flatness & levelness verification

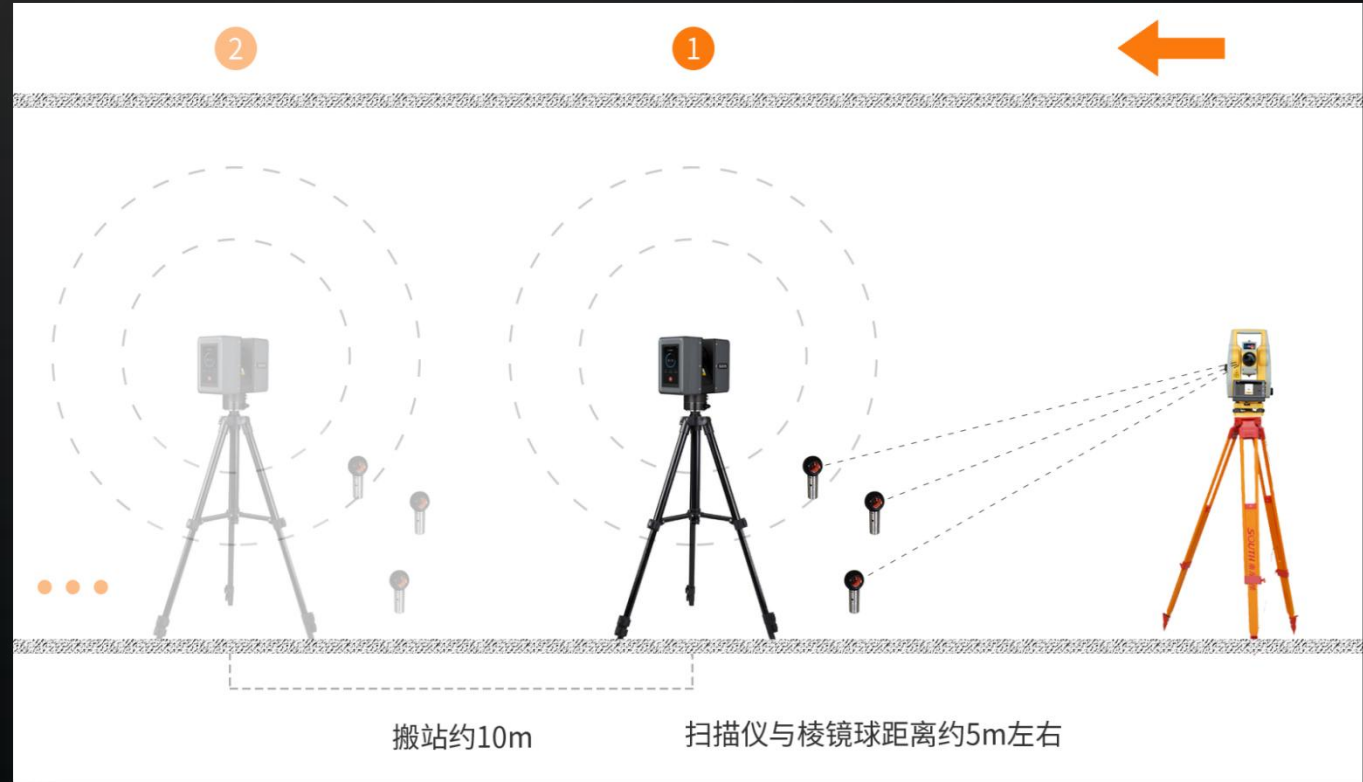




# 05 Tunneling - over & under excavation

Fast and accurate measurements to compare with design data, then adjust tunneling method

**Recommended: TLS/SLAM**

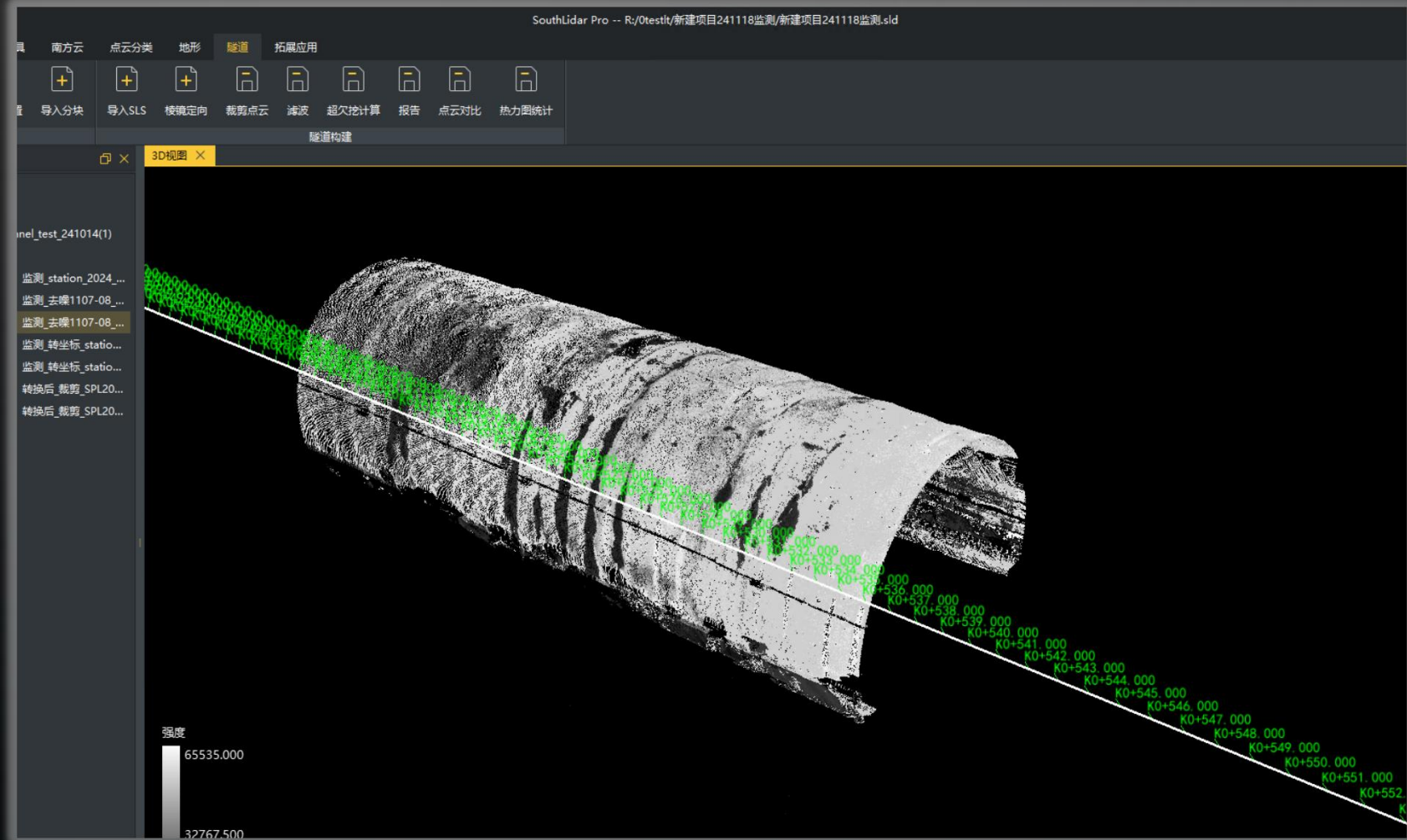


# 05 Tunneling - over & under excavation (based on TLS)

## 1. Transformation

## 2. Denoise & Crop

## 3. Extract Profile

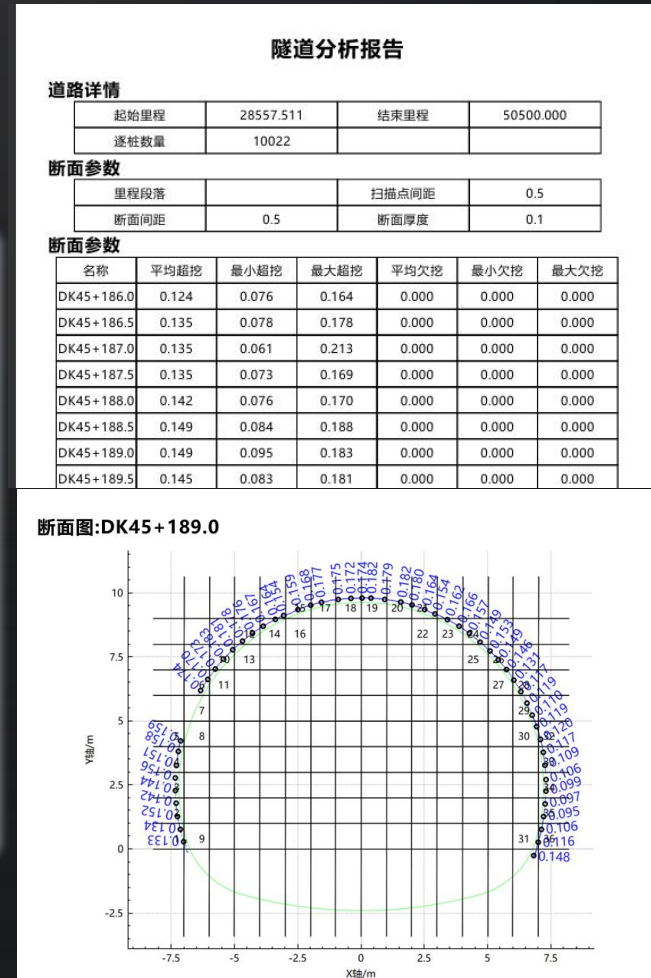
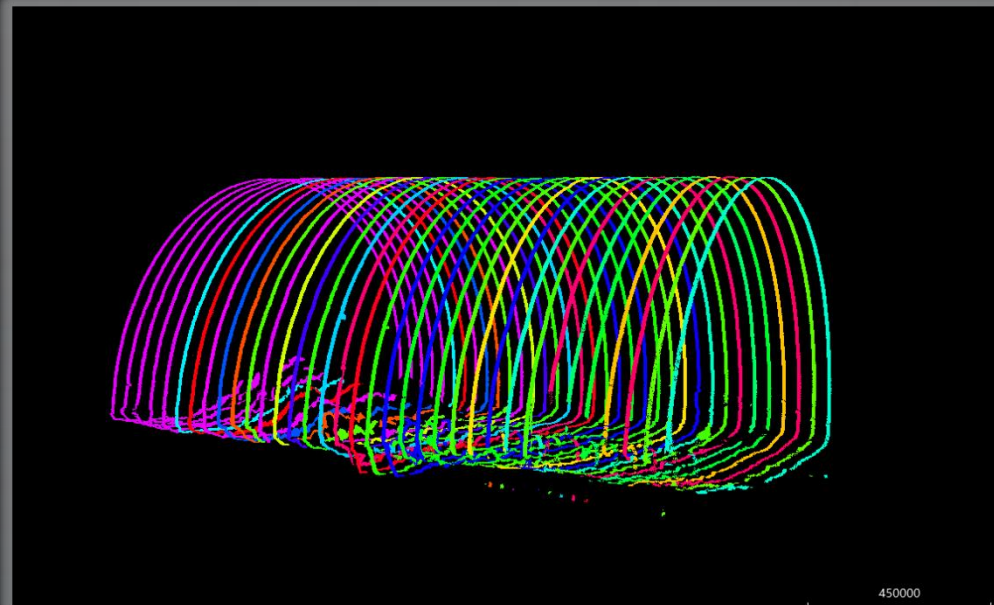




# 05 Tunneling - over & under excavation (based on SLAM)

## Rapid Scan

Accuracy down to 2cm  
Report within 10min



## 05 Tunneling - as-built survey

For shield tunnels, mid-line deviations and ovality inspection are needed.

**Recommended: TLS**

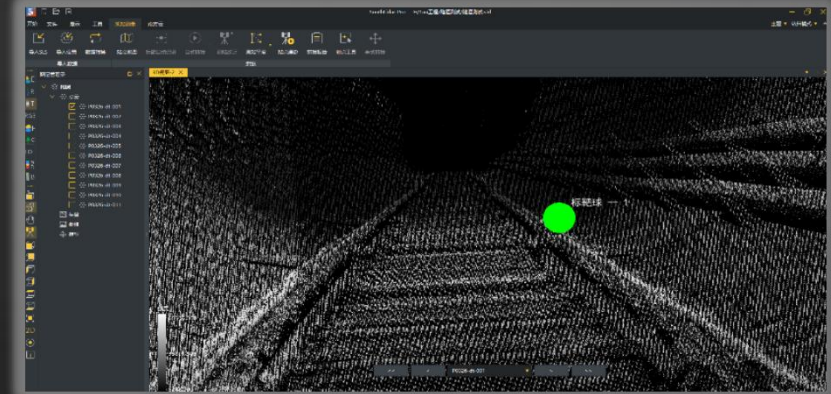




# 05 Tunneling - as-built survey

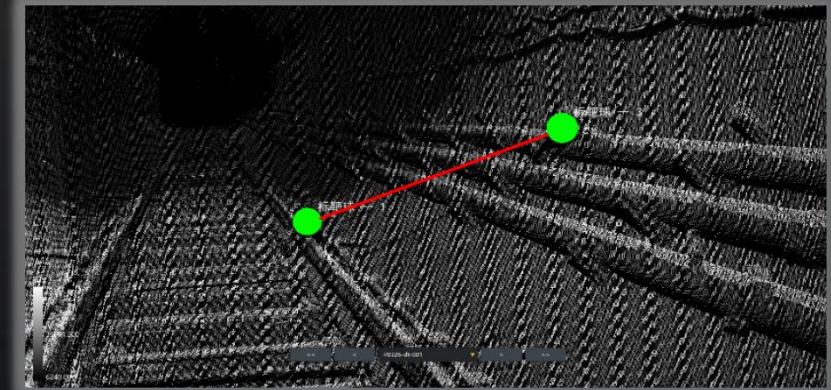
## □ Sphere Detection Based on Depth Map

1. Pano depth map generated from TLS
2. Circle Hough inspection



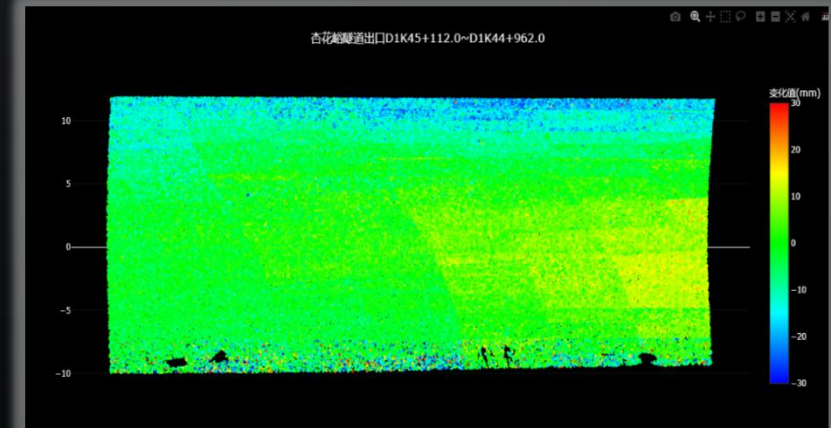
## □ Coordinate Auto Match

1. Geometric constraint of control points
2. Relative position, angle, distance, and topological structure
3. Spatial similarity and corresponding relationship



## □ Tunnel Wall Extraction

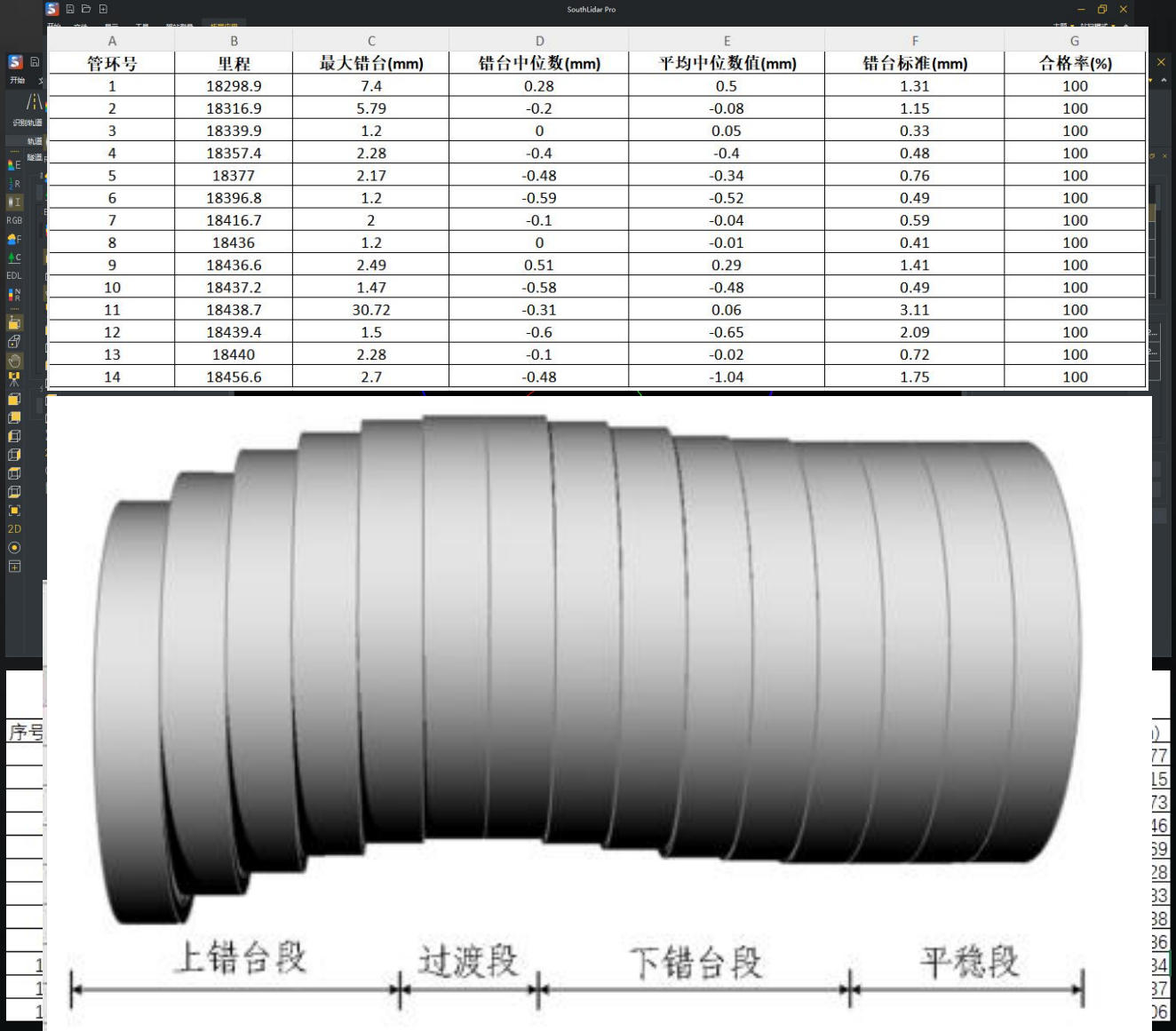
1. Mid-line closure
2. Column projection
3. Circular orthophoto to extract ground points



- Mid-line Analysis

- Ovality Analysis

- Segment Stagger Analysis



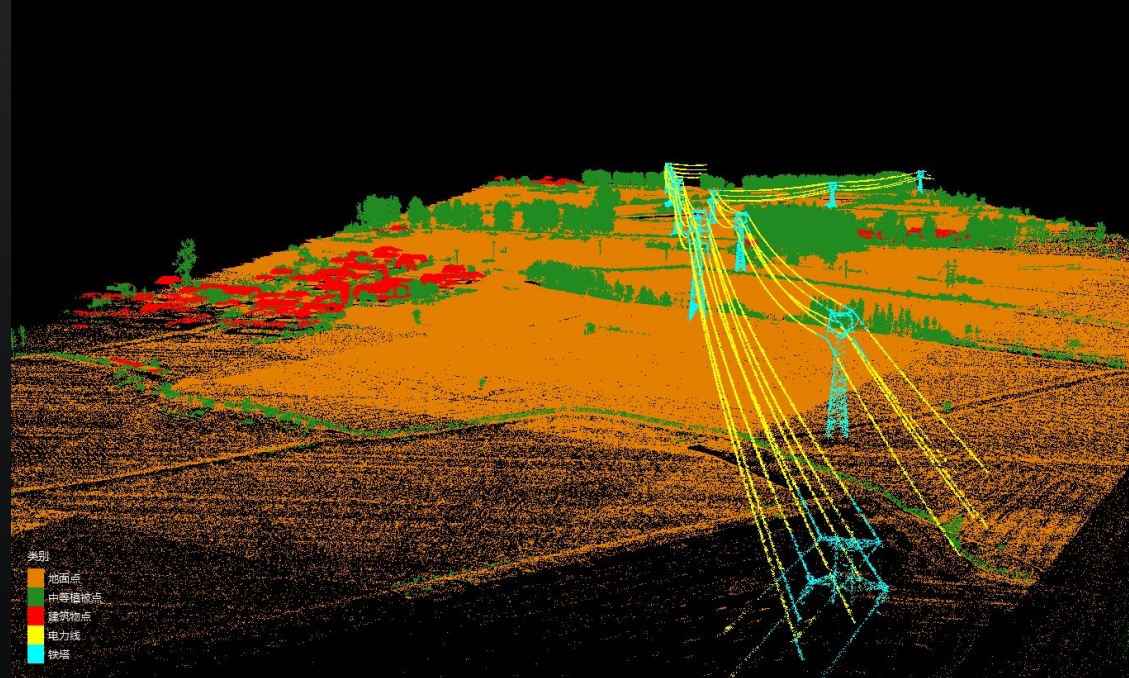


Topography and terrain conditions to know

**low efficiency with TS and RTK**

Aerial photogrammetry and LiDAR survey would be better

**Recommended: airborne**



# 06 Power Grids - power lines routing

## AI auto classification

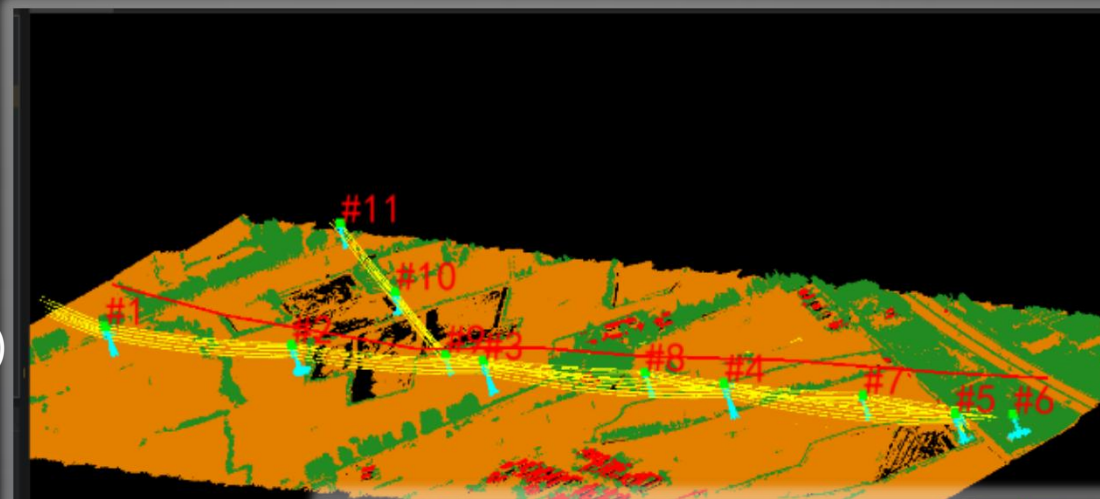
(electric tower, power lines, buildings, vegetation, bare ground)

Auto extraction based on slope features

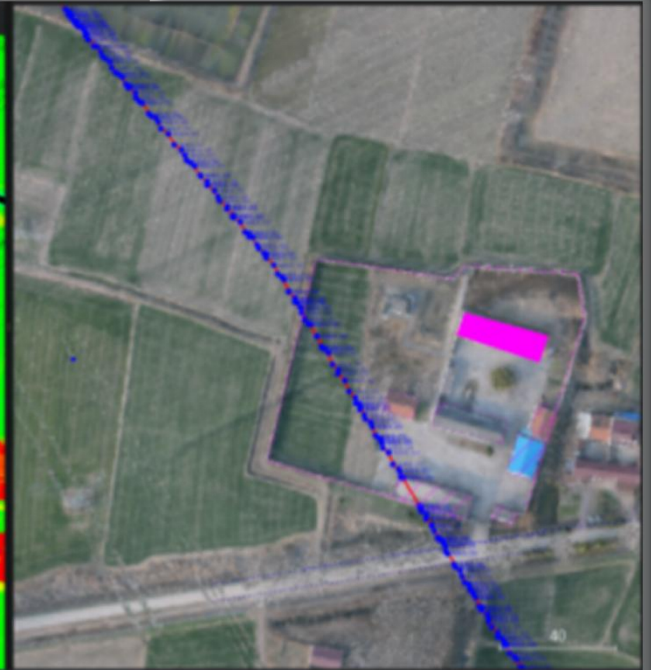
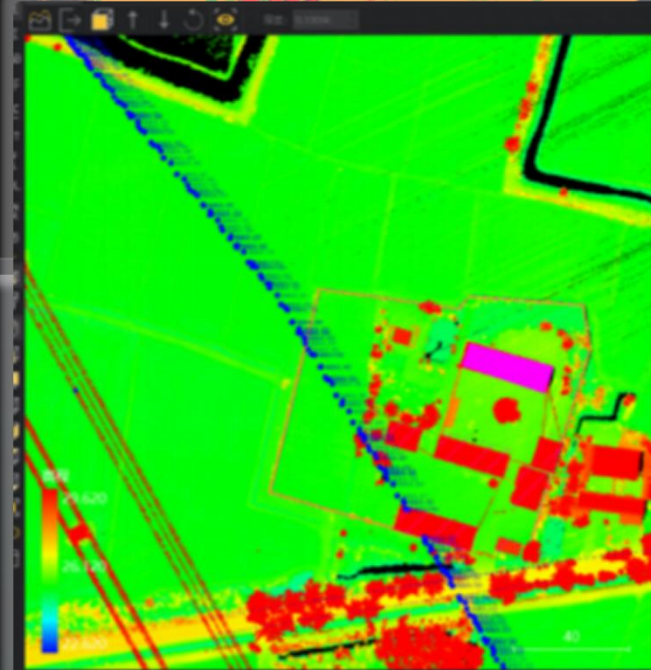
Features extraction based on DOM

**Job Case: one electricity design institute 100km routing survey**

- Before: fieldwork + process 14 days, 7 staff, RTK+TS
- **Now: fieldwork + process 5 days only, 2 staff**



类别  
地面点  
中等植被点  
建筑物点  
电力线  
铁塔





# THANK YOU

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- WeChat: 13763333133

