KOOL

Handheld 3D Laser Scanner: Product Introduction & Practical Operation



CONTENTS

1. Product Introduction
2. Application Cases
3. Scanning Precautions

1.Product Introduction

SOUTH



KOOL

Cost-Effective

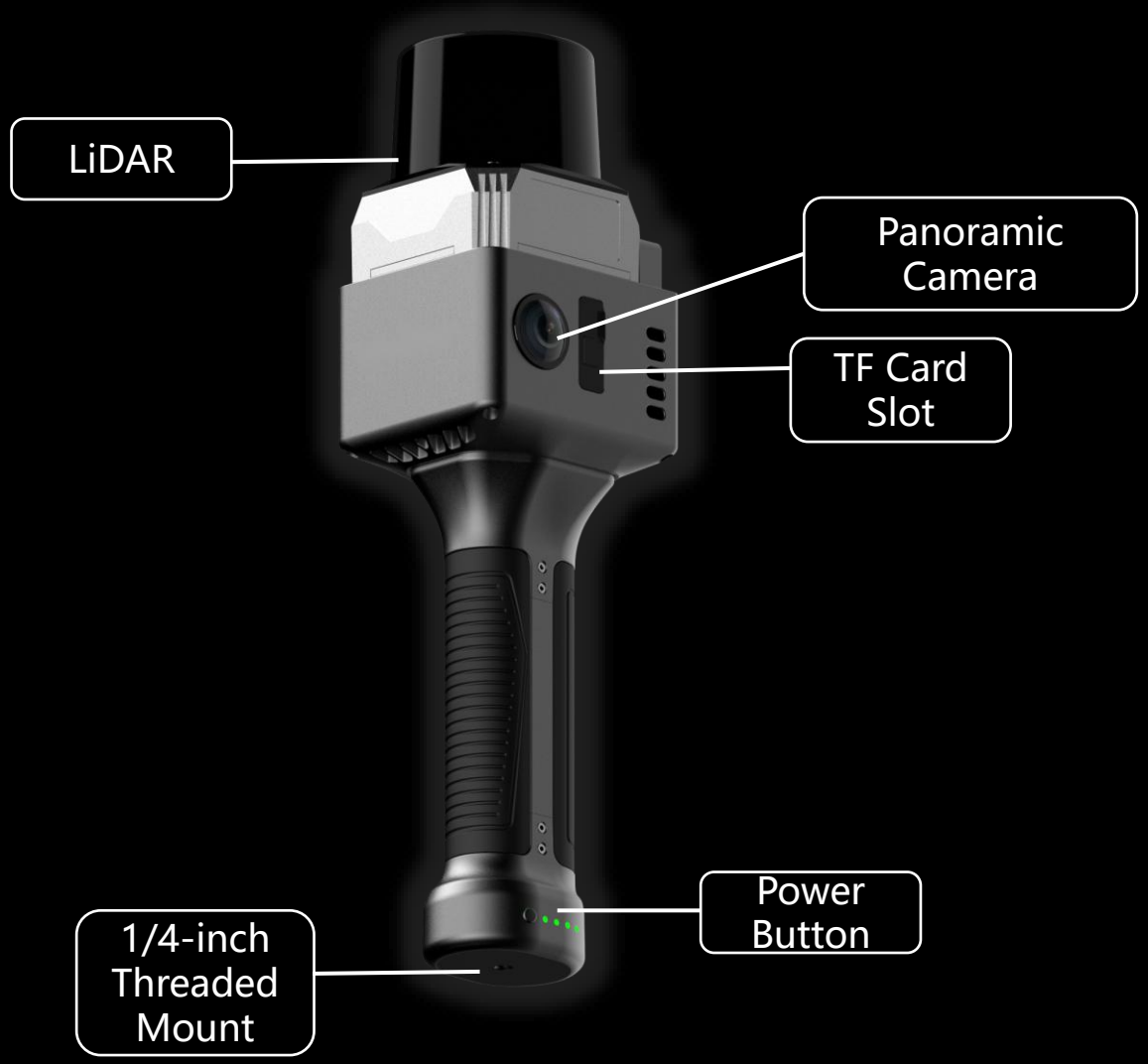
Scan Range	0.1–40 m @ 10% reflectivity; 0.1–100 m @ 90% reflectivity
FOV	360° (H) × 130° (V), optimized for data redundancy
Scanner Sensor	Mixed solid-state laser with stable internal structure
Mapping Method	SLAM with real-time point cloud display
Processing Mode	Real-time and post-processing
Scan Rate	200,000 pts/s (equivalent to 1.2 million pts/s through non-repetitive scanning and proprietary variable-frequency technology)
Laser Class	Class 1, eye-safe
Camera	2 × 12 MP
Field Control	MapStar
Data Processing	AcuteLas Studio
Accuracy	⩽1 cm relative accuracy

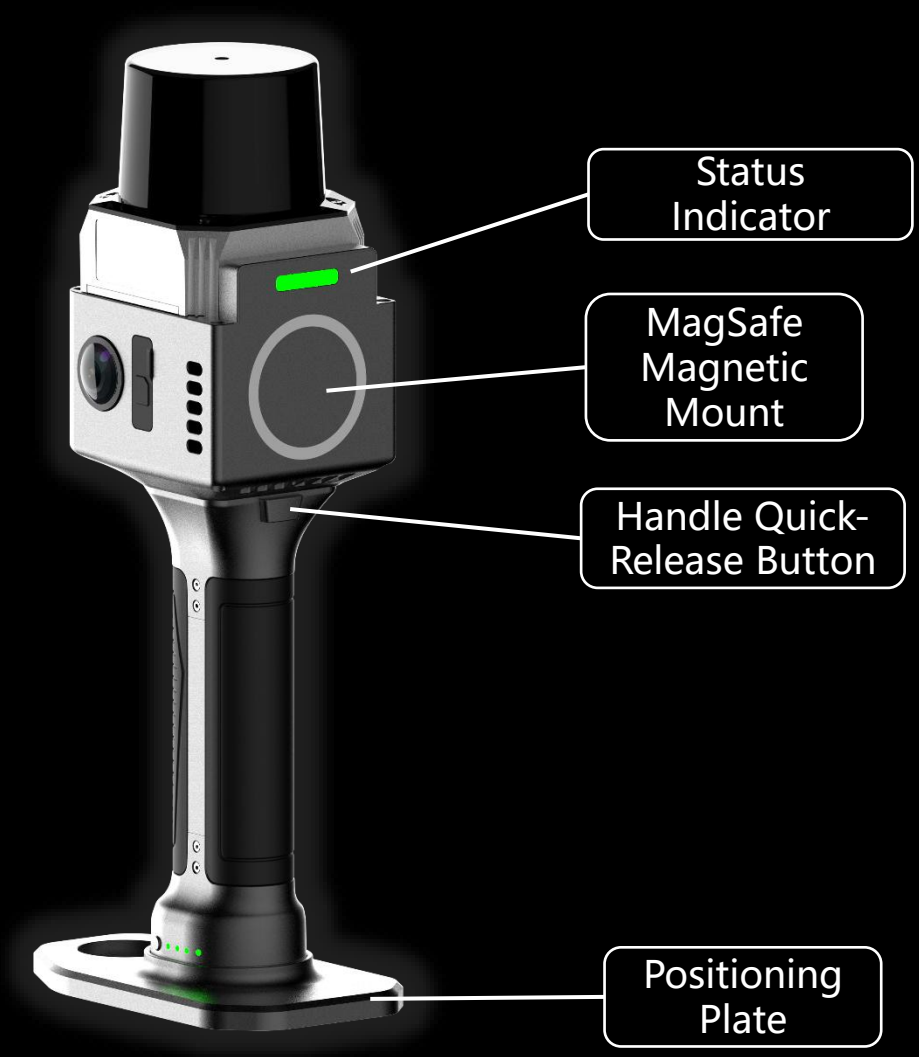
Geo-referencing	Control points established for localization
Power Supply	Handgrip battery, 3,150 mAh, 45.36 Wh
Power Consumption	23 W
Endurance	150 min
Data Management	TF card and Type-C
Memory Capacity	128 GB, expandable
Ingress Protection	IP5X
Net Weight	1.12 kg
Dimensions	111 × 222 × 33 mm
Working Temperature	−20 °C to 45 °C
Storage Temperature	−20 °C to 60 °C



SOUTH

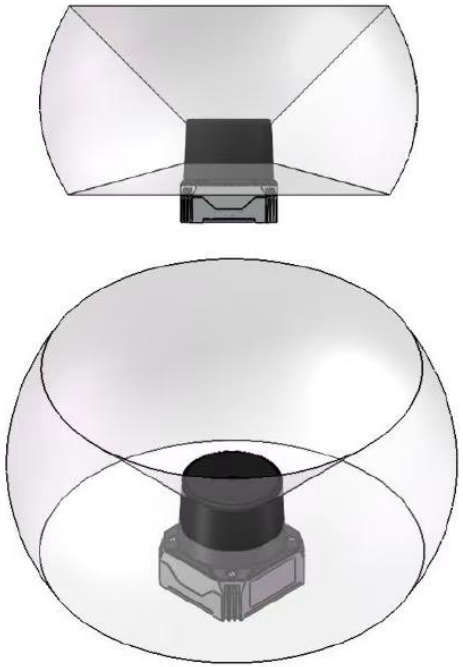
Device Interfaces and Components

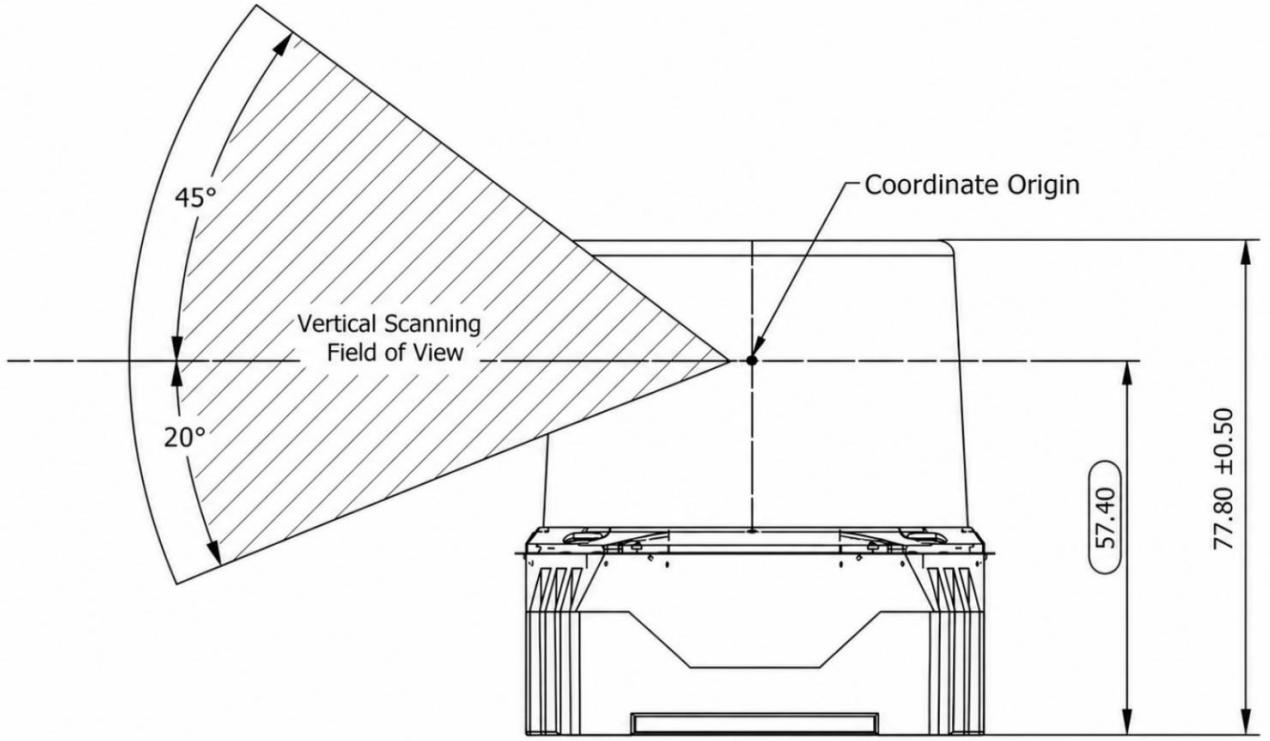




SOUTH

Ultra-Wide Field of View





FOV: 360° (H) × 130° (V)

Range: 40 m @ 10% reflectivity; 100 m @ 90% reflectivity

SOUTH

1. Standardized workflow with guided operation
2. Real-time display of panoramic imagery and true-color point clouds
3. Dynamic trajectory tracking with real-time survey-quality visualization





SOUTH

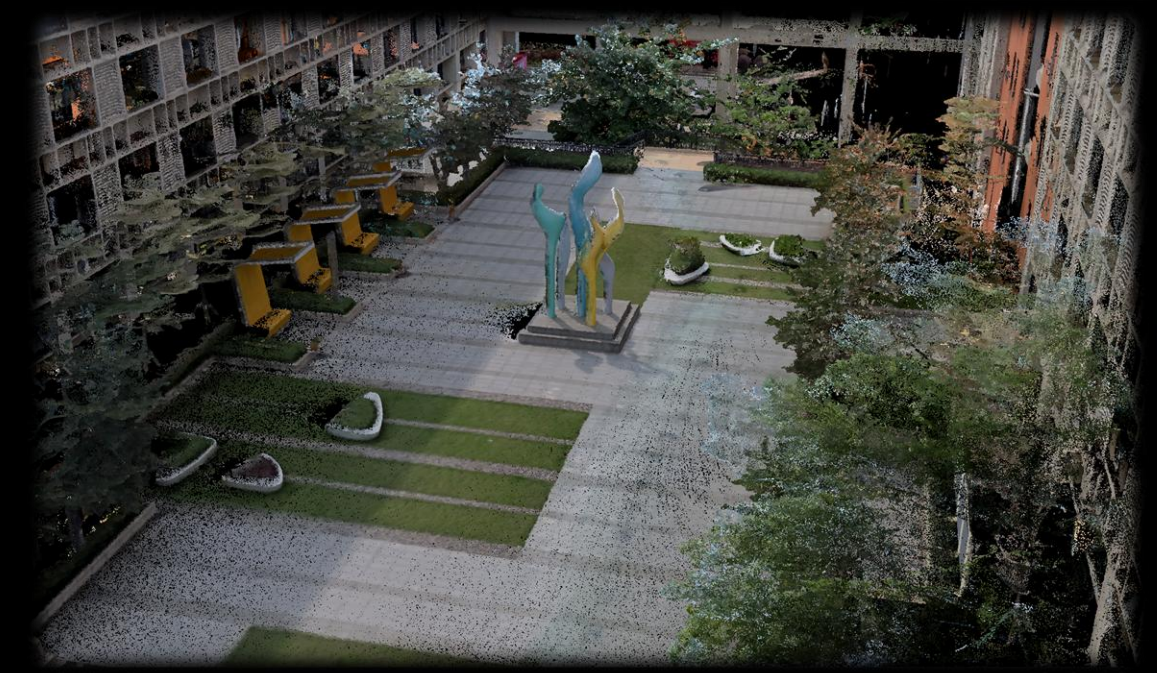
Photorealistic Colorization













SOUTH

Relative Accuracy Check

dx: 11.956 m
dy: 0.139 m
Length: 11.956 m



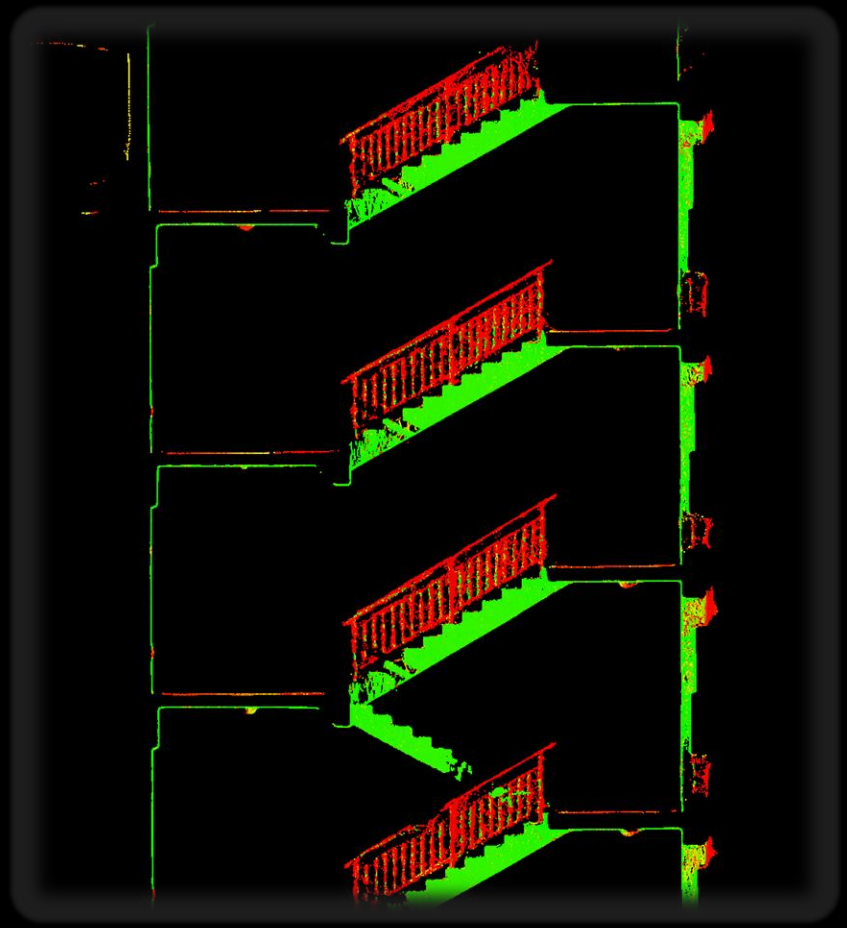




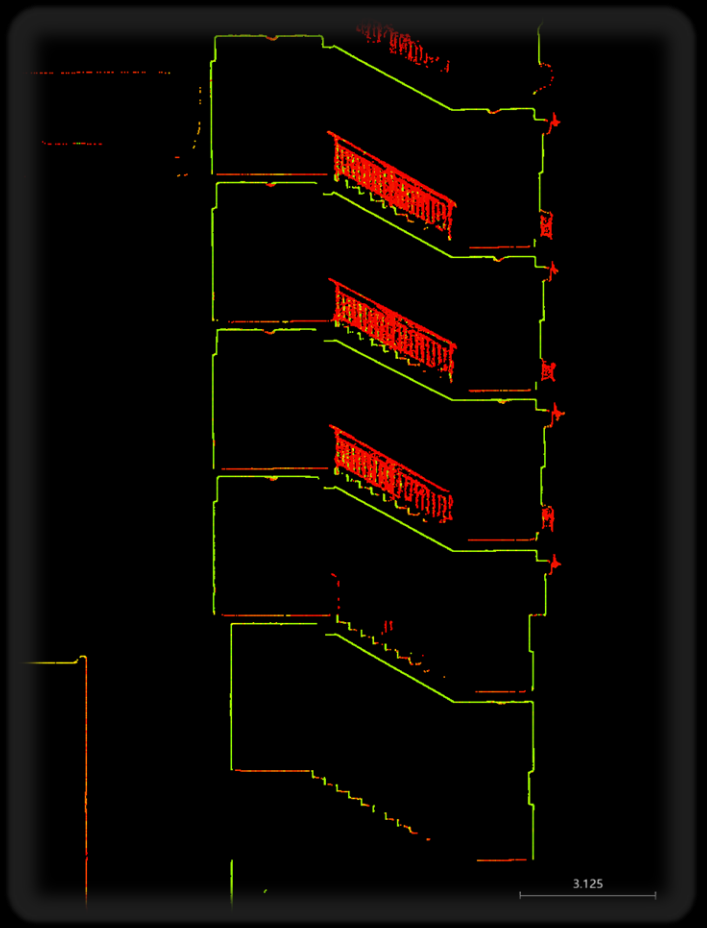
Compared with a Leica Distance Meter;
Millimeter-Level Deviation

SOUTH

Distortion-Free Indoor Building Scanning







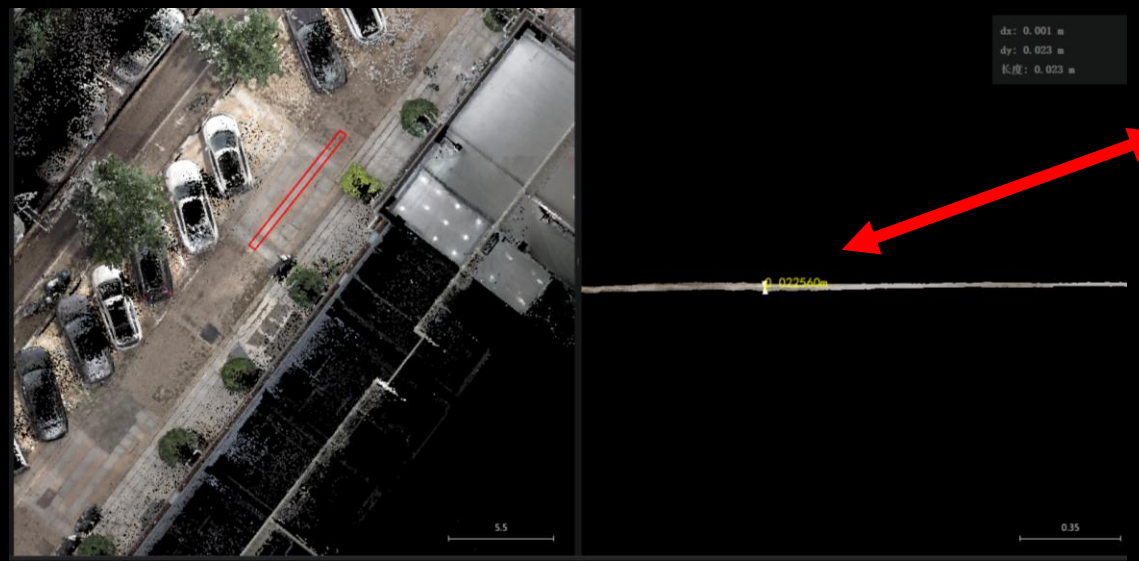
SOUTH

Point Cloud Thickness Comparison





KOOL Thickness



Competing Products

SOUTH

Point Cloud Colorization Comparison

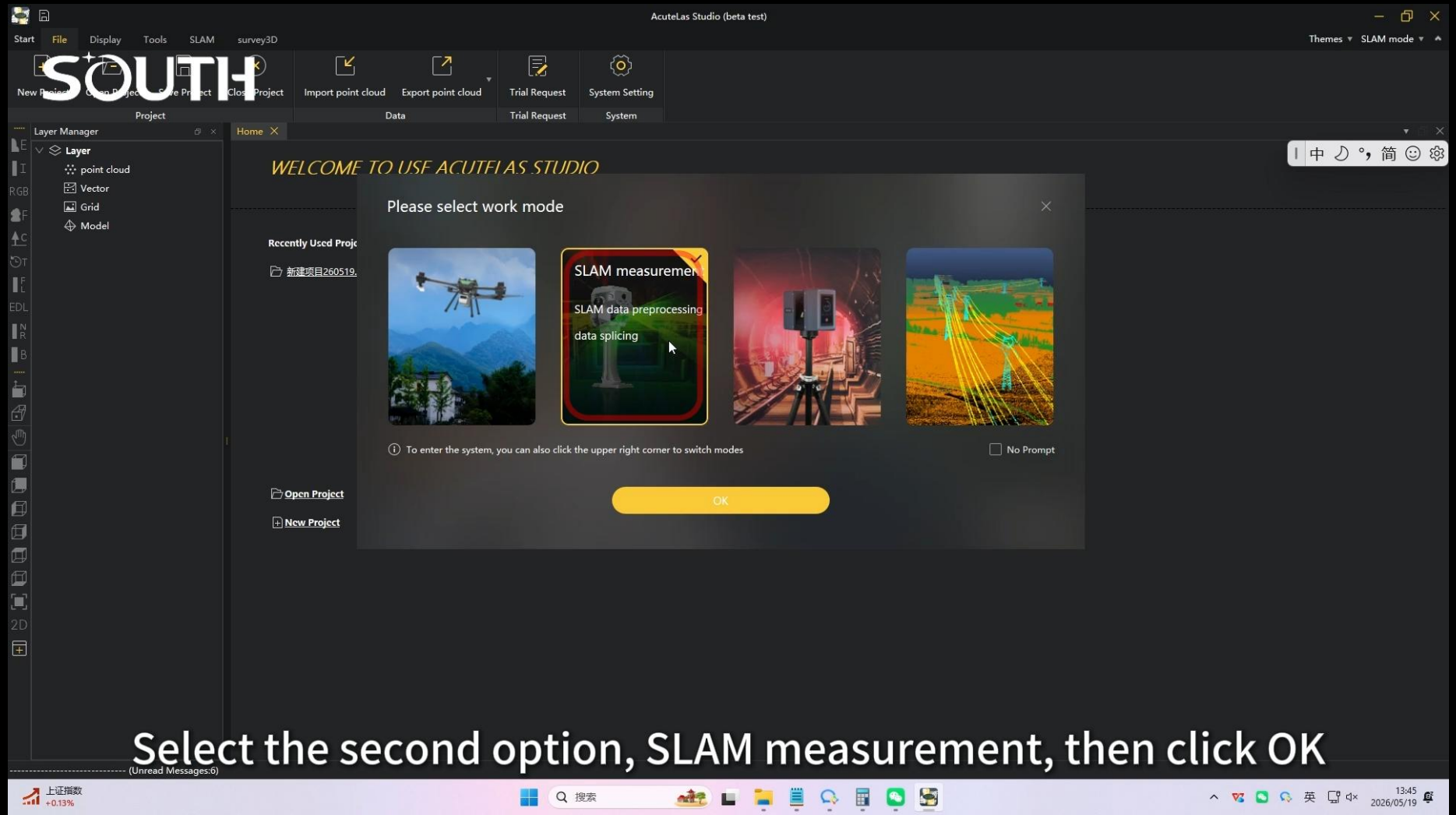


KOOL

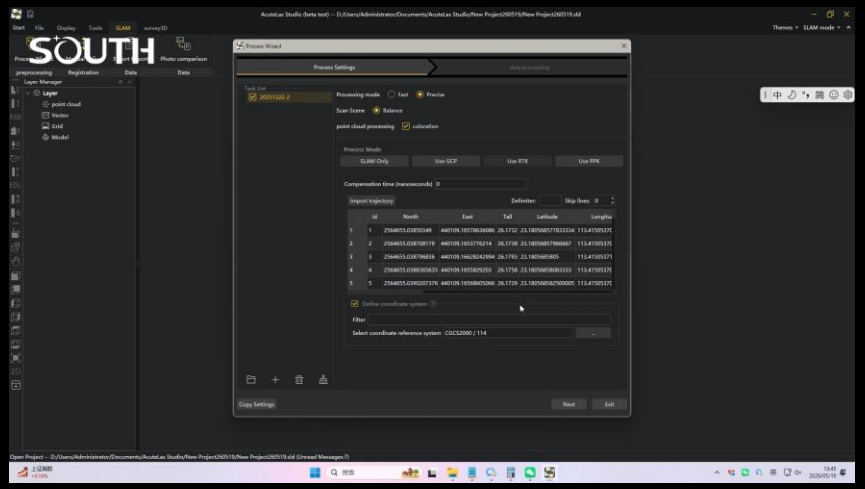
Competing Products

AcuteLas One-Click Automated Processing (SLAM)

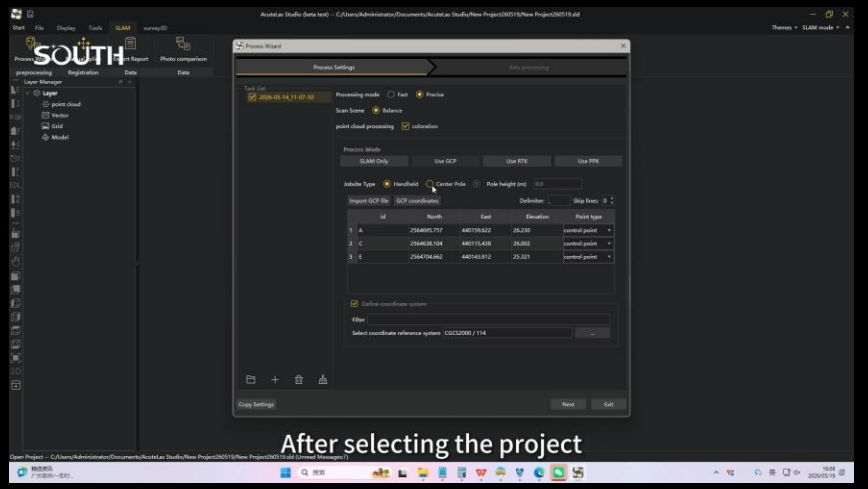
One-click processing from trajectory computation to point cloud registration, with automated computation, a streamlined interface, and a clear workflow.



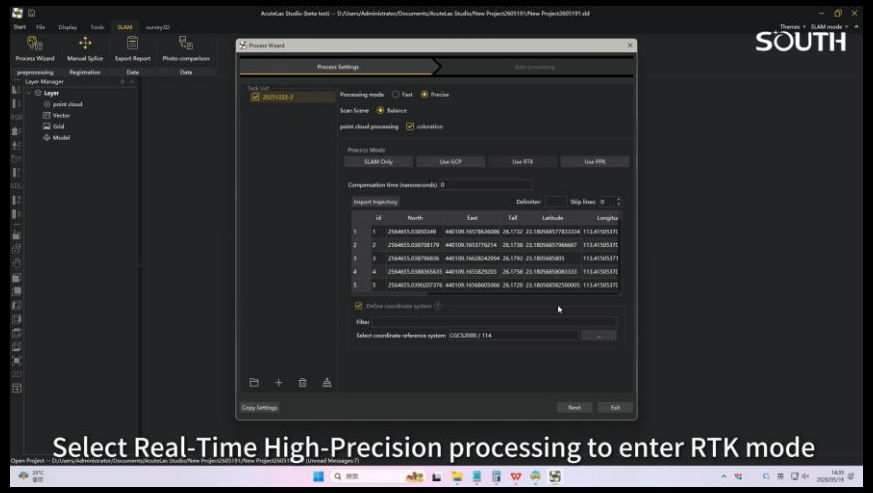
AcuteLas – SLAM: One-Click, Any Mode



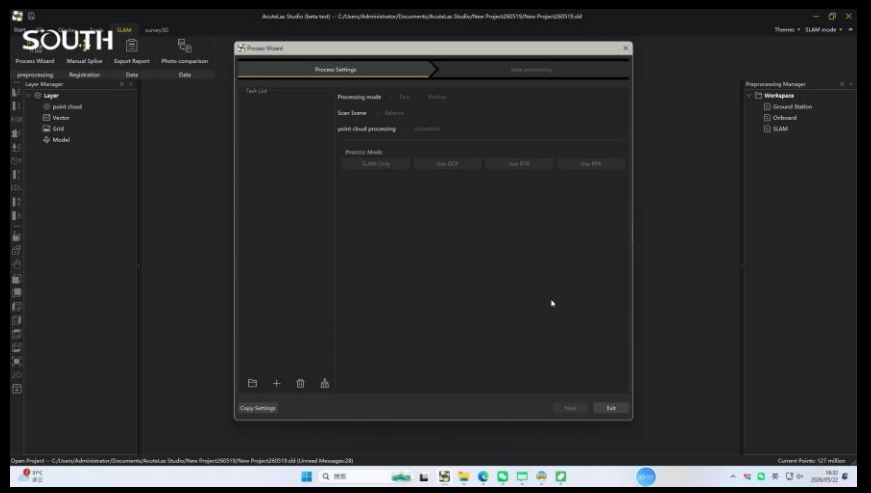
Pure SLAM



PPK

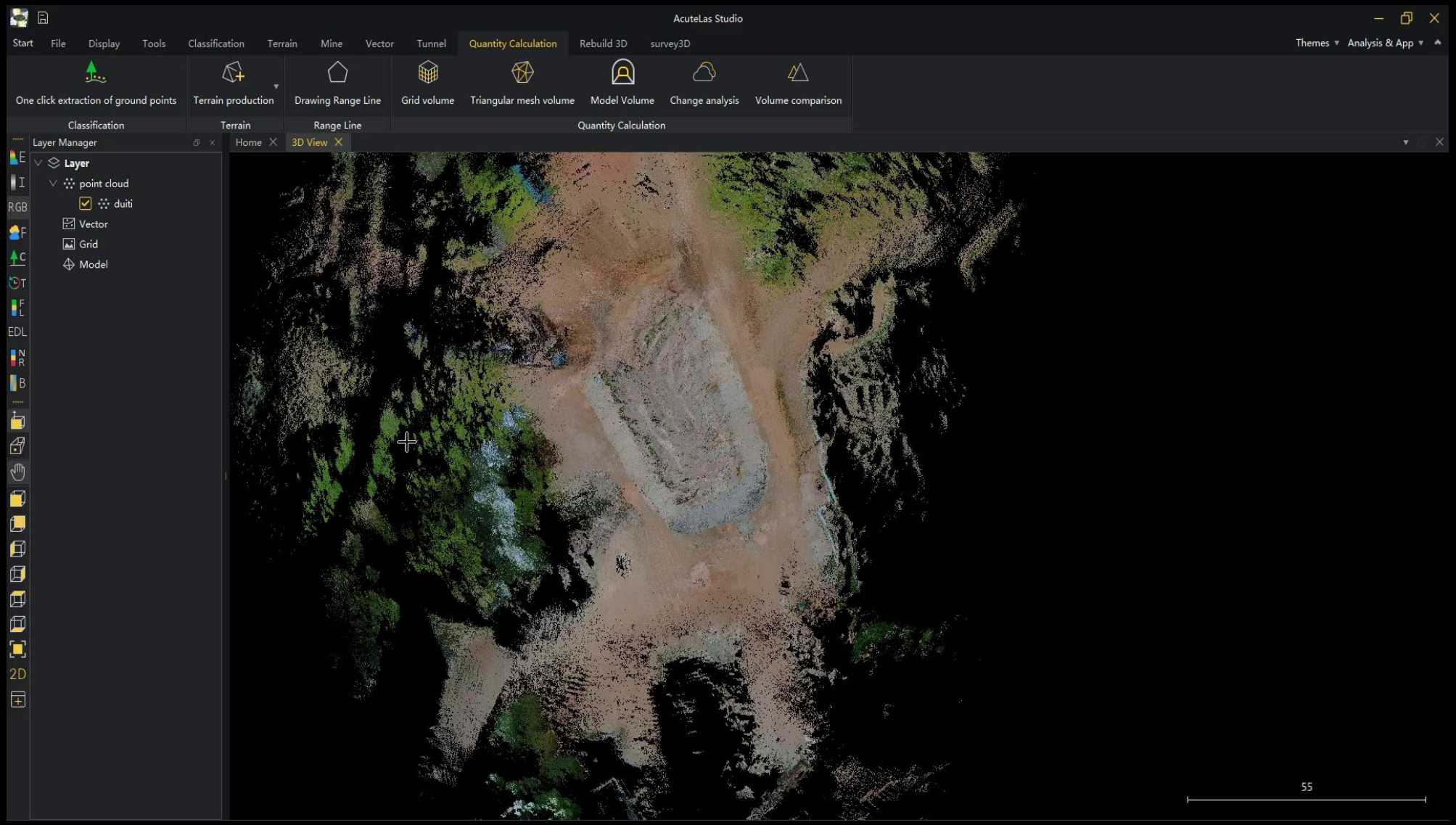


RTK



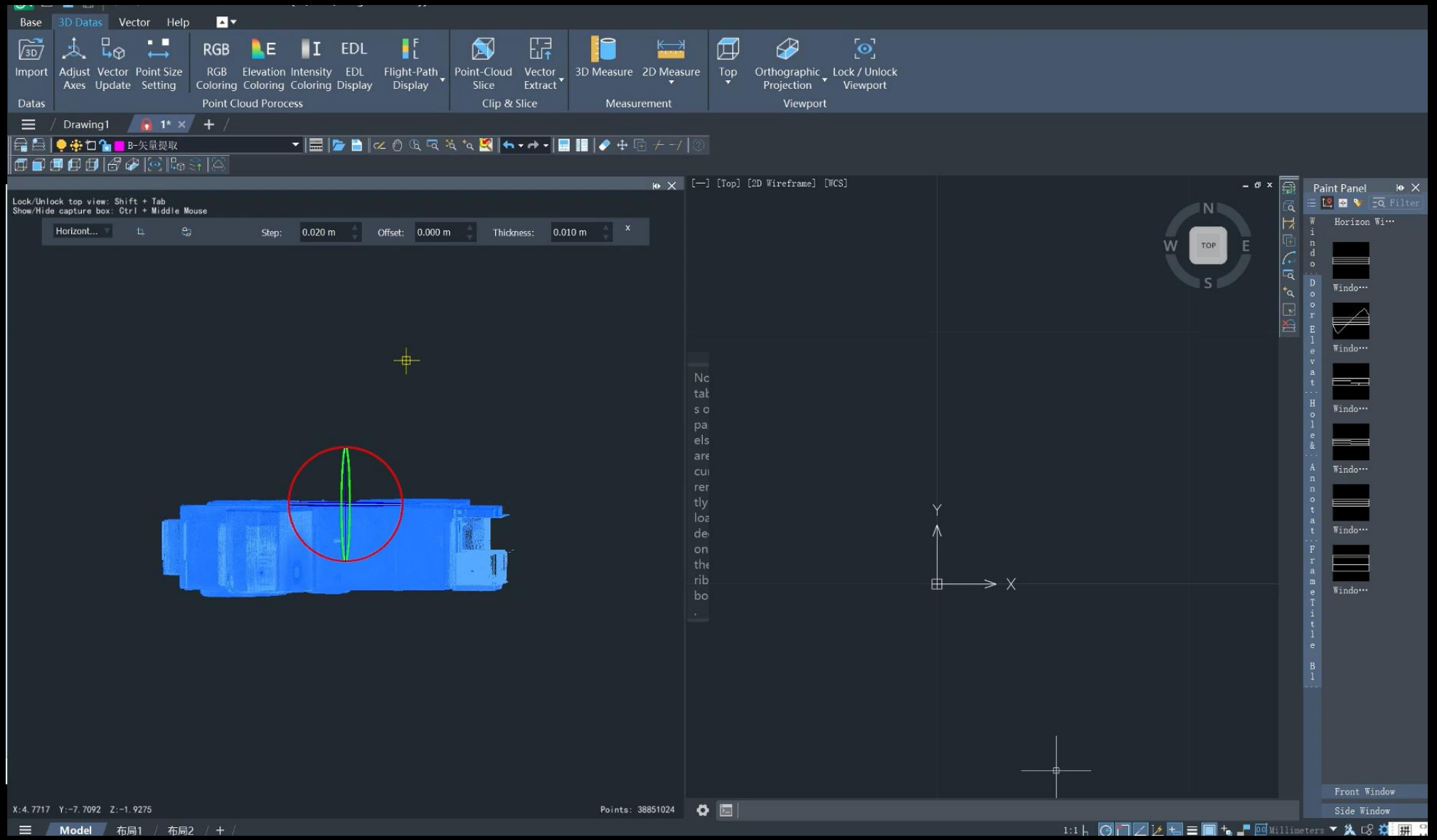
GCP

SOUTH Earthwork Scanning with One-Click Volume Calculation



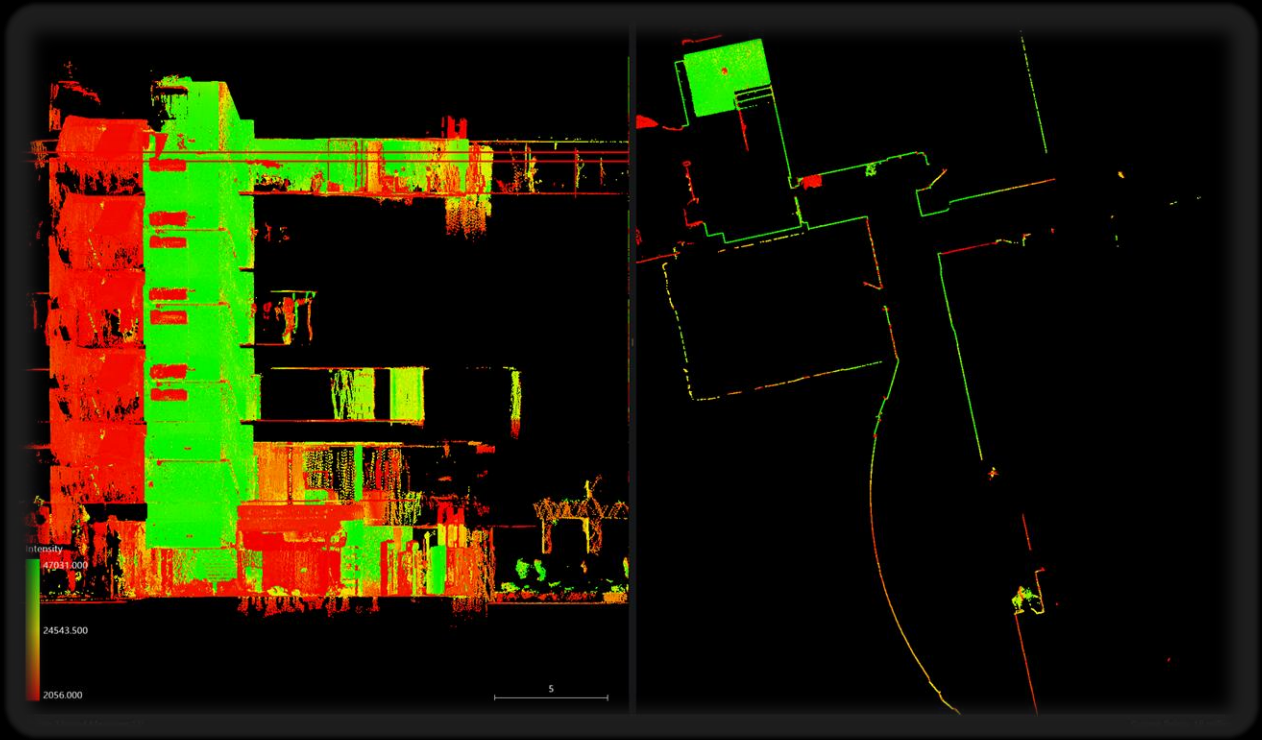
SOUTH

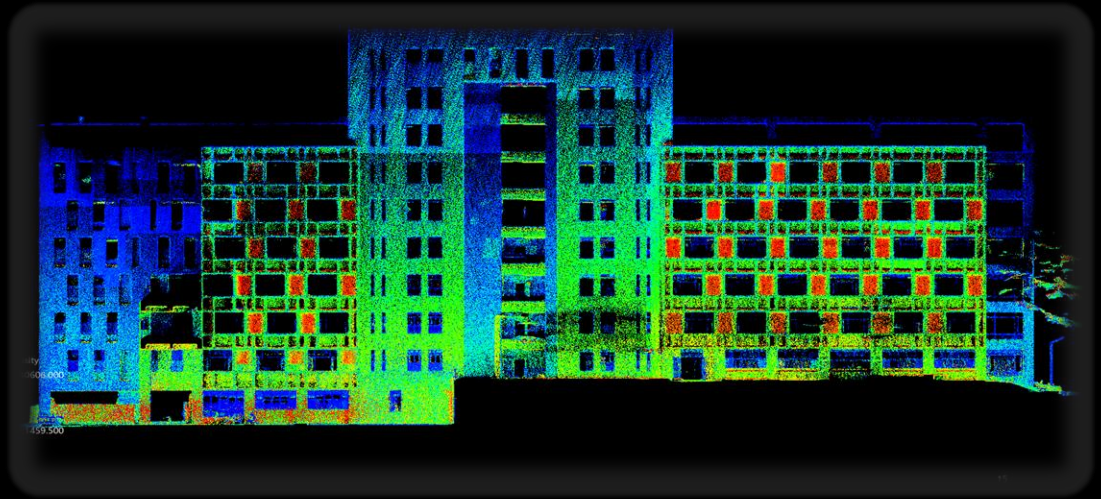
One-Click Plan Vector Extraction

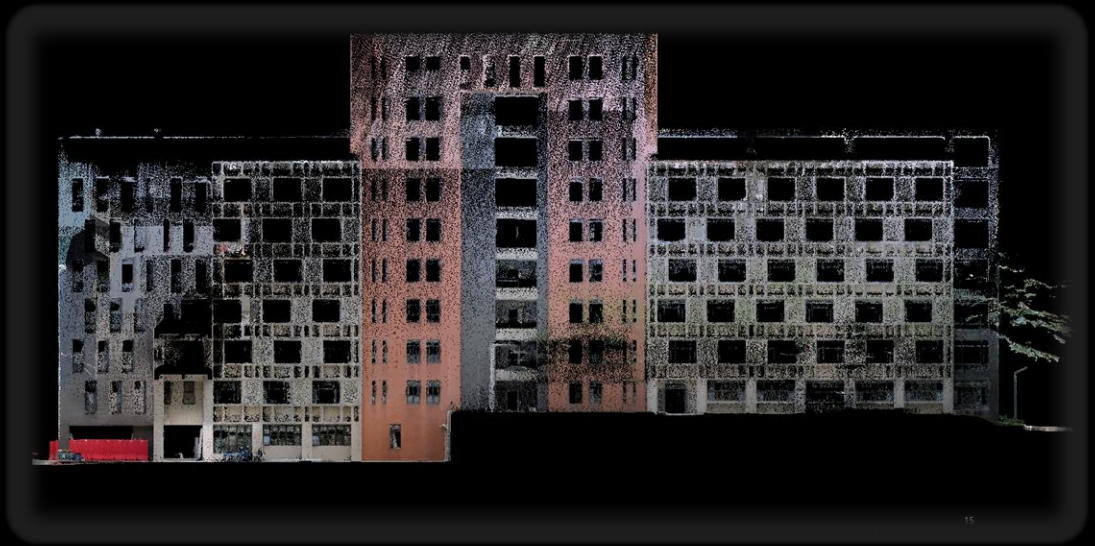


SOUTH

Architectural Drafting: One-Click Extraction of Plans, Elevations, and Sections



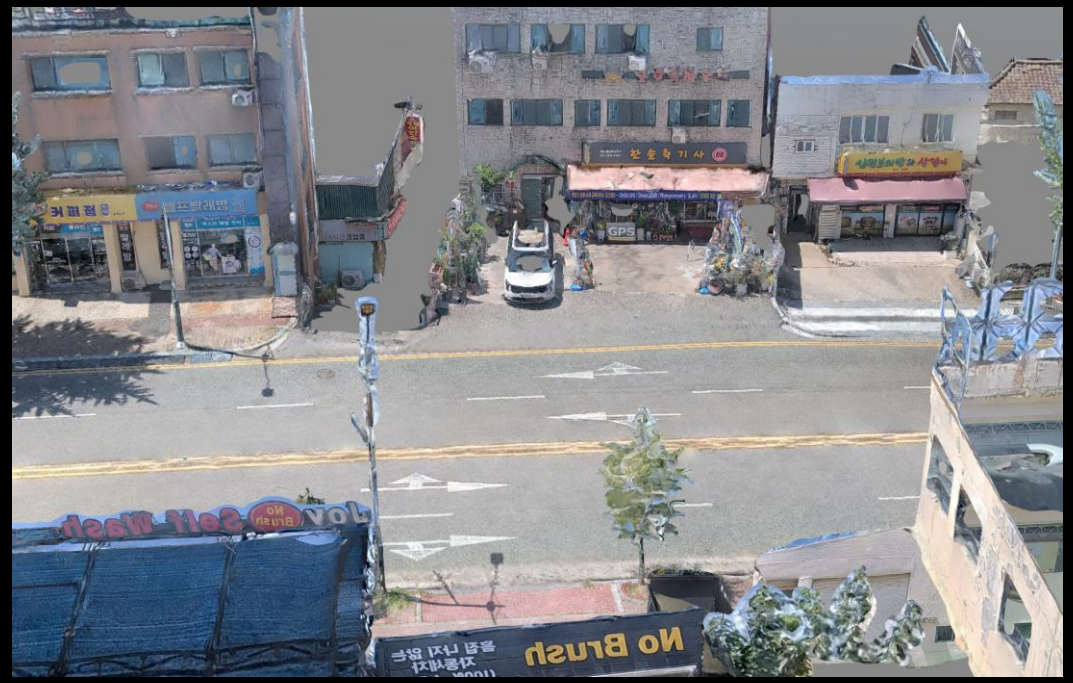




SOUTH

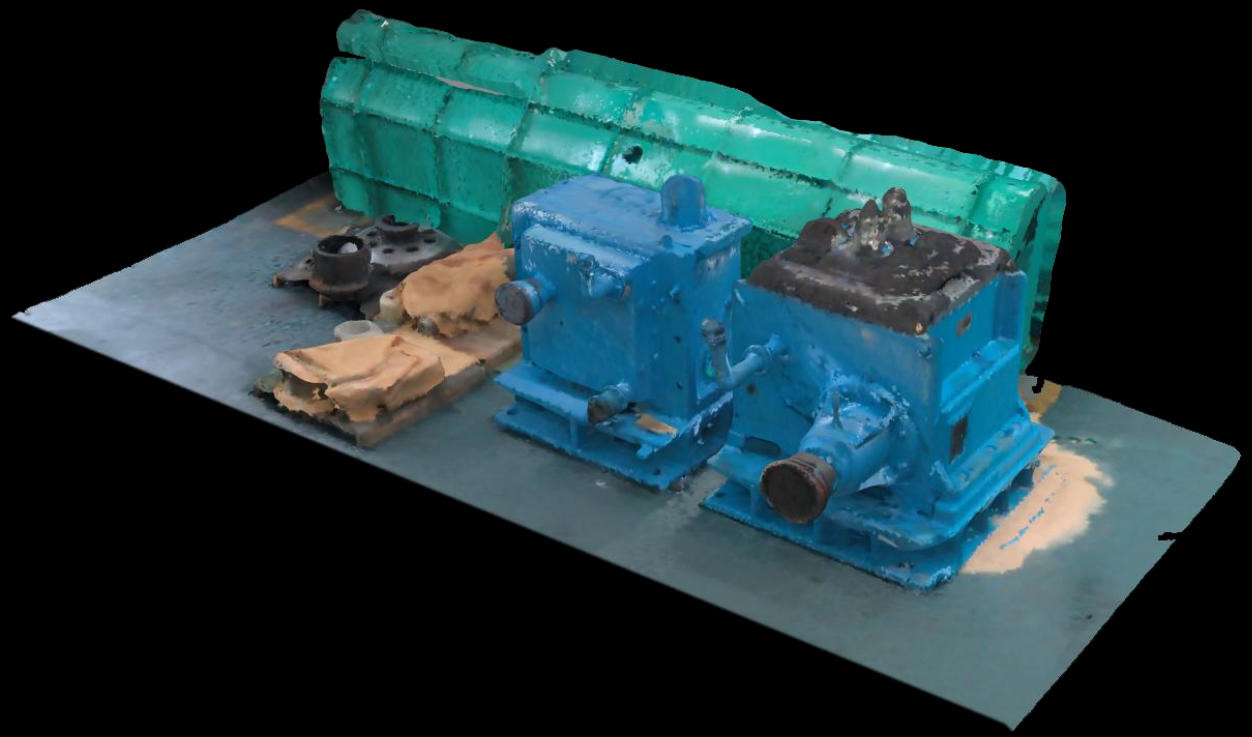
KOOL Mesh Model Result





SOUTH

Industrial Plant Scanning and 3D Modeling







SOUTH



AcuteLas Studio



True-Color Point Cloud and 3DGS Model

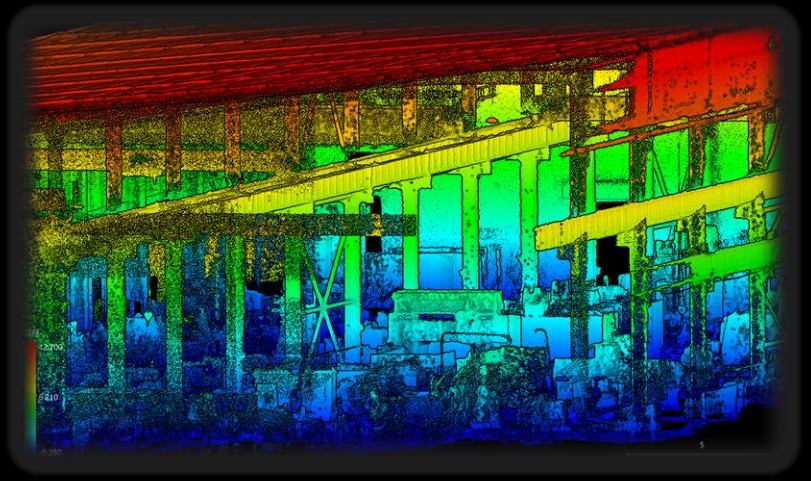
2. Application Cases

SOUTH

Industrial Plant Scanning and 3D Modeling

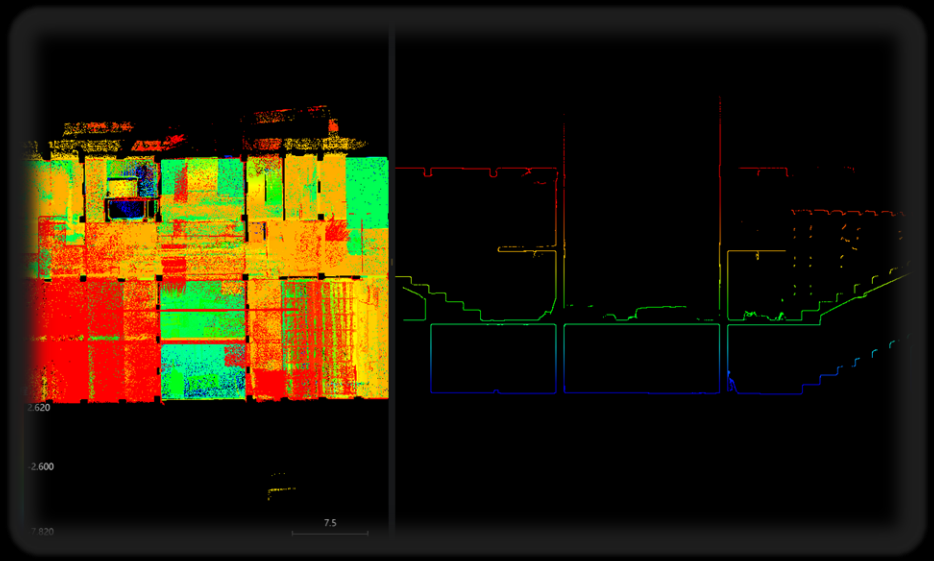


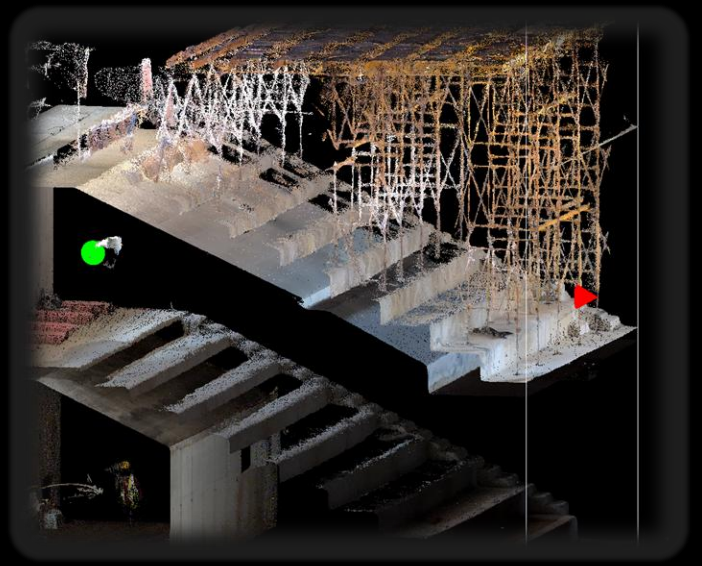


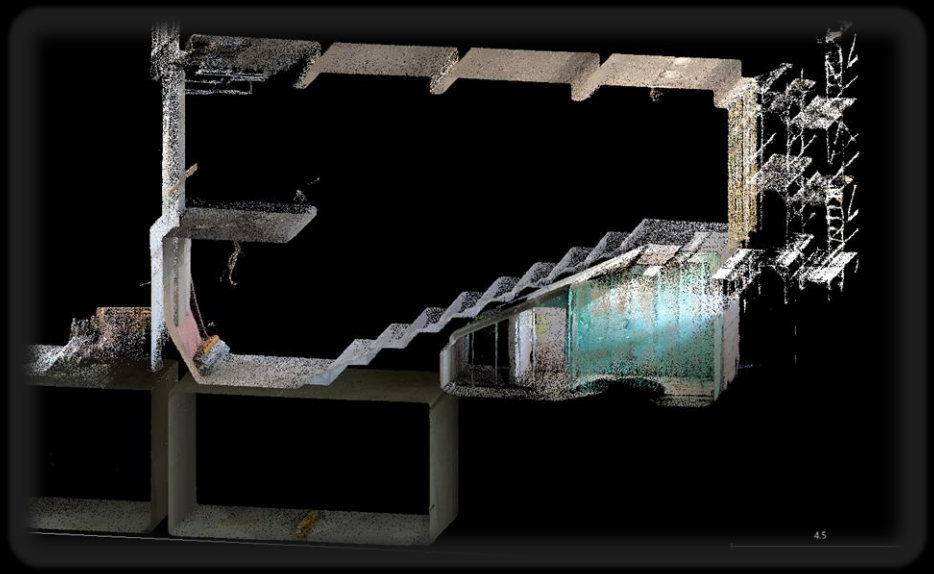


SOUTH

Construction Sites and Underground Spaces



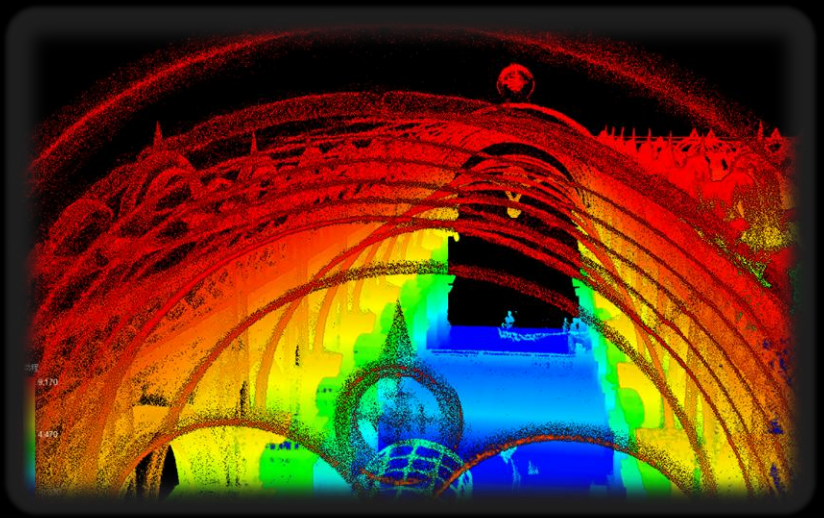


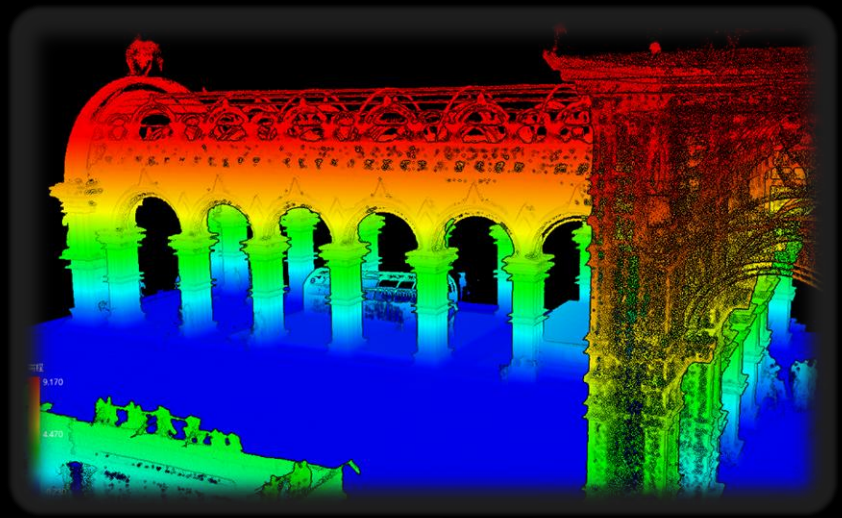




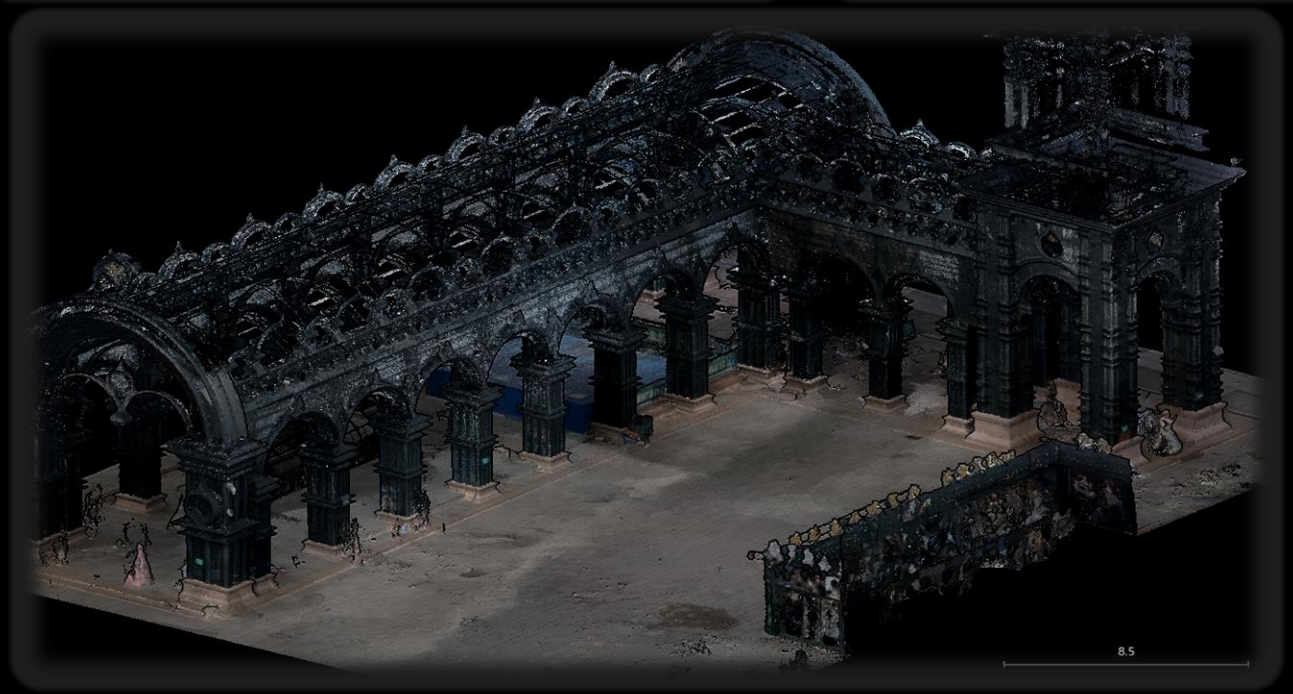
SOUTH

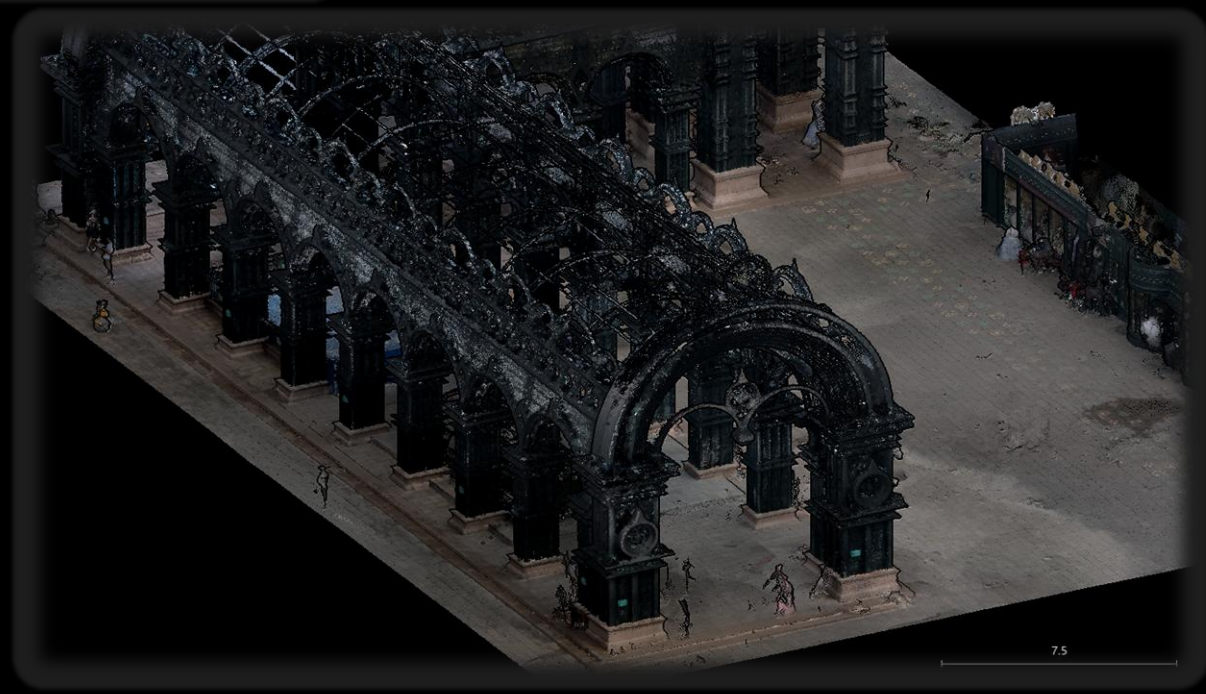
Harbin Steel Survey







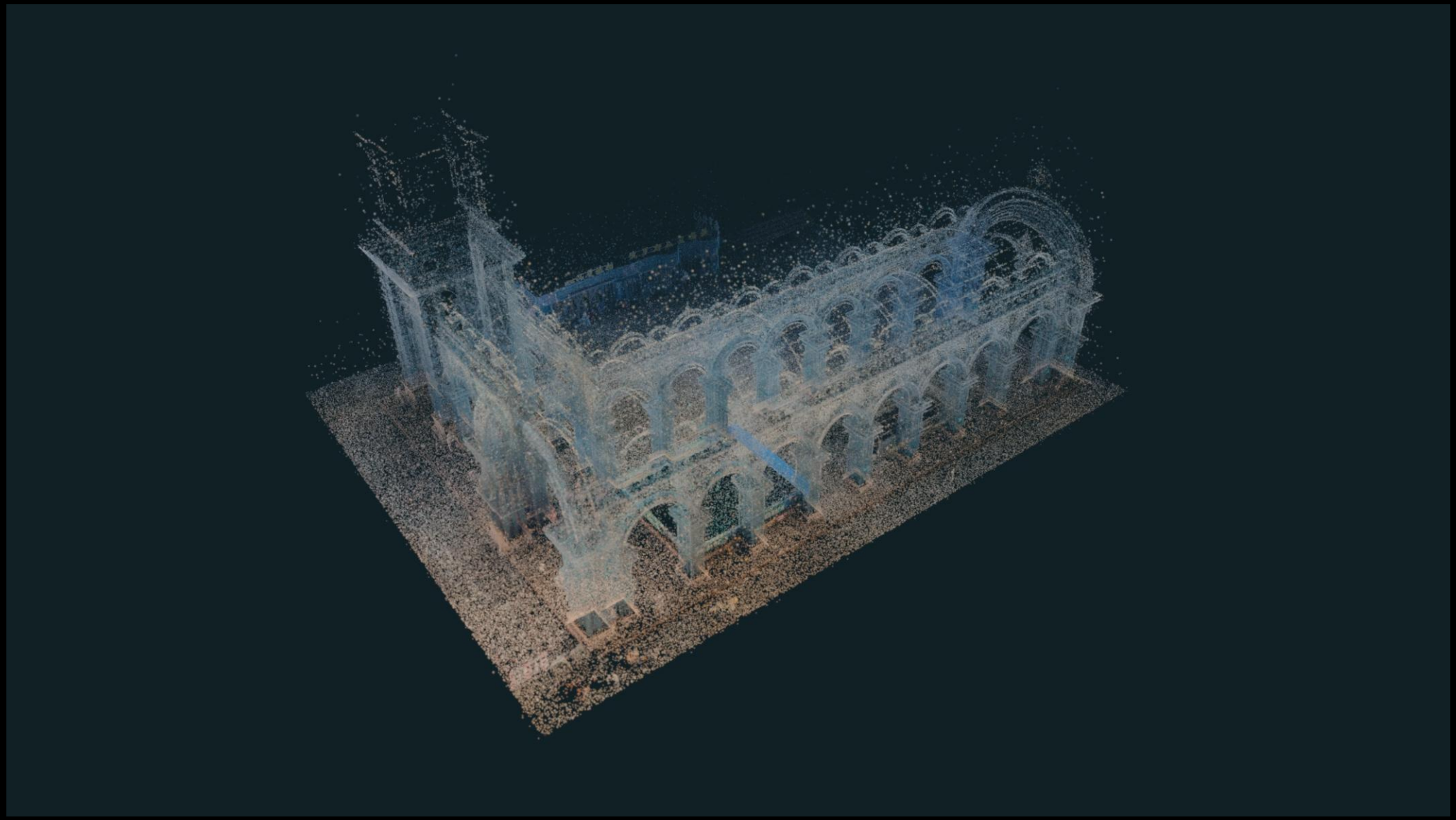




SOUTH



SOUTH



SOUTH

High-Fidelity Point Cloud Colorization



SOUTH

Art District



Point Cloud

Gaussian Splatting

3. Scanning Precautions

SOUTH

Pre-Survey Preparation

1. Equipment Check

Firmware: Use the latest device firmware.

License: Before first use, install the complete Microsoft Visual C++ Redistributable (VC_redist.x64.exe); missing components may prevent license verification.

2. Site Assessment

Features: Ensure sufficient geometry, such as walls, columns, and structural edges. Open spaces, long corridors, and glass curtain walls may cause SLAM drift.

RTK: Verify satellite status first. Float solutions do not improve the integrated solution; only a fixed solution is valid.

Lighting: Ensure adequate illumination; underexposure degrades post-processing colorization.

SOUTH

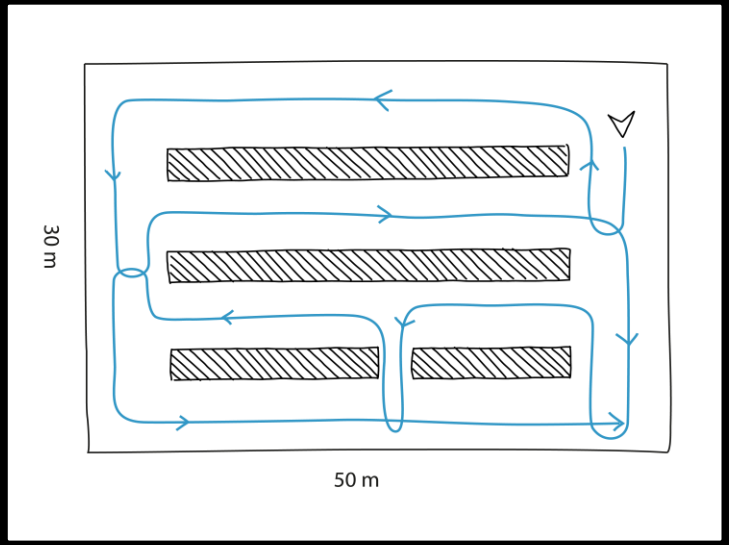
Data Acquisition Procedure

1. Walking Route and Speed

Uniform Speed: Walk steadily and slow down at turns; abrupt turns may cause trajectory divergence.

Closed Loops: Return near the starting point where possible to correct accumulated drift.

Avoid Repeated Traversal: Repeated coverage increases data redundancy and processing load.



2. Camera Orientation

Face the Target: Keep the camera facing the target or wall. Excessive tilt reduces point cloud and colorization quality.

Full Coverage: Keep surrounding structural features within the field of view to support SLAM matching.

SOUTH

Data Acquisition Procedure

3. Control Point Observation (Critical)

Remain Stationary: Hold the scanner still for several seconds at each point. Moving observations are flagged as “not static” and cannot be processed.

3.1 Control Point Distribution

Use at least three evenly distributed control points. Uneven distribution may cause vertical drift in distant data.

Cover the full survey area; do not cluster points in a small zone.

Verify all coordinates. Swapped or incorrect values will cause processing to fail.

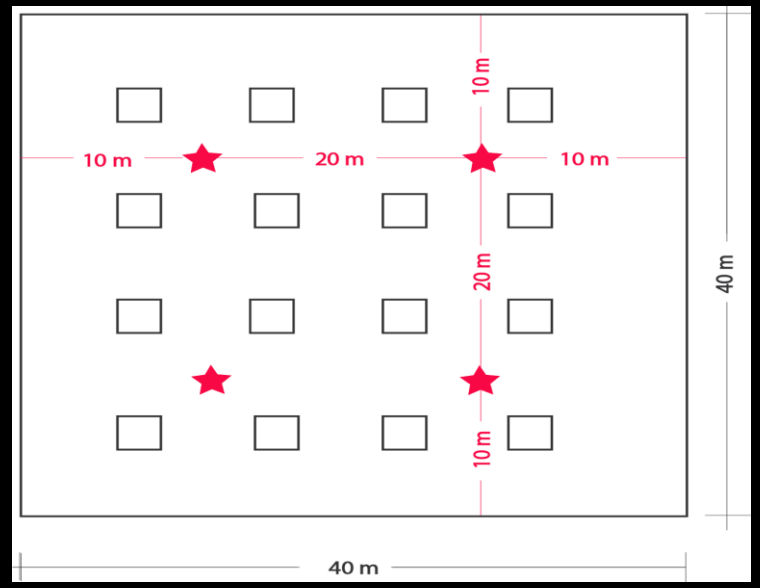


Figure 1:

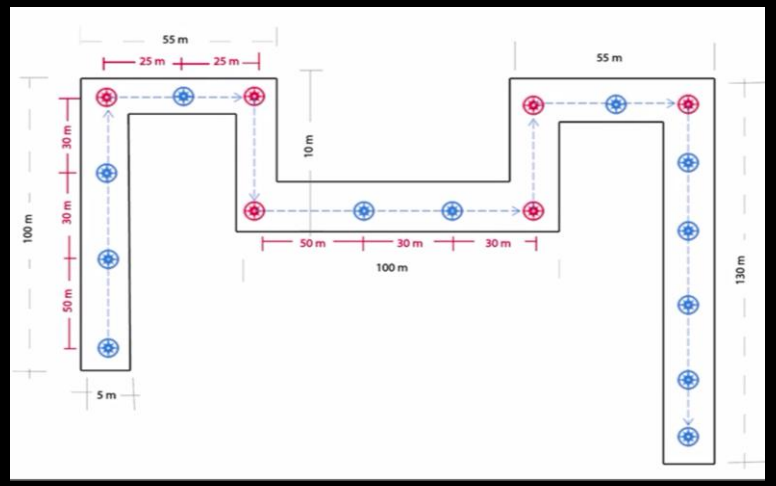


Figure 2:

SOUTH

Data Acquisition Procedure

4. RTK Data Acquisition Precautions

Real-Time Trajectory Drift Does Not Mean the Data Is Unusable: It is commonly caused by insufficient site features (a degenerate environment) and does not necessarily indicate a device fault. Pure SLAM post-processing may still produce a correct result.

RTK Is Used for Logging Only: Real-time RTK does not participate in real-time computation; it is logged and incorporated during post-processing fusion.

RTKPoint Data Quality: The RTKPoint file may contain redundant or biased observations, causing processing anomalies. If RTK-mode processing is abnormal, update the acquisition software.

False-Fix Risk: RTKPoint processing may be affected by false fixed solutions. Observe selected key locations as control points to improve reliability.

SOUTH

Thank you