Mobile Mapping Advances for Asset Management

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- Mobile Mapping Market
- Mobile Mapping Components
- Asset Management Examples
- Q&A

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Mobile Mapping Market

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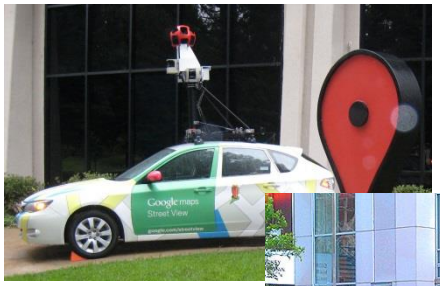
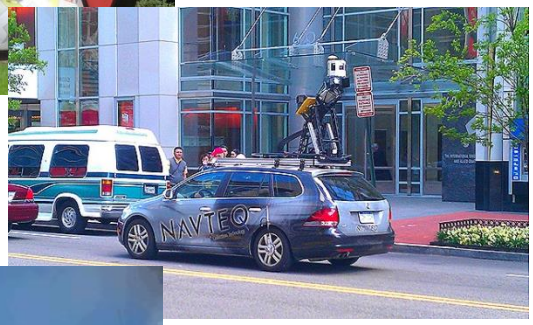
Mobile Mapping Market

- Video Logging
  - Fast Results
  - GIS/Google Earth
  - Less Accurate





- Mobile LiDAR
  - Slower Results
  - CADD/Engineering
  - More Accurate

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Three Main Categories

High accuracy measurements

(.06')

- Engineering topography
- As-builts and construction monitoring
- Detailed profiles of tunnels and bridges
- Measurement of deformations

Medium accuracy measurements

(0.33')

- Designing and planning corridors
- Detailed descriptions of transport infrastructure
- Environmental measurements
- Earthworks measurements
- Mapping urban areas
- Analysis of erosion of coastal areas

Lower accuracy measurements

(> one foot)

- Asset collection
- Preliminary town and rural planning
- Statistics of transport routes
- General descriptions of transport infrastructure

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Mobile Mapping Components

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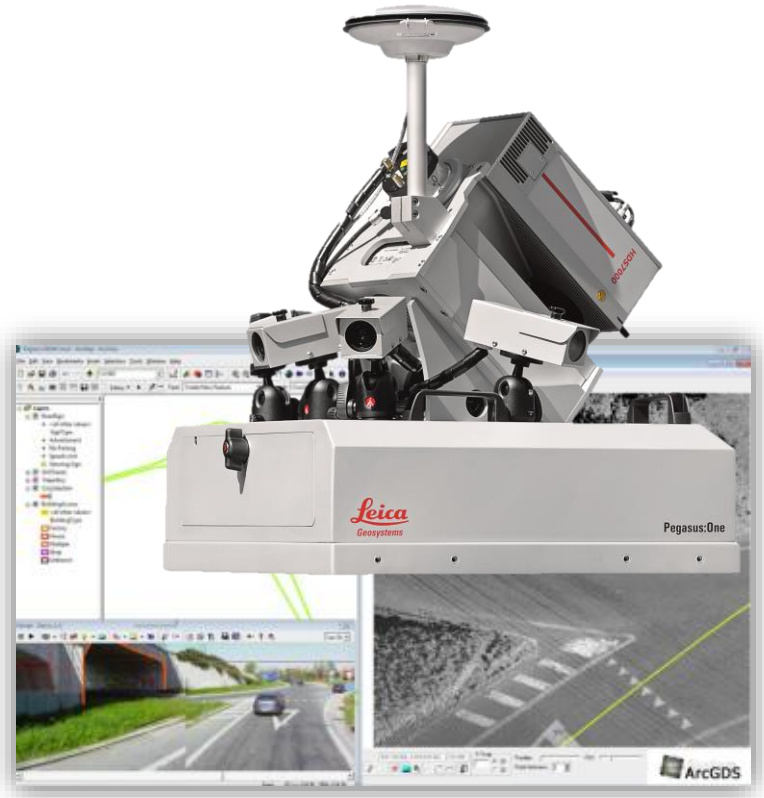
Advances in Mobility

- Portable “survey grade” mobile mapping system
  - No dedicated vehicle
  - Two boxes
  - Fly in + map + fly out



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Mobile Mapping Options

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System Configuration

GNSS/INS & IMU
NovAtel SPAN

Camera System
6 CCD Cameras
1600 x 1200 pixels
360-deg Coverage

Roof Mounting
Standard roofrack
System fits in one case

Laser Scanner
2D Profiler or 3D HDS

Industrial Computer
Dedicated hardware
500 GB SSD

Power Supply
One cable connection
10 hours operation time

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Camera Systems

- 6 cameras optically calibrated, suitable for photogrammetric tasks
- Acquisition interval based on the distance travelled
- Camera orientation and trigger interval adjustable
- Cameras system covers 360°
- 3D point determination possible from two consecutive images

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LiDAR Scanners

- 2D phase laser scanner
- Rotation speed 200 Hz
- Profiles at 5 cm @ 36 km/h
- Field of view 360°
- Acquisition speed 1,000,000 pt/s
- Range 119 m
- Range accuracy : 3 mm @ 50m

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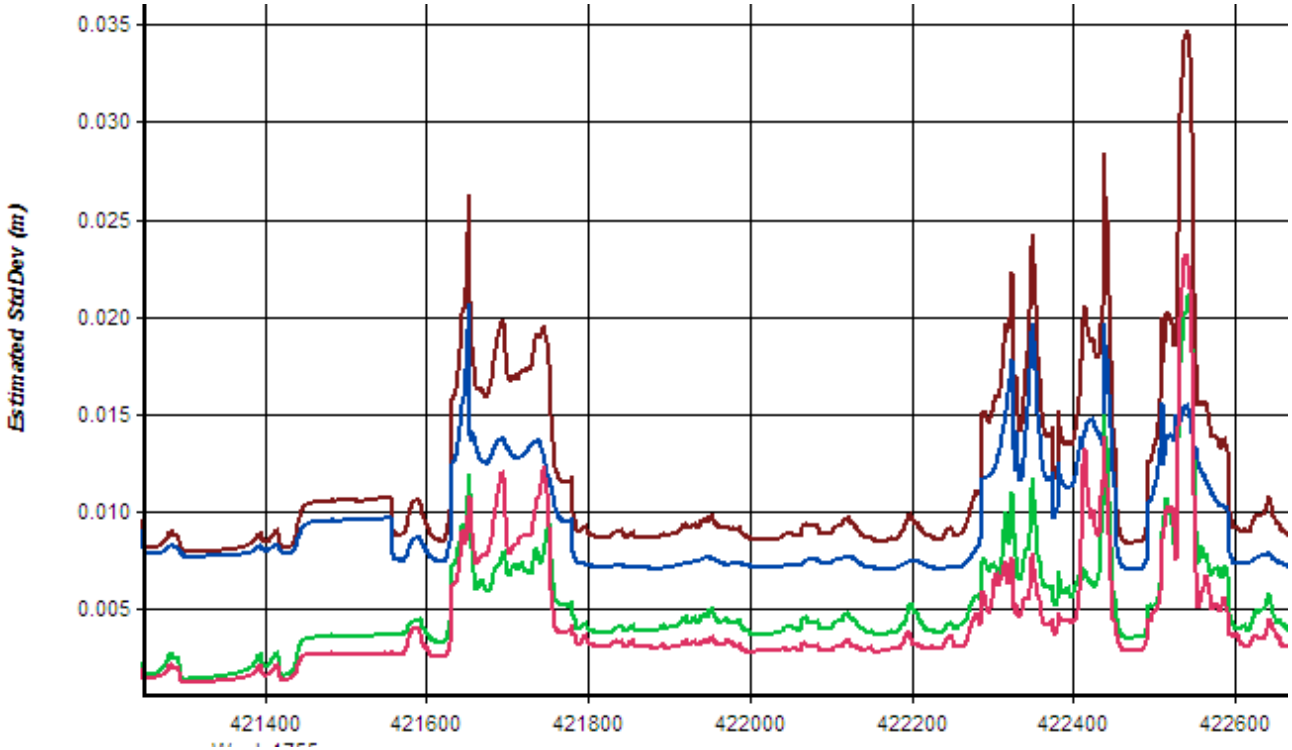
LiDAR Accuracy

- ✓ Survey Grade Accurate with Primary and Secondary Control
- ✓ +/- 2 CM (.06’) Absolute Accuracy
- ✓ +/- 5 MM (.01’) Relative Accuracy



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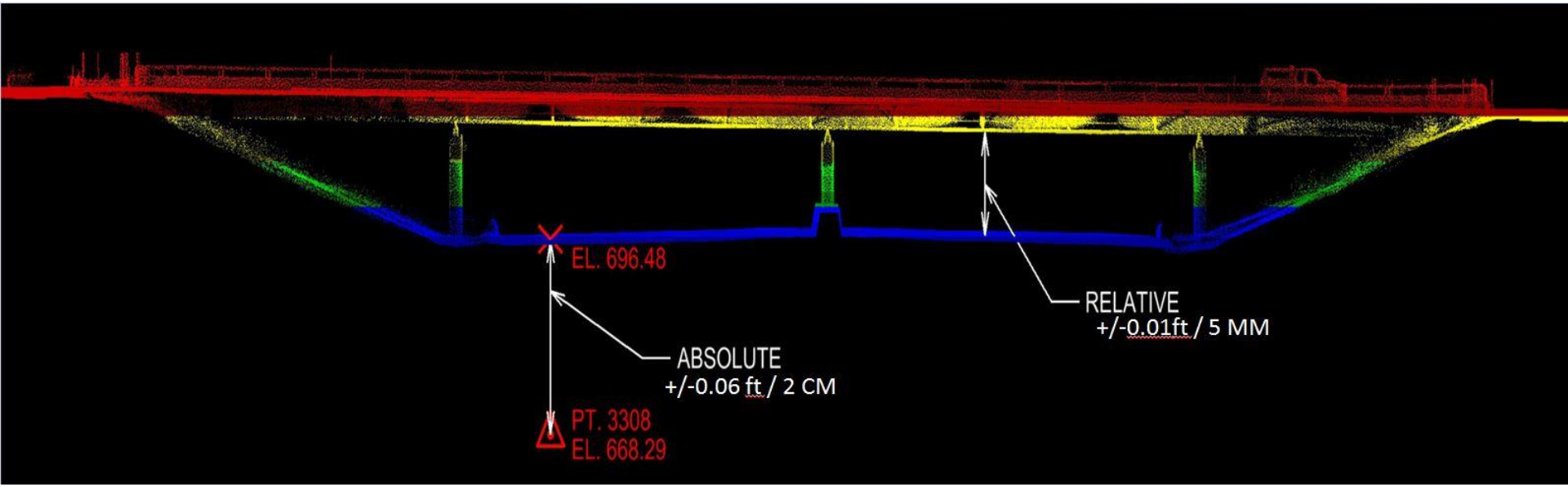
Absolute vs. Relative Accuracy



- Absolute – Location
  - Point cloud in relation to established coordinate system
- Relative – Distance
  - Point to point distance within cloud

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Asset Management Examples

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Above Ground Utilities

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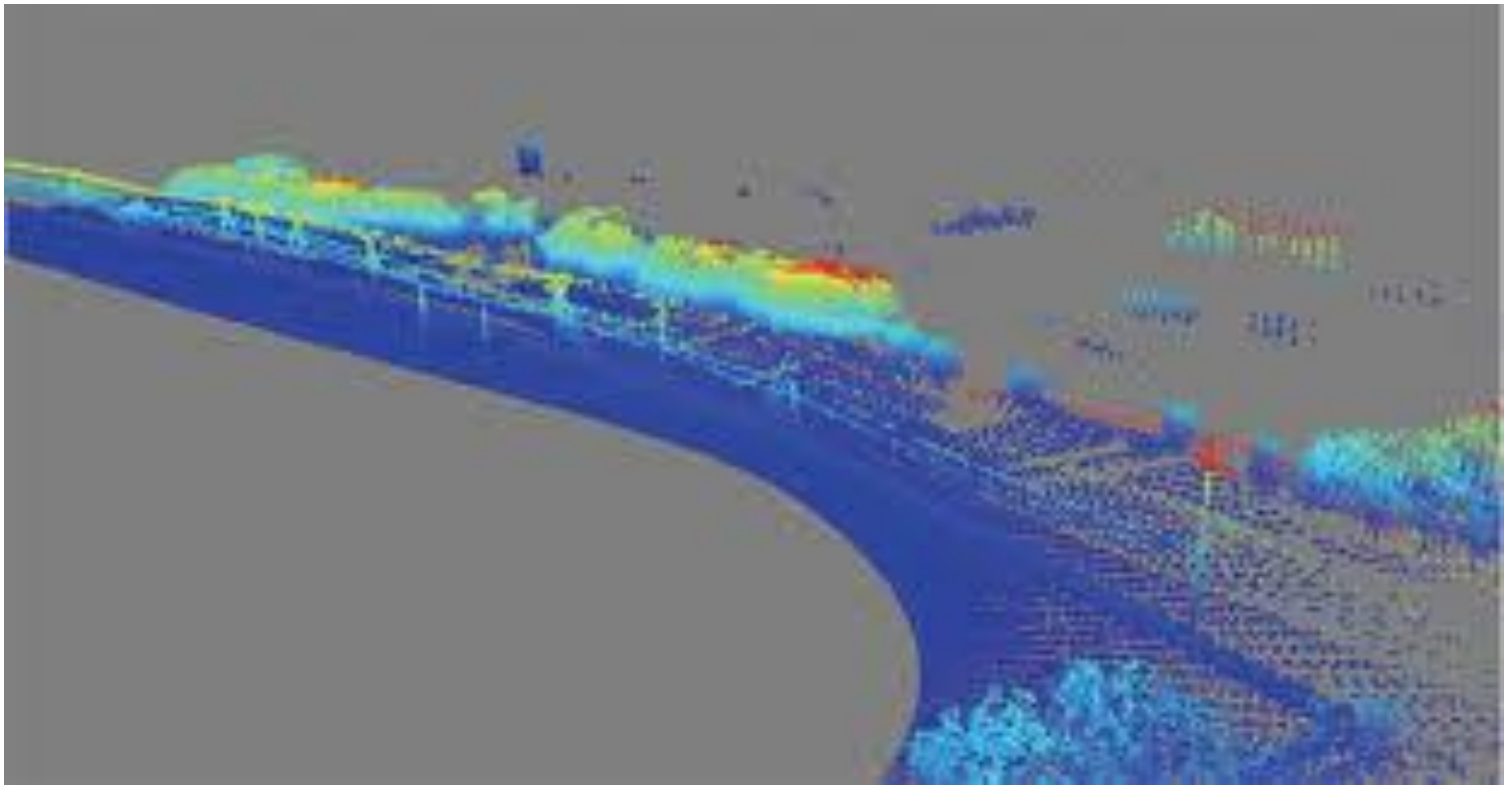
Above Ground Utilities



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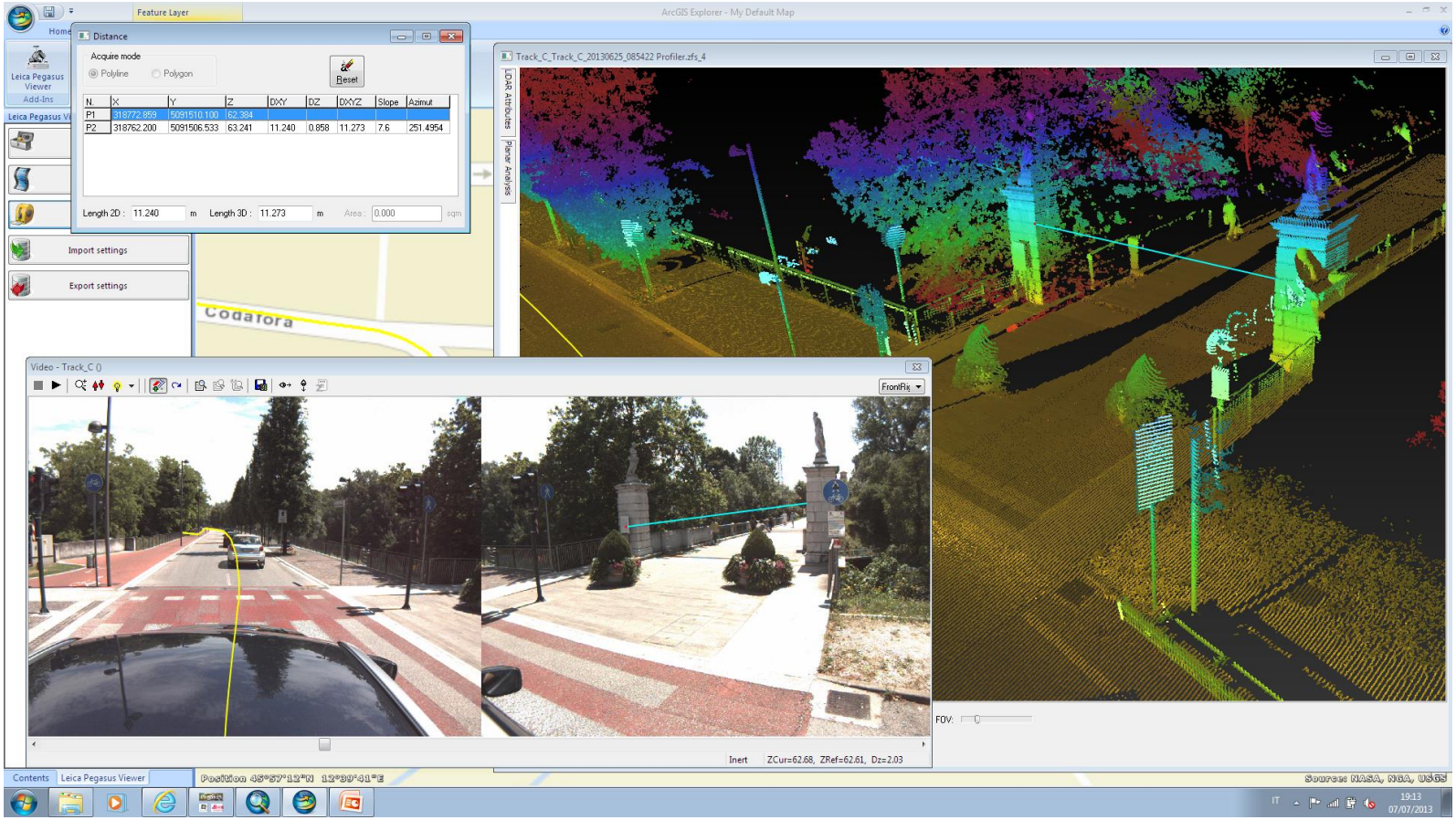
Light Poles and Signs



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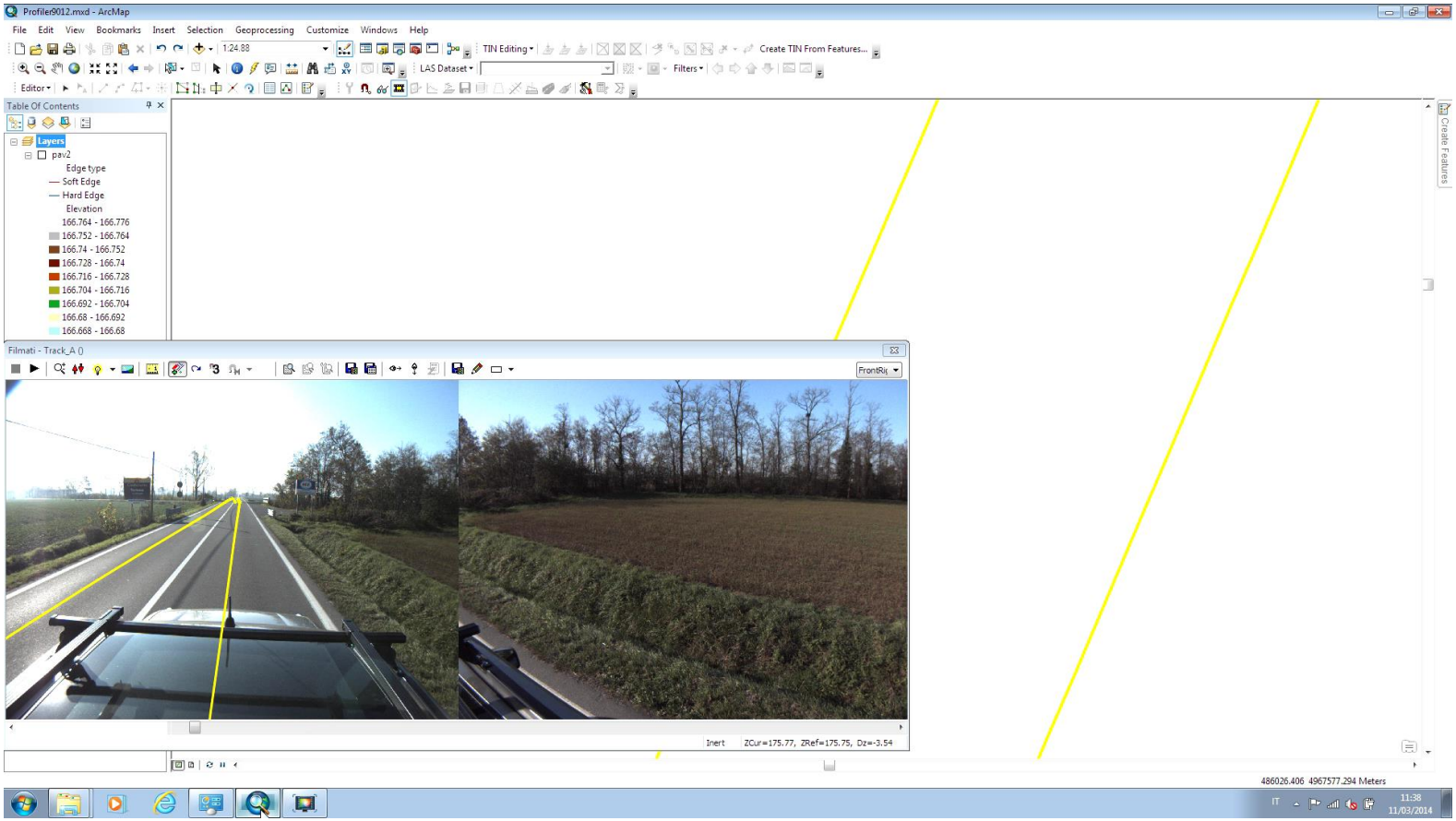

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Rail Corridors

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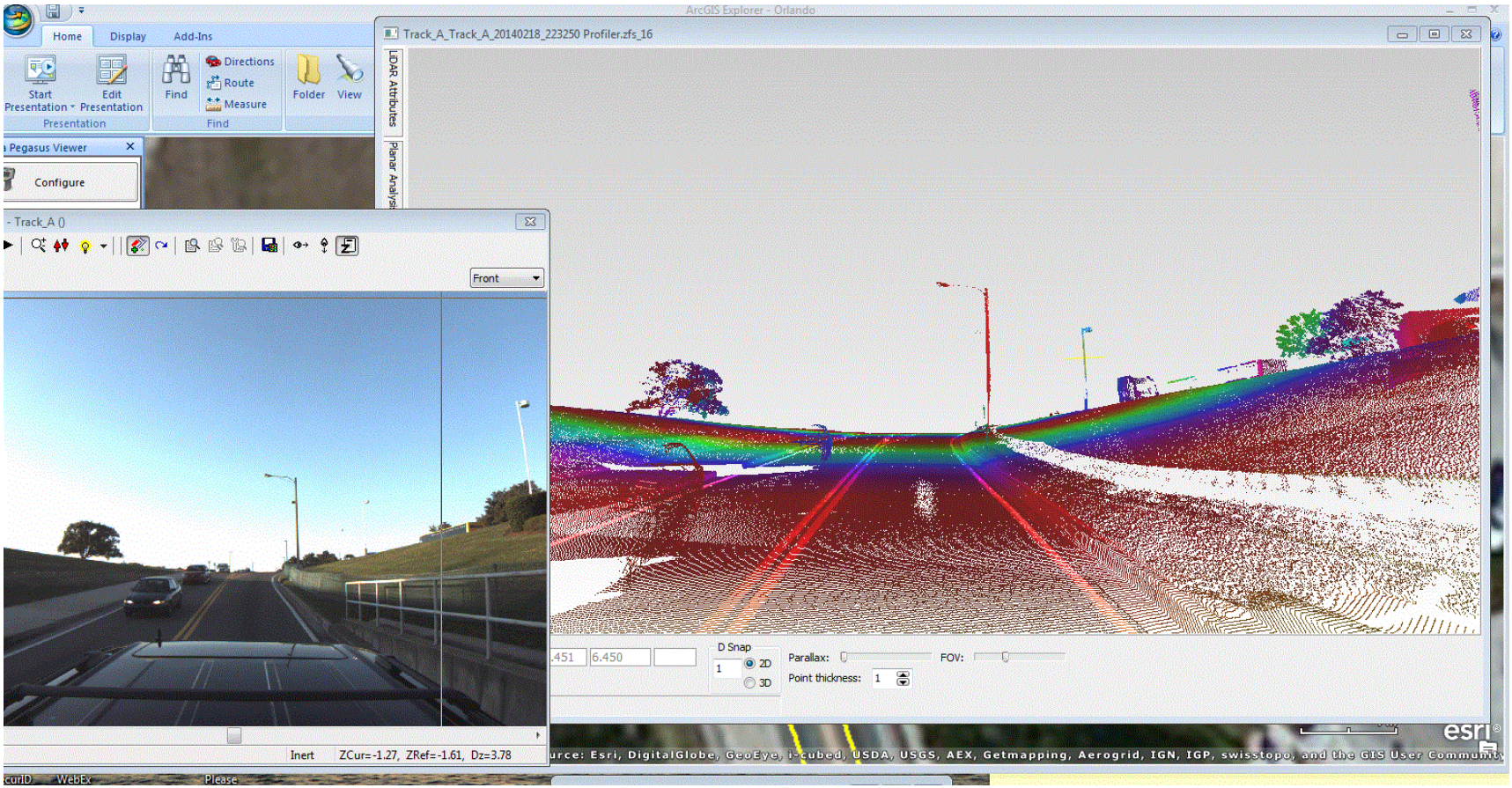
Roadways



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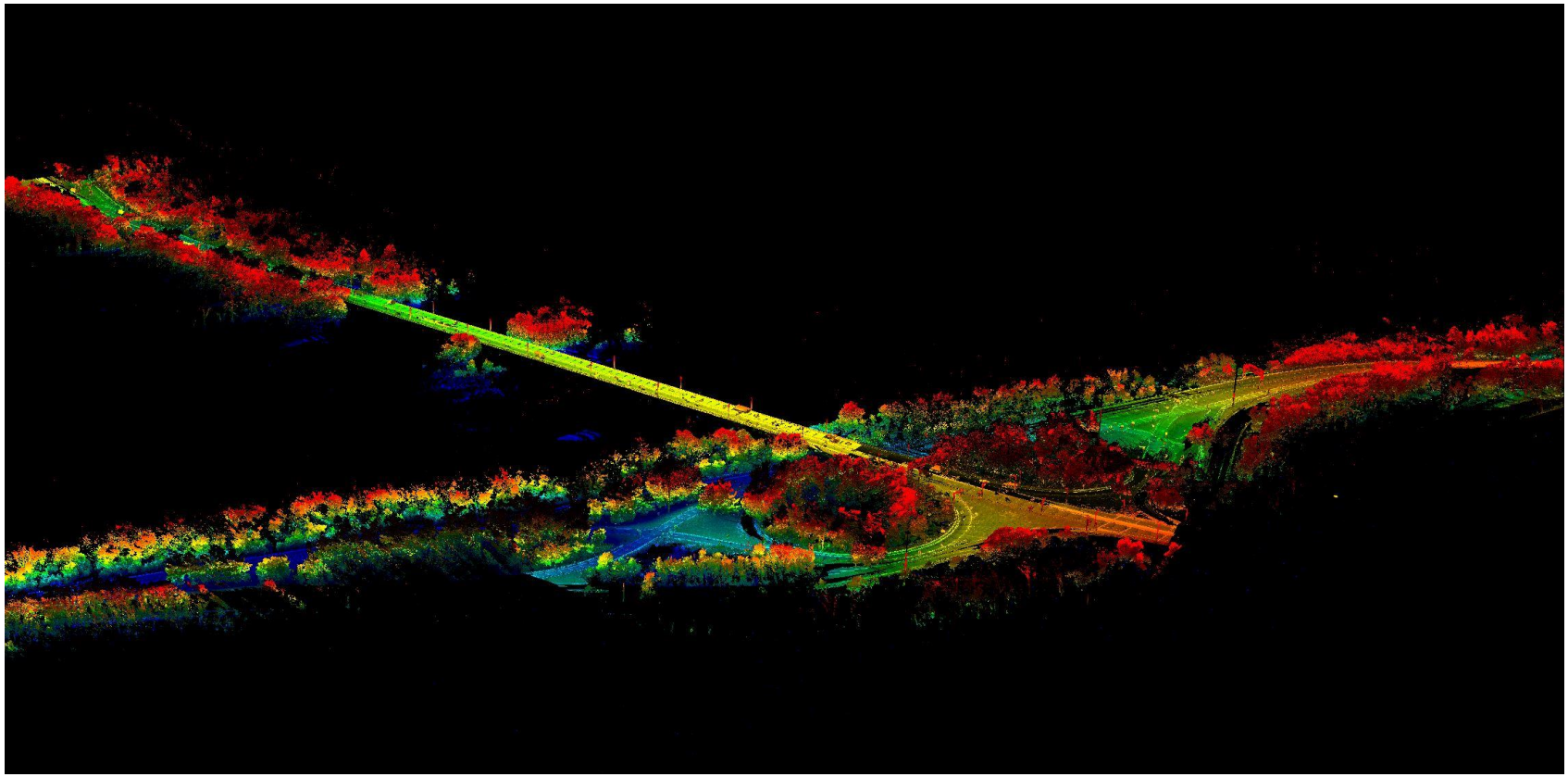
Roadway



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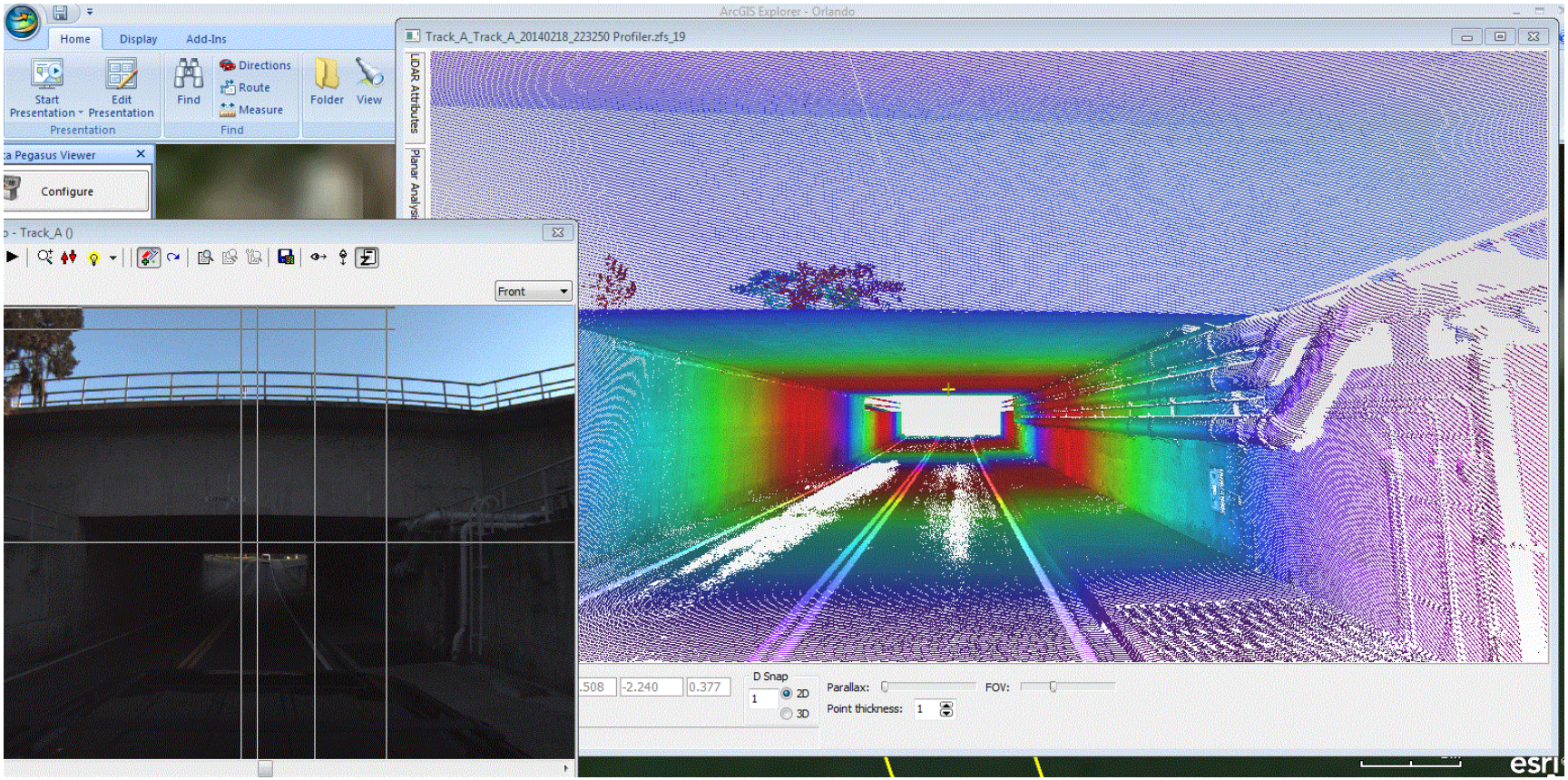
Tunnels



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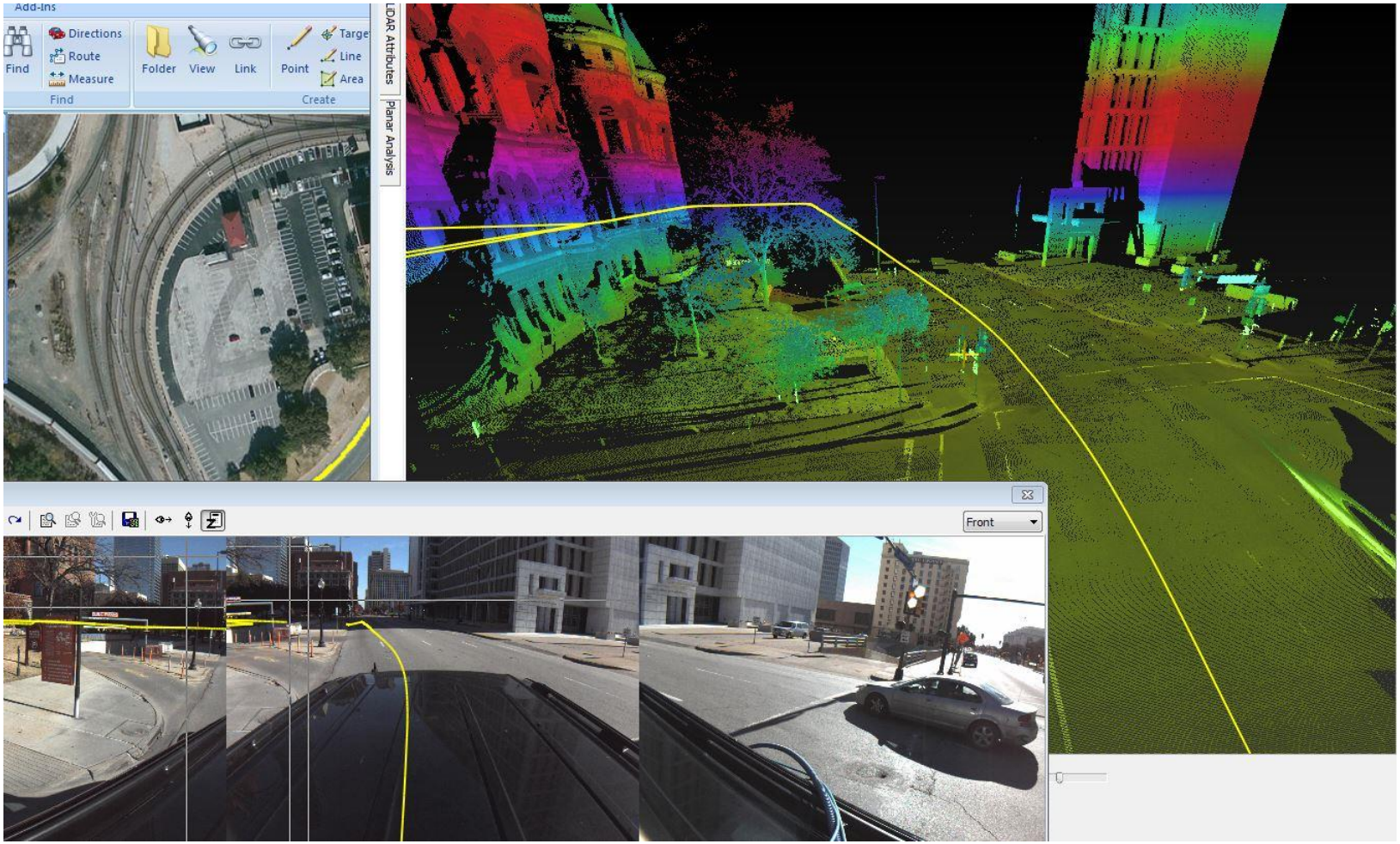
Urban Planning



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Facility Management

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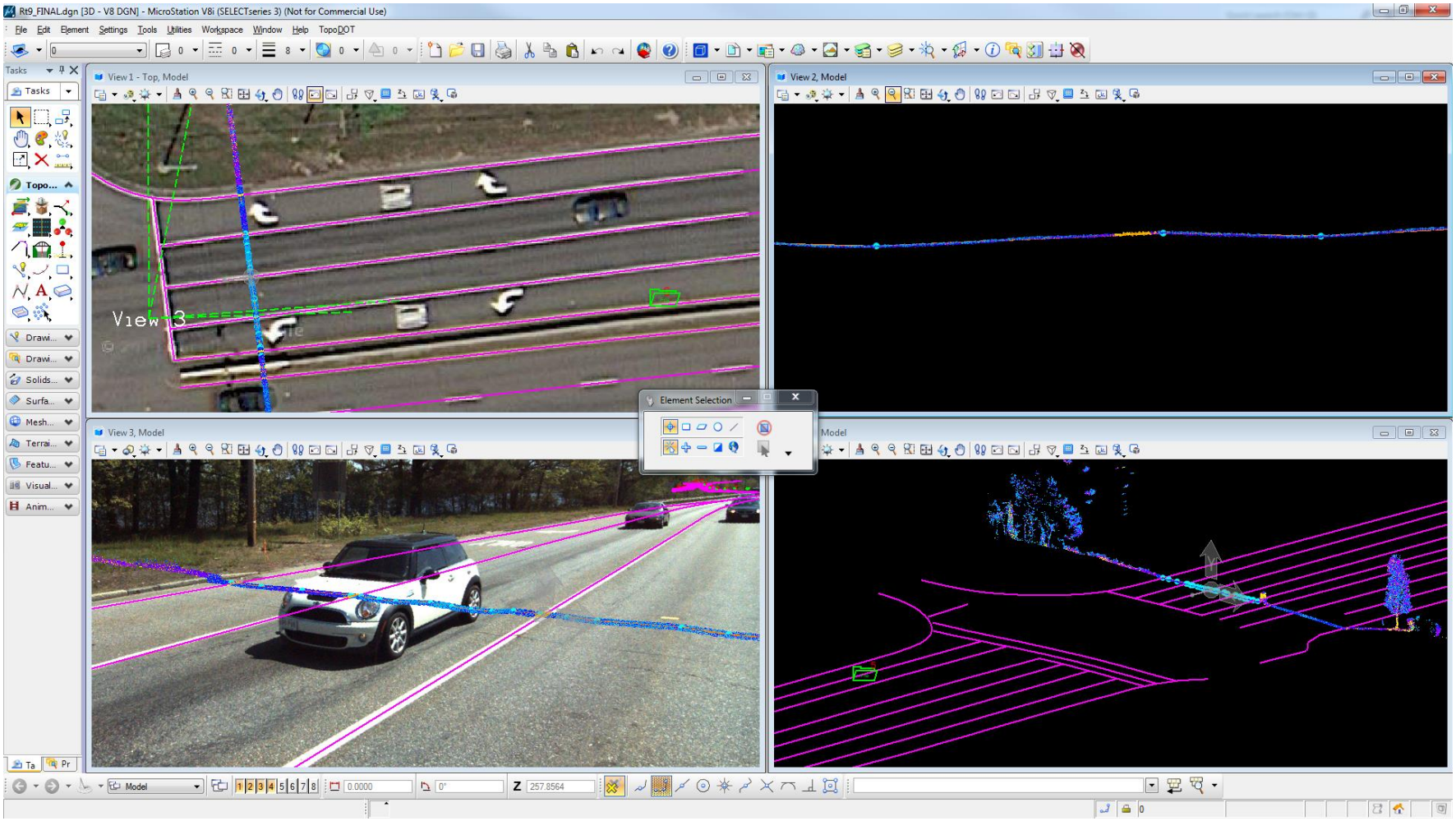
Data Extraction



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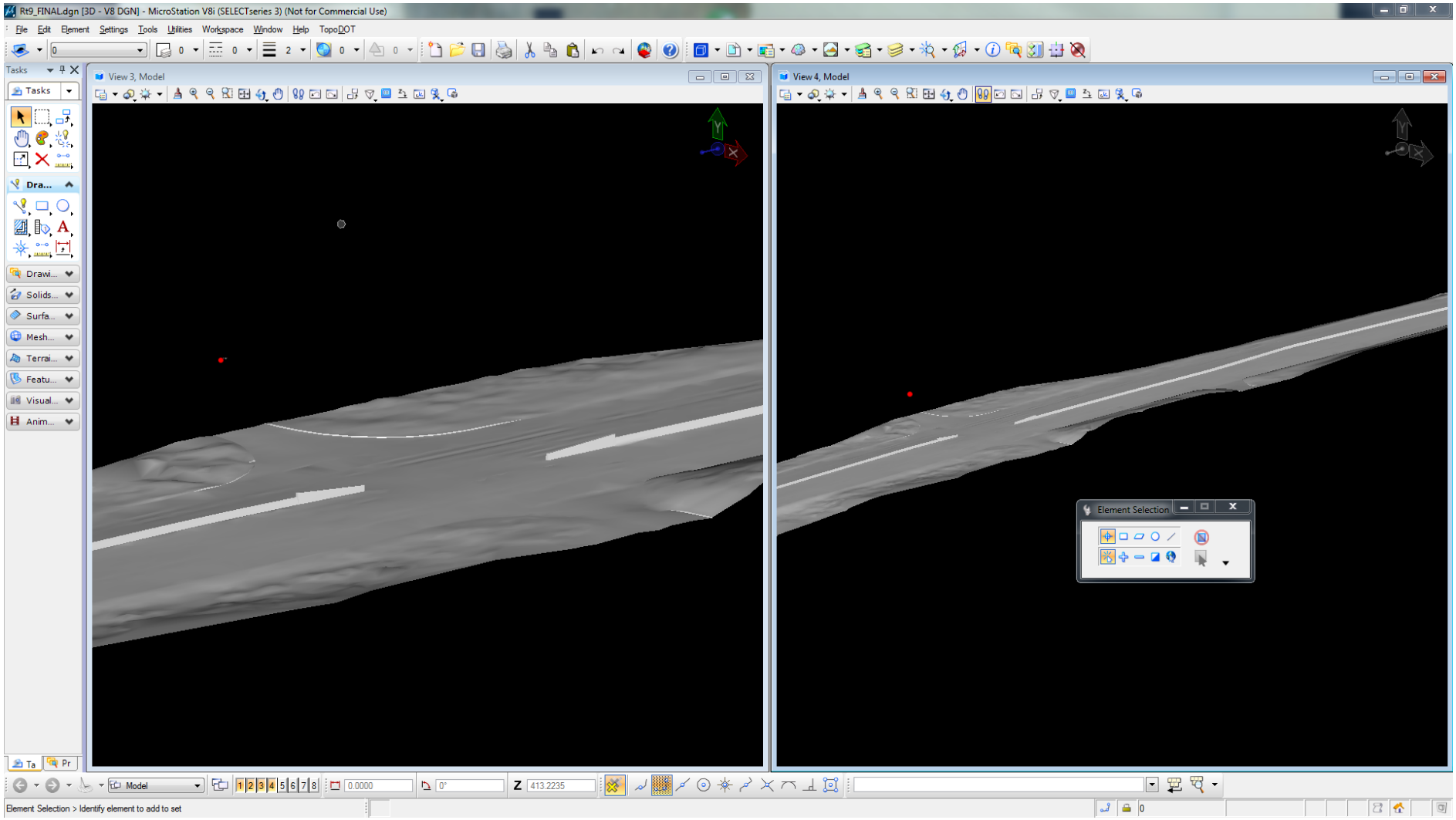

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Summary

- Technology has bridged the gap between fast and accurate.
- Post processing and delivery times have been reduced.
- Tools for utilizing and integrating LiDAR and imagery data have been enhanced.
- Asset Management can now be a precise operation.

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Q & A

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