

How Reality Capture Is Reshaping the Digital Future

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Growing Population

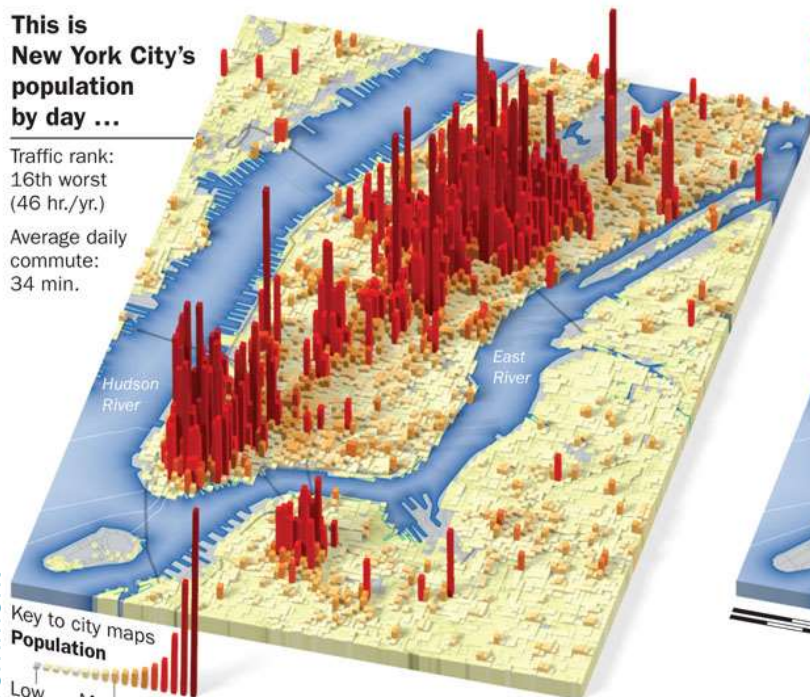


Changing Cities

This is
New York City's
population
by day ...

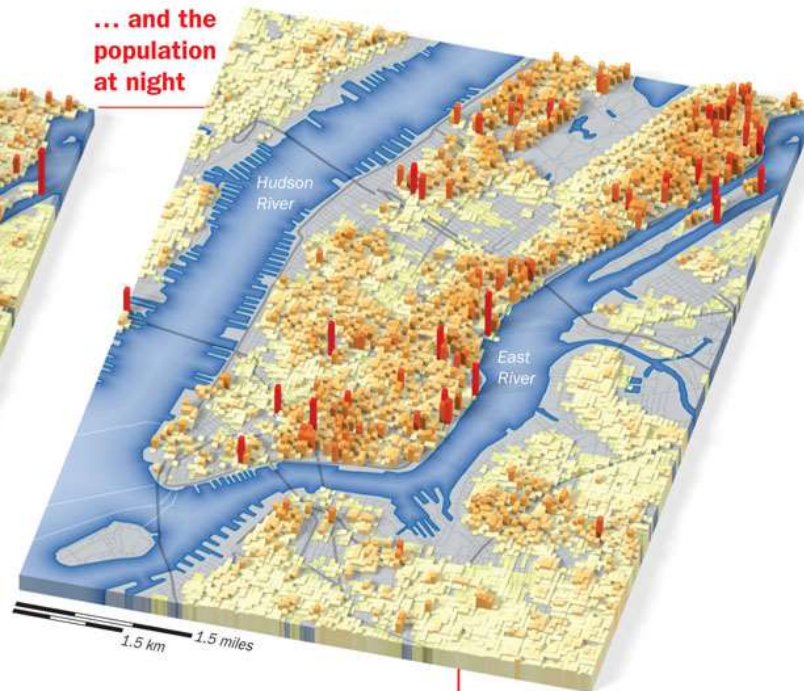
Traffic rank:
16th worst
(46 hr./yr.)

Average daily
commute:
34 min.



~3.1 Million

... and the
population
at night



~1.6 Million

Source: US
Government

Dynamic Transportation

DEC 4TH – 4.735M PEOPLE TRAVELLED ON THE LONDON
TUBE – 55% OF LONDON POPULATION



Moving at the Pace of Change

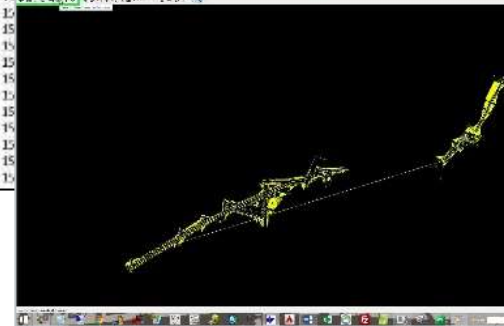


Traditional Surveying



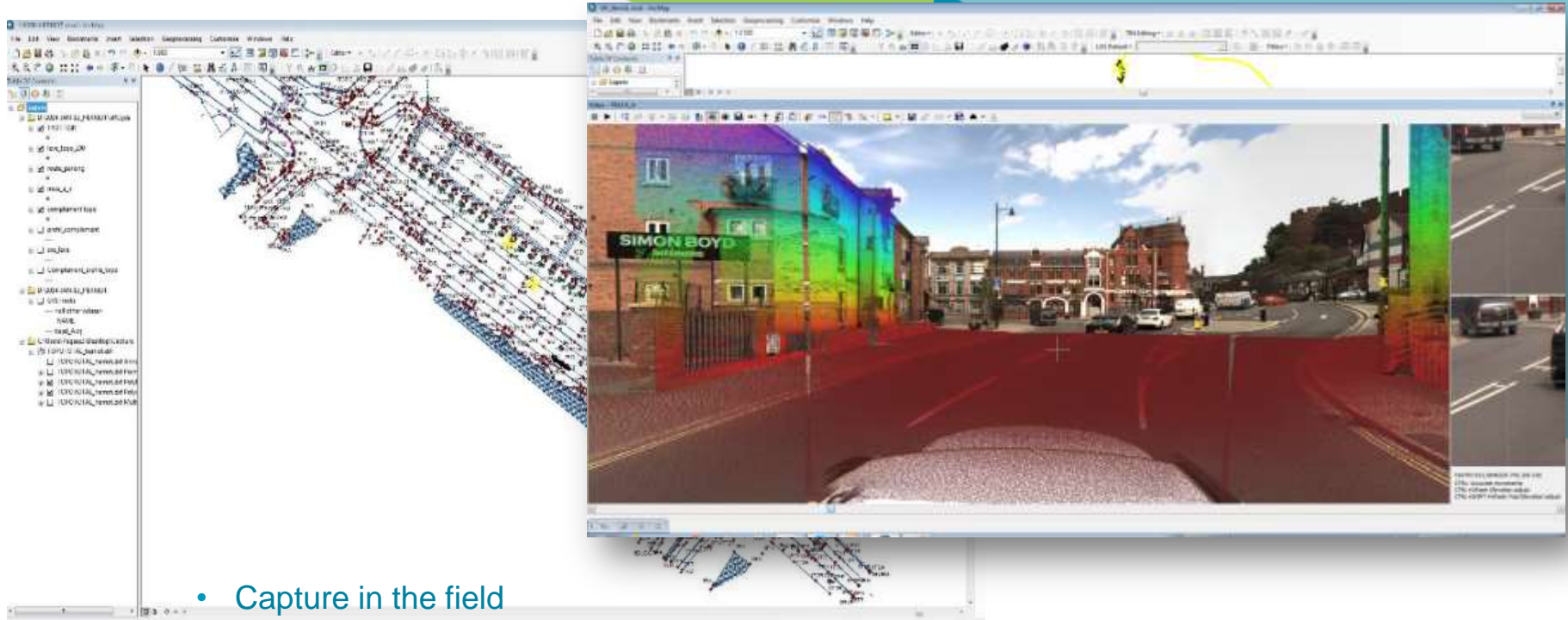
- Individual points are manually chosen in the field, labeled, and stored
- Significant time on site – traveling to the site
- Traffic management
- Safety concerns, weather exposure

Station	Label	Forward	Backsight	
1	1567817.901	1283215.907	84.589	EST
2	1567818.513	1283215.635	85.910	EST
3	1567818.443	1283215.102	86.113	EST
4	1567818.437	1283215.524	82.572	EST
5	1567818.853	1283215.275	84.681	EST
6	1567818.089	1283215.558	87.498	EST
7	1567818.985	1283215.171	82.948	EST
8	1567818.724	1283215.013	81.982	EST
9	1567818.292	1283215.944	81.363	EST
10	1567818.177	1283215.728	84.628	EST
11	1567818.025	1283215.334	82.355	EST
12	1567818.148	1283211.782	81.971	EST
13	1567818.454	1283217.864	81.788	EST
14	1567818.272	1283215.184	86.038	EST
15	1567818.756	1283215.941	100.974	EST
16	1567818.015	1283214.504	100.911	EST
17	1567818.358	1283211.983	100.568	EST
18	1568035.584	1283215.793	100.083	EST
19	1568035.892	1283215.432	100.948	EST
20	1568035.445	1283212.903	100.533	EST
2000	1567818.424	1283215.429	87.523	EST
2001	1567818.772	1283215.65	87.093	EST
2002	1567818.713	1283215.643	87.365	EST
2003	1567818.487	1283215.724	87.985	EST
2004	1567818.754	1283215.033	88.54	EST



Digital Surveying

Data remains digital throughout the process



- Capture in the field
- Work in the office - digital point picking
- Work within the images over the point cloud – creates the drawing

Digital Surveying Application



- Expressways, Highways, Roads corridor mapping.
- Railways , Fast Trains, Tram ways corridor mapping.
- Canals and distributaries system, having service roads.
- 3D City modeling, City surveys & Topographic Surveys.
- Surveys for Airport runways and adjacent areas.
- Surveys for Telecommunication – along road network.
- Water and Gas pipe lines survey along the existing roads.

9

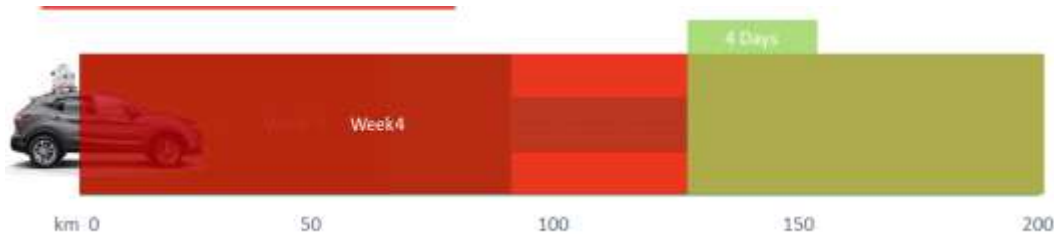


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Accuracy measurement of heights very important for design the new road surface

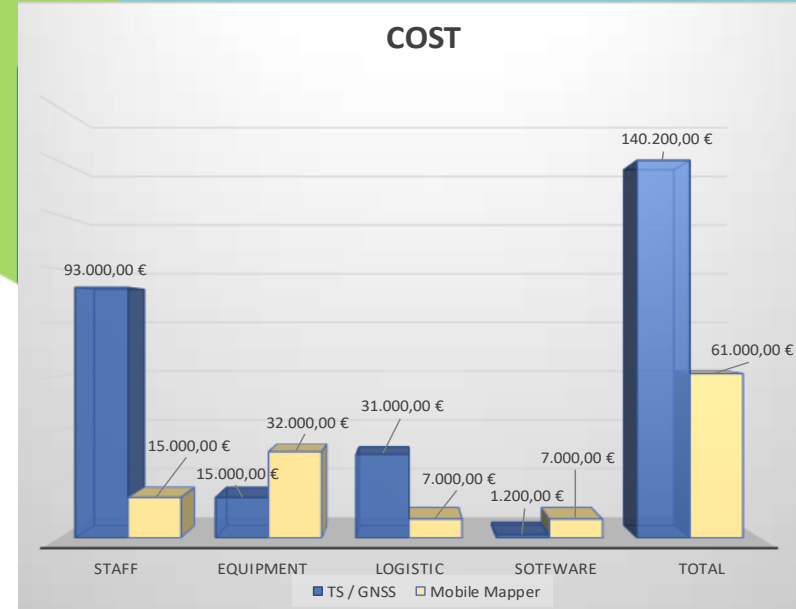
PEGASUS TWO: PROJECT IN SOUTH AMERICA ROAD IMPROVEMENT PROJECT IN COLOMBIA



When Pegasus Two arrived at the project we had measured 130 km
only of road asphalt and 90 km of the 15 m side of the road

Only 4 days

with Pegasus Two measured all the project



Intelligent Information



Rear Camera => Pavement Assessment
Sky Camera => City Modeling



Lidar => Pavement Assessment (IRI)



Thermal Sensor => Energy Efficiency /
Preventive Maintenance



Ground Penetration Radar => Underground GIS

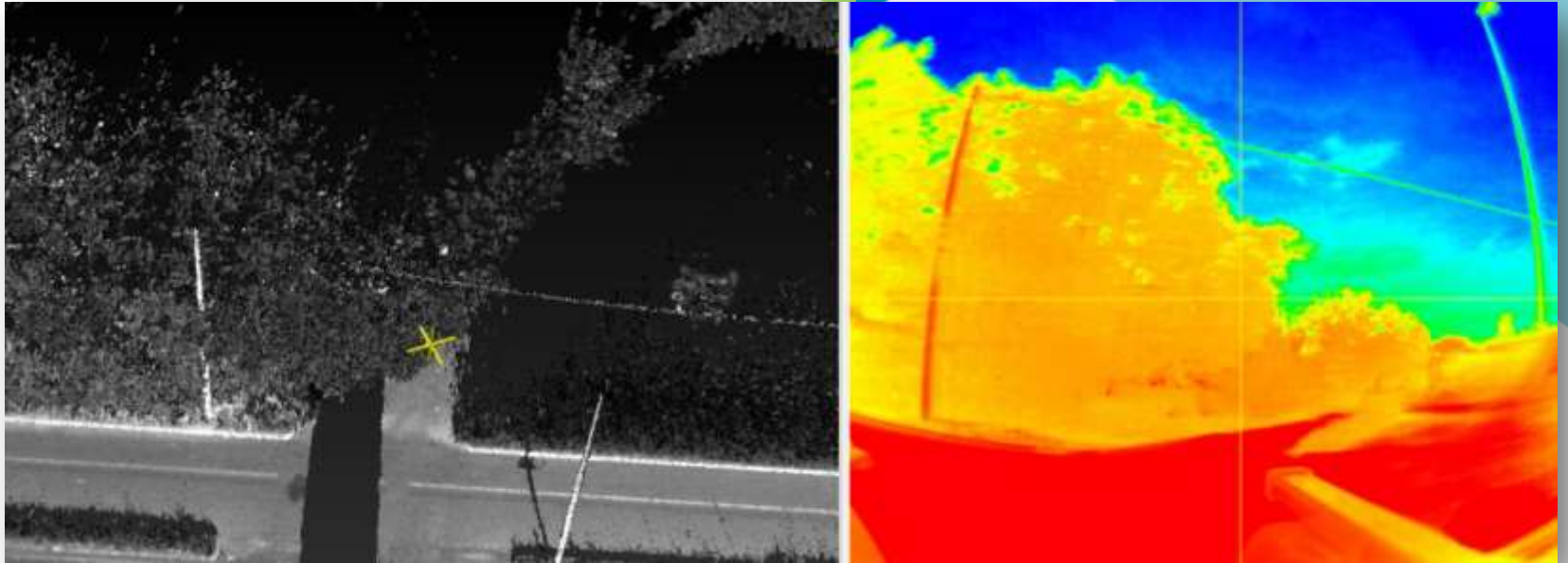


Pollution / Noise Sensor => Property Value Indexing based on
Quality of Life

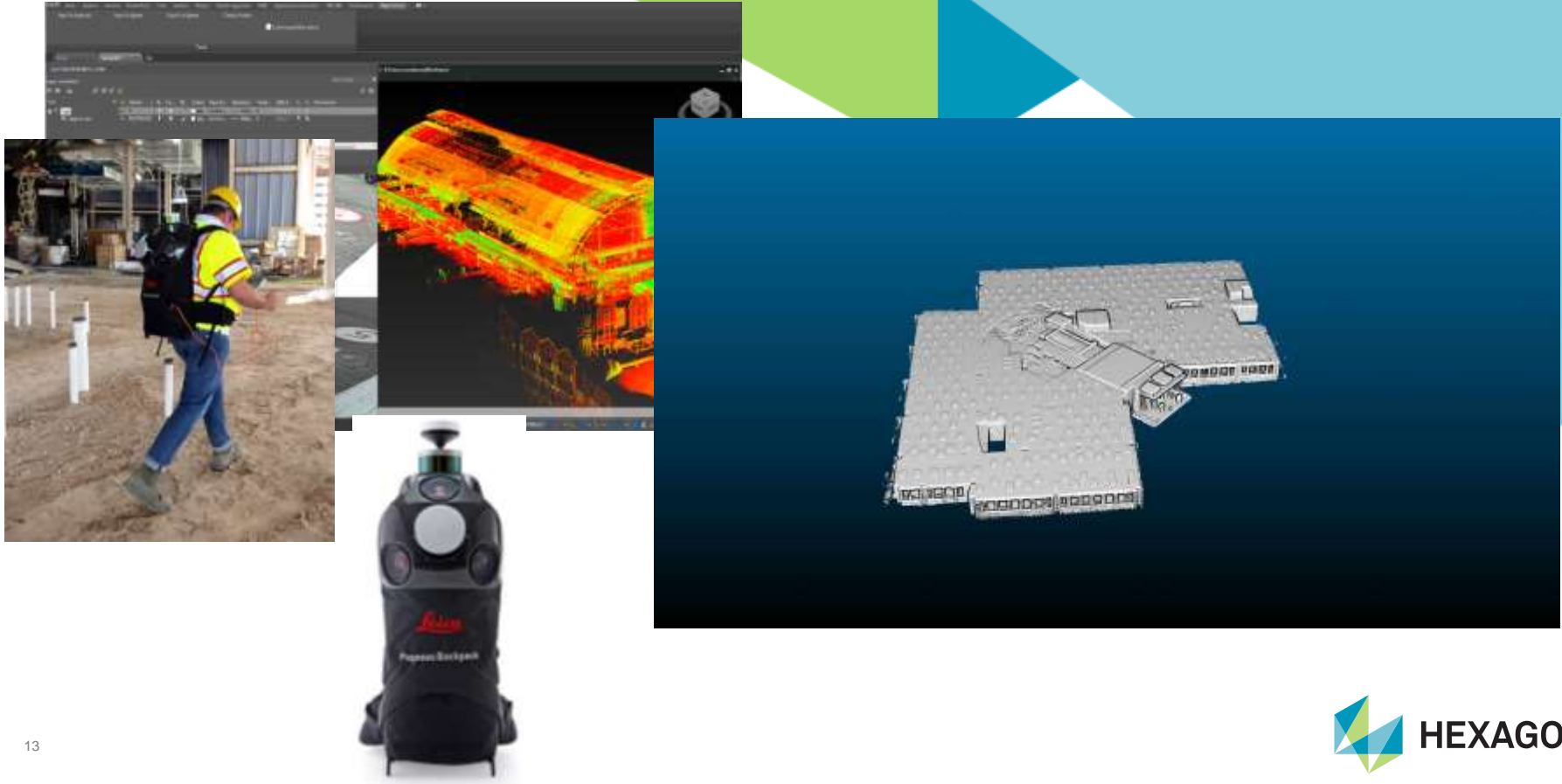
Intelligent Information



Thermal Sensor



Professional BIM Documentation



Urban Planning and Monitoring



Credit: Genesys International

Urban Planning and Monitoring

- Dimly lit corridors even during Mid-Day (Problem solved by using Flash mounted on the backpack)
- Extremely narrow lanes and by lanes
- Haphazard lane and by lane layouts
- Hutments present below ground level
- Closely spaced hutments with overlapping roofs causes problems in acquiring GPS fixes
- Varying Terrain Undulations
- Turbulence from slum dwellers and political unions

Credit: Genesys International



Urban Planning and Monitoring - Deliverables

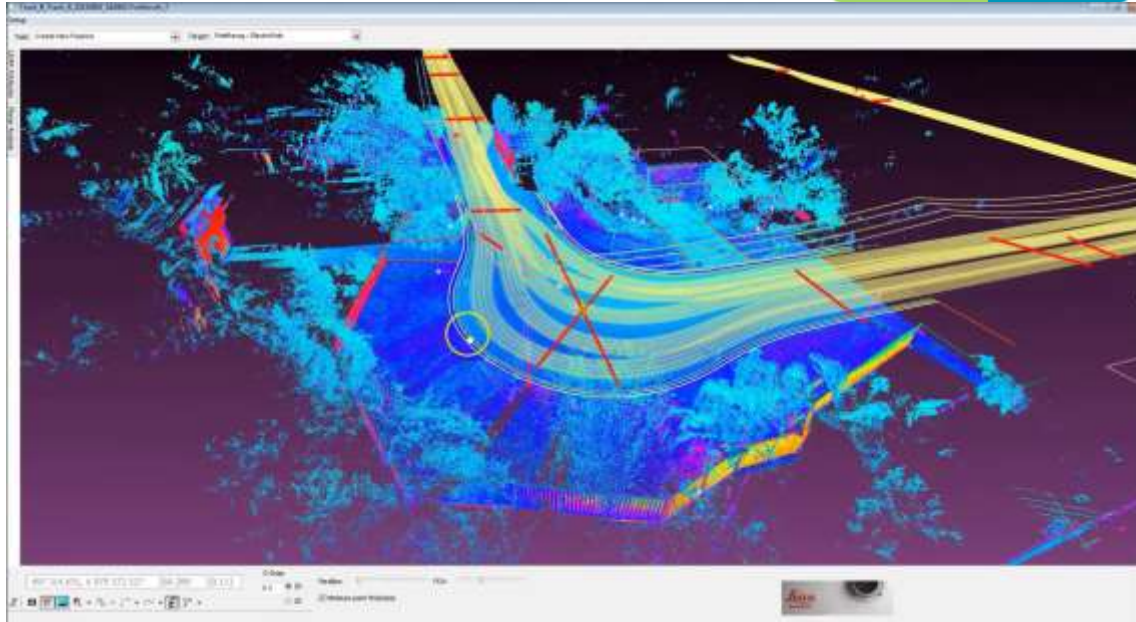
Hut Wall Extraction Top View



Hut Wall Extraction Side View



Below and Above Ground Asset Management



- Mass asset management capture
- Up to 10 m depth scan
- Non-intrusive detection

Thank You



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