Innovations in Geospatial Engineering

Presentation to

BGA – Central Scotland Regional Group

12 February 2019

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Geospatial Engineering Innovations

- Subsurface laser scanning and multibeam sonar void surveys
- Remote Access Vehicles & ROV's

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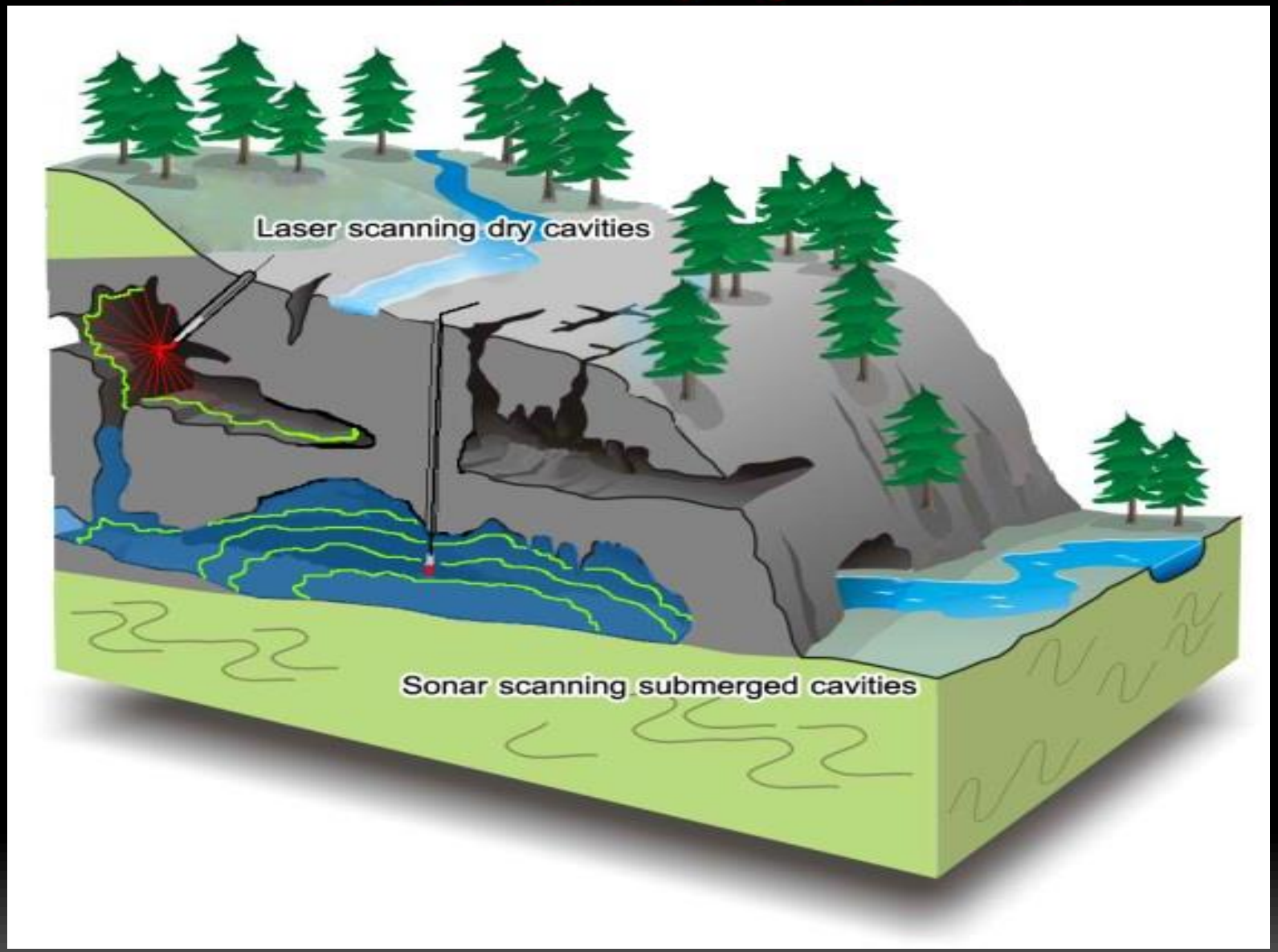
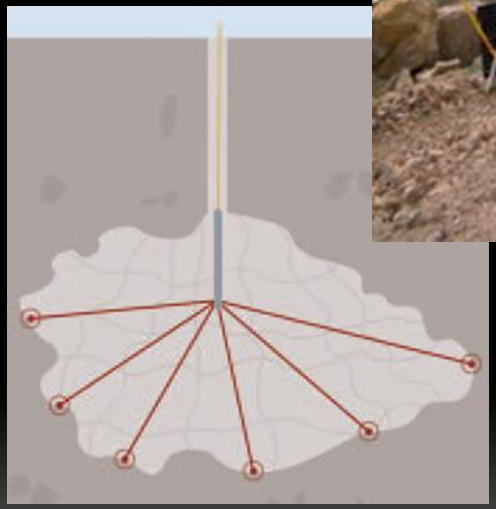
SUBSURFACE LASER SCANNING



SUBSURFACE LASER SCANNING

C-ALS (Cavity Auto Laser Scanner) - **DRY**

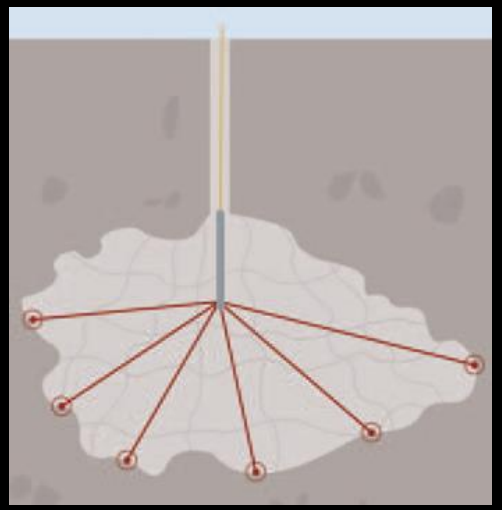
- Deployed through borehole +50mm Ø ID
- Infra-red camera (still & video)
- 150m standard radius
- 100m standard & 300m max depth
- Time of flight laser scanner
- Full 360x350 operational range
- 5cm accuracy



SUBSURFACE LASER SCANNING

FARO Focus Laser Scanner - **DRY**

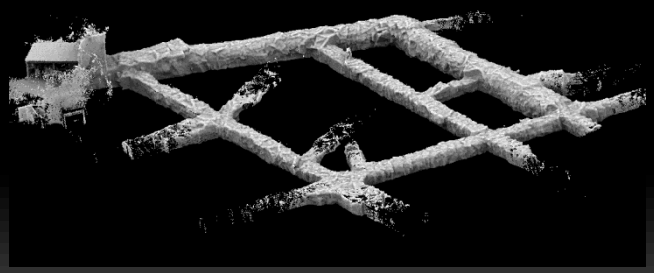
- Deployed through hole 300mm x 180mm
- 90m standard radius & depth
- Time of flight laser scanner
- One million points/second
- Full 360x350 operational range
- 5mm accuracy



SUBSURFACE LASER SCANNING

GeoSLAM REVO Laser Scanner - **DRY**

- Carried on backpack, pole or vehicle
- 30m standard radius & depth
- Time of flight laser scanner
- 50,000 points/second
- Full 360 operational range
- 15mm accuracy



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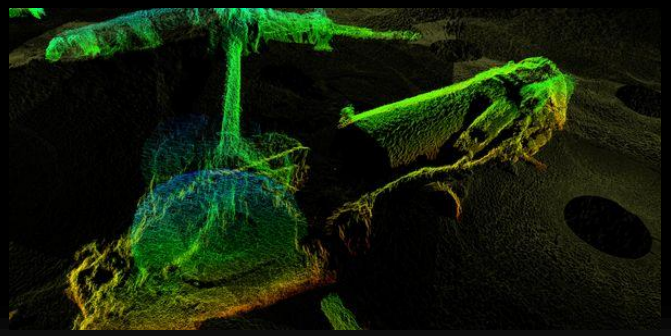
SUBSURFACE LASER SCANNING

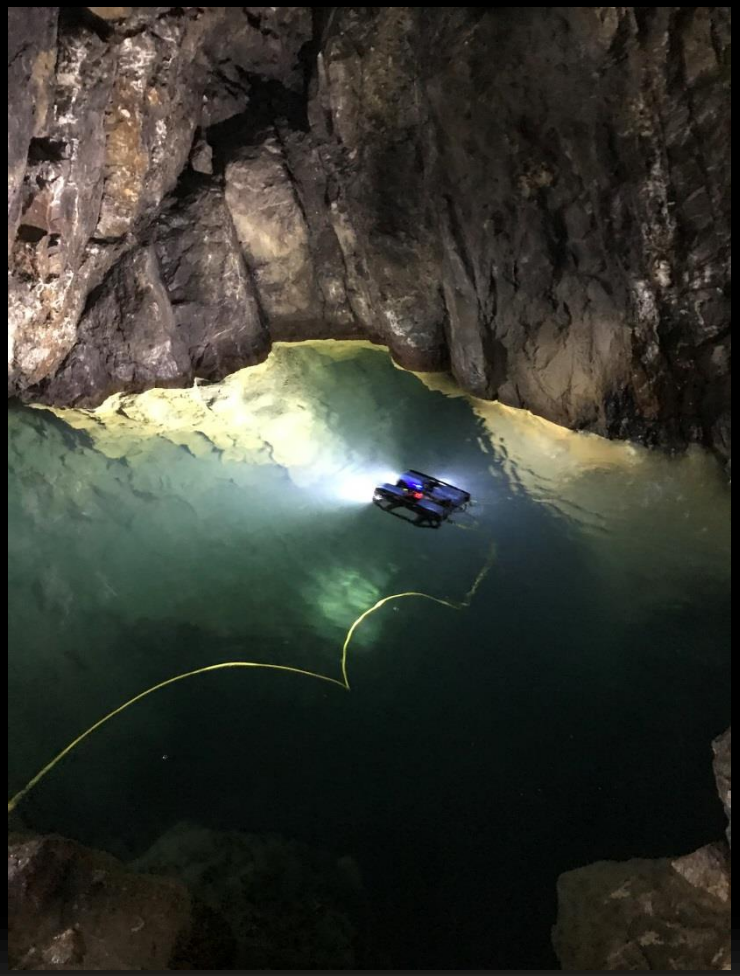
Sonar System - **WET**

- Use in waterlogged mines, cavities,shafts
- Downhole sonar system in +120mm Ø ID
- Profiling & multibeam sonar systems
- 100m standard radius + 1400m depth
- Heading, Pitch and Roll Sensor
- Geo-referenced Data
- 2cm accuracy



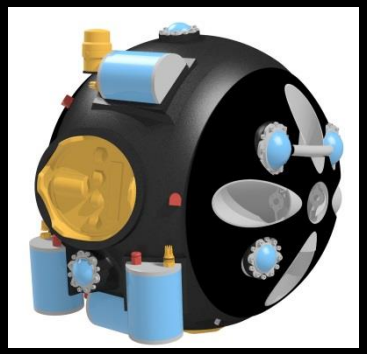
SUBSURFACE LASER SCANNING

- ROV Survey
- VideoRay Pro 4 ROV
- Dive to 100 m (1,000 ft)
- HD video & photography
- Powerful LED lights



SUBSURFACE LASER SCANNING

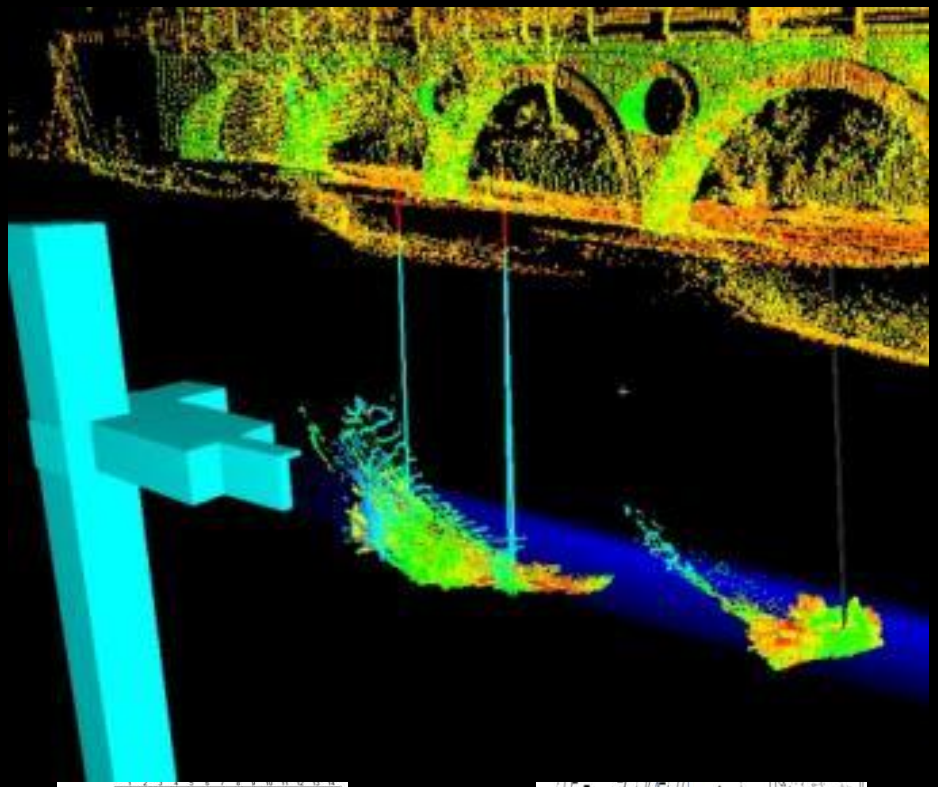
- Robotic Sonar
- UNEXMIN UX1
- Autonomous robot
- Flooded mine mapping
- Sinkhole mapping
- Geo-referenced 3D data

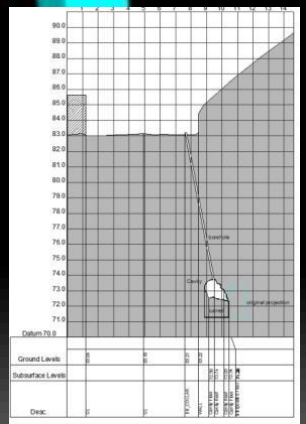


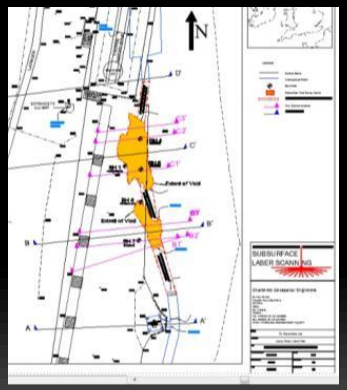
- HD Video/Photography
- GE PTZ 6.2 industrial camera
- Watertight to 45m depth
- Remote operation
- Hand held boom or tripod
- Powerful LED lighting
- Zoom control

OUTPUT DATA

- Full CAD compatibility
- Plans, Sections & 3D models
- Scan data can be output in dxf, ascii or pts
- Fully geo-referenced and locally referenced survey depending on clients needs
- Scan to BIM with level 1 or 2 model intelligence for Revit

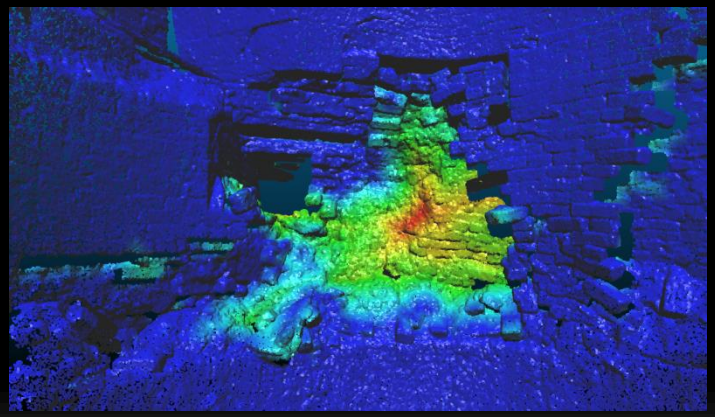


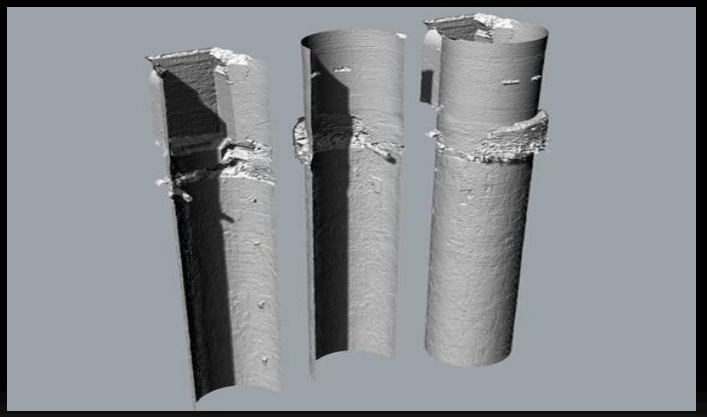




COAL MINE SHAFT SURVEYS - MANSFIELD

- 3D laser scan survey of old coal mine shaft
- Monitoring of shaft deformation
- Surveyed on annual basis



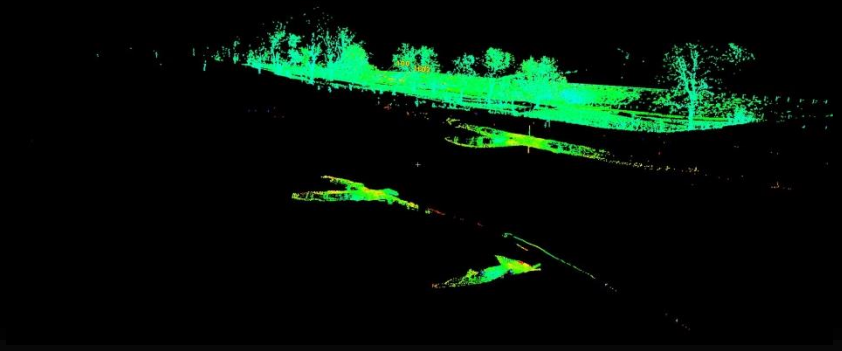


RAIL VENTILATION SHAFT SURVEYS - DOVER

- 3D laser scan survey of old rail ventilation shaft
- Monitoring of shaft deformation
- Surveyed on annual basis

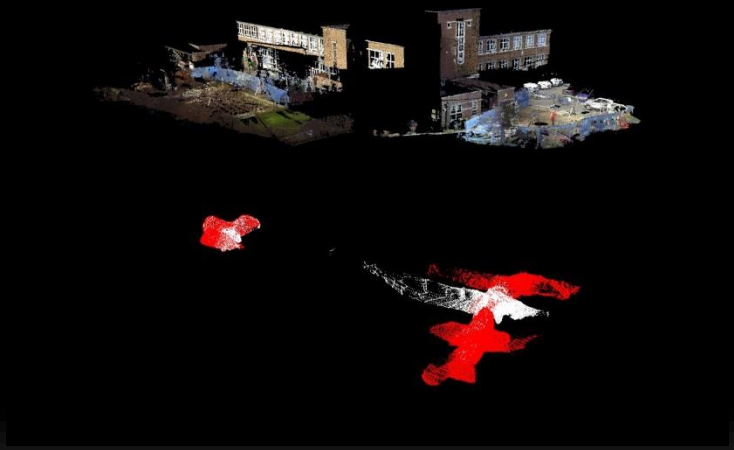
GYPSUM MINE VOID SURVEYS - THORNEGATE

- Unknown void size & shape
- Verification of geo-referenced location of three levels
- Surveyed with C-ALS over two days on two visits



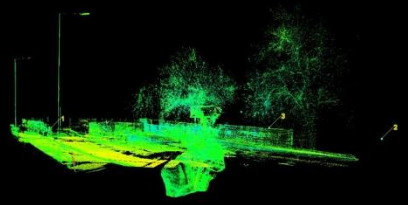
CHALK MINE VOID SURVEYS - HARROW

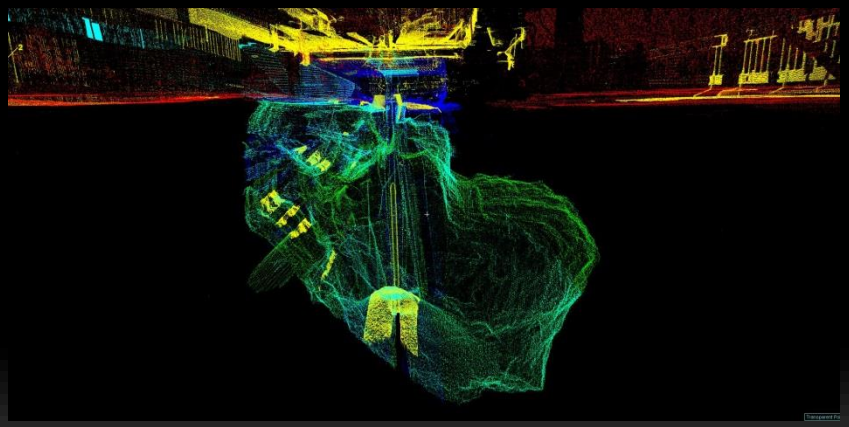
- Unknown void size
- Unknown number of voids and geo-referenced orientation
- Surveyed with C-ALS over five days



SHAFT COLLAPSE VOID SURVEYS - GLASGOW

- Unknown void size
- Unknown extent of utilities geo-referenced orientation
- Surveyed with FARO scanner in one day

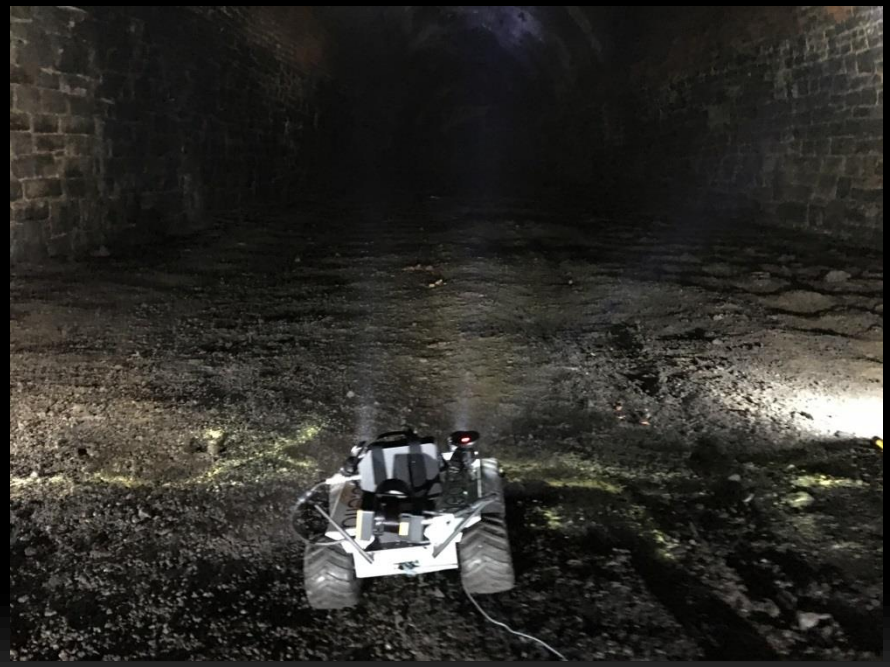




QUEENSBURY TUNNEL, WEST YORKSHIRE

QUEENSBURY TUNNEL, WEST YORKSHIRE

REMOTE CONTROLLED MOBILE LASER SCANNER PLATFORM



SUBSURFACE LASER SCANNING

Difficult access – no problem!

KEEP INNOVATING!!

Thank you for listening

Any Questions?

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