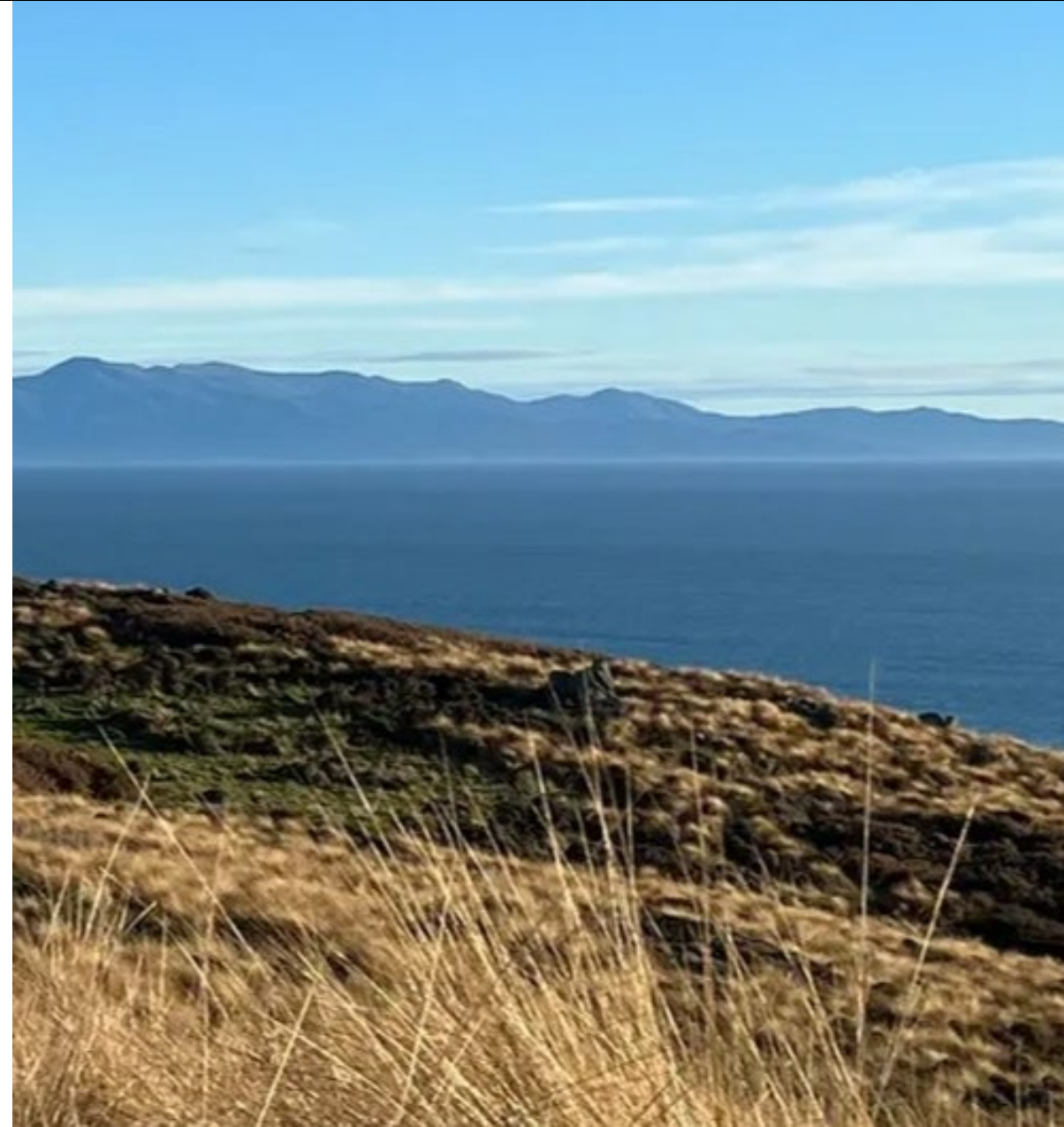


Technological tools - empowering quarries to manage electrical networks.

Mark Spinks & Ian Dressler
Gridvision

QuarryNZ 2026 - Invercargill



What is a Digital Twin?

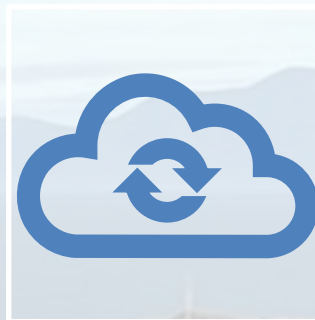
- Virtual, queryable replica
- Accessible to:
 - Operators
 - Engineers
 - Executives
- Enables:
 - Monitoring
 - Simulation
 - Optimisation



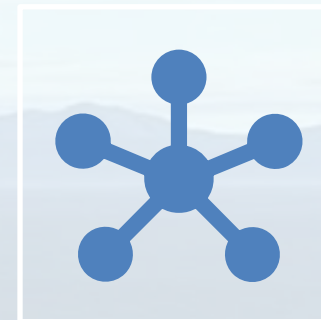
Why Digital Twins *Now*?



Safety, compliance, cost
management

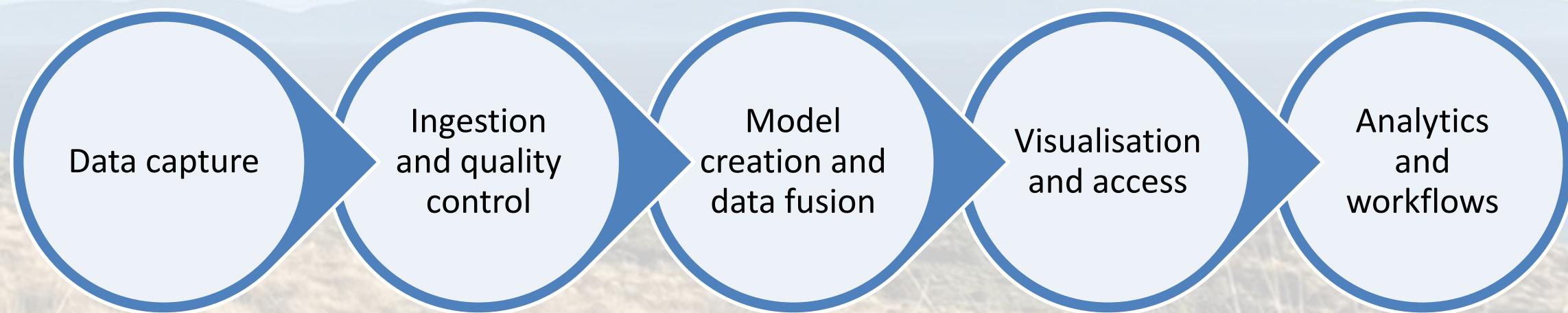


Advances in LiDAR
capture, cloud
computing and analytics



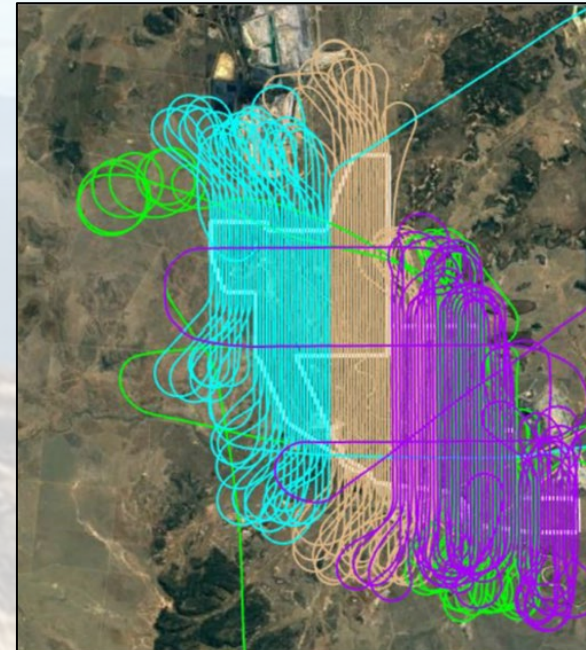
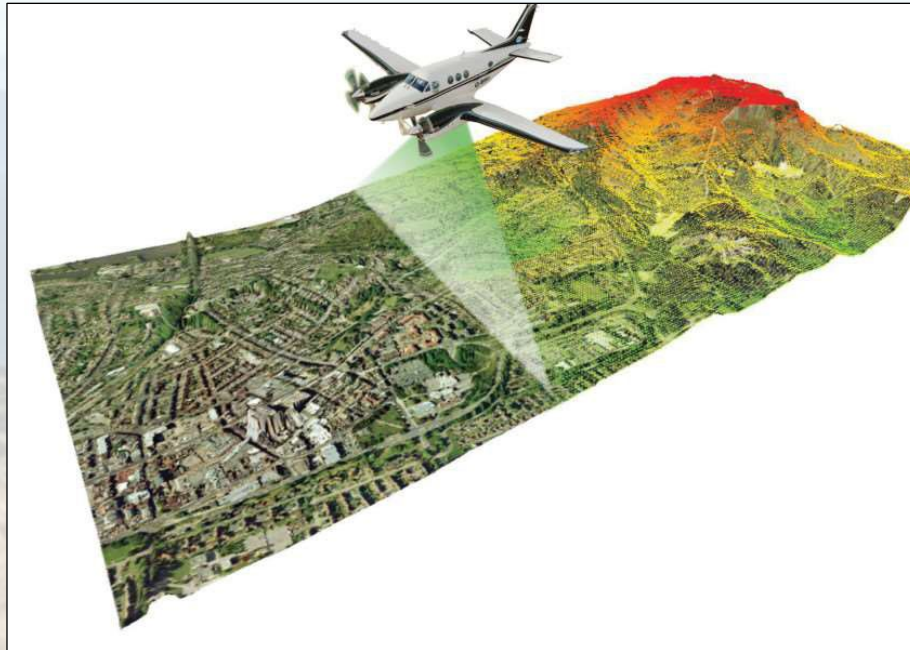
Ageing infrastructure x
uptime requirements

Workflow Overview



Capture Methods: Pros, Cons and Powerful Combos

- Aerial LiDAR
 - Wide area coverage
 - Cost effective at scale



Capture Methods: Pros, Cons and Powerful Combos

- Drone LiDAR
 - Targeted
 - BVLOS becoming less of a hurdle



Image credit: Hovermap by Emesent

Capture Methods: Pros, Cons and Powerful Combos

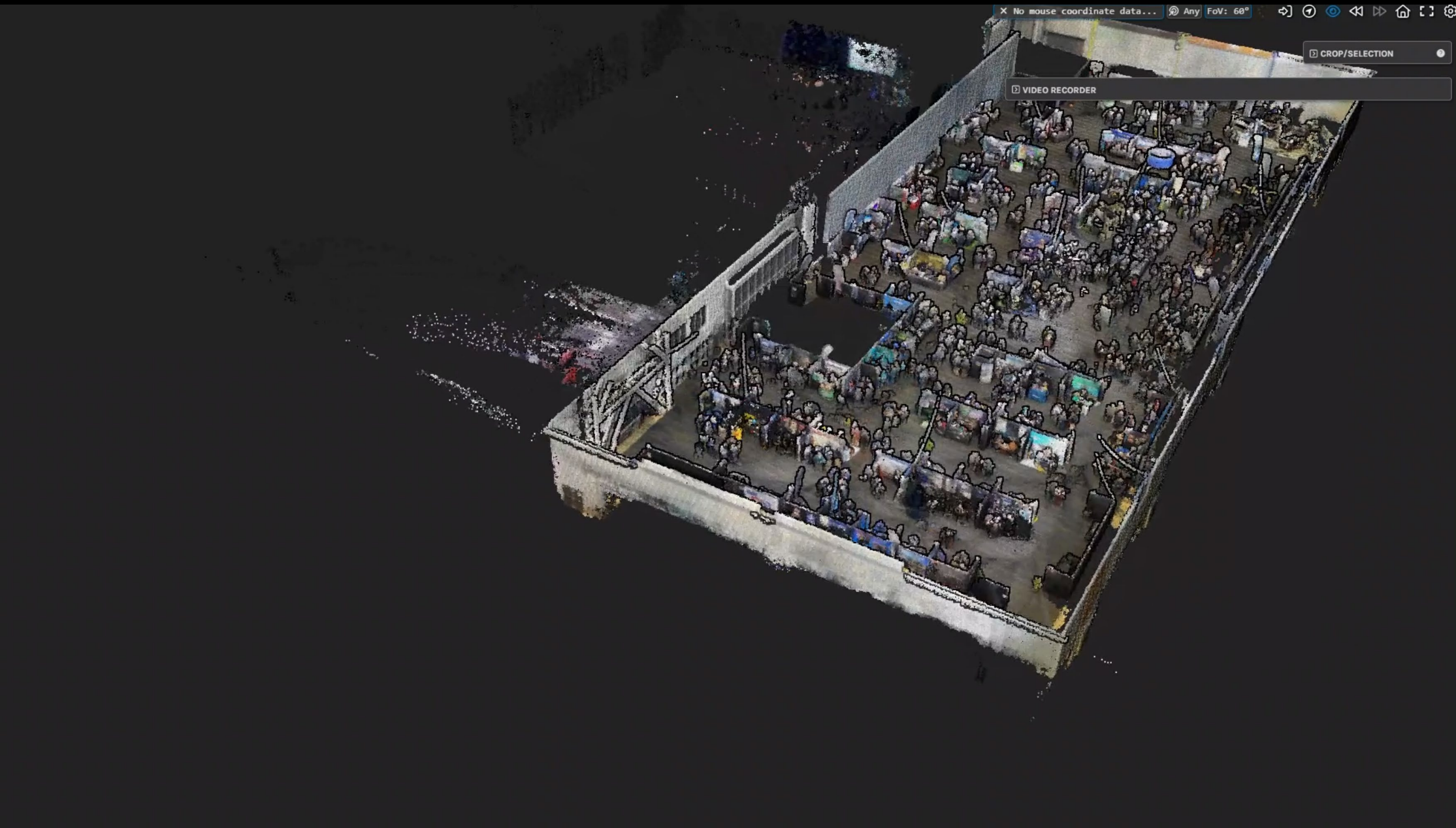
- Mobile / Portable LiDAR
 - Super flexible
 - No aviation challenges
 - Can operate indoors or in underground mines
 - Very high resolution



LiDAR Demo

- With thanks to Ian Dressler for capturing and processing

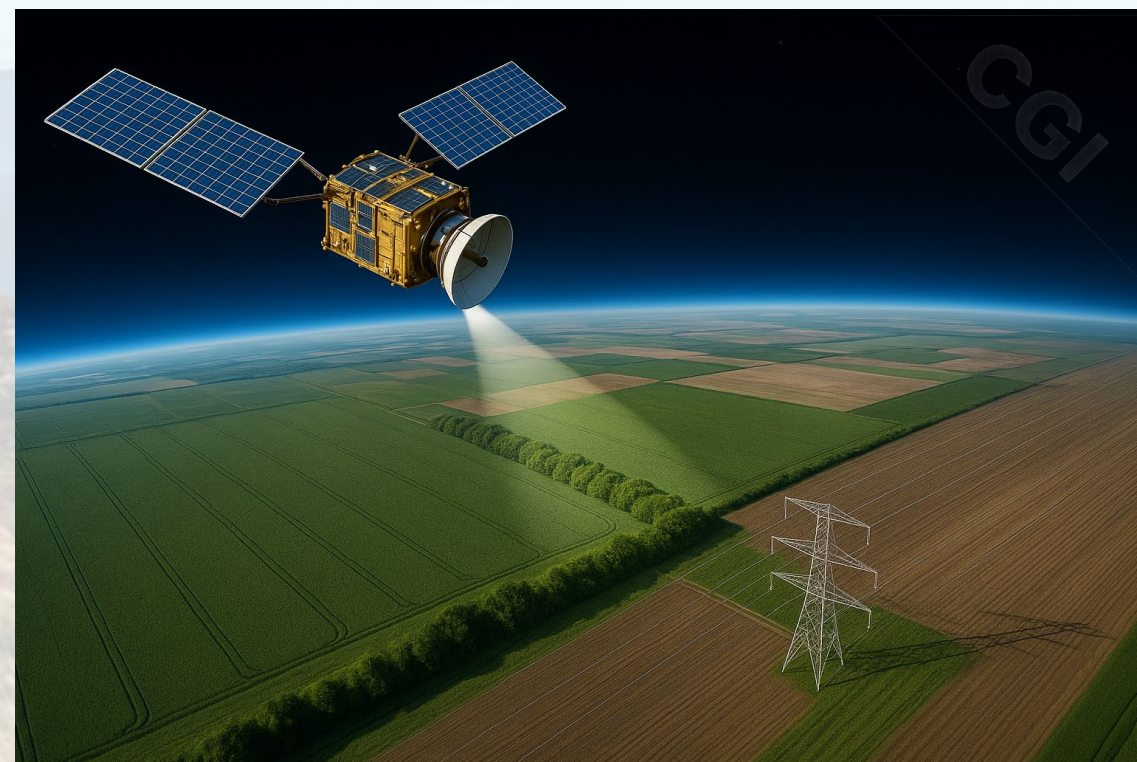




Capture Methods: Pros, Cons and Powerful Combos

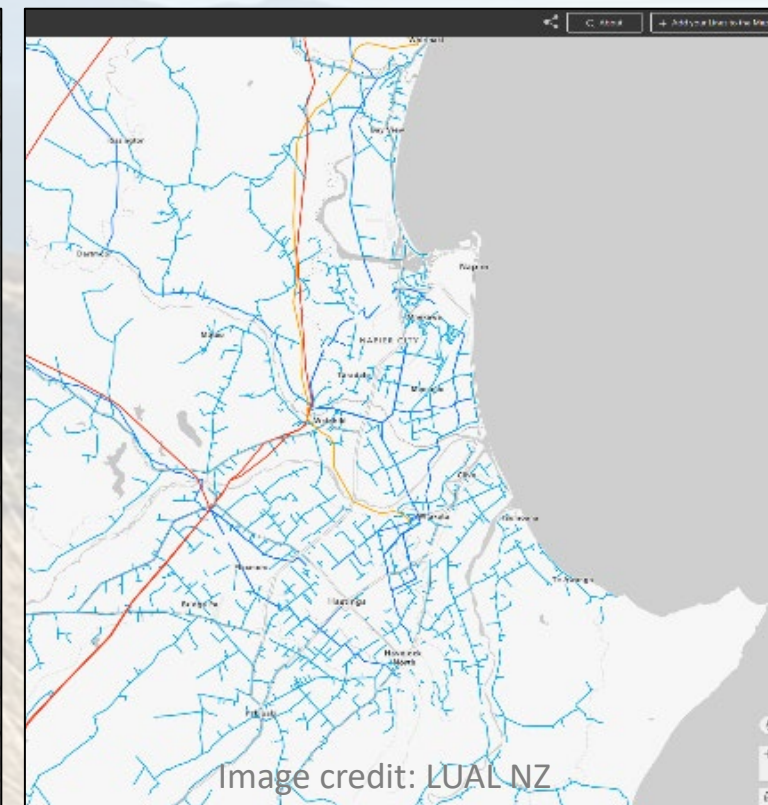
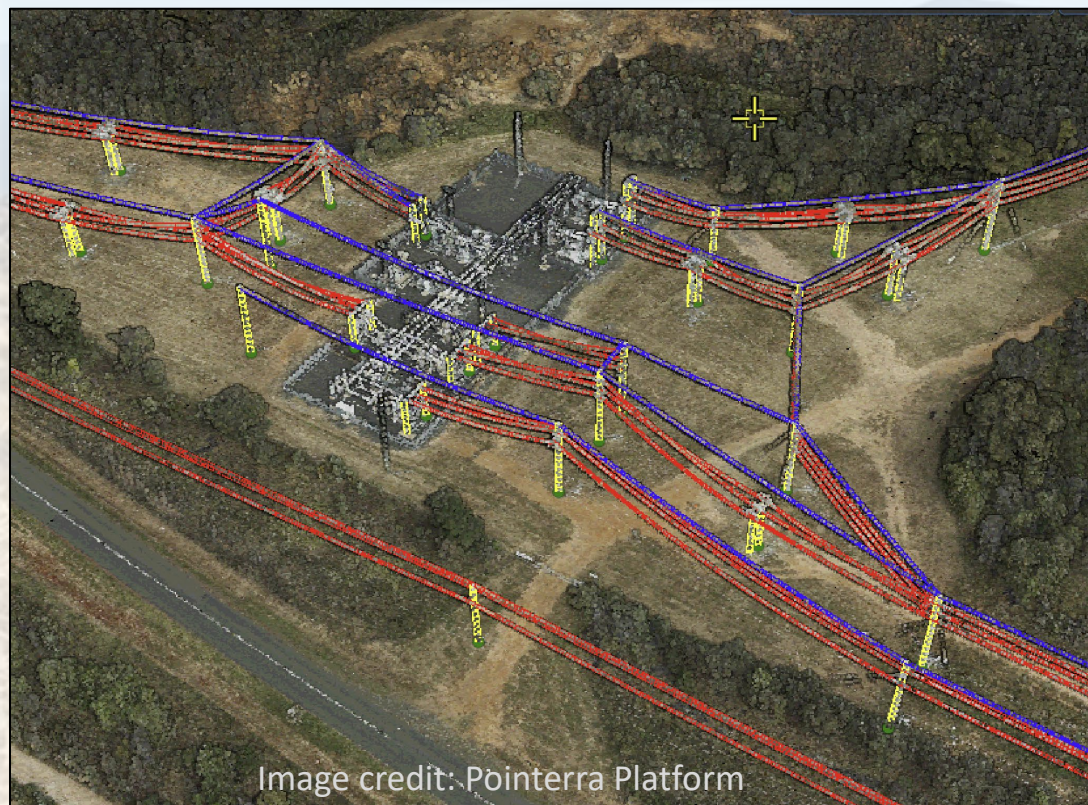
- **Satellite imagery**

- Complementary to other techniques
- Lower resolution
- Very wide-scale view
- Very frequently updated



Real-World Insights Delivered

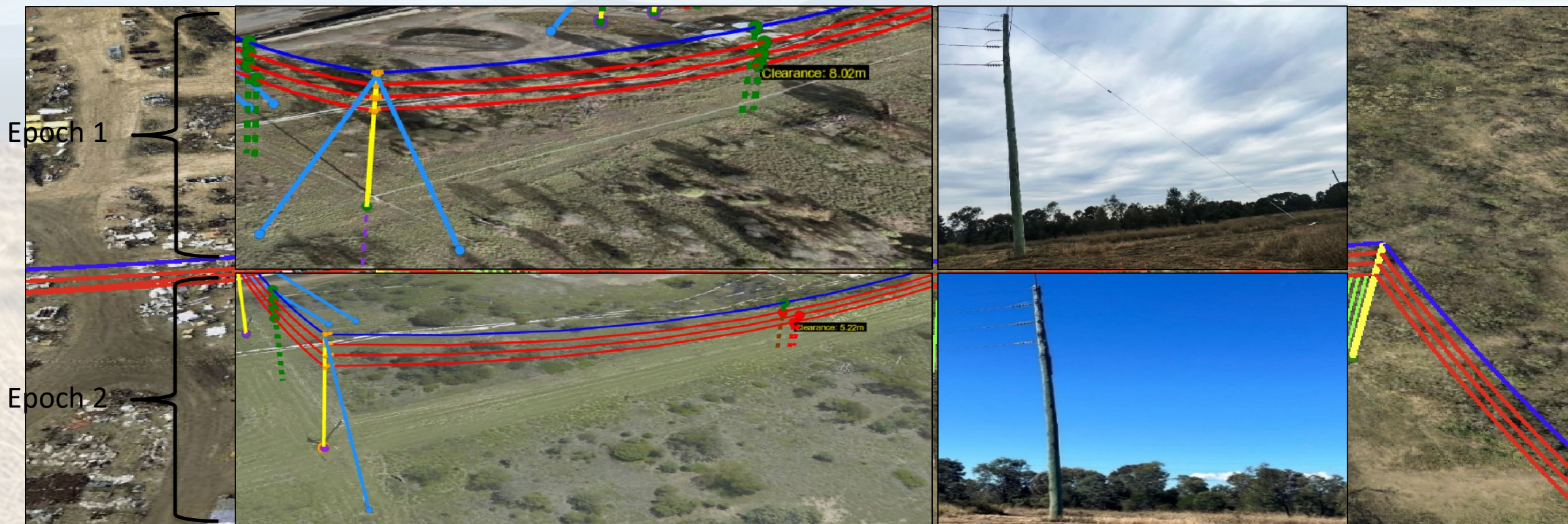
- Validation and sharing of network details (*“where stuff is”*)





Real-World Insights Delivered

- Conductor-to-ground clearance



Real-World Insights Delivered

- Conductor sag simulation



Image credit: Neara Platform

Simulation controls

Show Dynamic Env ☐

Show Maxop Env ☐

Dynamic Environment

Temperature 0 °C

Wind Pressure 17 Pa

Other Environments

survey

Reports Ground Clearance ☐

Reports Building Clearance ☐

no wind

Reports Ground Clearance ☐

Reports Building Clearance ☐

Max-Op Temp

Real-World Insights Delivered

- Vegetation proximity

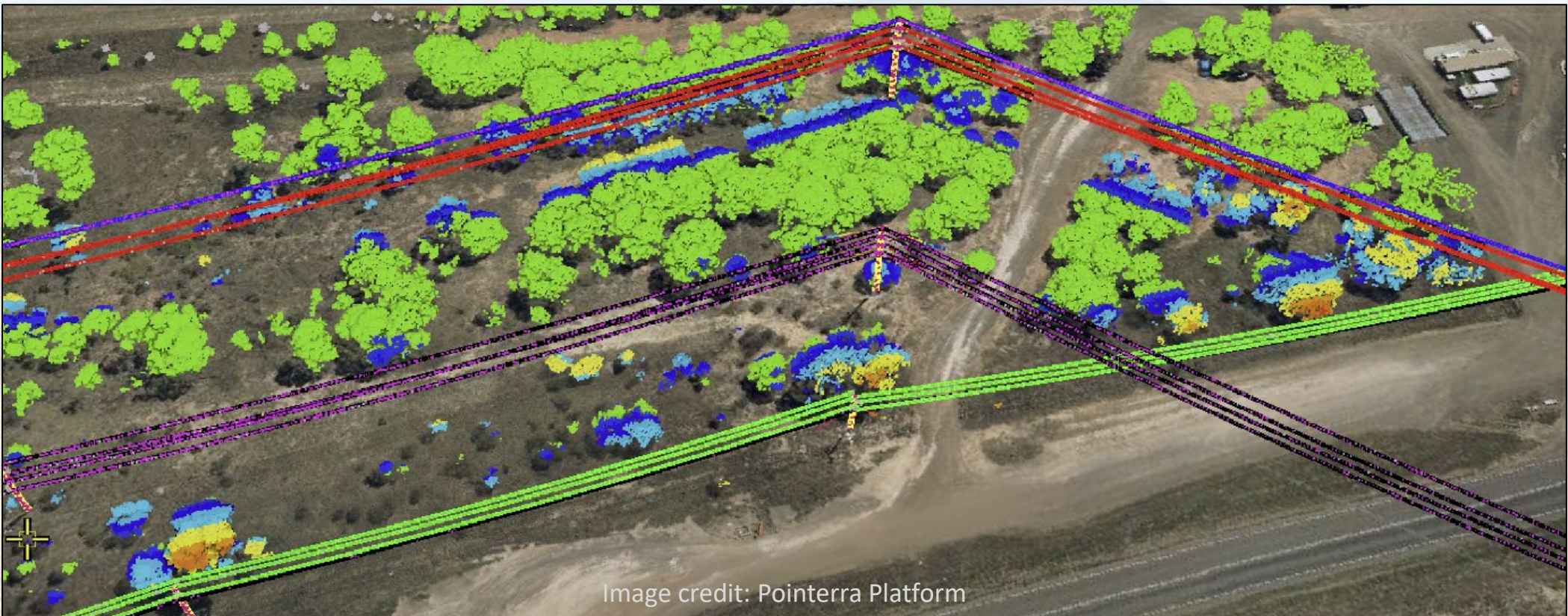
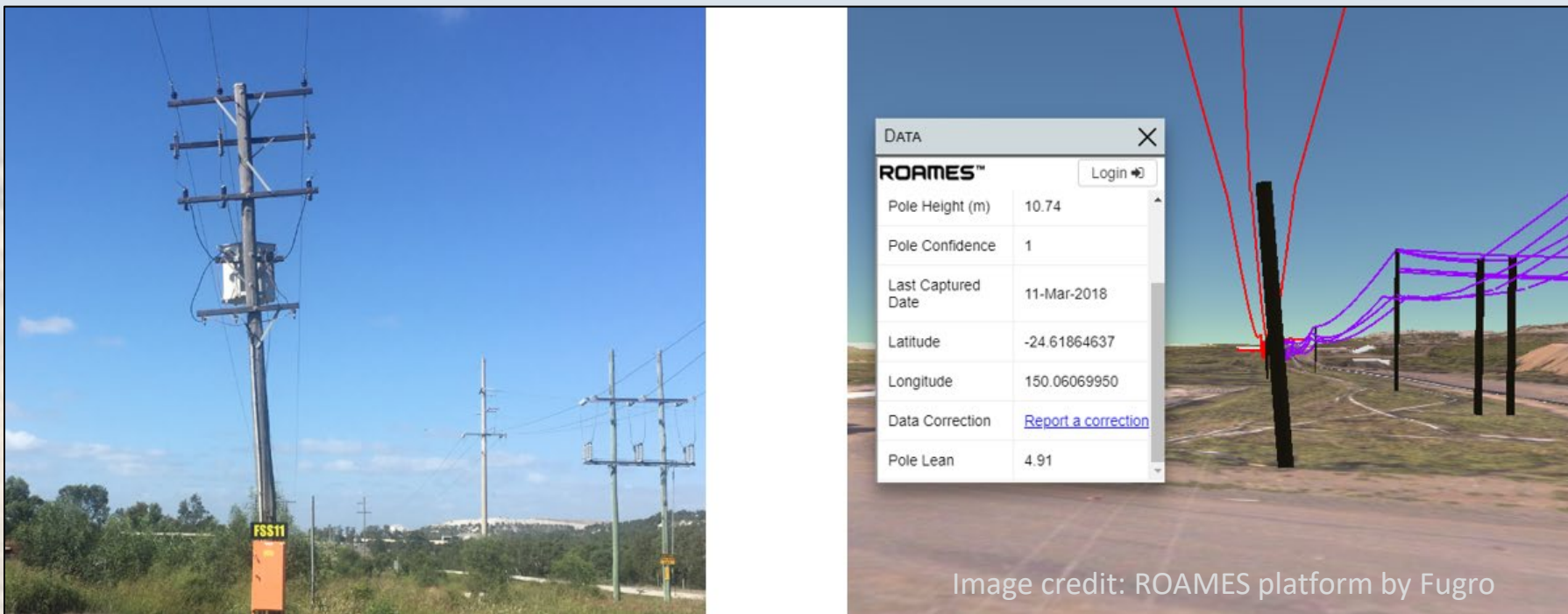


Image credit: Pointerra Platform

Real-World Insights Delivered

- Structure lean detection



Real-World Insights Delivered

- Design overlays for constructability

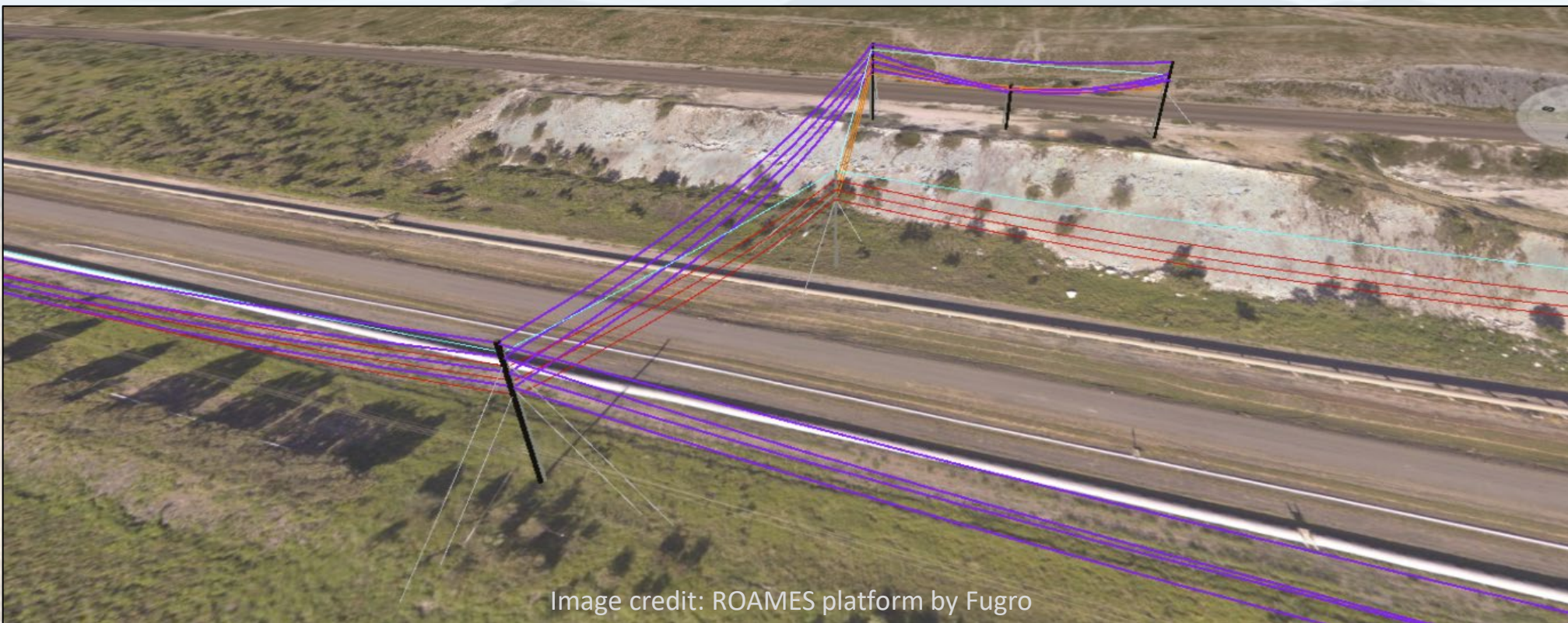


Image credit: ROAMES platform by Fugro

Real-World Insights Delivered

- Poletop defect inspection incorporation

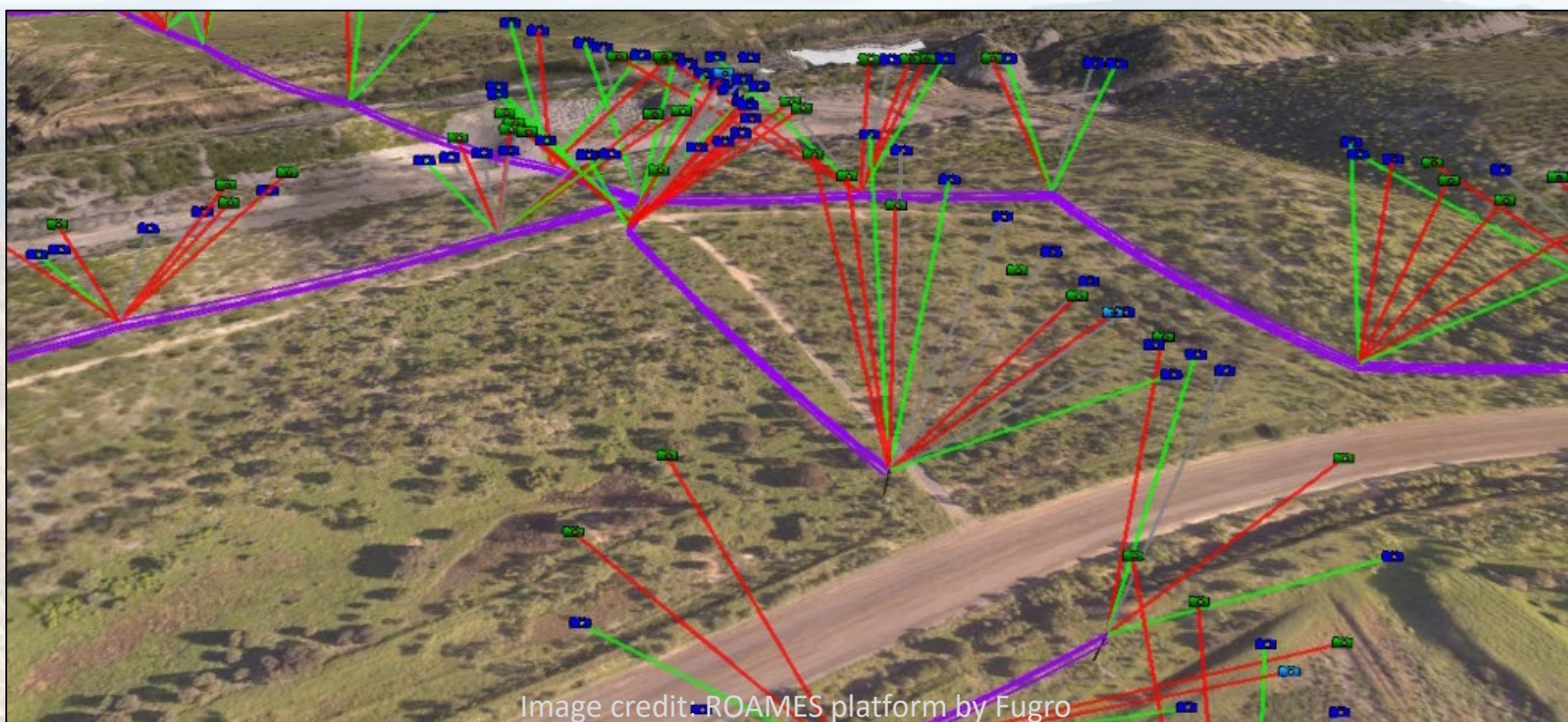


Image credit: ROAMES platform by Fugro

Powerline Defect

Identifier	DAW 18_D_002	Severity Category	Cat2, Cat3, Cat4
Pole	C15	ABSL	ME-CMU
Detail	Cat2: Conductor (ALUM) insufficient clearance Cat3: Conductor hand tie (ALUM) Repair damaged Conductor hand tie (ALUM), Cause - non compliant installation. Cat4: Crossarm (timber) Repair loose/twisted Crossarm (timber), Cause - hardware/king bolt loose.		
Roames PoleID	8512965		
Date	15 November 2018		
Workorder#	00880292		

ROAMES

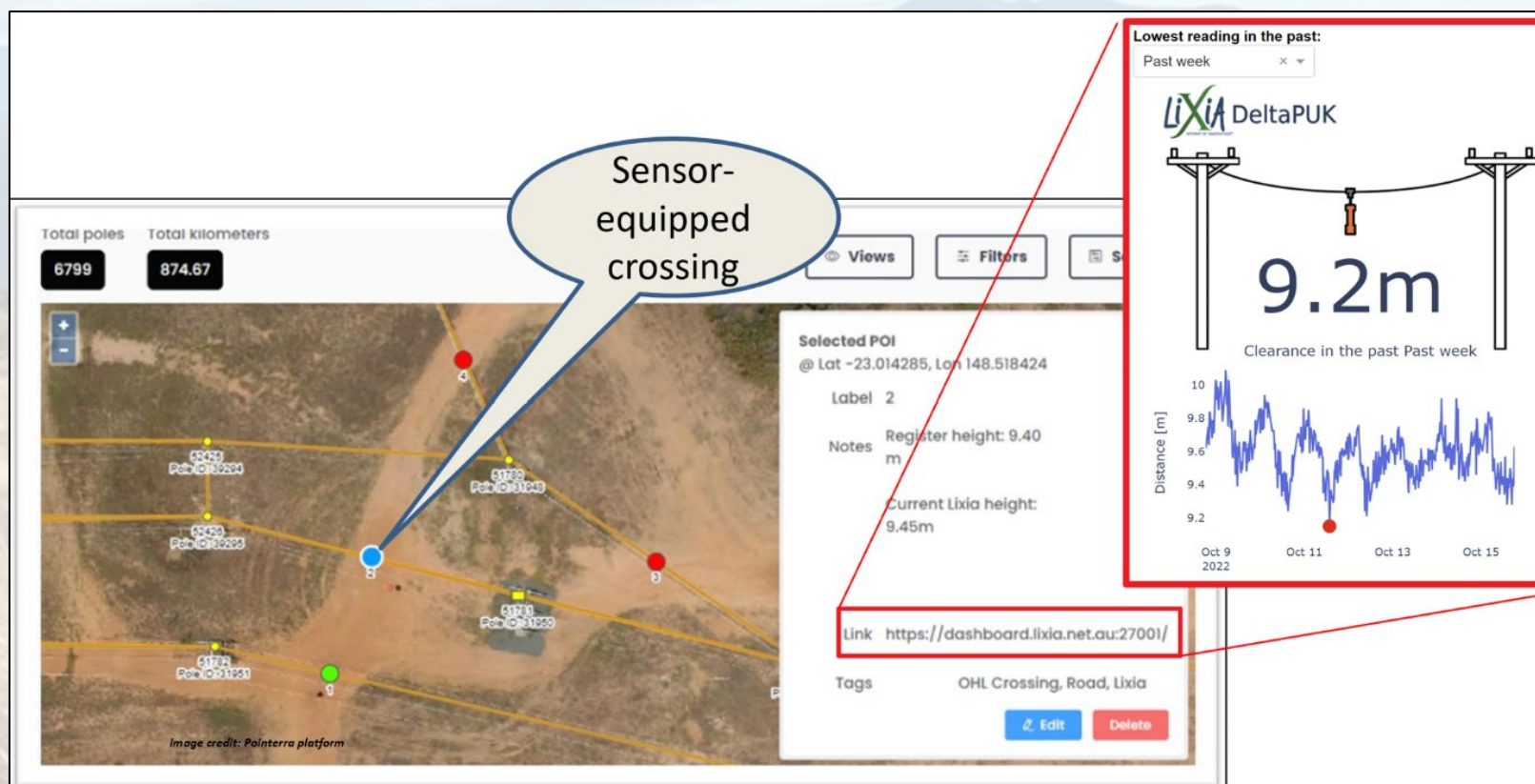
ROAMES

ROAMES

ID	Severity	Voltage	Relative Level	Inspector Comment
16484	Cat2	HV	2	Conductor (ALUM) insufficient clearance Conductor (ALUM)
16485	Cat3	HV	1	Conductor hand tie (ALUM) Repair damaged Conductor hand tie (ALUM), Cause - non compliant installation
16486	Cat4	HV	1	Crossarm (timber) Repair loose/twisted Crossarm (timber), Cause - hardware/king bolt loose

Real-World Insights Delivered

- IoT integration for real-time updates

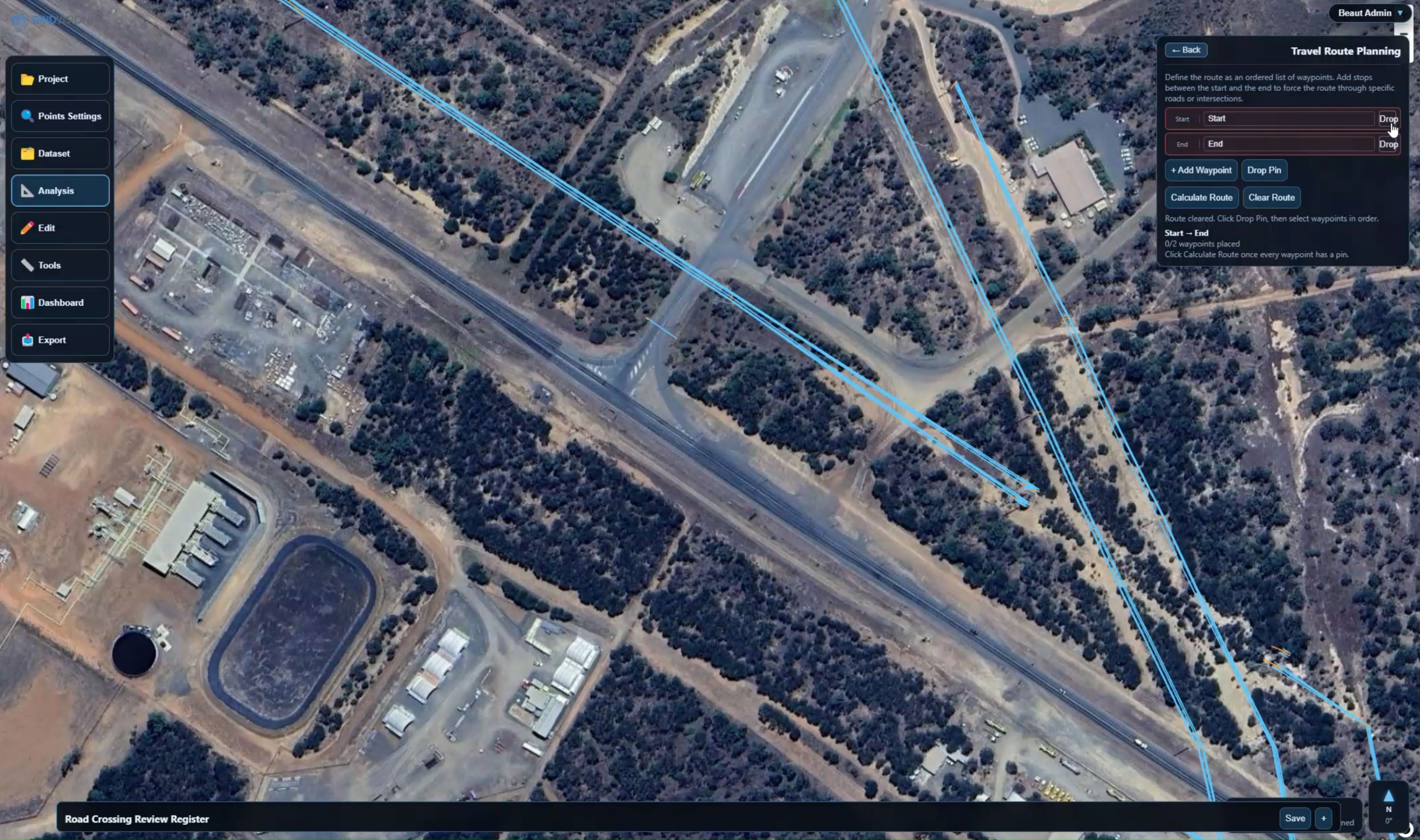


Real-World Insights Delivered

- Travel route planning (considering powerline clearance)







- Project
- Points Settings
- Dataset
- Analysis
- Edit
- Tools
- Dashboard
- Export

[← Back](#)

Travel Route Planning

Define the route as an ordered list of waypoints. Add stops between the start and the end to force the route through specific roads or intersections.

Start

Start

Drop

End

End

Drop

+ Add Waypoint

Drop Pin

Calculate Route

Clear Route

Route cleared. Click Drop Pin, then select waypoints in order.

Start → End
0/2 waypoints placed
Click Calculate Route once every waypoint has a pin.

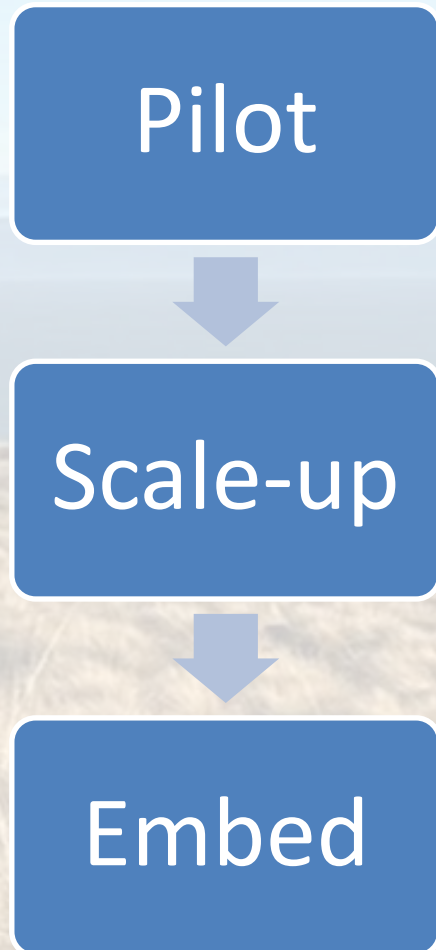


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HVStatus[®]

CABLE & RETICULATION
MANAGEMENT PLATFORM

Implementation Roadmap



Recent client comments:

- *“Digital twins and the many options / approaches are stackable.”*
- *“You don’t need to go from 0 to 100mph in one go, or lock in one approach.”*
- *“Start with a baseline or pilot capture and build up as slowly as you like over time based on what’s important to you.”*

Questions & Discussion

From the Gridvision team, thank you for the opportunity to meet with you at QuarryNZ 2026.

