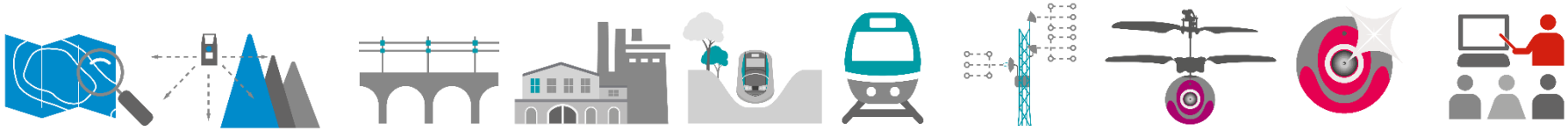
SNCF RÉSEAU

ALTAMETRIS

UNE SOCIÉTÉ DE SNCF RÉSEAU



Who we are

2012 : Creation of the Drone Department within SNCF Group ; **3 people**

2013 : SYNAPSES Prize (Open Innovation Challenge) won in partnership with EDF (Electricy Utility)

2014 : Creation of an Intra-Company ;6 people

2015 : Major Partnership with ONERA ; The French National Aerospace Lab

2016 : 650 flights and 10 000km covered !

2017 : Creation of ALTAMETRIS as a spin-off ; 100% owned by SNCF Réseau ; 30 people

2018 : Opening of our first regional office; **35 people**

2020 : European Leader in the Data for Asset Management Sector !

Mapping

Consulting

Communication

Surveillance

Inspection
Asset Management

Inspection
Power Lines and Telecom

Inspection
Earth and Civil Works

Inspection
Equipment

Nicolas POLLET
CEO
PhD. Engineering Geology

Flavien VIGUIER
Deputy CEO / Technical Expert
Eng. Land Surveyor

Oulimata DIA
Chief Strategy Officer
Eng. Electrical Engineering

Anthony Victor MEHL
Sales & Marketing Director
Master Business Engineering

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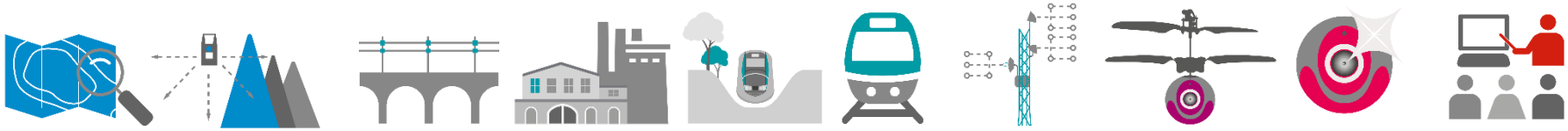
USE CASE 1 : 3D Data for Asset Management

USE CASE 2 : Vegetation Risk Analysis

USE CASE 3 : Asset Surveillance

USE CASE 4 : Inspections for Asset Maintenance

USE CASE 5 : Applied AI for Gauge Extraction



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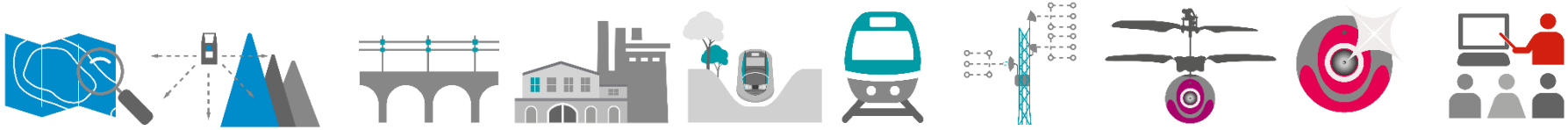
USE CASE 1 : Geo-data Integration for SIG & Asset Management



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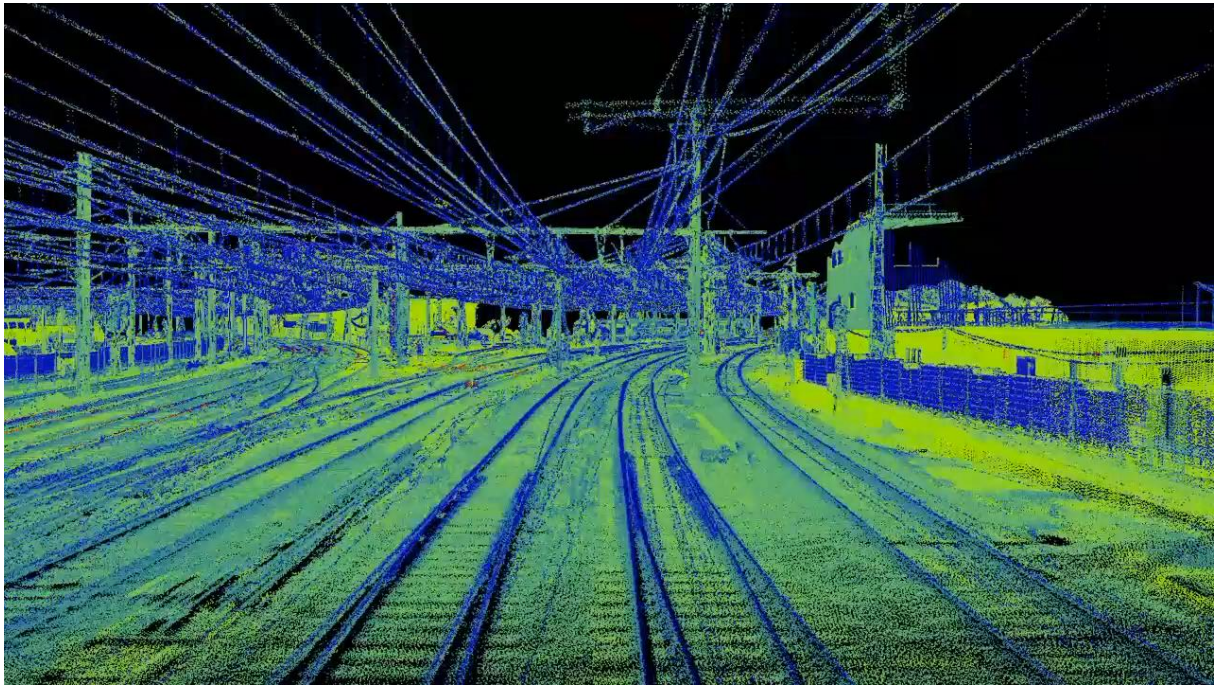
From point cloud to…

From point cloud to…

From point cloud to…



LIDAR TECHNOLOGY ➔ Dense point clouds :

- 250 to 1000pts/m²
- Absolute precision : 2cm
- Produce 3D Data
- Little to no operation disruption
- Highly automated processing

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From point cloud to…

LIDAR TECHNOLOGY ➔ Dense point clouds :

- 250 to 1000pts/m²
- Absolute precision : 2cm
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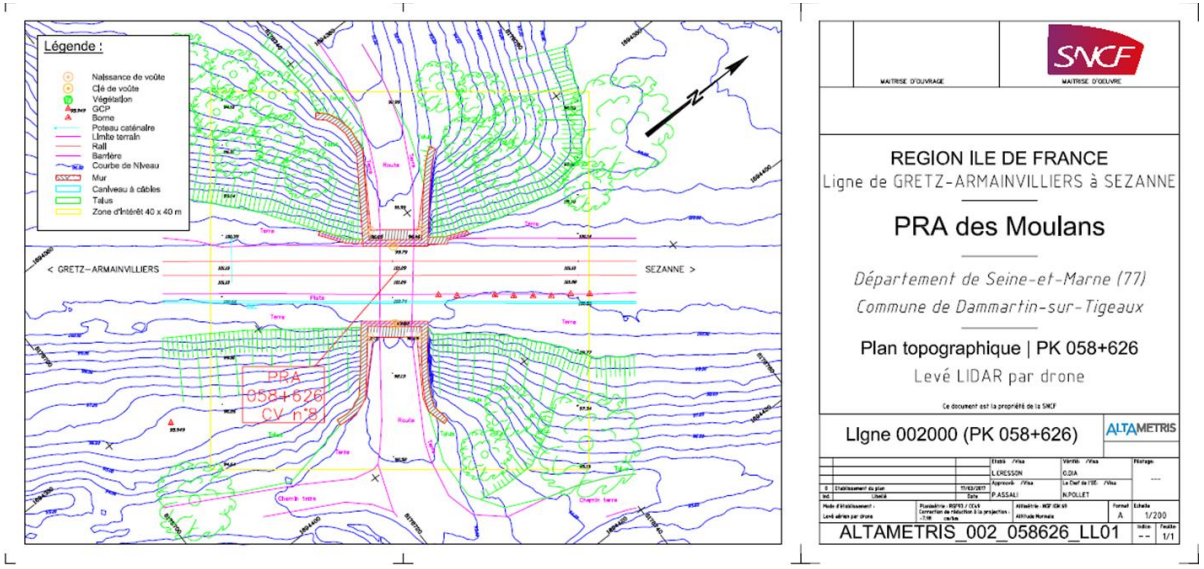
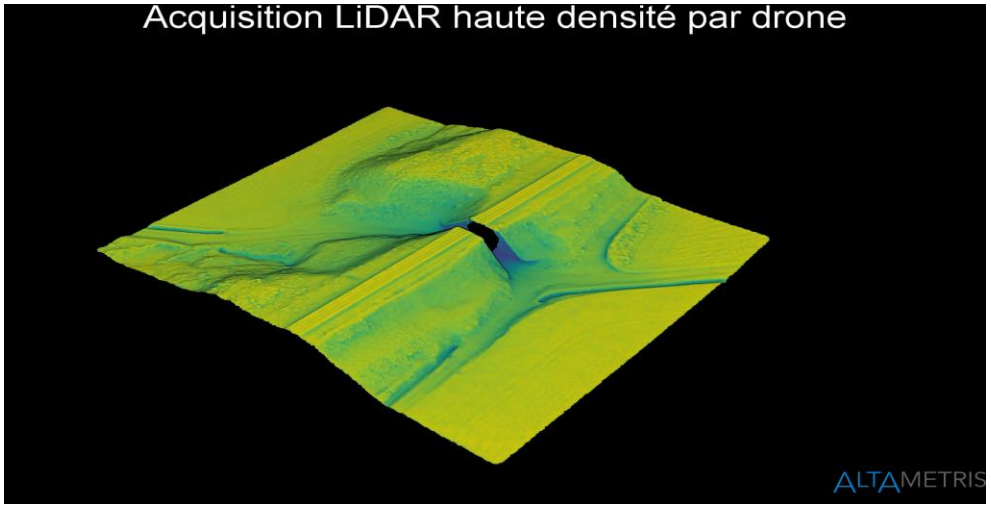
To SIG-friendly or .dwg data



SIG-FRIENDLY DATA ➔ Asset Management Optimized :

- Easy archiving of 3D data
- Possibility to make measurements and cross-checks without going to the field
- 100% integrated within your SIG or in coordination with InfoSys teams
- Archiving for N+1 comparison and evolution
- Agile and Precise !

Land Survey - Les Moulans



TARGETS :

✓Digital Elevation Model
✓Scatter Plot: 250 pts/m²
✓Dwg drawing 1/200
✓Precision : <5cm

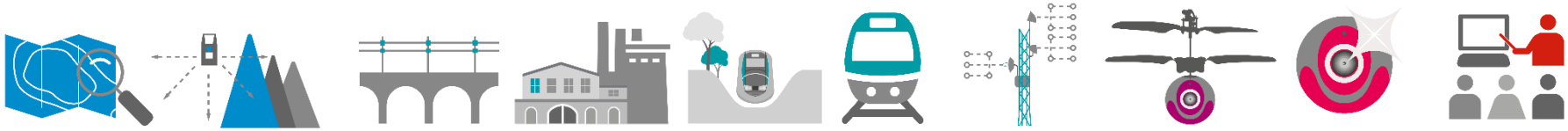
TOOL : Ricopter + RIEGL LIDAR

BENEFITS :

✓Lidar goes through green-cover
✓No need to clean-up the area
✓No need to send people near from the railway
✓Conform to Railway Standards

➔ **Rain Water evacuation model**
➔ **Landslide**
➔ **Erosion**

USE CASE 2 : Vegetation Risk Analysis



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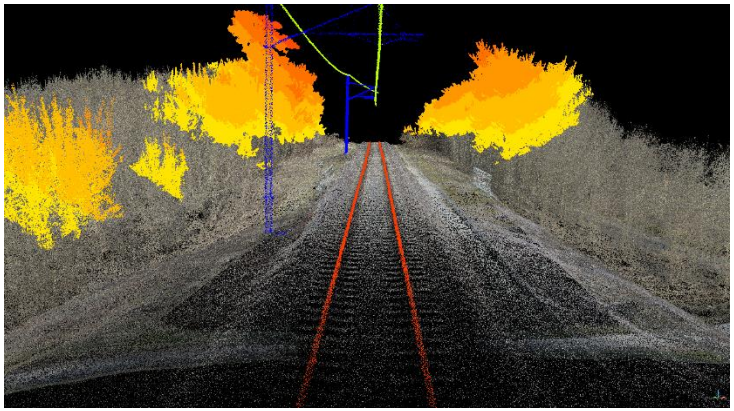
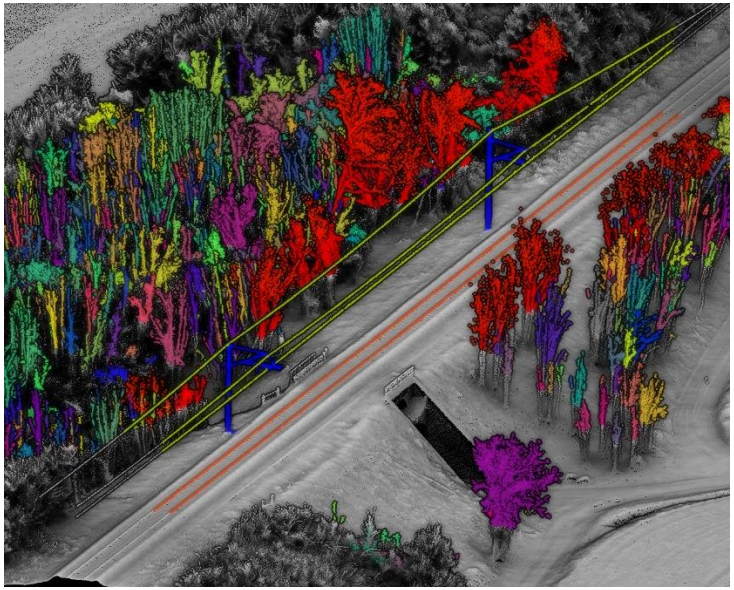
Vegetation Classification





TARGETS :

✓**Anticipate Tree and Green Cover Maintenance**

✓Scatter Plot: 250 pts/m²

✓Precision : <5cm

✓Classify Tree per :

- ✓ Proximity to the infrastructure
- ✓Height
- ✓Size of the trunk

TOOL : Ricopter + RIEGL LIDAR

BENEFITS :

✓**Lidar goes through green-cover**

✓**No need to clean-up the area**

✓**Vegetation Maintenance arrives prepared!**

✓**Better use of human ressource and planning!**

AREAS OF AUTOMATION :

- Flight Path Calculation and Flight Execution
- Objects Recognition (trees from pylones, rail from road, catenary)
- Mapping and anticipated mapping

Vegetation Risk Management

OBJECTIVES:

✓Acquisition survey of a gas transportation/ powerline network in a dense vegetation cover

✓**Acquire precise data without sending people on the ground**, generate reference for future maintenance

TOOLS: Delair DT26 / Ricopter

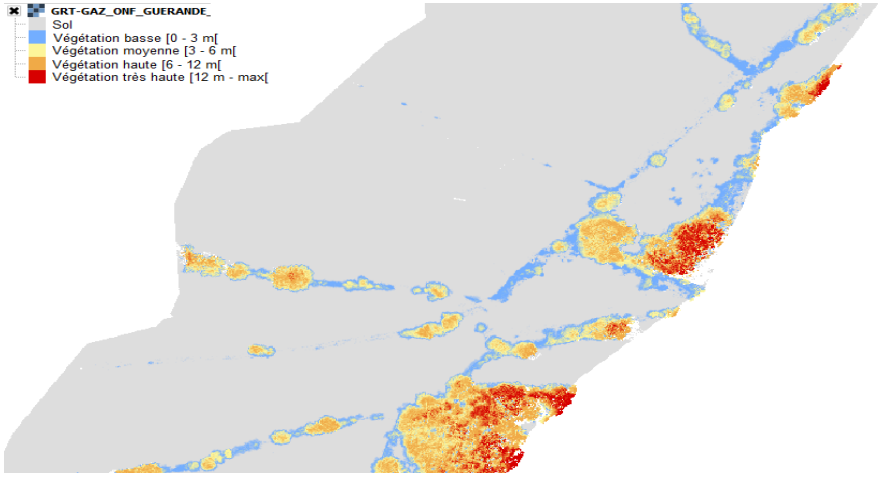
STRENGTHS :

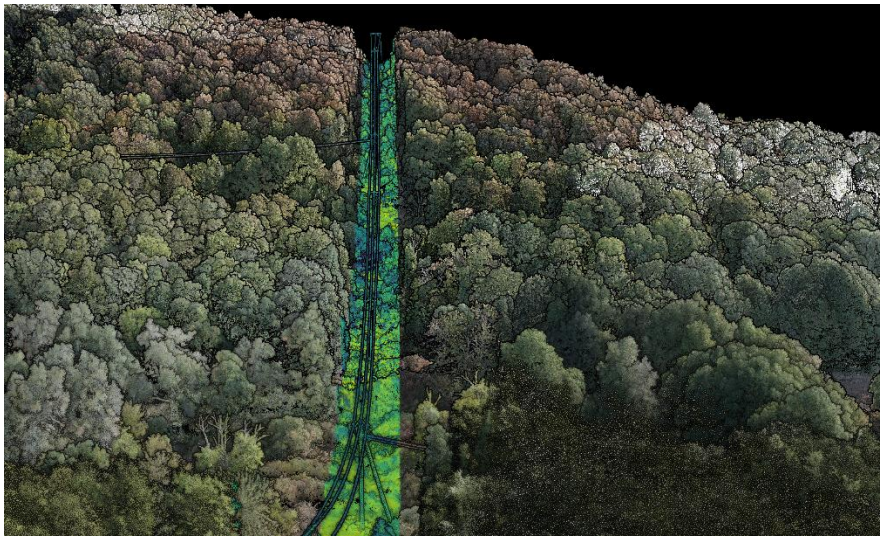
✓ A high resolution acquisition adapted to the 50 km linear

✓**A 3D model with centimetric precision** of the whole area

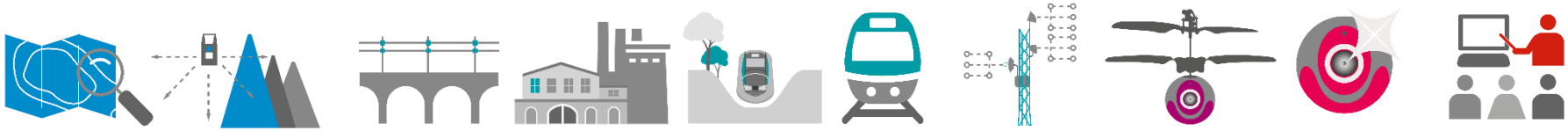
✓**A personalized inventory cartography** of the vegetation height

✓**Multispectral data to characterize the state of the vegetation (also available)**





USE CASE 3 : Asset Surveillance



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Asset Surveillance

THREE WAYS TO DO IT :

✓**Companion for Safety** : the drone provides bird-eye view of a scene to assist a small mobile team

✓**Captive Multi-copter** : 24H/24H security to watch over a specific area

✓**BVLOS / Longue Distance** : All-night security over 5-10km long-lines to identify and track threats.

BENEFITS :

- ✓ See the criminals before they see you (anti-poaching, area surveillance, worksite surveillance)
- ✓ Identify and quantify a threat to measure risk exposure
- ✓ Reduce risk exposure
- ✓ Generate data for judiciary follow-up or coordination with Police Forces

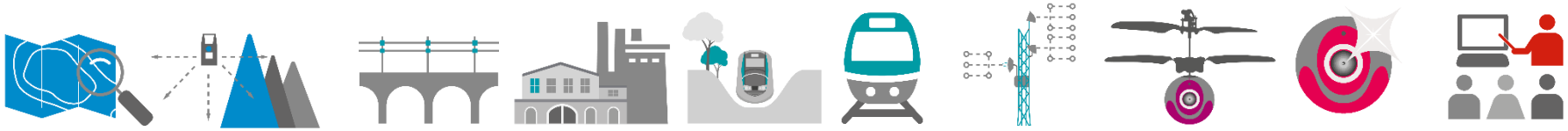
Asset Surveillance

[redacted]

Asset Surveillance

Asset Surveillance

USE CASE 4 : Inspections for Asset Maintenance



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Inspection - Viaduct of Puyoô

TARGETS:

✓**Detect & Characterize masonry defects**

TOOL: Falcon 8 & **Sony Nex 7** 16 Megapixel

BENEFITS :

✓ Expert can analyse data from his desk : better use of HR

✓ **No requirement for heavy planning or security process like for cherry pickers**

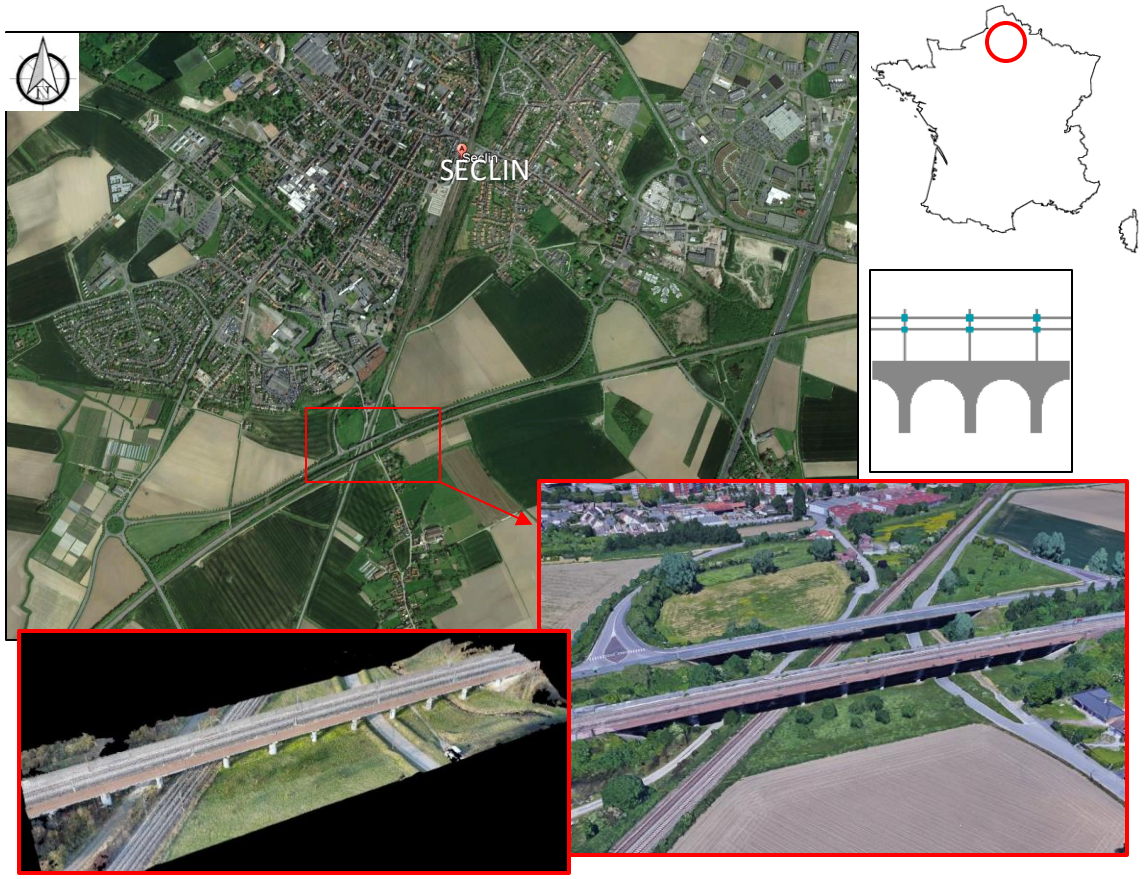
AREAS OF AUTOMATION :

✓Flight Path

✓Defect Recognition

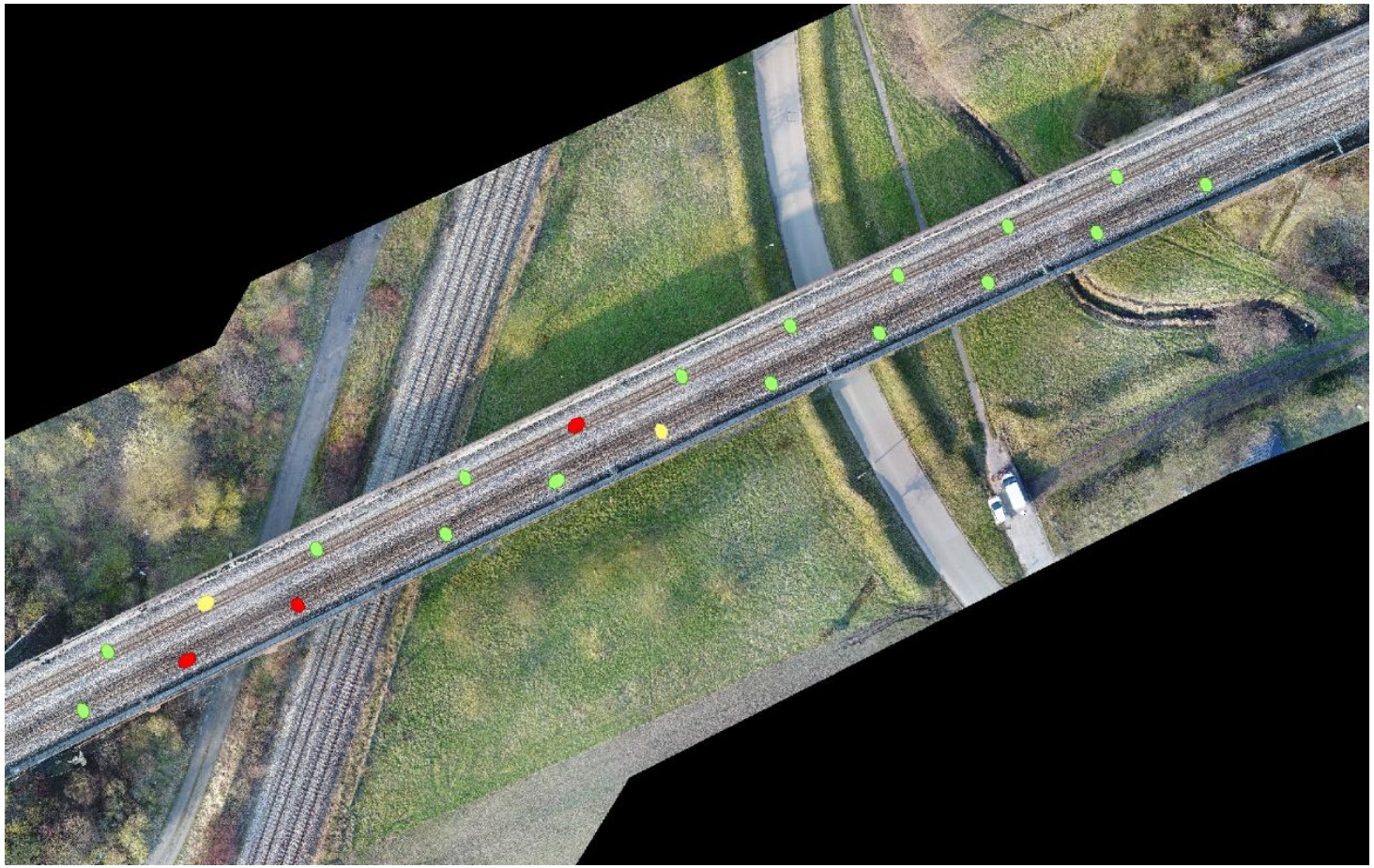
✓Report Generation

Digitalization & Inspection - SECLIN



ALTAMETRIS

Digitalization & Inspection - SECLIN



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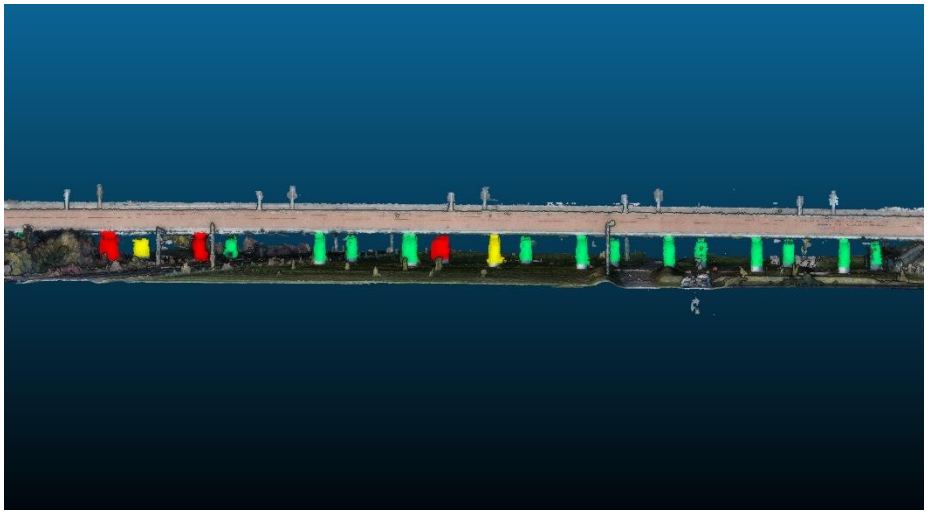
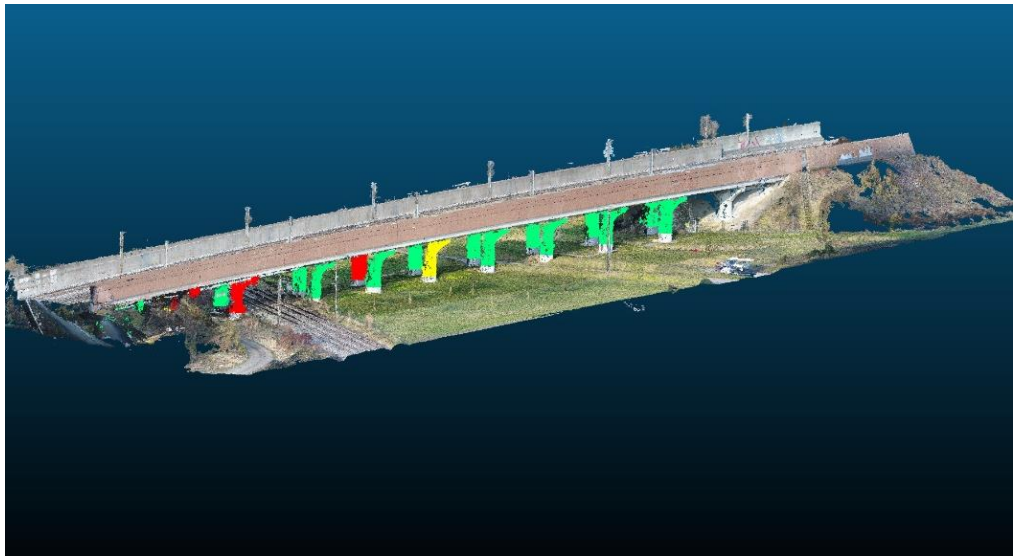
Digitalization & Inspection - SECLIN





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Inspection – Metallic structures

OBJECTIVES:

✓**Locate and identify rusting, leaks and aging defects**

TOOLS: DJI Phantom 4 Pro

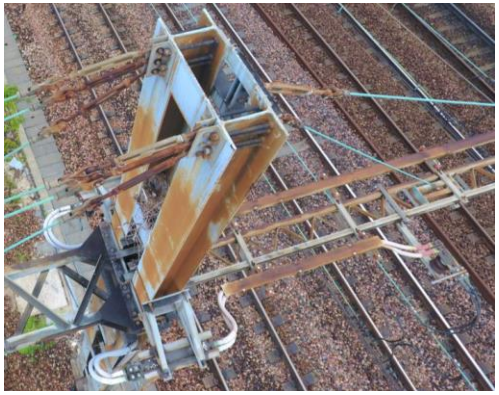
STRENGTHS :

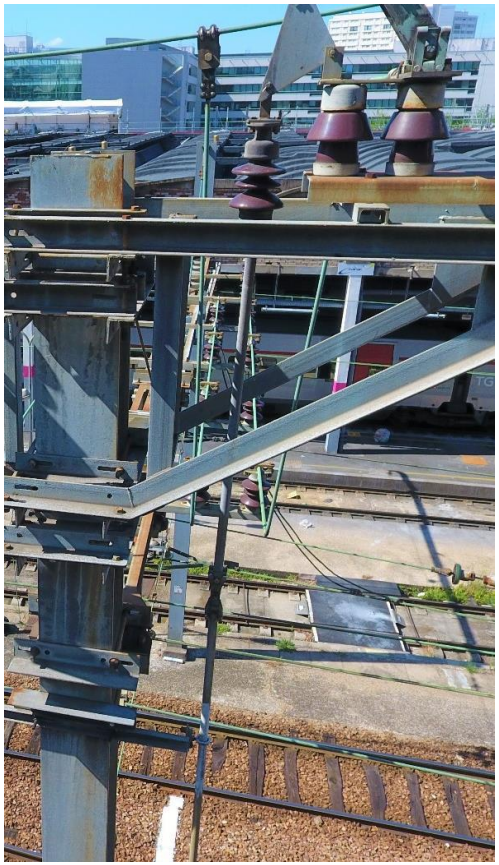
✓ **Non-intrusive work and no impact on current operations**

✓ Intervention reactivity enhancement

✓ Detailed characterization of defects thanks to precise photographic data

Inspection – Power line mats





OBJECTIVES:

✓**Locate and identify aging defects**

TOOLS: DJI Phantom 4 Pro

STRENGTHS :

✓ **Non-intrusive work** and no impact on current operations

✓ Intervention **reactivity enhancement**

✓ **Detailed characterization** of defects thanks to precise photographic data

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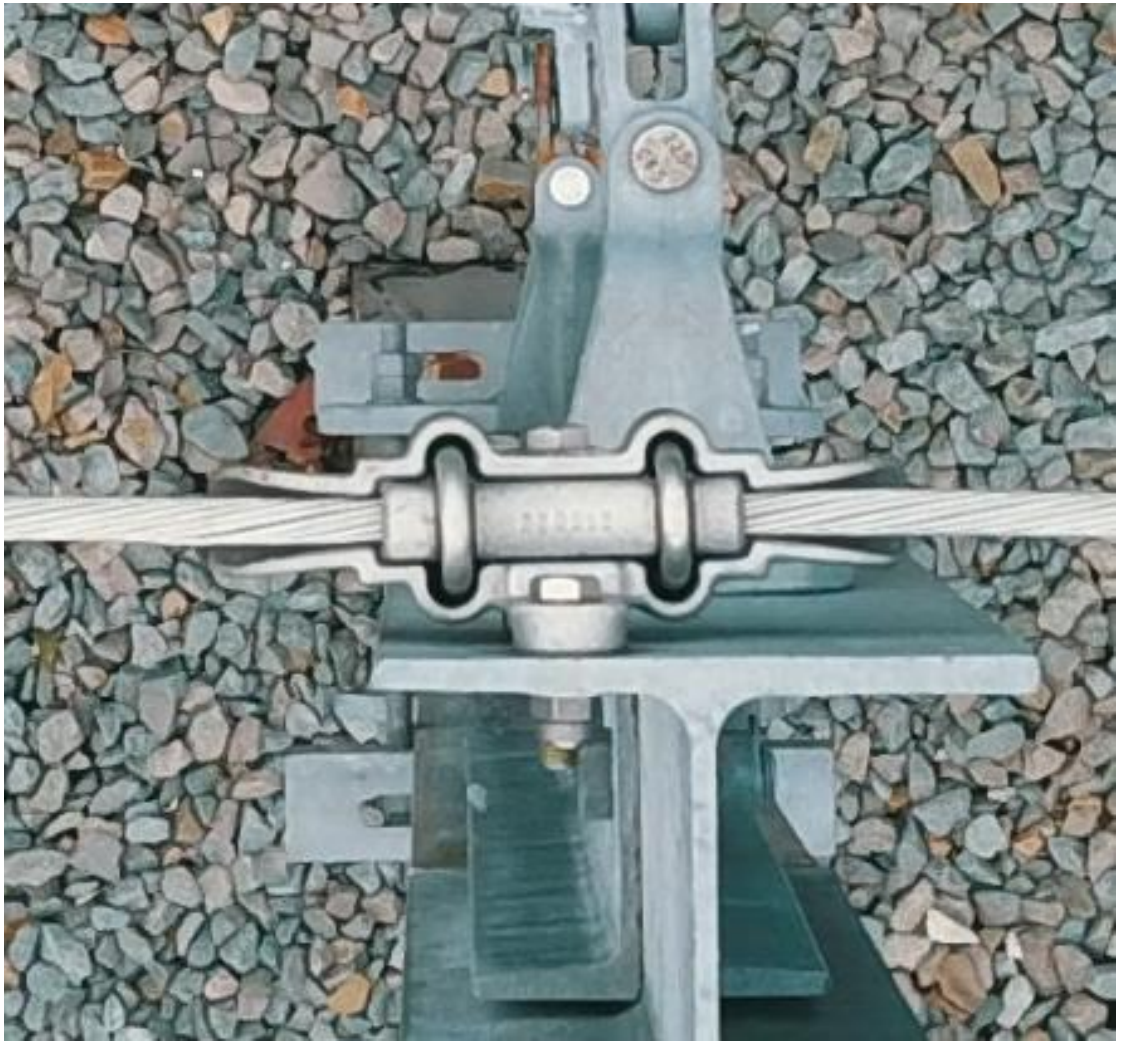

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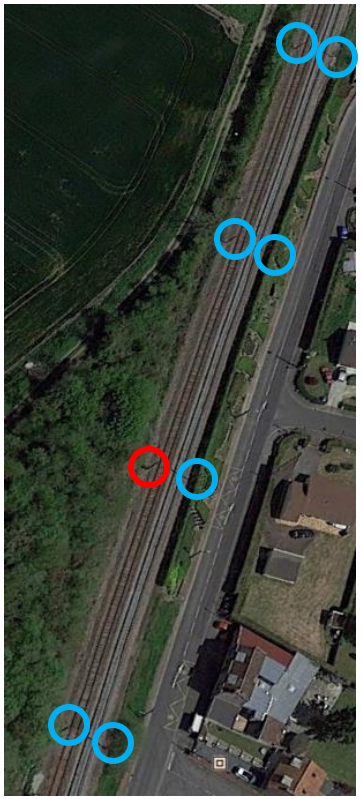
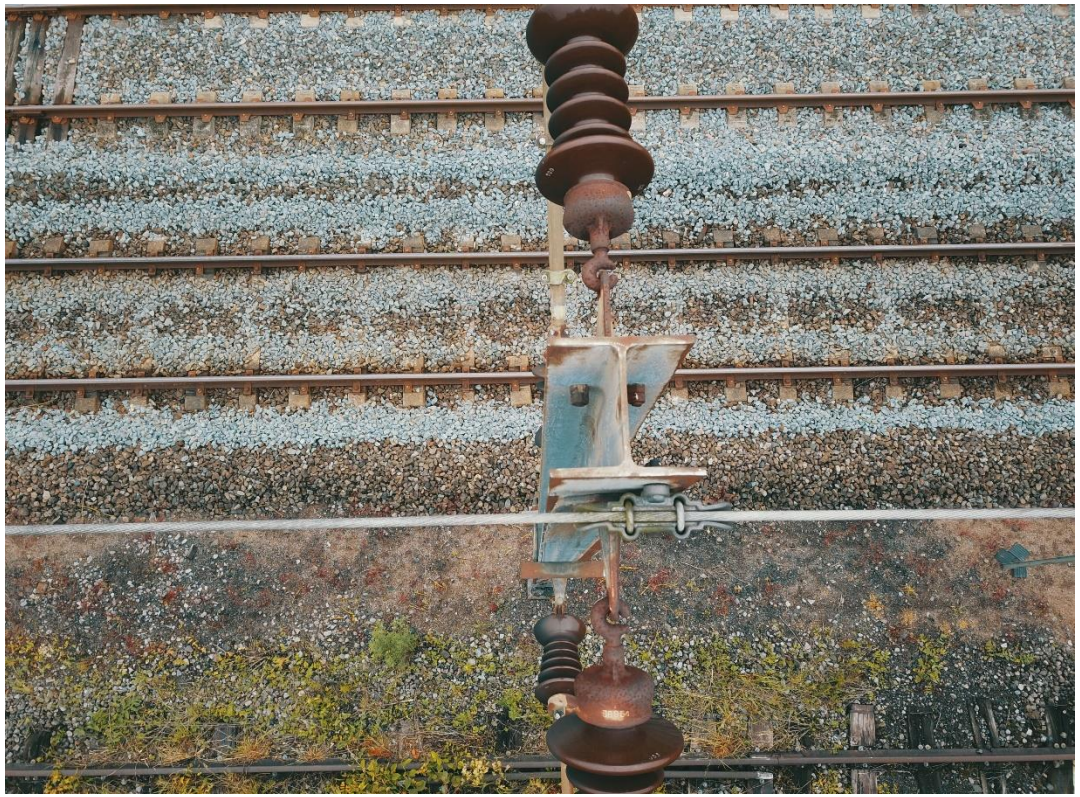
Mapping and Maintenance Optimisation





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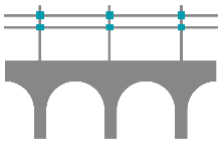
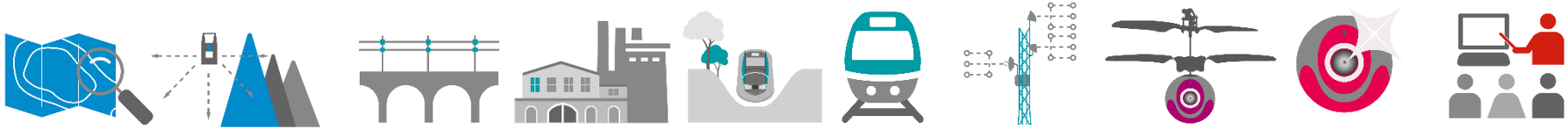
Voie : V1
Poteau : 235-01
Date : 29/05/18



Your work companion

USE CASE 5 : Applied AI for Gauge Extraction



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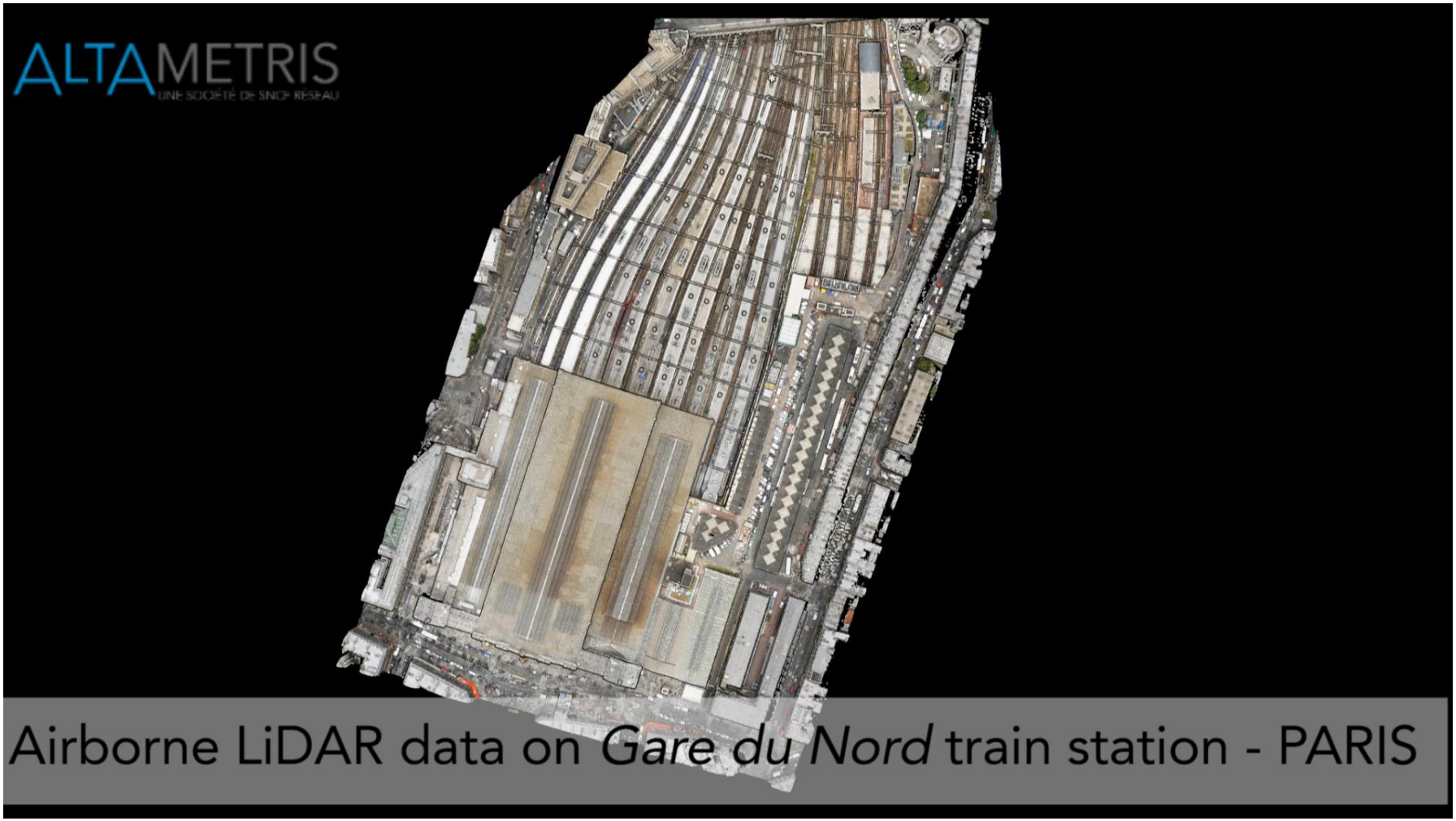
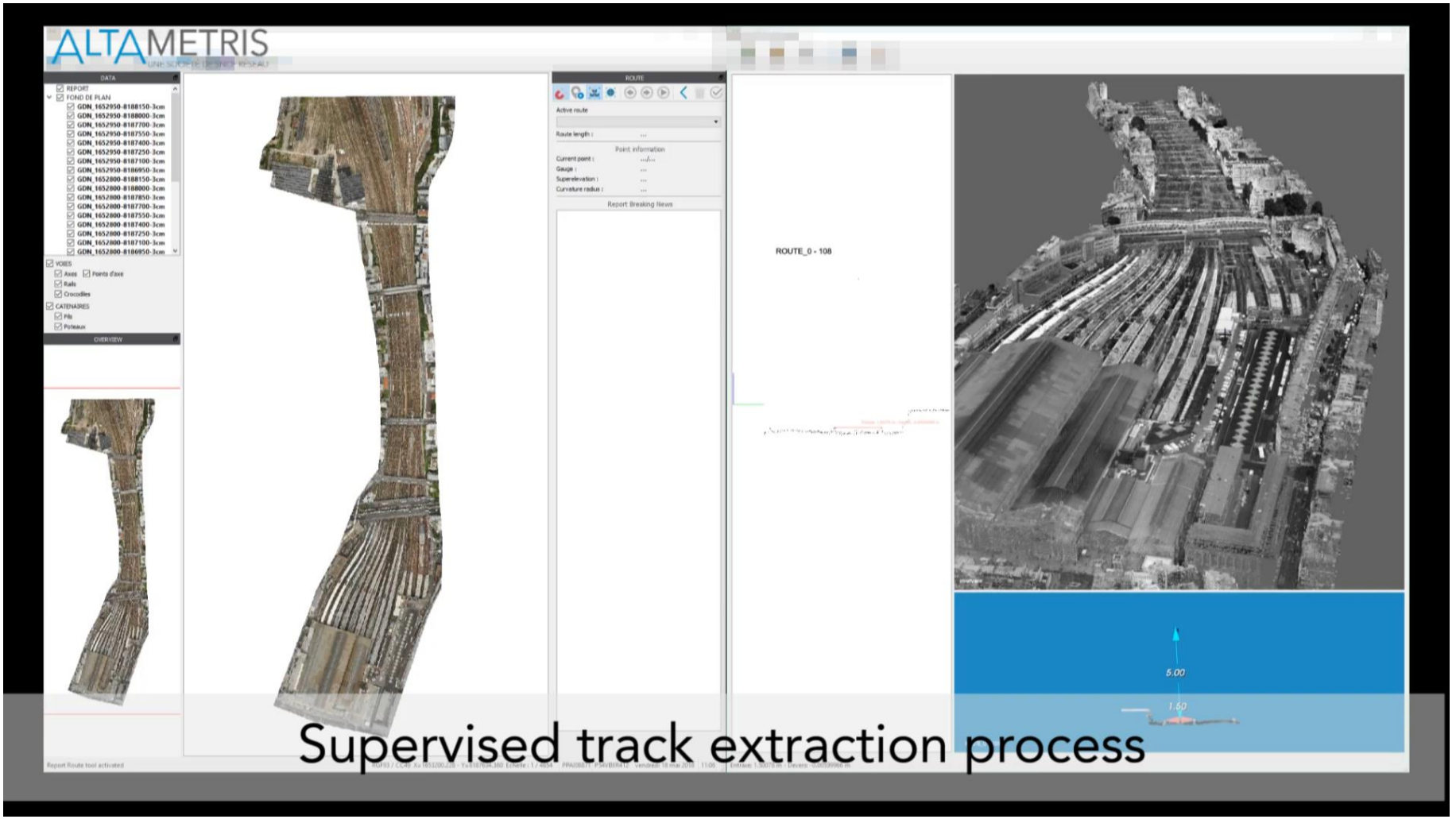
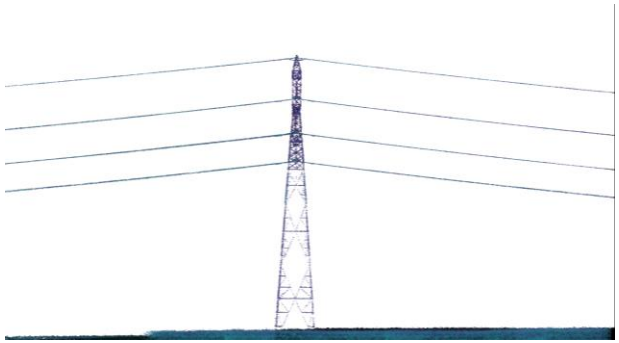
Applied AI for Gauge mapping

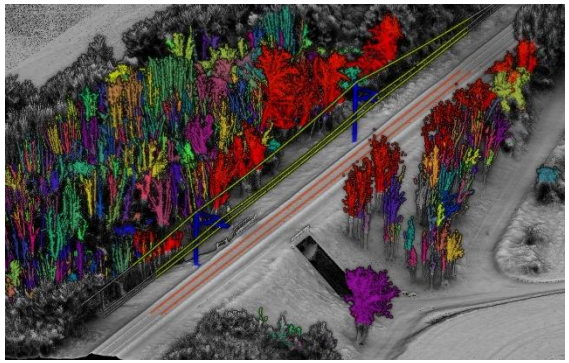


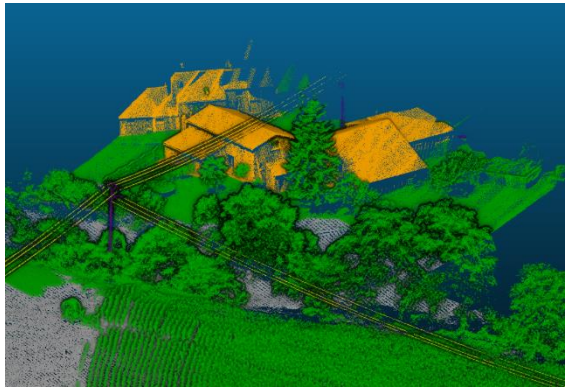
Applied AI for Gauge mapping

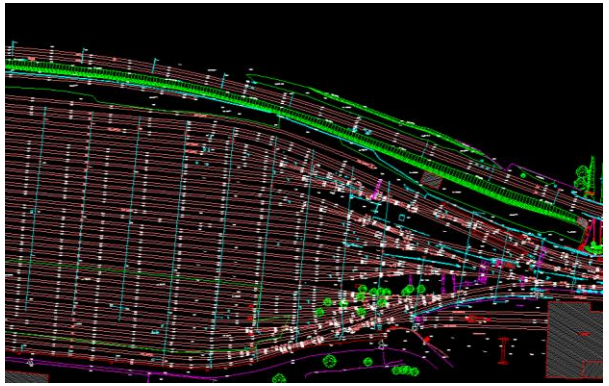


Conclusion









1. Numerous Applications
2. **Agile and Versatile** Tooling
3. **Integrated** Solutions
4. **Optimised** Human Resources use : more safety, more accuracy
5. Moving towards **Digital Asset Management**

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