



[**CLICK TO KNOW MORE**](#)

XenomatiX
True solid state lidar

**Pavement Management
based on a 6D digital scan
- a Zoom-in of BIM**

Geospatial World, Rotterdam
May 16th, 2024

GEOSPATIAL
WORLD
ADVANCING KNOWLEDGE FOR SUSTAINABILITY



Agenda

- x PMS and GIS
- x 6D Digital Scan
- ~~x (Use Cases)~~
- x Digitization Trend
- x To remember...



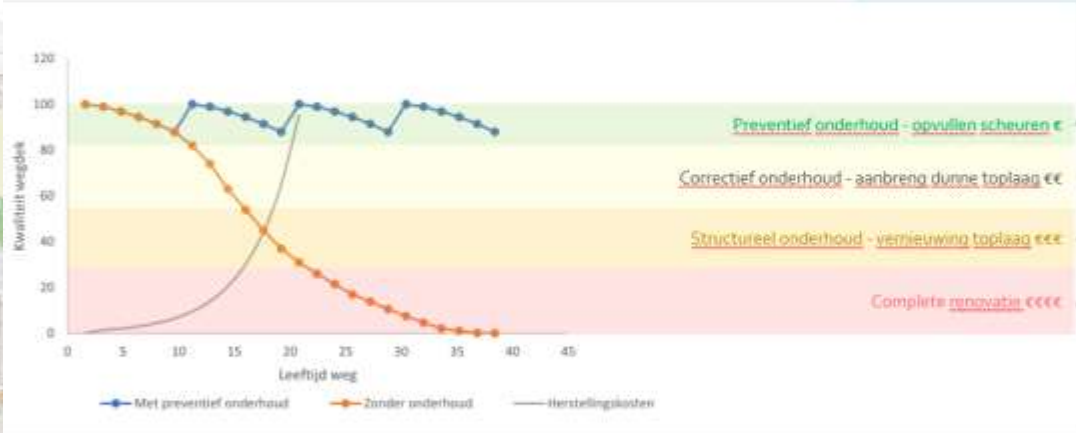
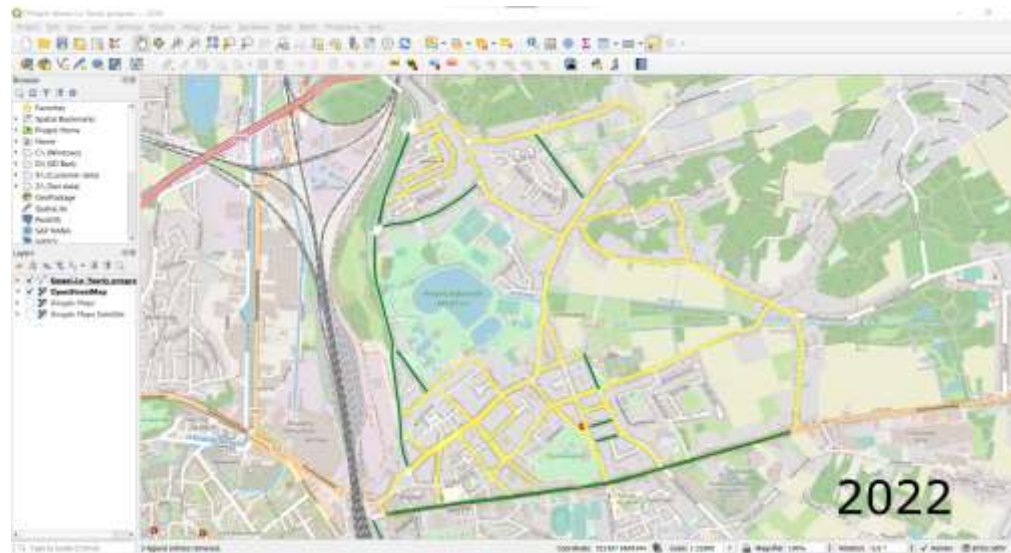
Agenda

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Productive Pavement Management – Control and Save Budget

- ✘ Structural maintenance is 6 to 10 times more expensive than preventive maintenance
- ✘ Simulation of road surface degradation to find the optimal moment for investment
- ✘ Match the color code with your budget
- ✘ Follow-up regularly over time



Project **Map** Insert Analysis View Edit Imagery Share

Clipboard: Paste, Copy, Copy Path

Navigate: Explore, Bookmarks, Go To XY

Layer: Basemap, Add Data

Selection: Select, Select By Attributes, Select By Location, Clear, Zoom To

Inquiry: Measure, Locate, Infographics, Coordinate Conversion

Labeling: Pause, Lock, View Unplaced, Convert, More

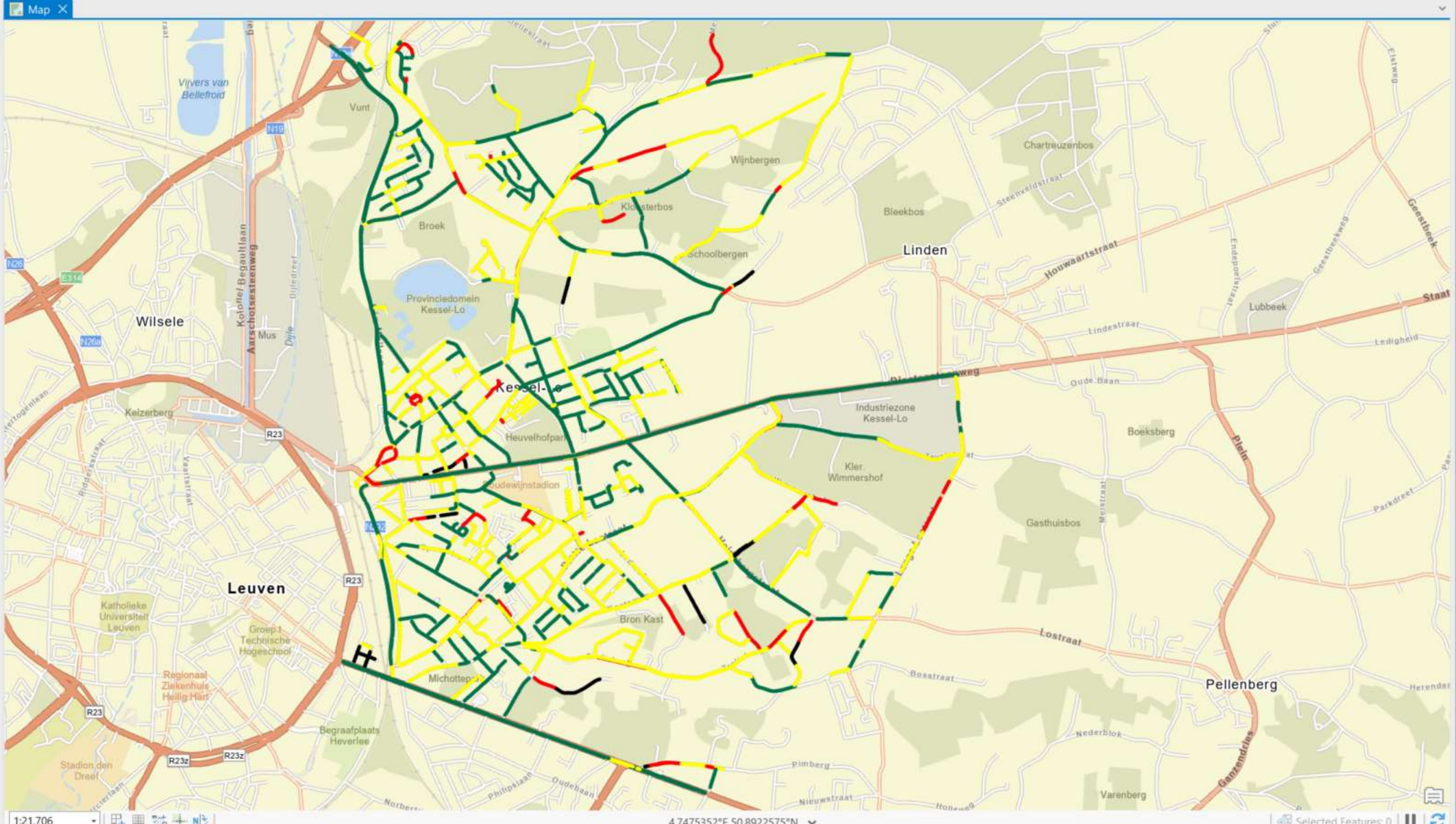
Offline: Download Map, Sync, Remove

Contents

Search

Drawing Order

- Map
- Camera_GeoTagged_GeoTaggedPhotosToPoints
- Charts
 - DateTime Count
 - IRI160
 - worst iri
 - 1.000000 - 4.000000
 - 4.000001 - 6.000000
 - 6.000001 - 10.000000
 - 10.000001 - 30.000000
 - IRI_320_ArcGIS
 - average_2
 - 0.483586 - 4.100000
 - 4.100001 - 7.300000
 - 7.300001 - 10.600000
 - 10.600001 - 30.000000
 - 20221215_Lindensestraat.1.las
 - 20221215_Heuvelstraat.las
 - 20221028_Jan Vandeveldealaan.las
 - Data percentage: 0
 - plan3d
 - World Street Map



Project Map Insert Analysis View Edit Imagery Share Feature Layer Labeling Data

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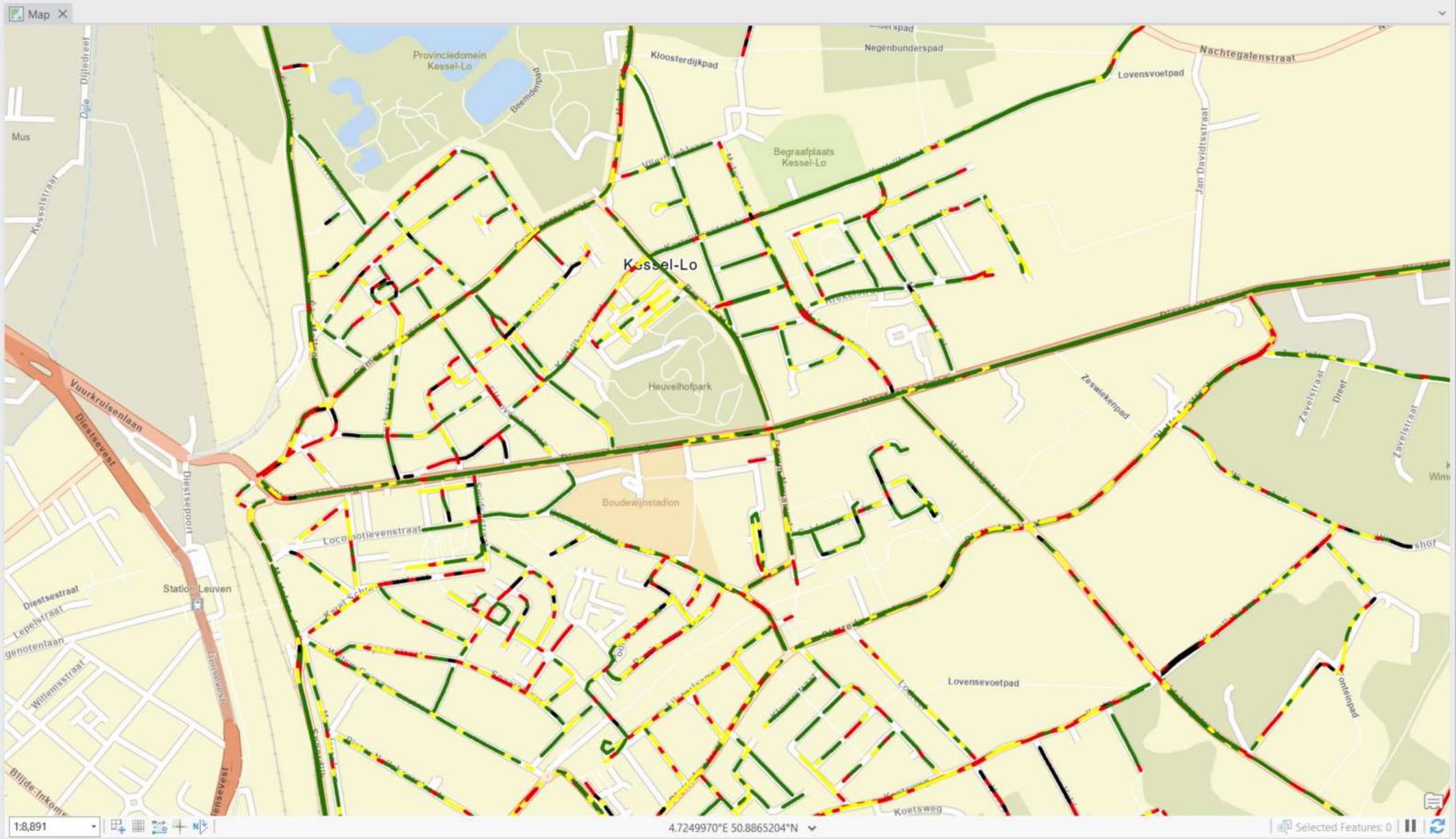
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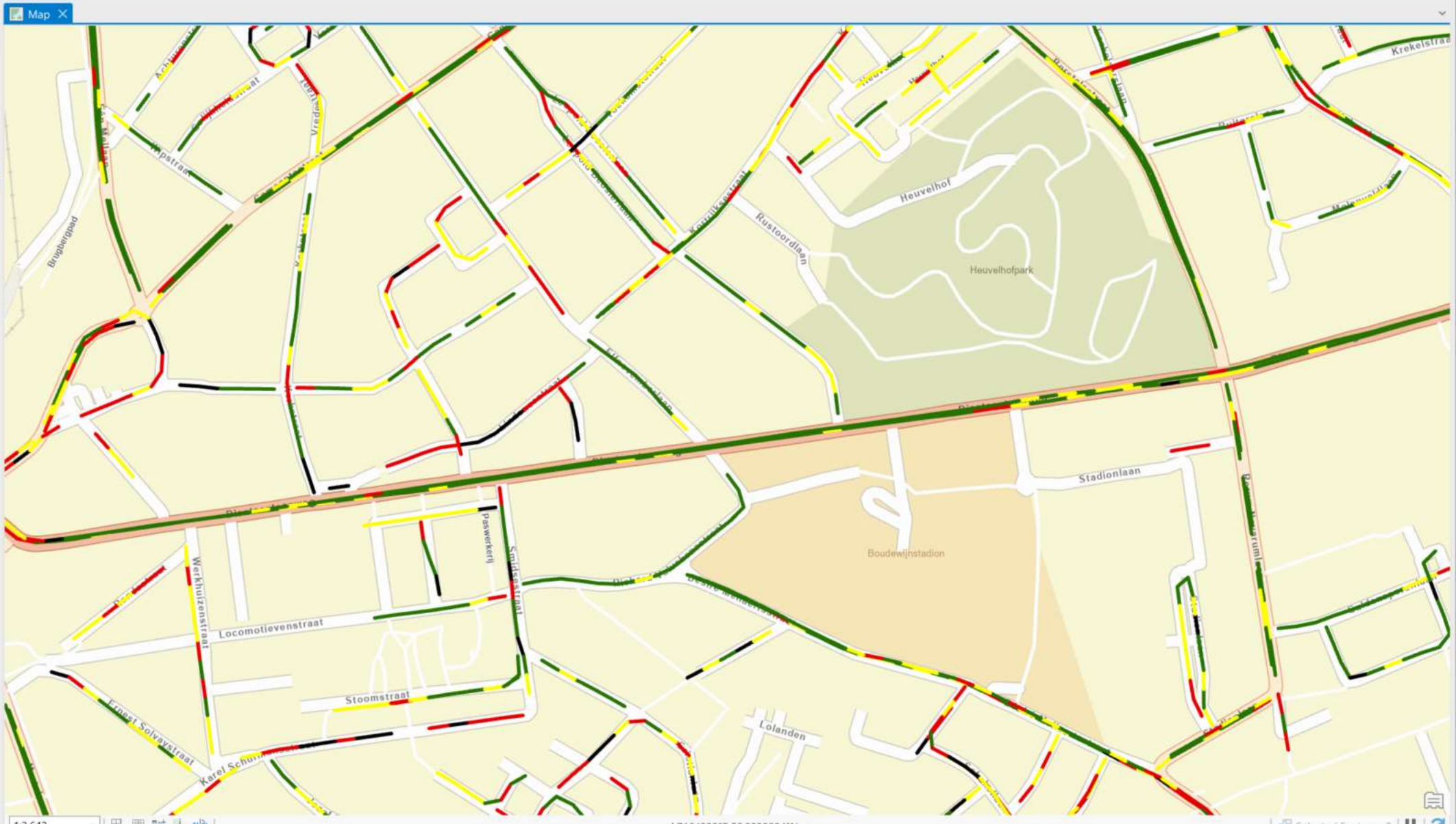
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Clipboard Navigate Layer Selection Inquiry Labeling Offline

Basemap Add Data Add Graphics Layer

Select Select By Attributes Select By Location Clear Zoom To

Measure Locate Infographics Coordinate Conversion

Pause Lock View Unplaced Convert Download Map Sync Remove

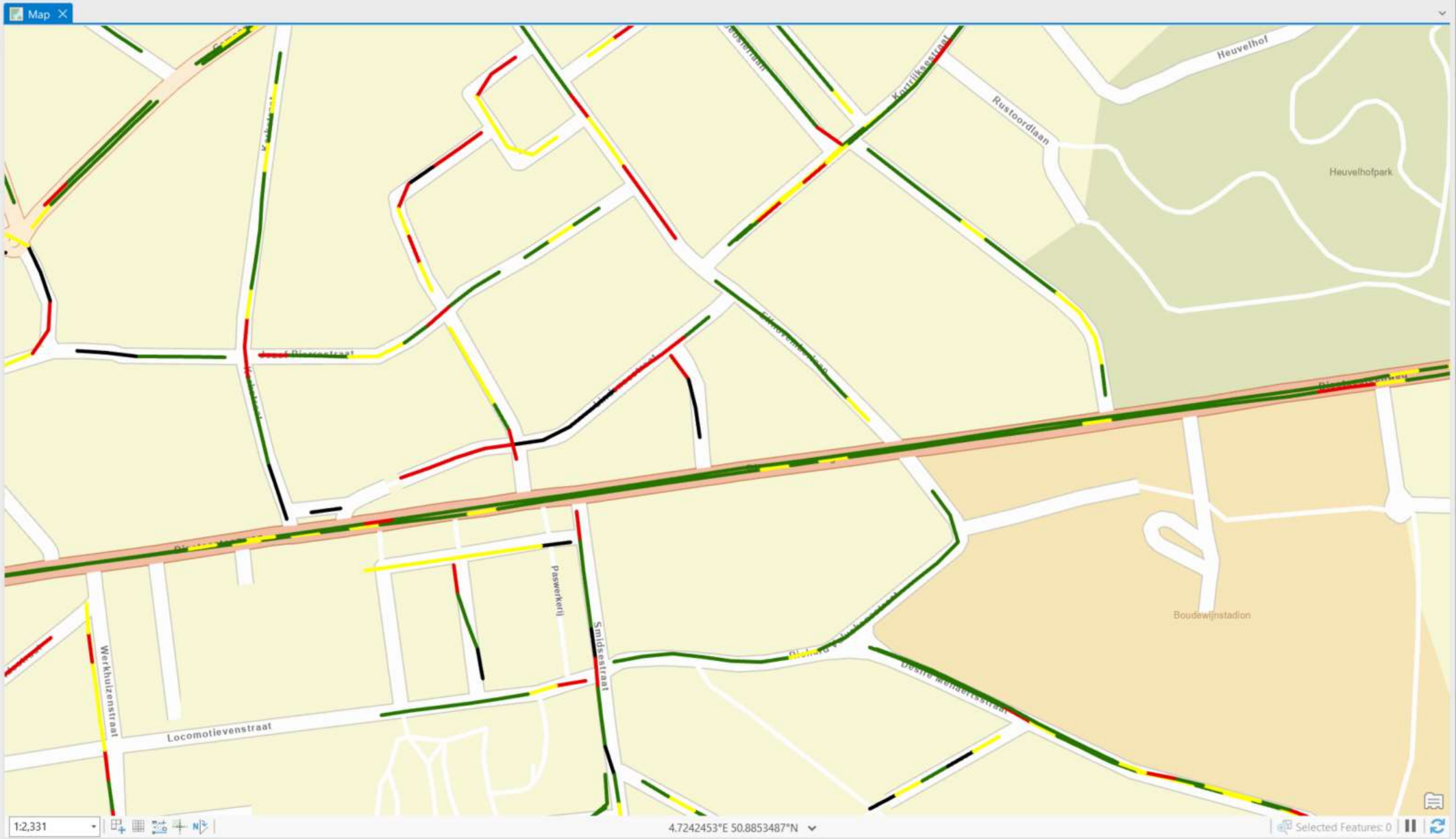
More

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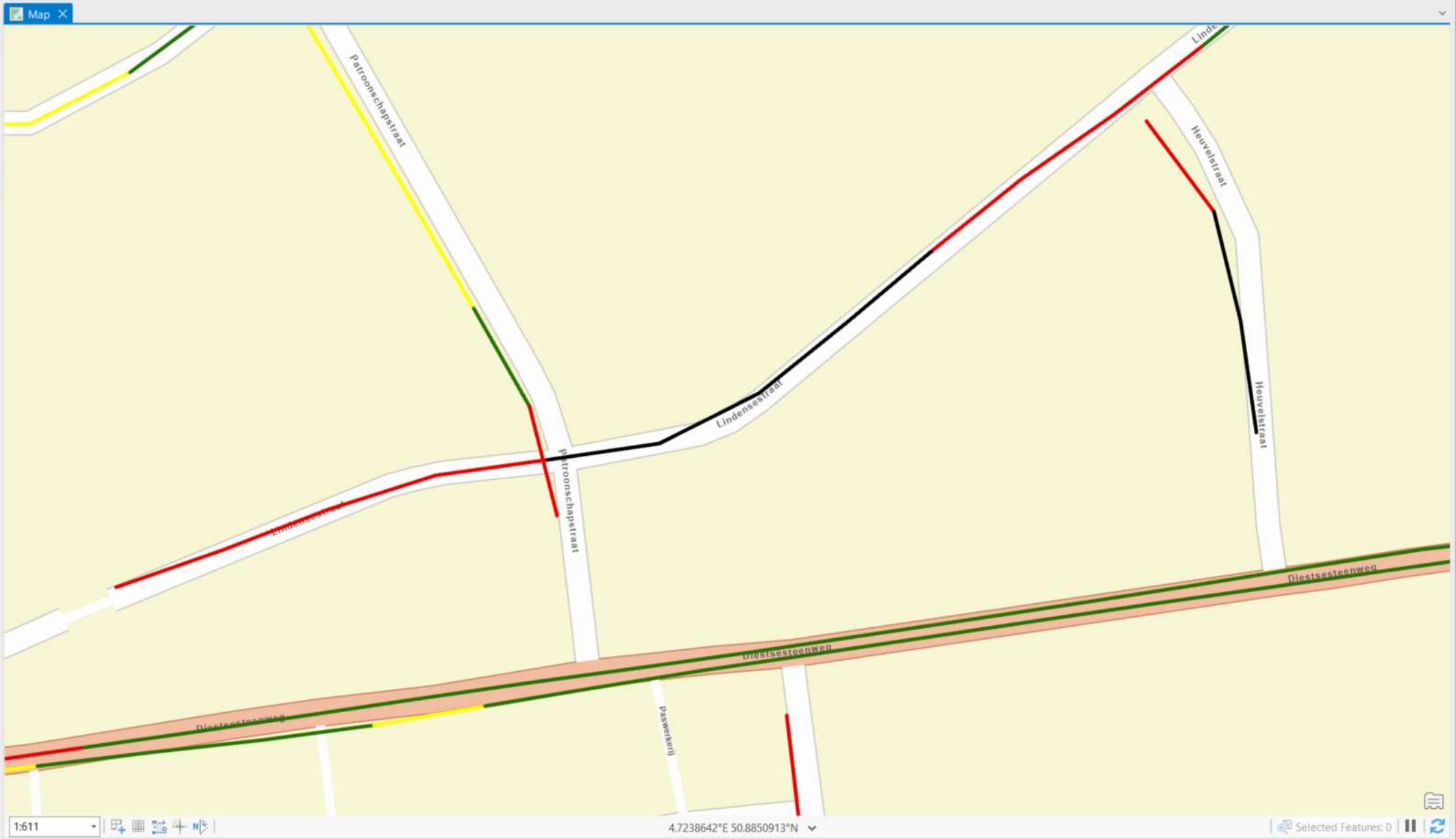
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1:611

4.7238642°E 50.8850913°N

Selected Features: 0

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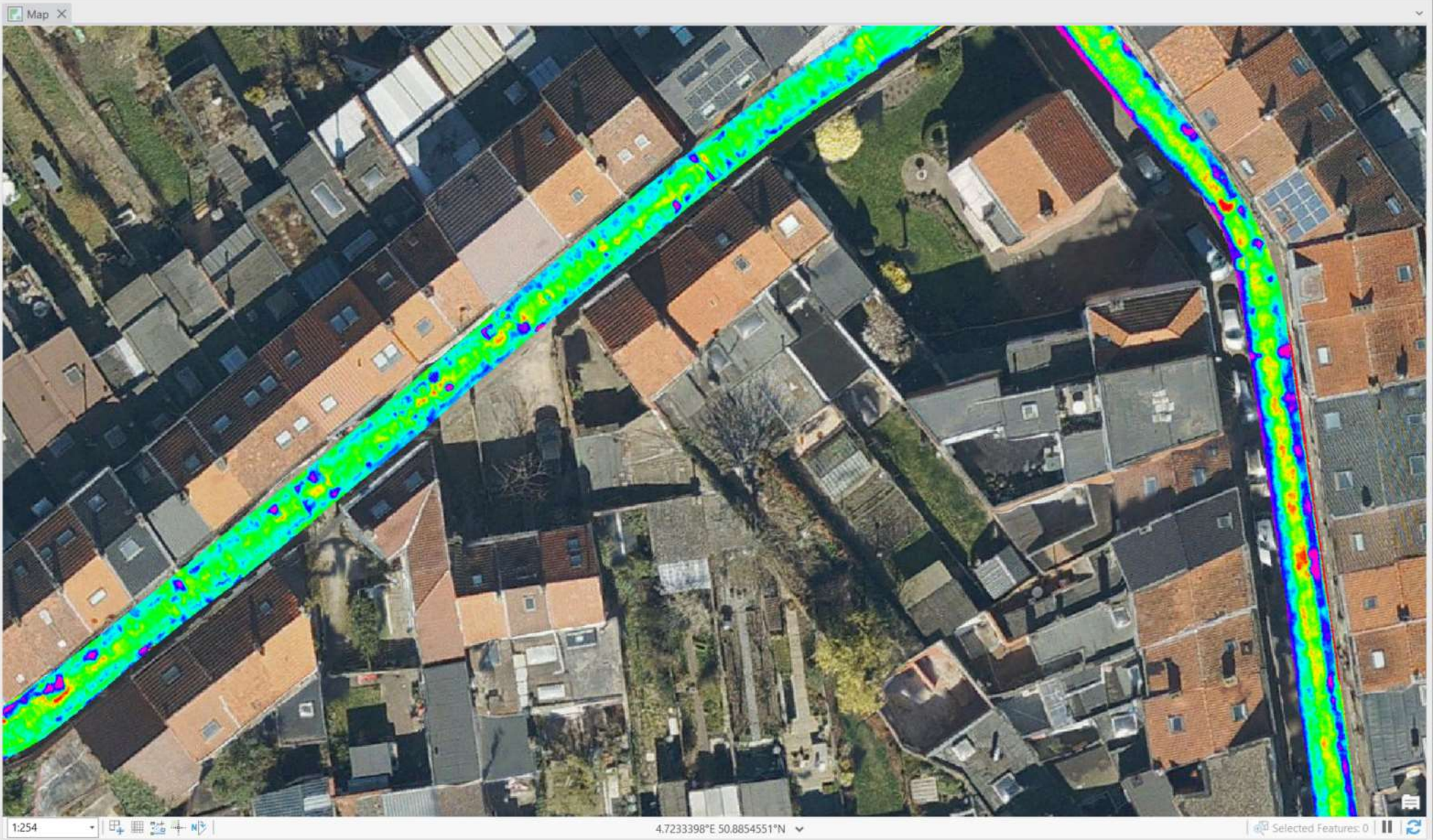
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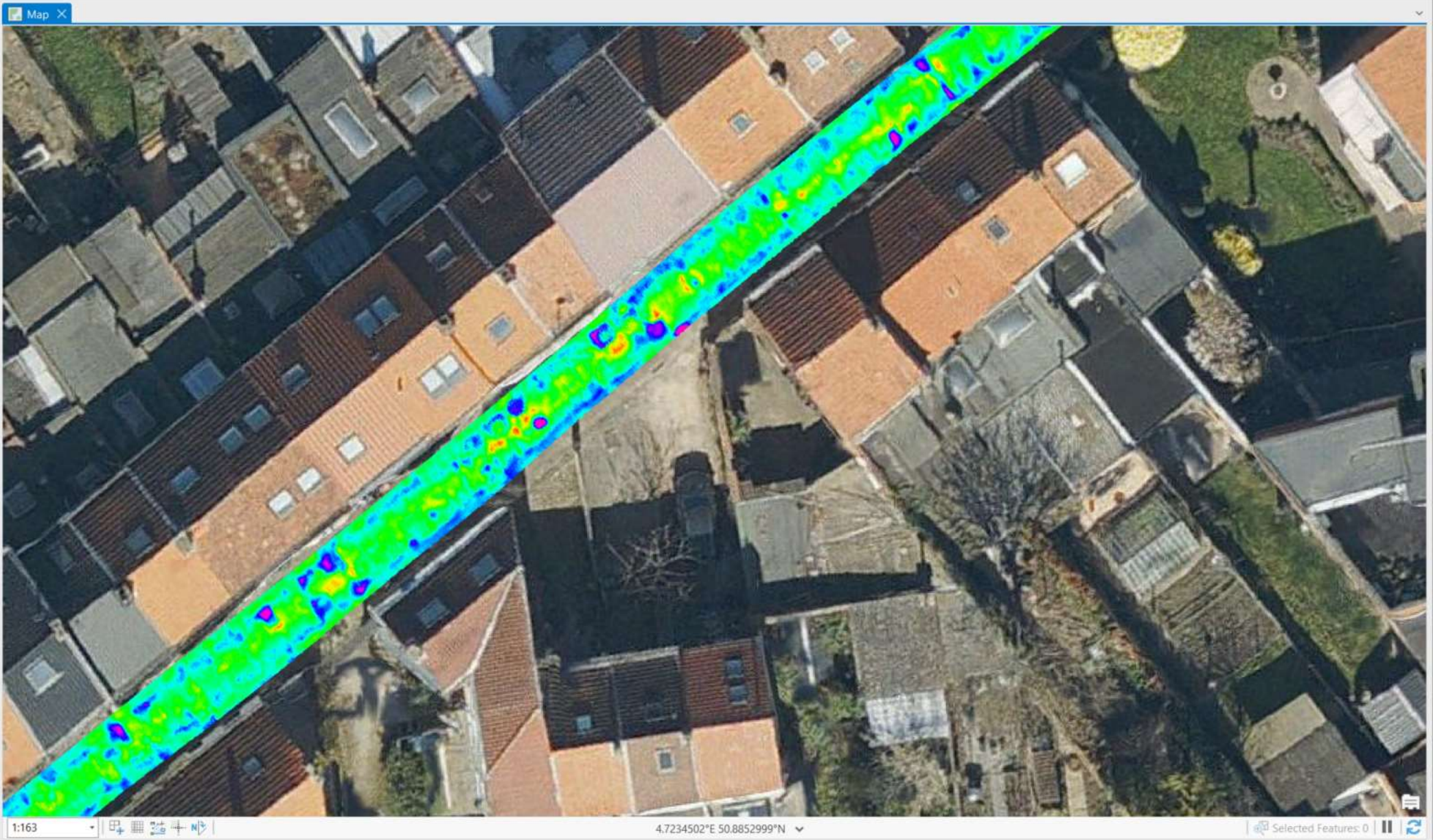
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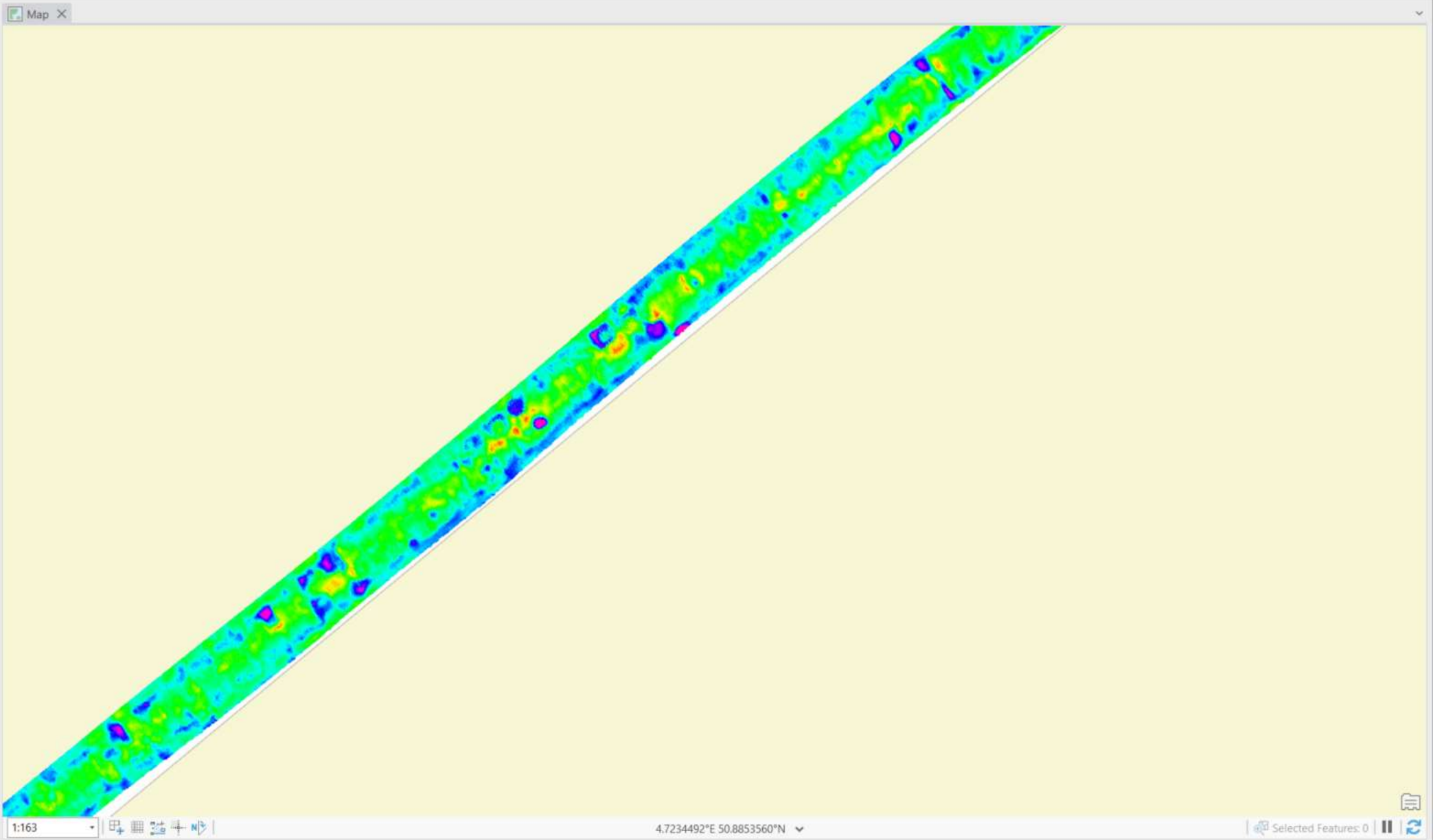
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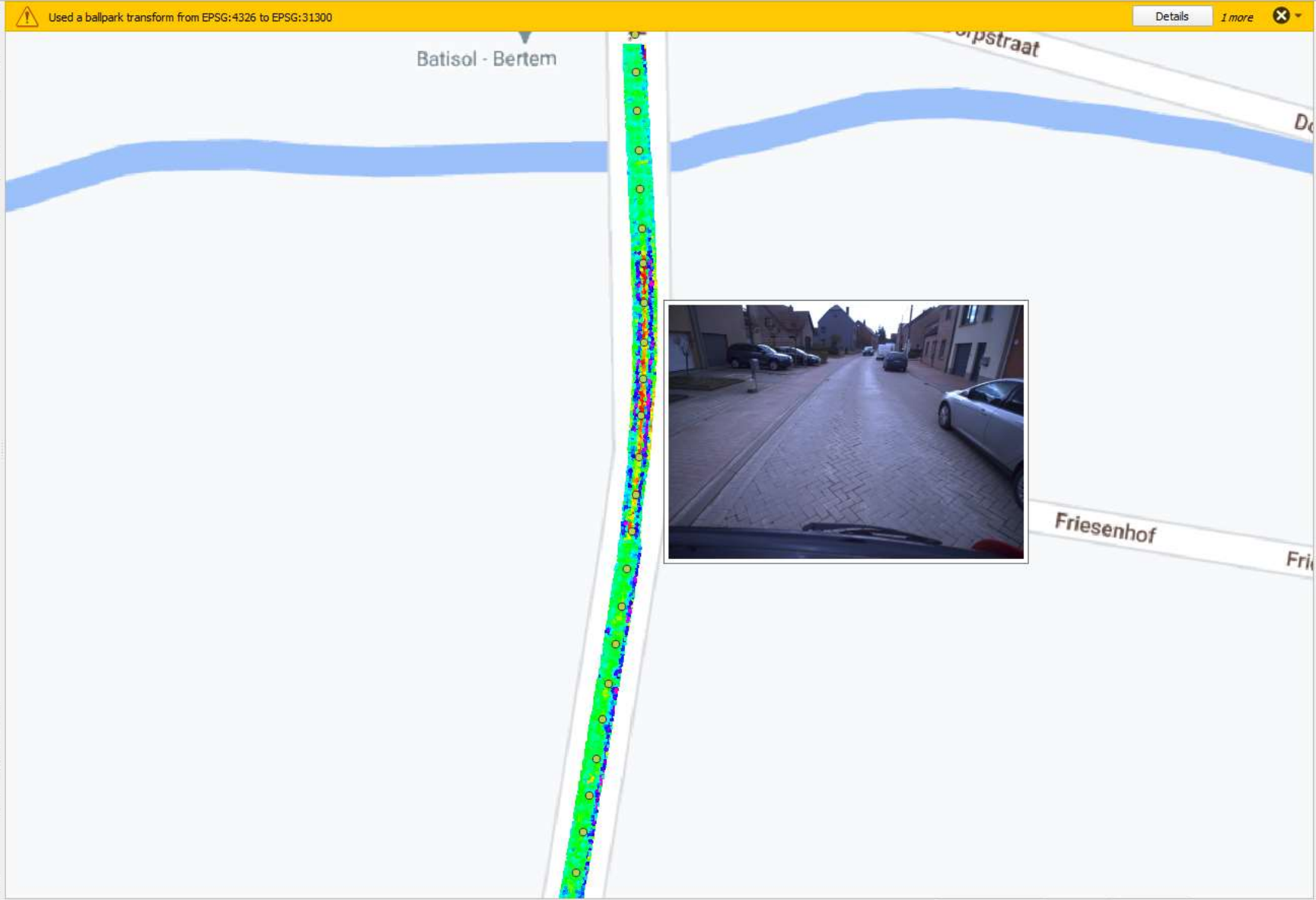
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Browser

- ☆ Favorites
- 📍 Spatial Bookmarks
 - Project Bookmarks
 - User Bookmarks
- 🏠 Project Home
- 🏠 Home
- Layers
- 📁 Bertem
 - markers
 - IRI zooming levels
 - Bertem - zooming lev
 - Bertem - zooming lev
 - Bertem - zooming lev
 - Bertem - zooming lev
 - Bertem - zooming lev
 - IRI_Bertem_AVG cop
 - Foto's
 - Photos Bertem
 - LAZ-bestanden
 - Tervuursesteenweg2
 - Tervuursesteenweg1
 - Tervuursesteenweg1
 - Slagberg
 - Blokkenstraat 1
 - Blokkenstraat 2
 - Van Laerstraat
 - Dorpstraat1B_1
 - Dorpstraat1B_2
 - Dorpstraat1B_3
 - Dorpstraat1B_4
 - Dorpstraat1B_5
 - Dorpstraat1B_6
 - Google - OpenStreetMap
 - OpenStreetMap
 - Google Maps



Processing Toolbox

- 🔍 Search...
- 🕒 Recently used
 - 🗺️ Cartography
 - 🗄️ Database
 - 📁 File tools
 - 📍 GPS
 - 📐 Interpolation
 - 🔧 Layer tools
 - 📏 Mesh
 - 🌐 Network analysis
 - 📊 Plots
 - 🗺️ Raster analysis
 - 🗺️ Raster creation
 - 🗺️ Raster terrain analysis
 - 🔧 Raster tools
 - 📐 Vector analysis
 - 🗺️ Vector creation
 - 🗺️ Vector general
 - 🗺️ Vector geometry
 - 🗺️ Vector overlay
 - 🗺️ Vector selection
 - 🗺️ Vector table
 - 🗺️ Vector tiles
 - 🌐 GDAL

Vertex Editor

Right click on an editable feature to show its table of vertices.

When a feature is bound to this panel, dragging a rectangle to select vertices on the canvas will only select those of the bound feature.

Type to locate (Ctrl+K)



Project Map Insert Analysis View Edit Imagery Share Feature Layer Labeling Data

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Map X

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- Points_64
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 - 0.346337 - 0.580726
 - 0.580727 - 0.742648
 - 0.742649 - 0.877826
- c20231006_results_GeoTaggedPhotosToPoints

Charts

- DateTime Count
- digital_road000000000.ias
- digital_road000000000.ias
- Satelliet Wereld



Pop-up

c20231006_results_GeoTaggedPhotosToPoints - Wittestraat_001_rgb_image0000000086.jpg

1 of 1

3.2335630°E 50.8548805°N

Project Map Insert Analysis View Edit Imagery Share Feature Layer Labeling Data

Clipboard Navigate Layer Selection Inquiry Labeling Offline

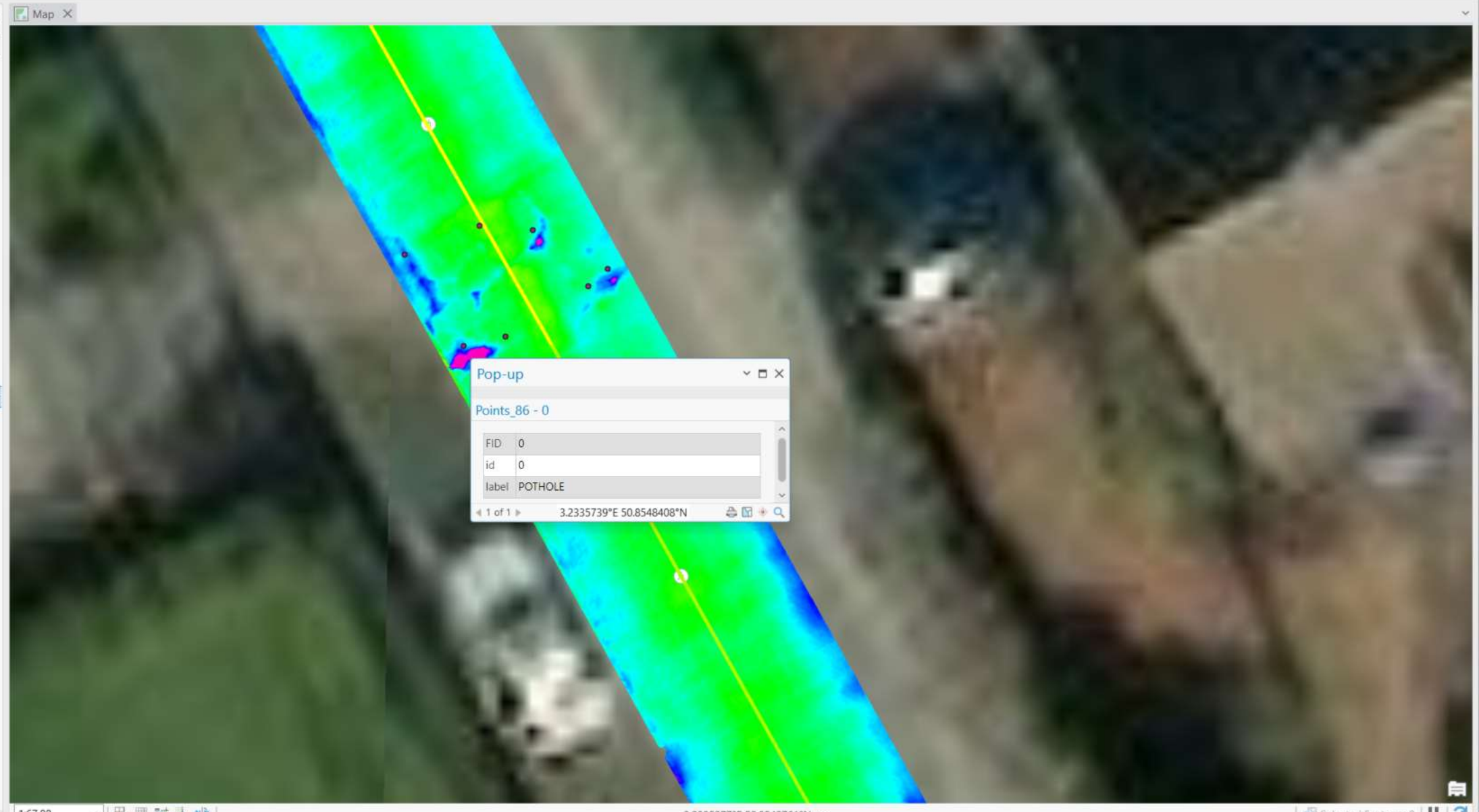
Explore Bookmarks Go To XY Basemap Add Data Add Graphics Layer Select Select By Attributes Select By Location Clear Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced Convert Download Map Sync Remove

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XenoTrack

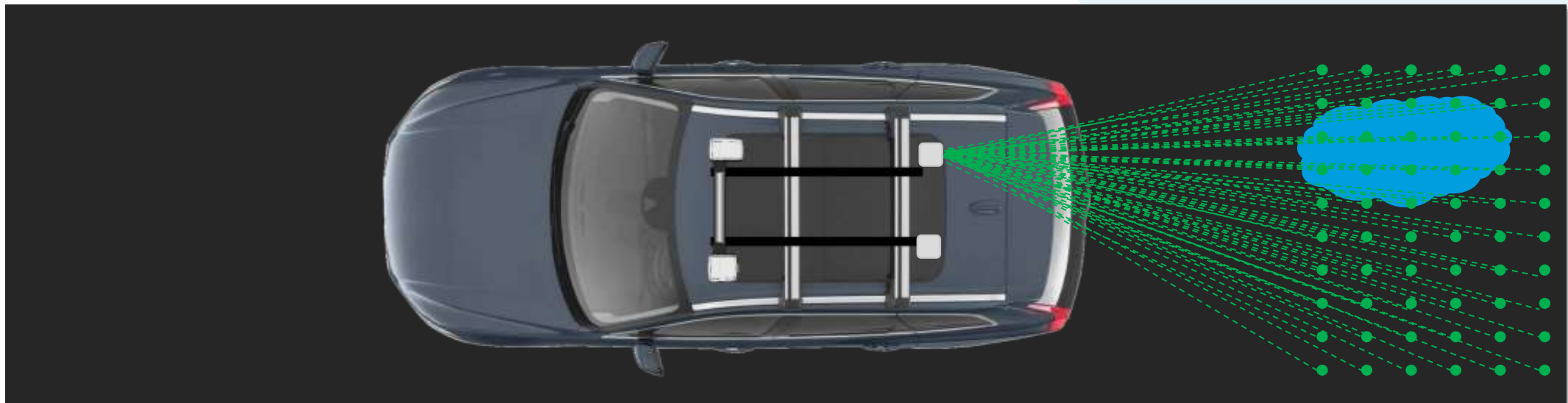
Road Lidar



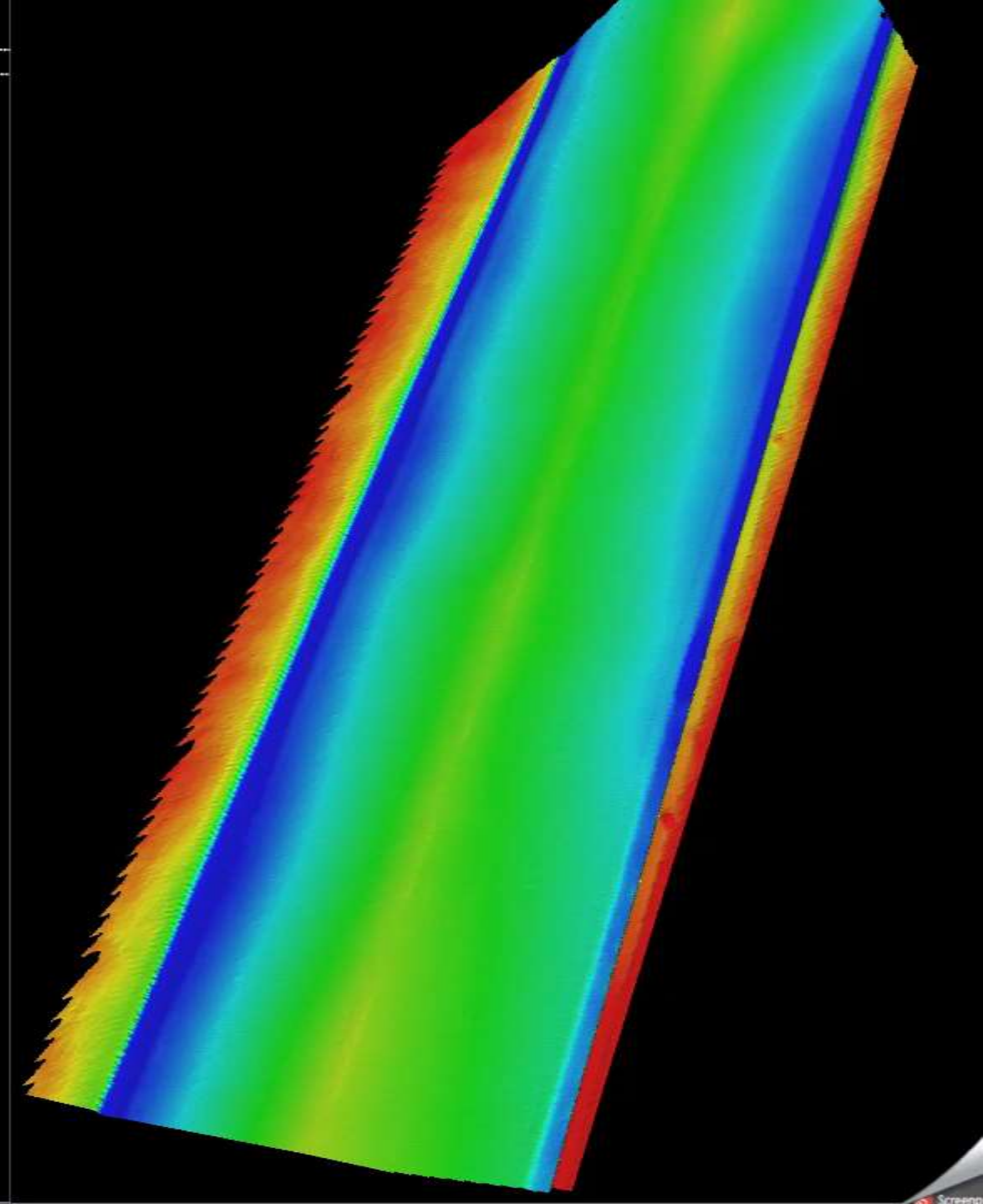
4D from XenoTrack Lidar



- X 28.000 laser beam Lidar
- X Single- or dual-lane
- X Start-and-stop
- X Day and night
- X Georeferenced 6D



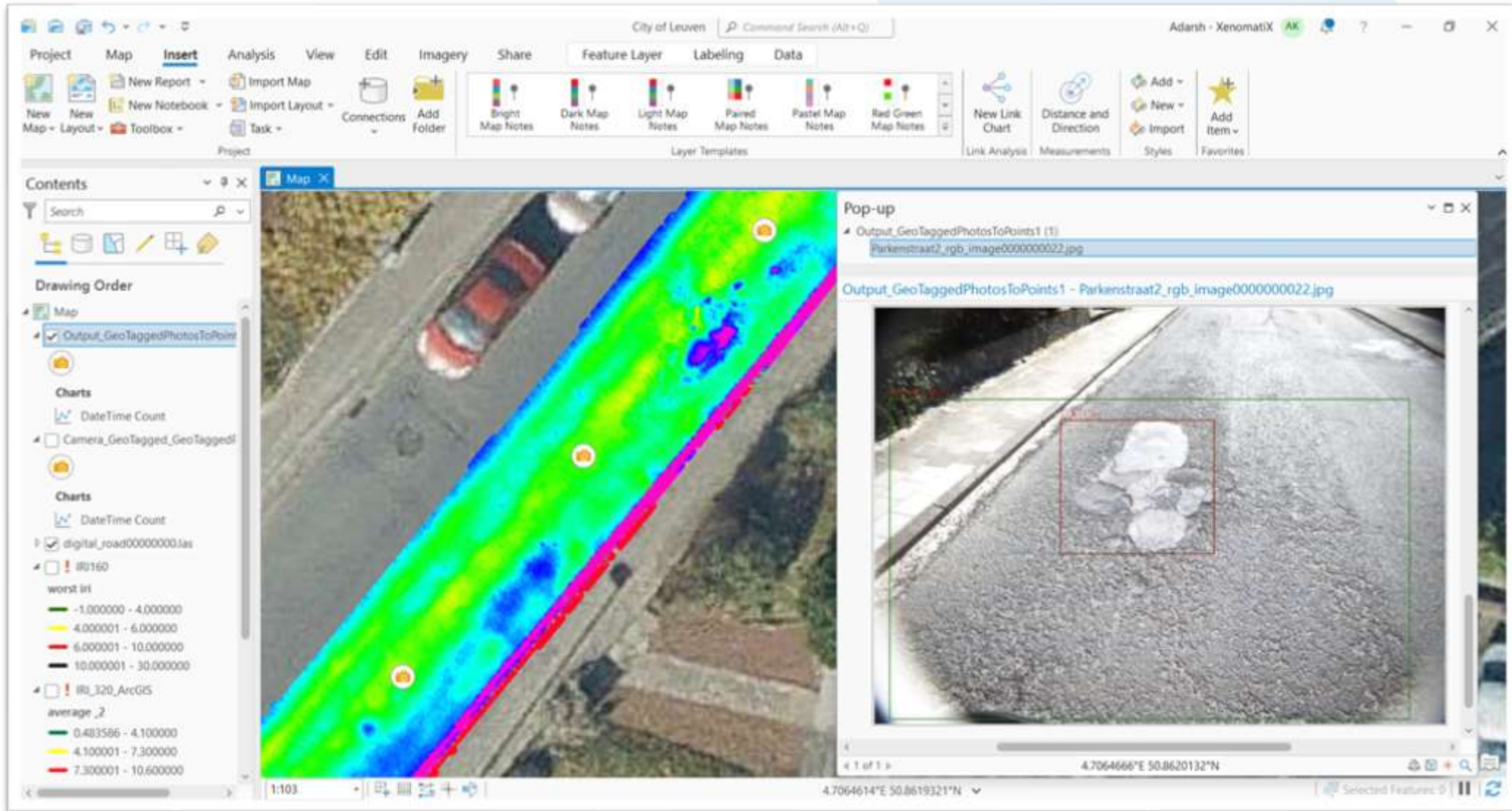
4D from XenoTrack Lidar



Local repair needs from AI on 2D

<i>Longitudinal crack</i>			<i>Patch</i>		
<i>Transversal crack</i>				<i>Longitudinal Construction Joint</i>	
<i>Alligator crack</i>			<i>Transversal Construction Joint</i>		
<i>Block cracking</i>				<i>Raveling</i>	
<i>Damaged shoulder</i>			<i>Polished Aggregate</i>		
<i>Delamination</i>				<i>Bleeding</i>	
<i>Pothole</i>			<i>Seepage</i>		

2D get 'enriched' with geometrical 3D information



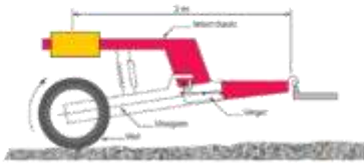
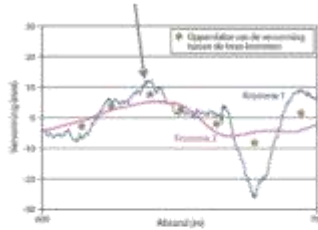
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Manual ... to ...Traditional inspection sensors ... to

APL



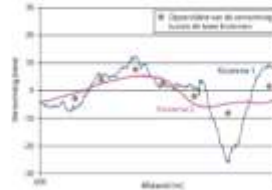
Laser Scanning



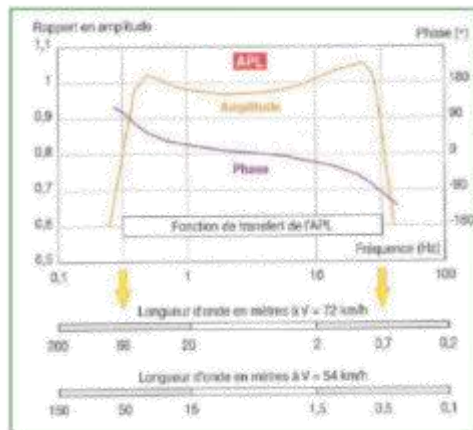
MFV



Laser Profilometer



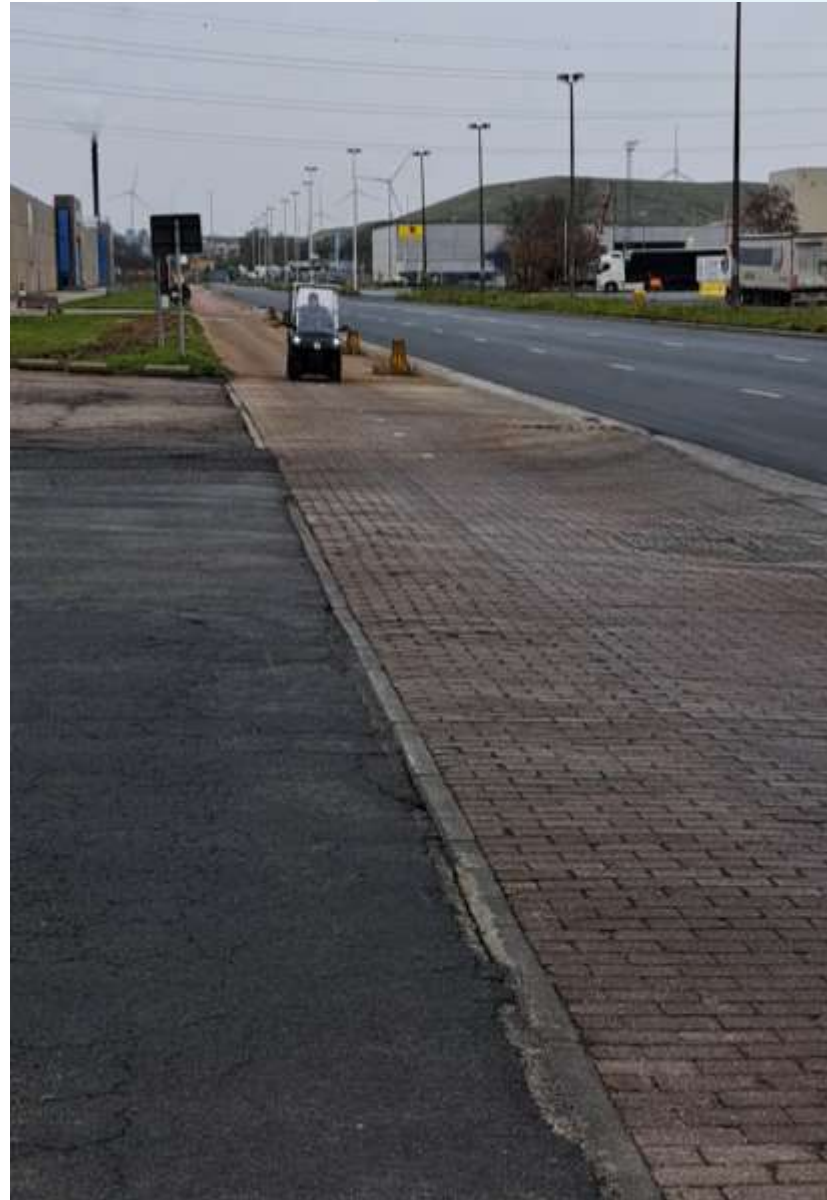
Fréquence max	30	Hz
Fréquence min	0.2	Hz
Vitesse		
Longueur d'onde		
(m/s)	(km/h)	km (m)
21.6	6	0.2
36	10	0.3
72	20	0.7
144	40	1.3
Pas d'échantillonnage (m)		0.05



- Longitudinal evenness
- Transversal evenness
- Aut. Crack and distress detection



.. And expands to Bike Lanes, Sidewalks, recreational ...

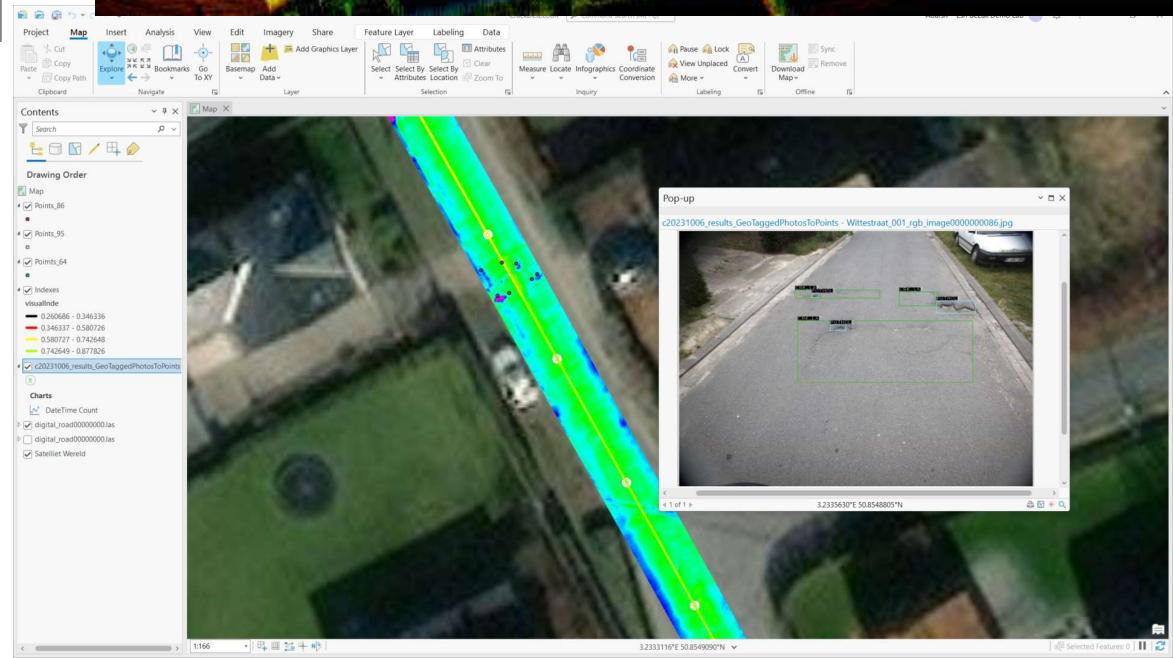
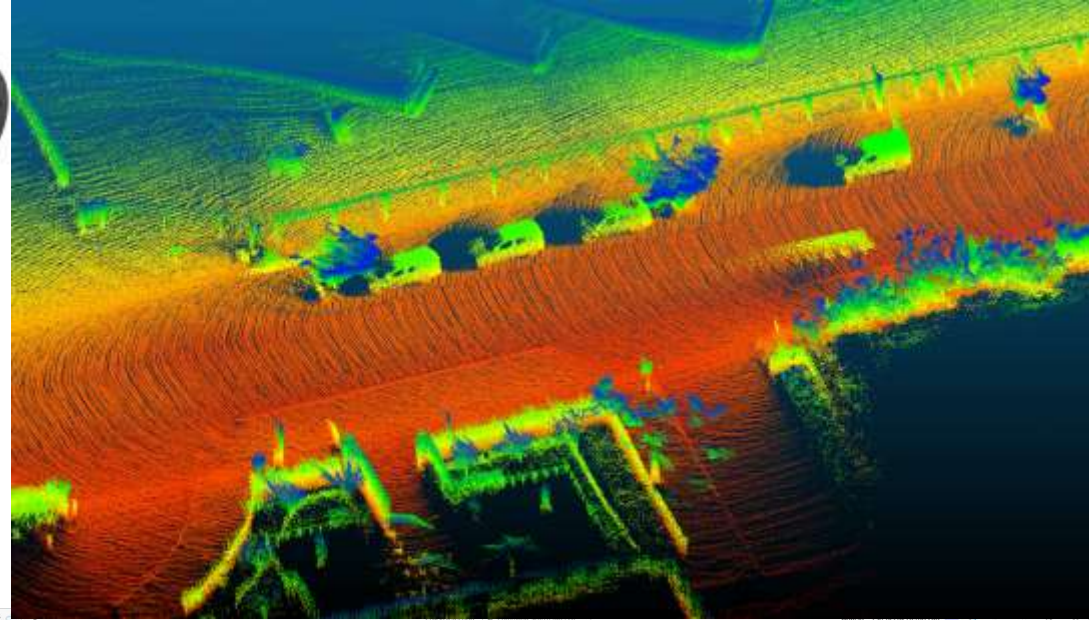


Combine in One ride for BIM and PMS

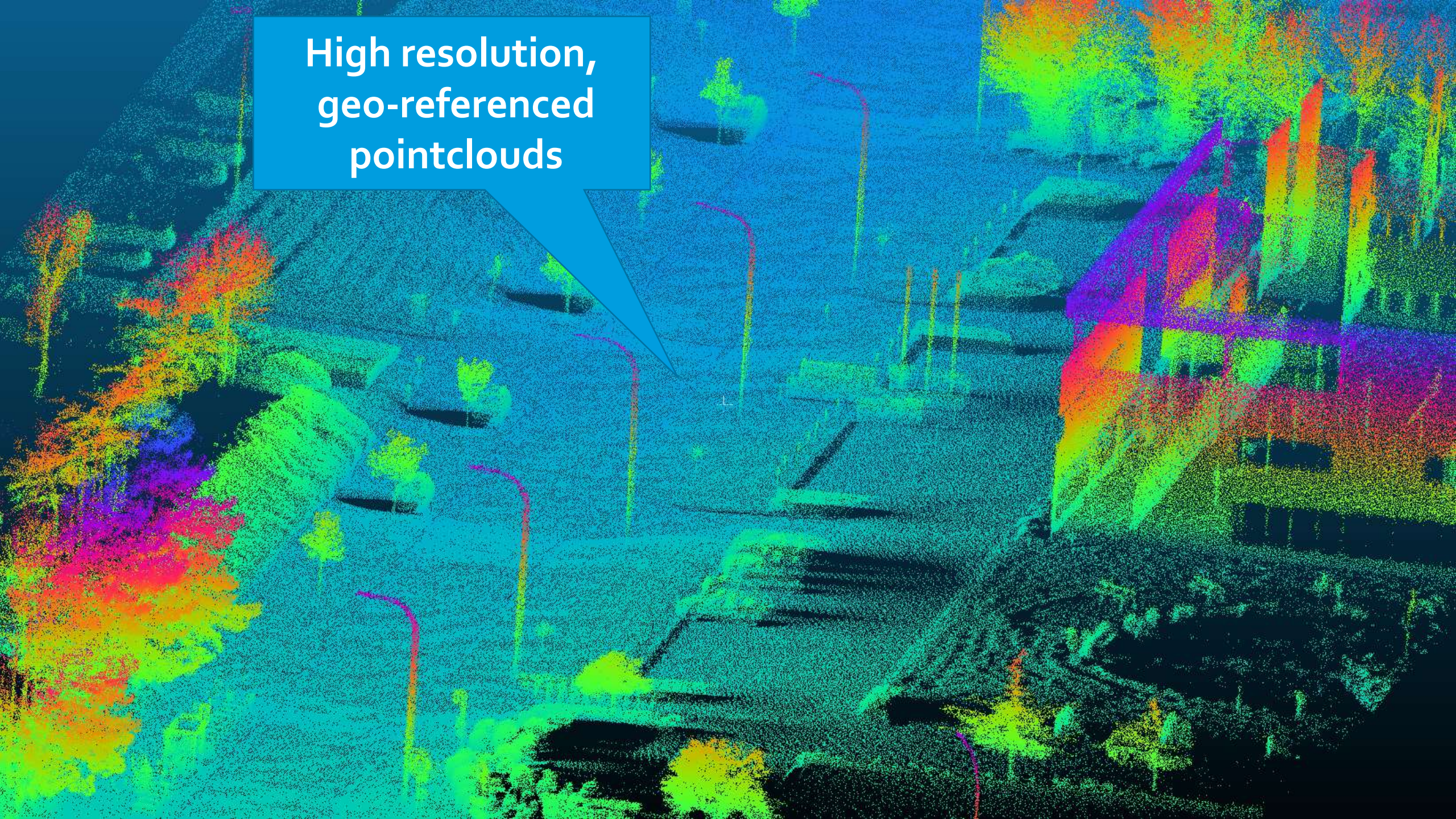
Based on expertise built up, we combine

- i. Mobile Mapping for BIM with
 - ii. 6D Road Inspection for PMS,
- offering:

- ✗ compatible with XenomatiX' software suite for pavement analysis (LAS, CSV, IRI, ...)
- ✗ Resulting 'BIM' scene models can be uploaded in softwares such as CloudCompare & GIS products
- ✗ Pointclouds in earth coordinates with dm accuracy



High resolution,
geo-referenced
pointclouds

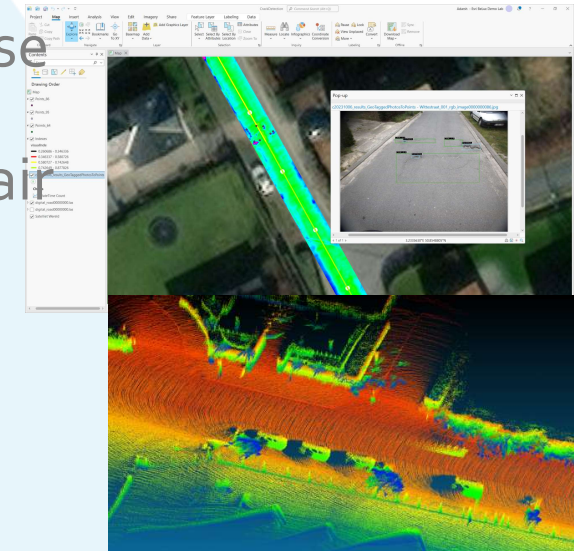


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To remember ...

- x Pavement Management with any flexible GIS that end-users already use
- x 6 D digital data in GIS - clear and intuitive insight on condition and repair
- x Productivity = ONE ride to collect the most = PMS + BIM
- x 6D pavement digitization for roads, runways, bike lanes, sidewalks



Want to get more ?

Ask for free sample data sets so you can have a closer look to raw XenoTrack data and run your own analysis.



Time for Q & A

XenomatiX Single and Dual Lane 6D Road Scanning -
Bringing Productivity through Innovative Technology