WORKSHOP ON DATA ECOSYSTEMS AND SDI • COPENHAGEN DECEMBER 2023

THE DIGITAL UNDERGROUND

COLLABORATIVE PROJECT SUPPORTED BY

DigitalLead.

LARS BODUM
DEPARTMENT OF SUSTAINABILITY AND PLANNING
AALBORG UNIVERSITY

LE34 it_thirty four Novafos aarhusvand AALBORG UNIVERSITY GENTOFTE GLADSAXE FJERNVARME VAM ENTREPRENØRFIRMA NORDKYSTEN Entreprenørfirmaet A/S

Winners of Grunddataprisen 2023!

The Digital Underground - Denmark

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Motivation for the project

Why is this important?

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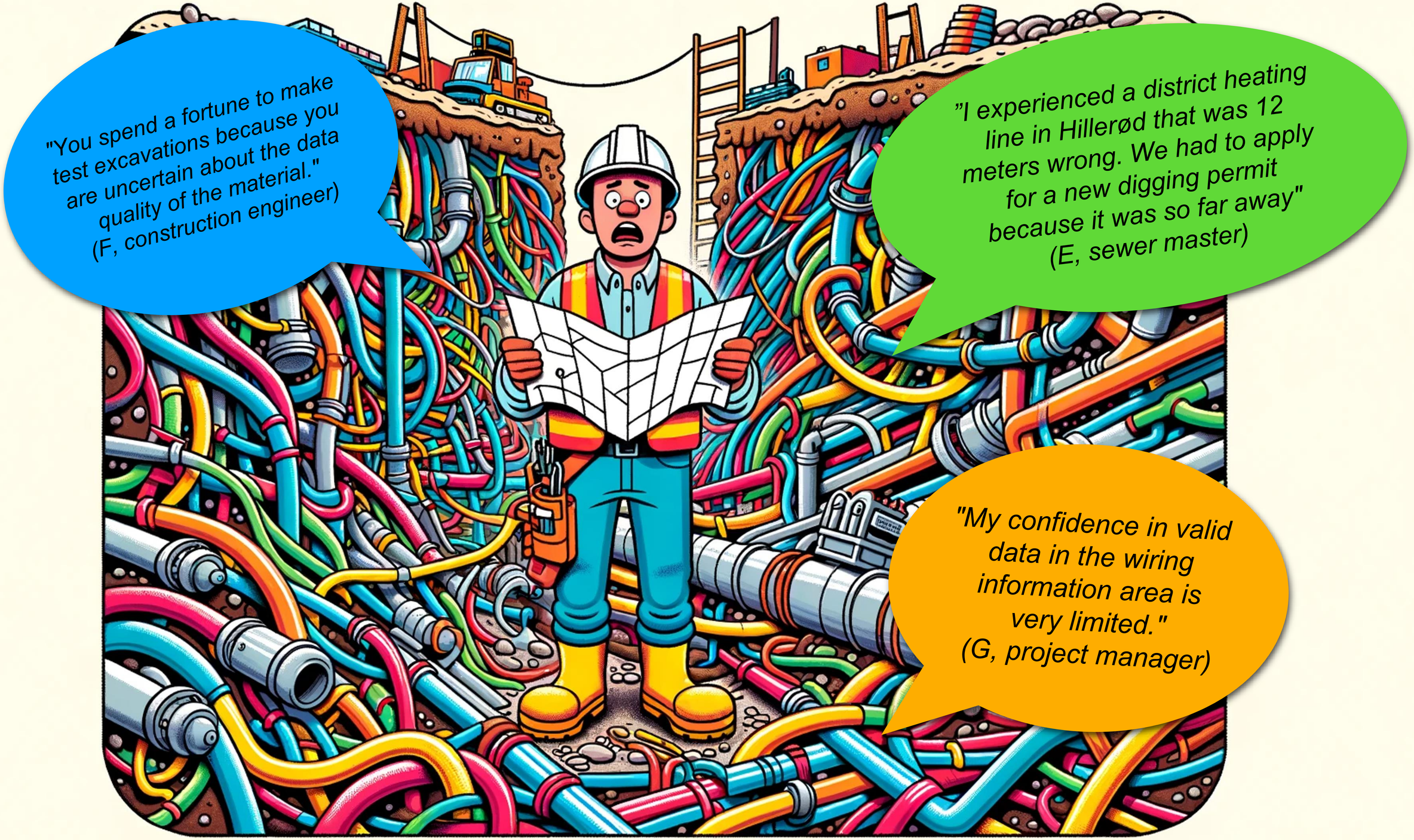
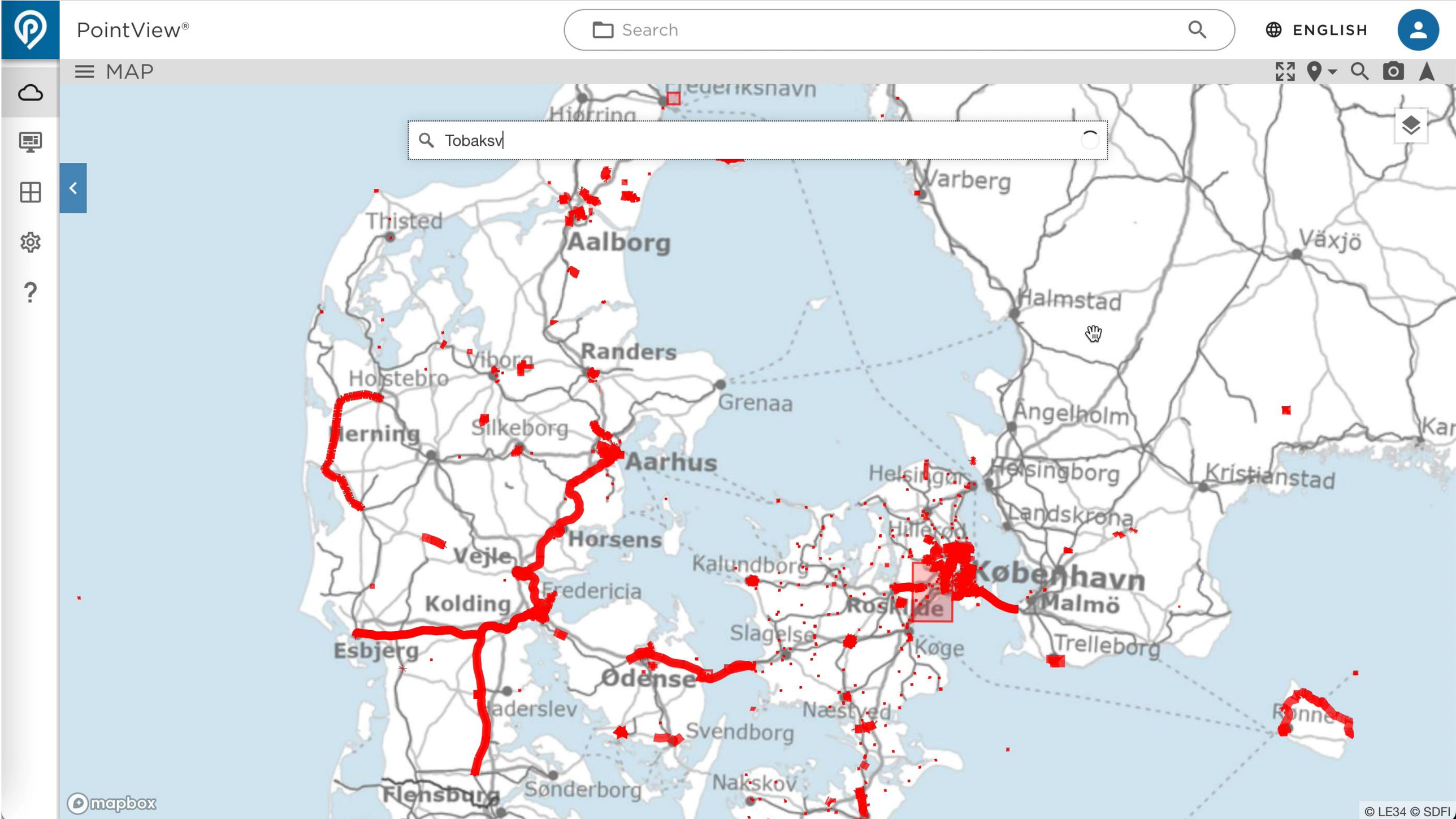
- Utility strikes are expensive:
  - 220-280 mill. DDK per year in direct costs in Denmark (Source: Rambøll report, 2016)
  - Research from the UK shows that the indirect costs are up to 29 times higher than the direct costs


"You spend a fortune to make test excavations because you are uncertain about the data quality of the material." (F, construction engineer)
”I experienced a district heating line in Hillerød that was 12 meters wrong. We had to apply for a new digging permit because it was so far away" (E, sewer master)
"My confidence in valid data in the wiring information area is very limited." (G, project manager)

Introduction to the project

Investigate how value is created using the exchange of point cloud data between actors in the Danish utility and construction industry?

- ***All project participants scan their excavation holes***
- ***All project participants share their scans from a common portal***
- ***An interview and questionnaire survey will be prepared to map the value of the exchange of point cloud data between the actors in the project***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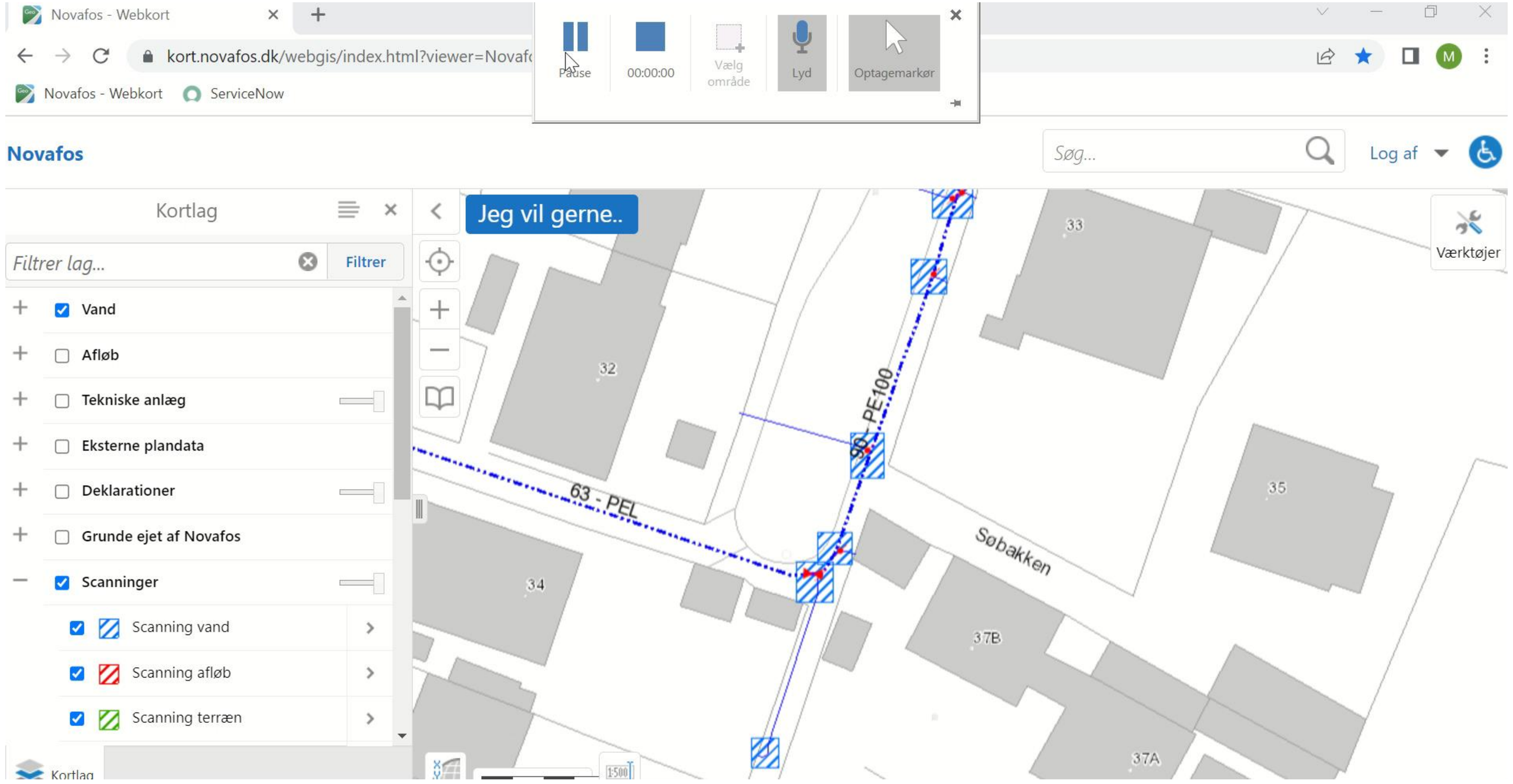
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Visualisations in the field with AR

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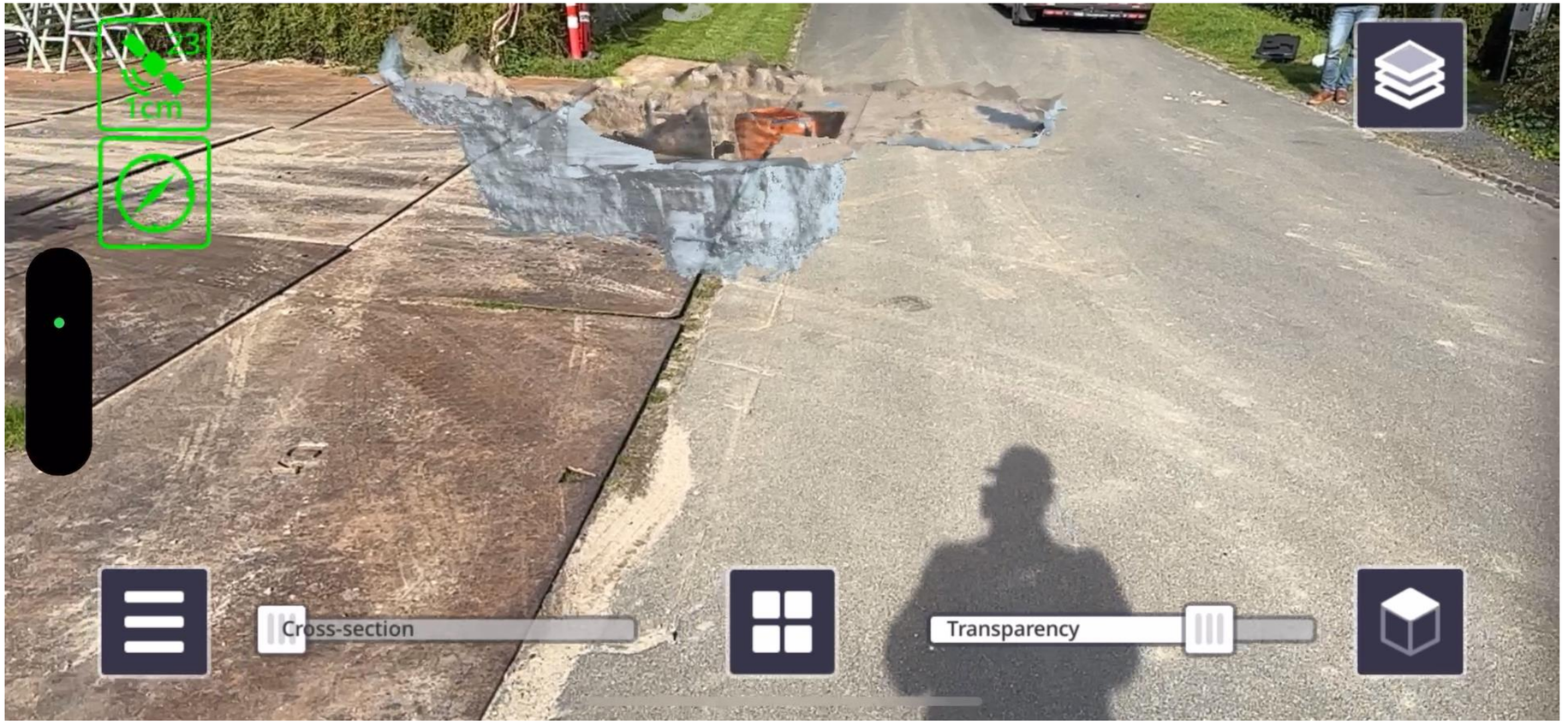

It is meant to be supplementary to
The Danish Register of Underground Cable Owners (LER)

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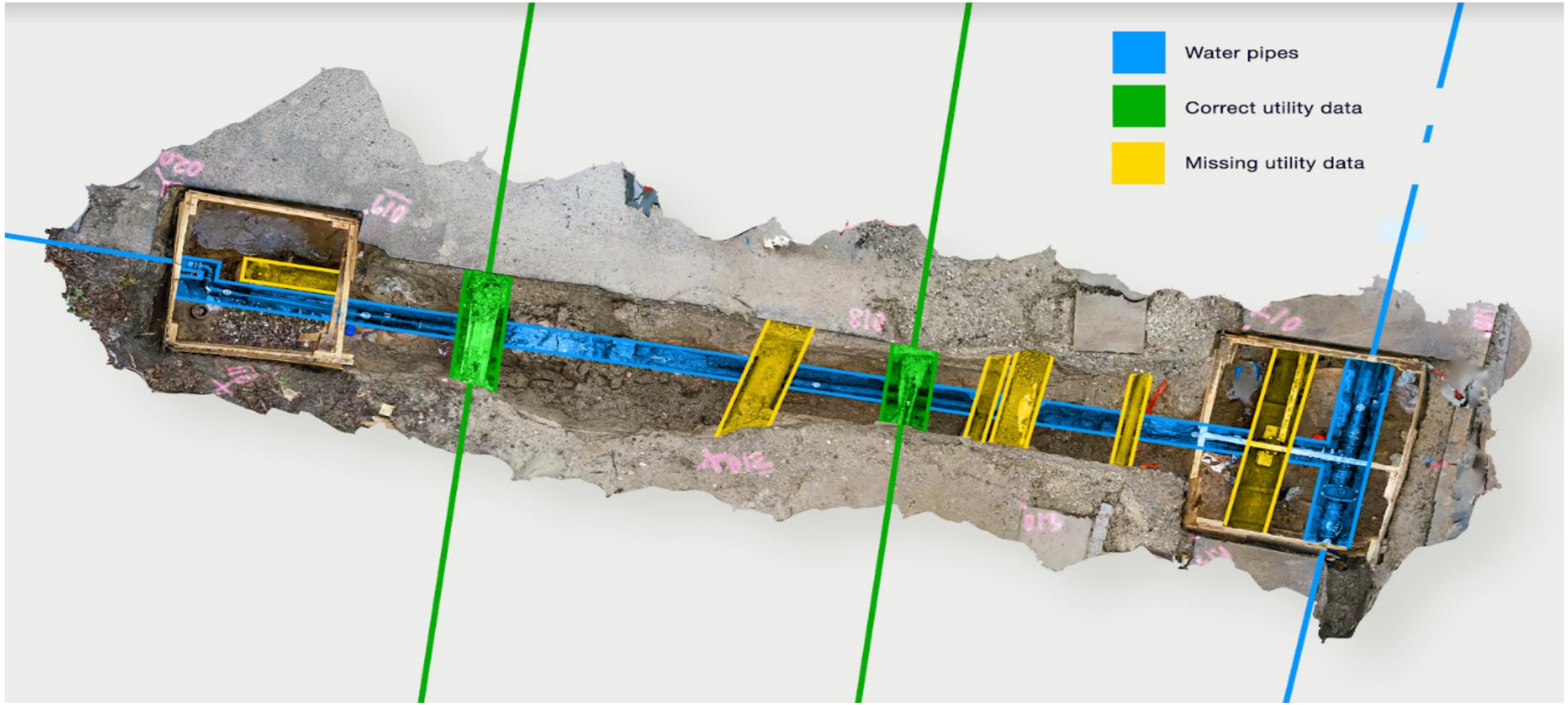
Not an alternative…



Selected results

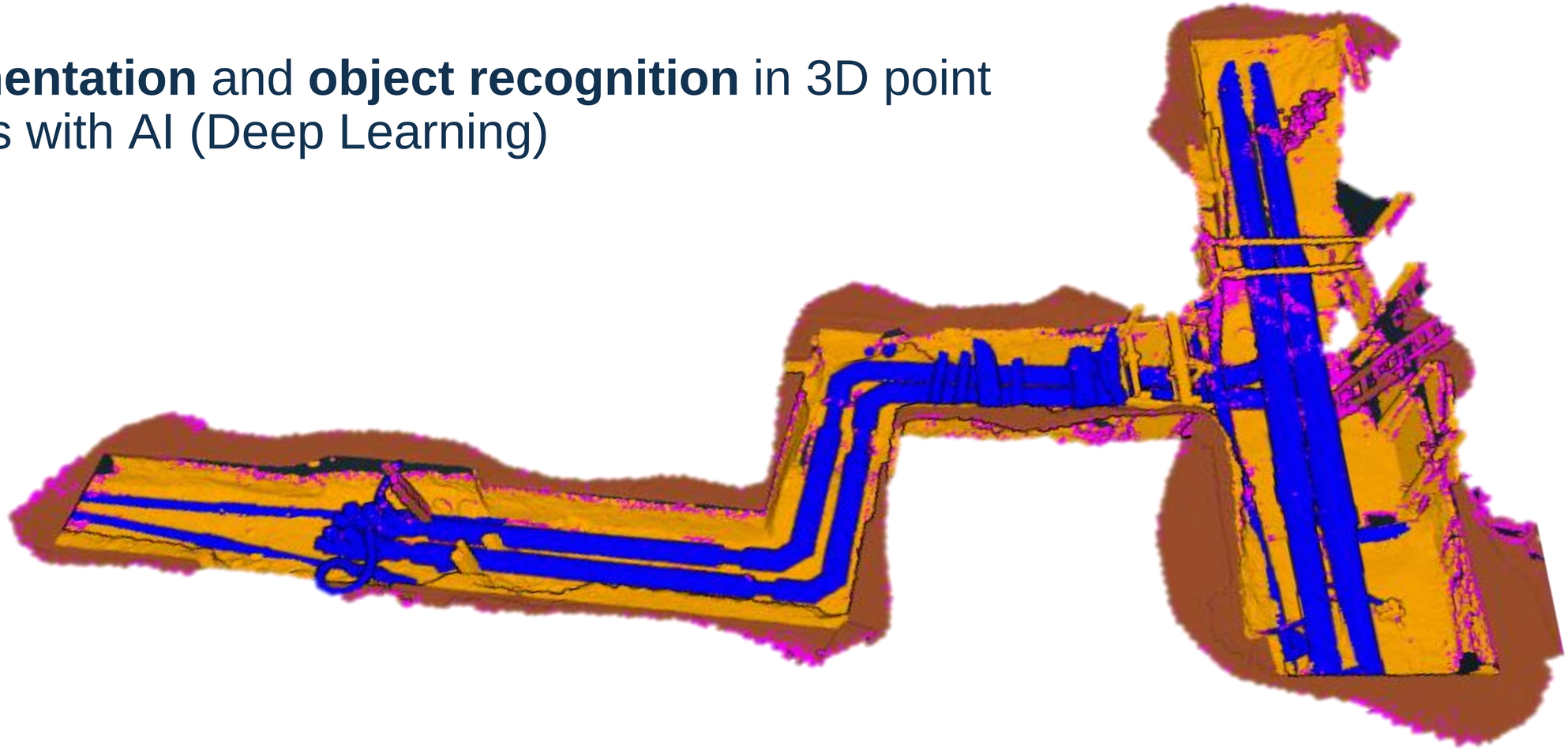
What has been achieved?

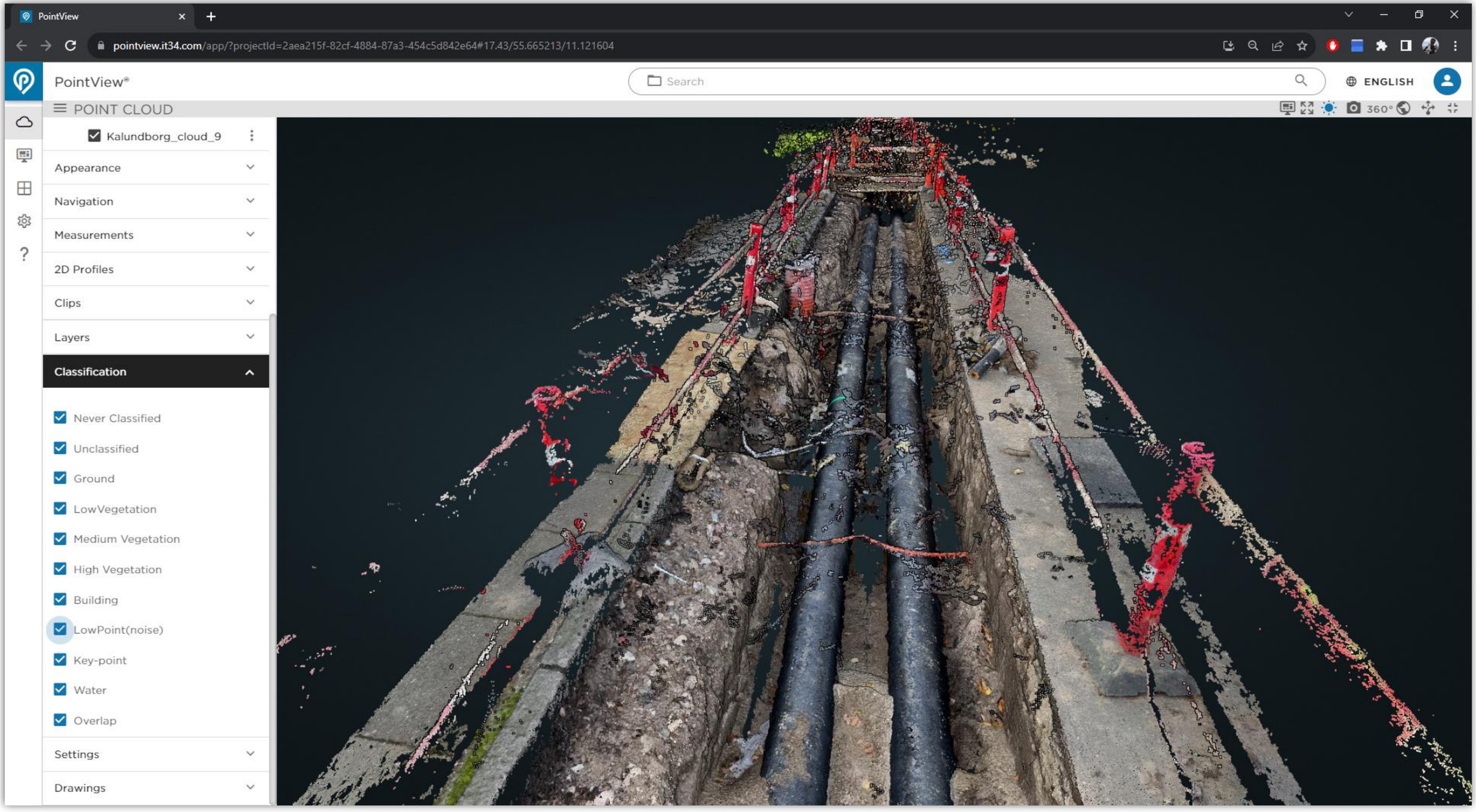
- For the contractors, it has made it faster to document works, compared to traditional surveying
- At least one utility company has made it easier to plan operational work and order materials for tasks
- With the contractors, the wow factor is great, in terms of the opportunity to see what lies underground before digging and the potential that lies there
- Point clouds are good for "conflict resolution" in the sense that you get a better overview of the work done and can thereby see what you have received and what you have not received

Future perspectives

Towards automatic cable detection and validation of LER data

- **Segmentation** and **object recognition** in 3D point clouds with AI (Deep Learning)

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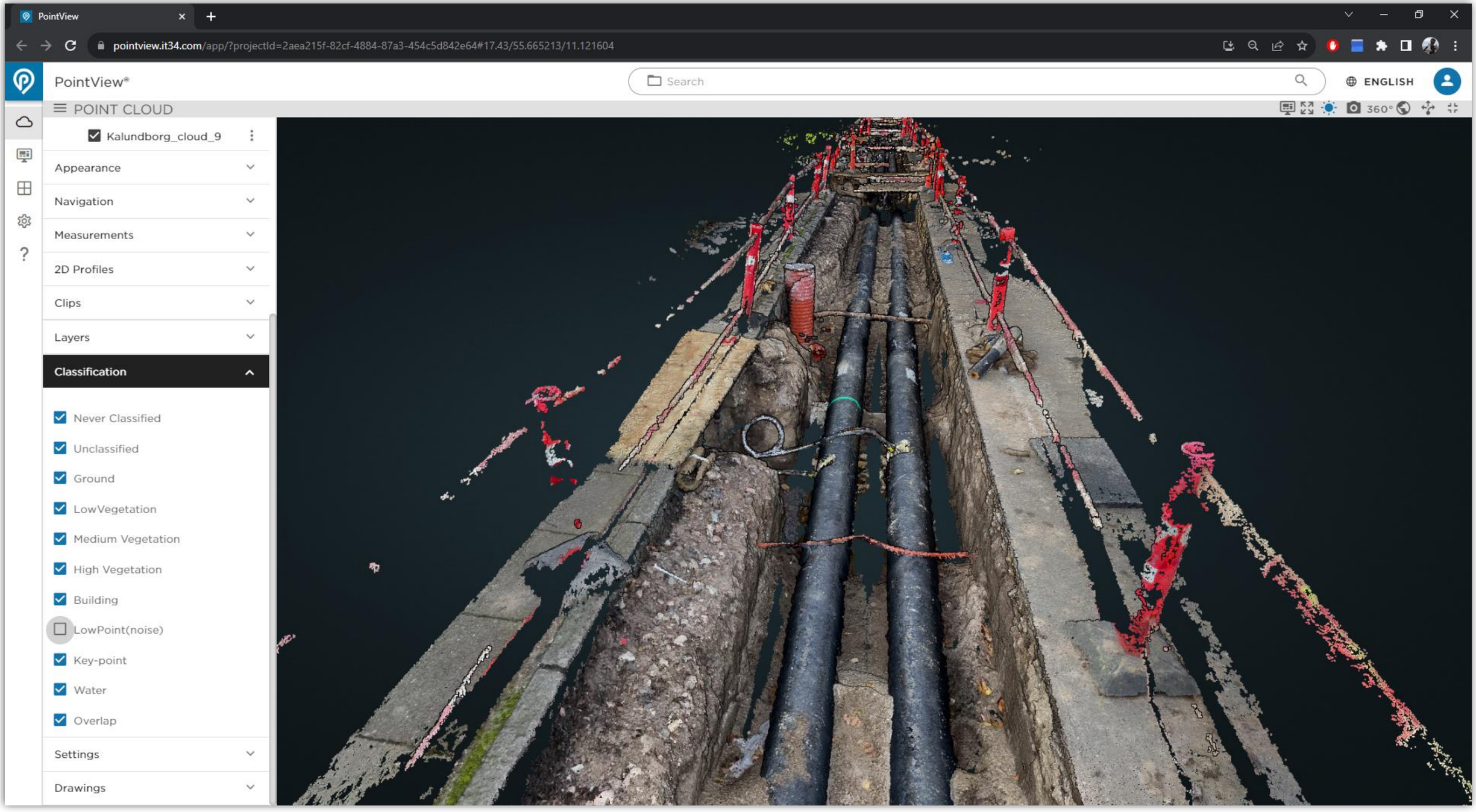
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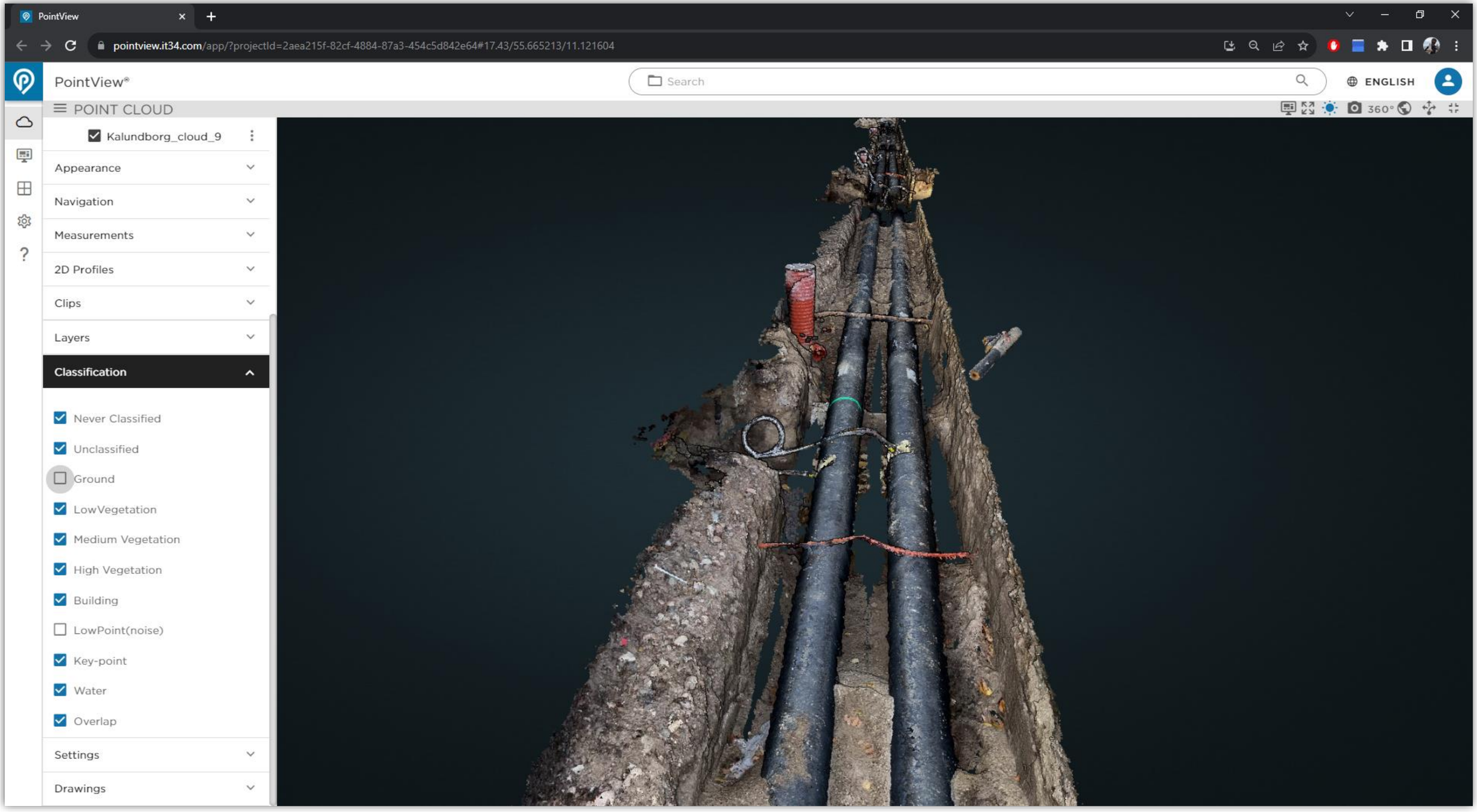
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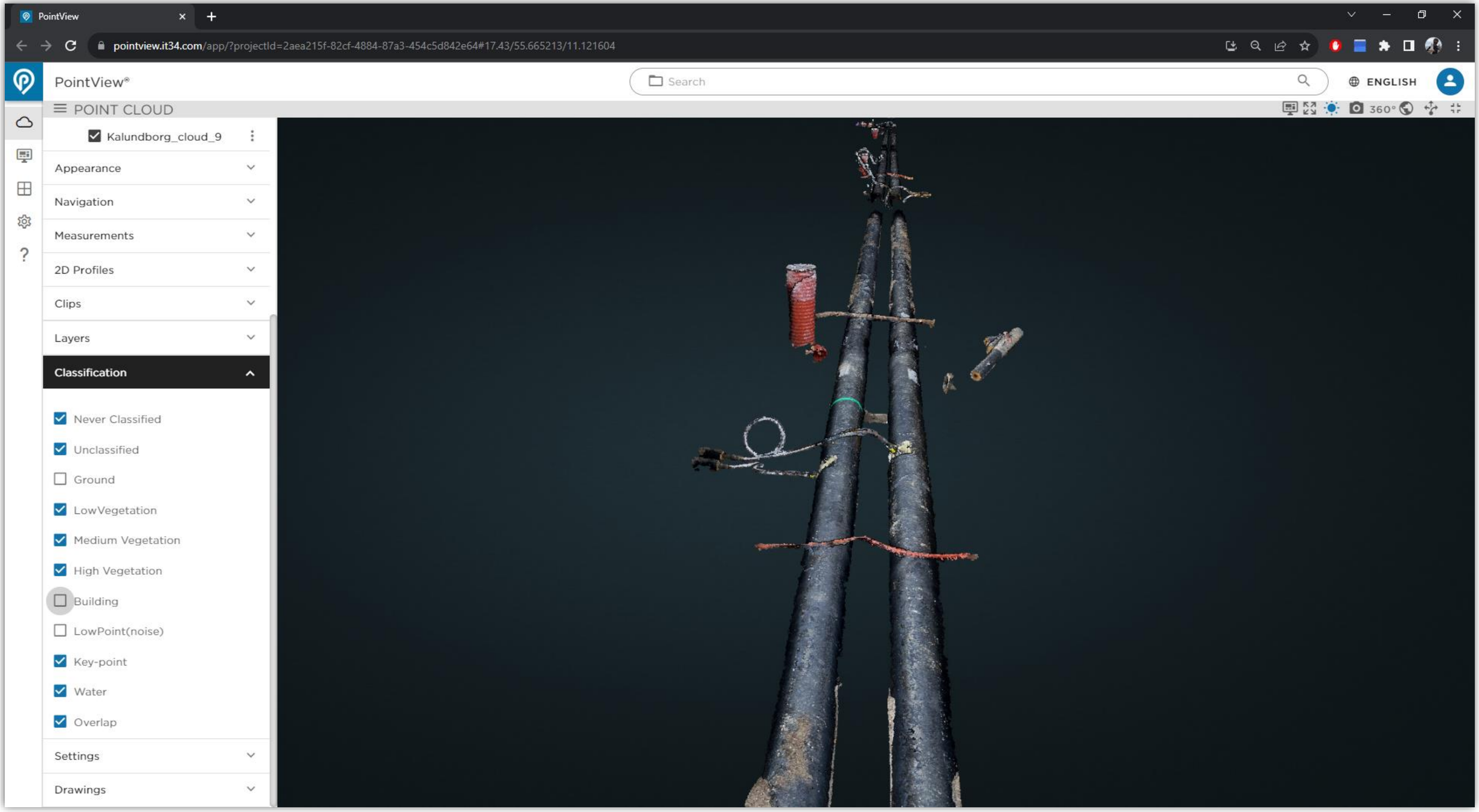
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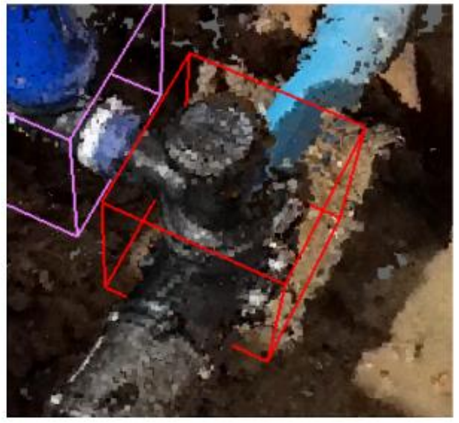

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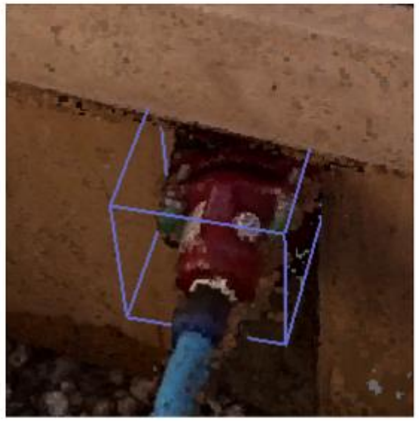

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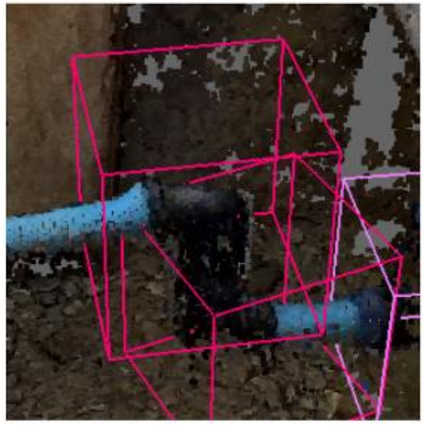

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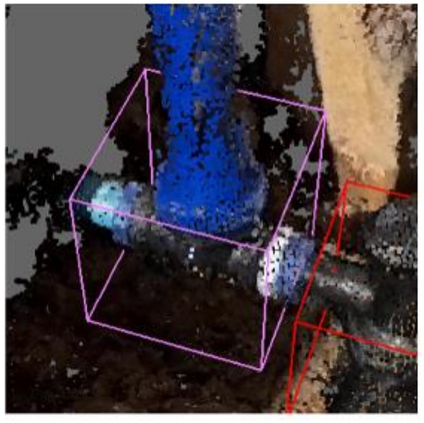

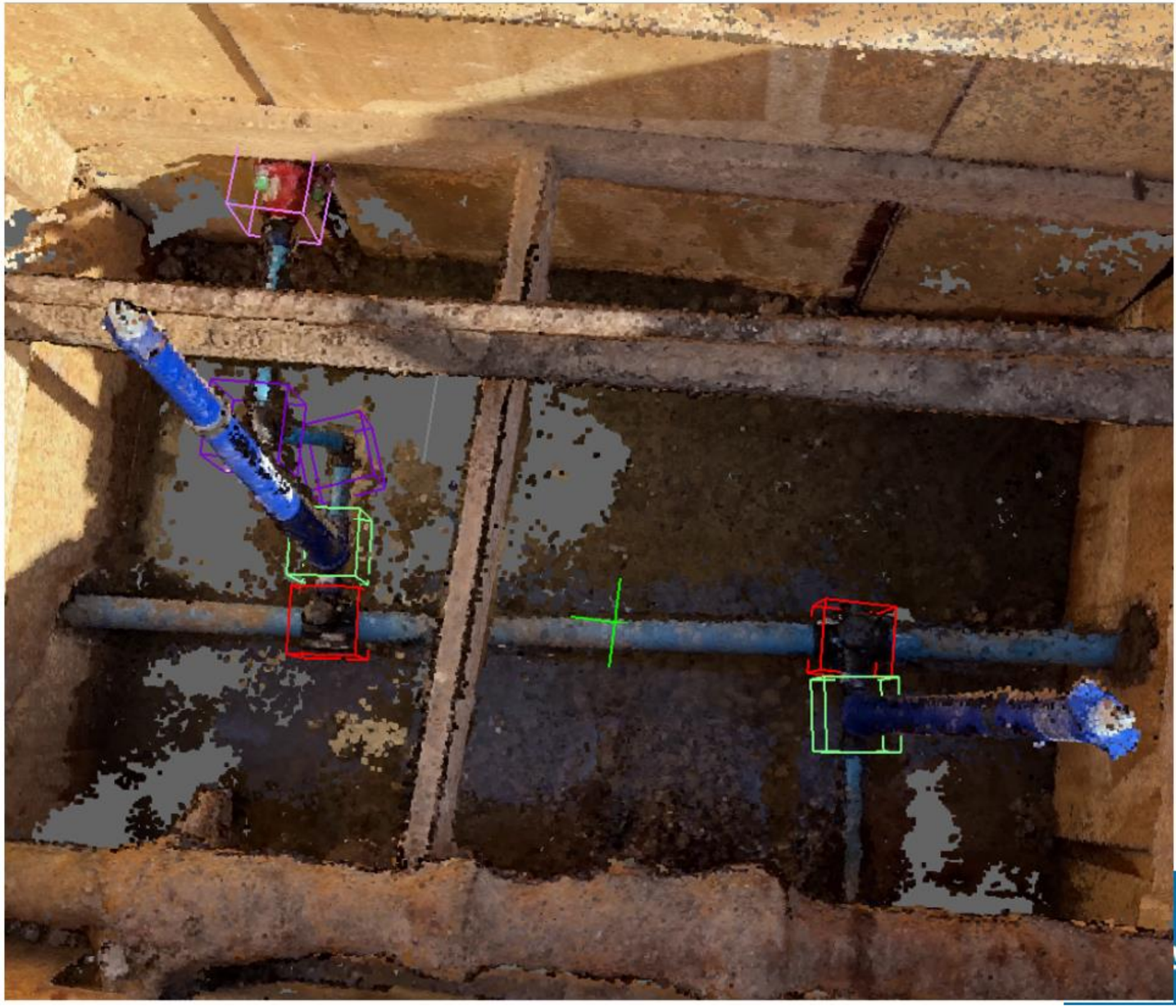

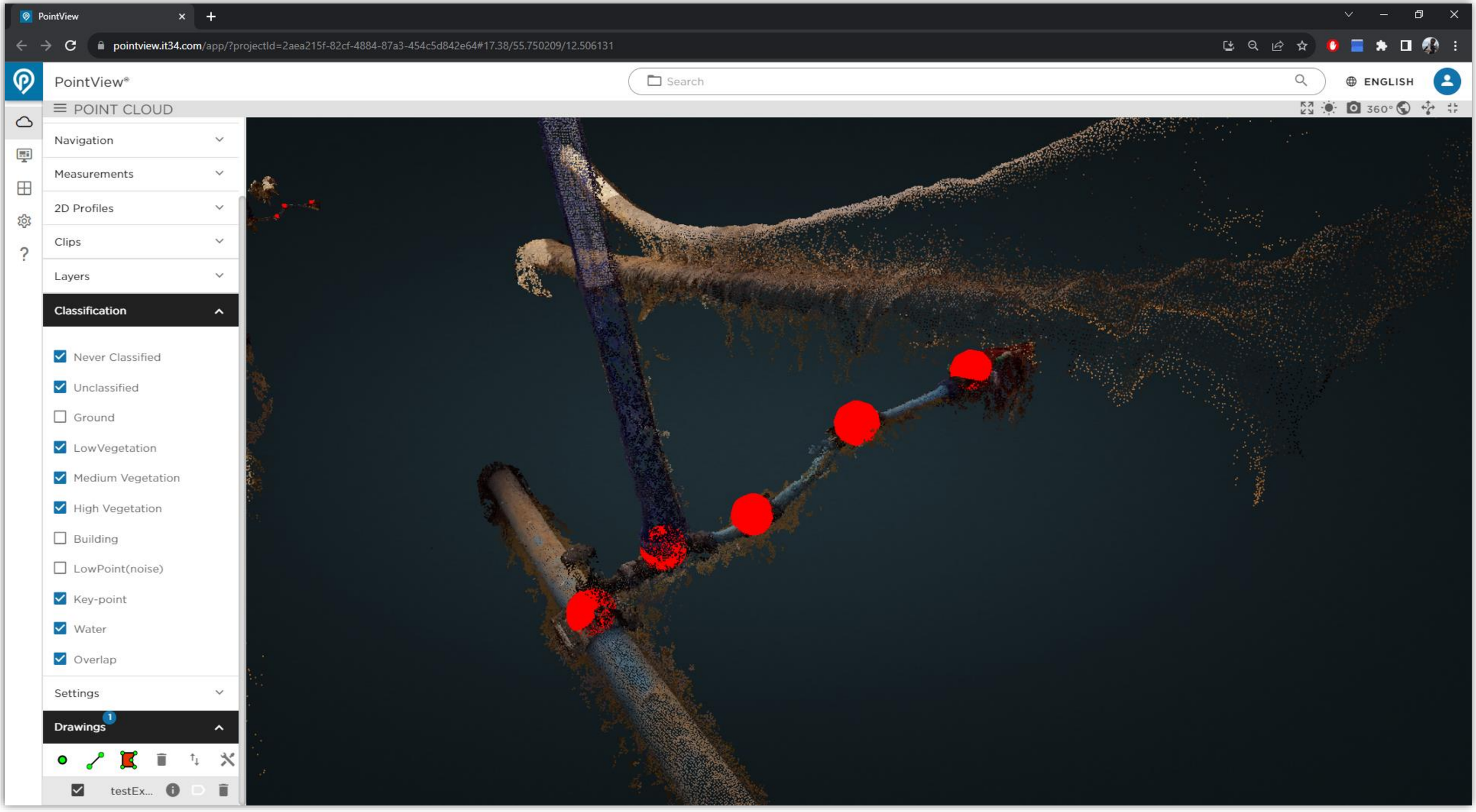
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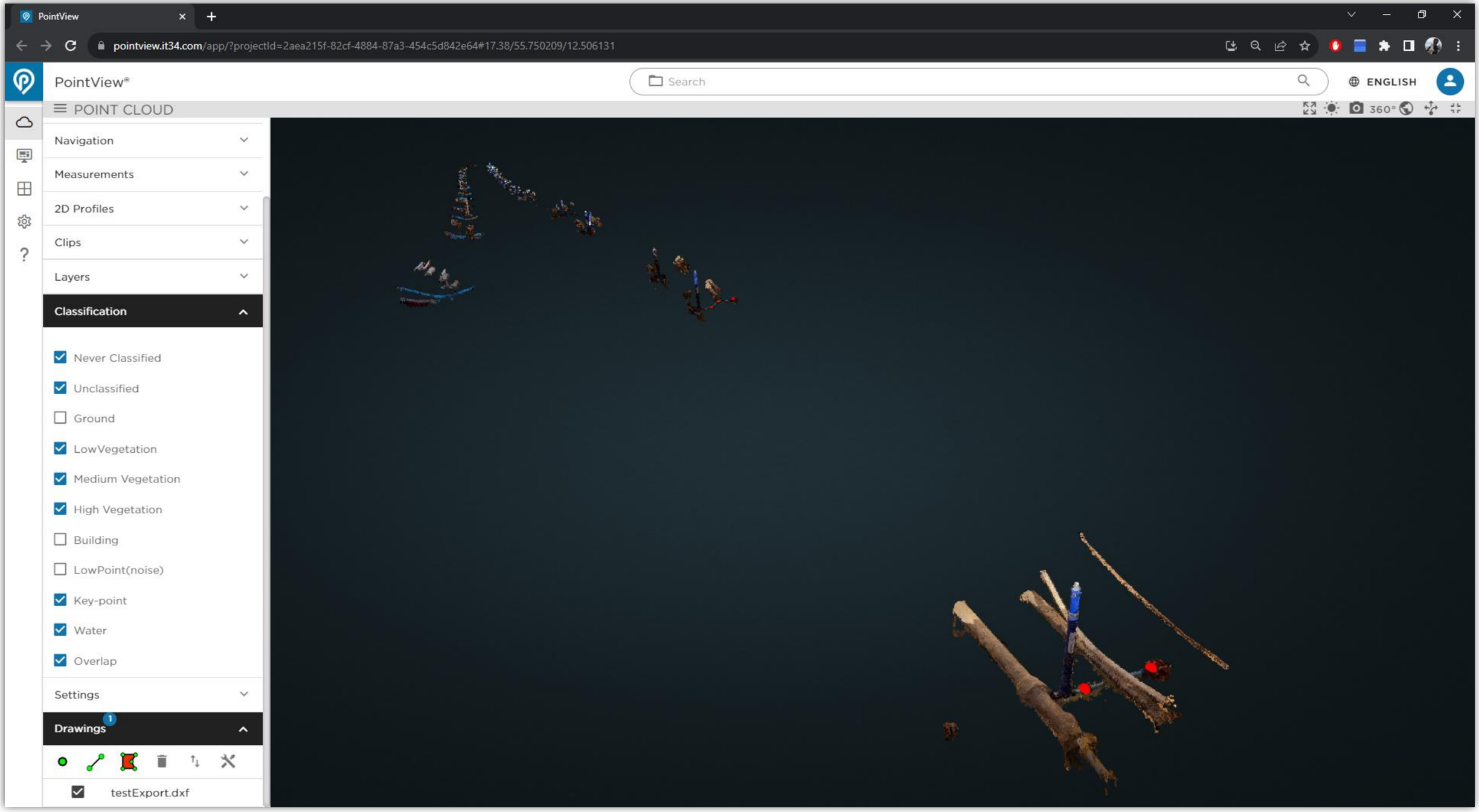
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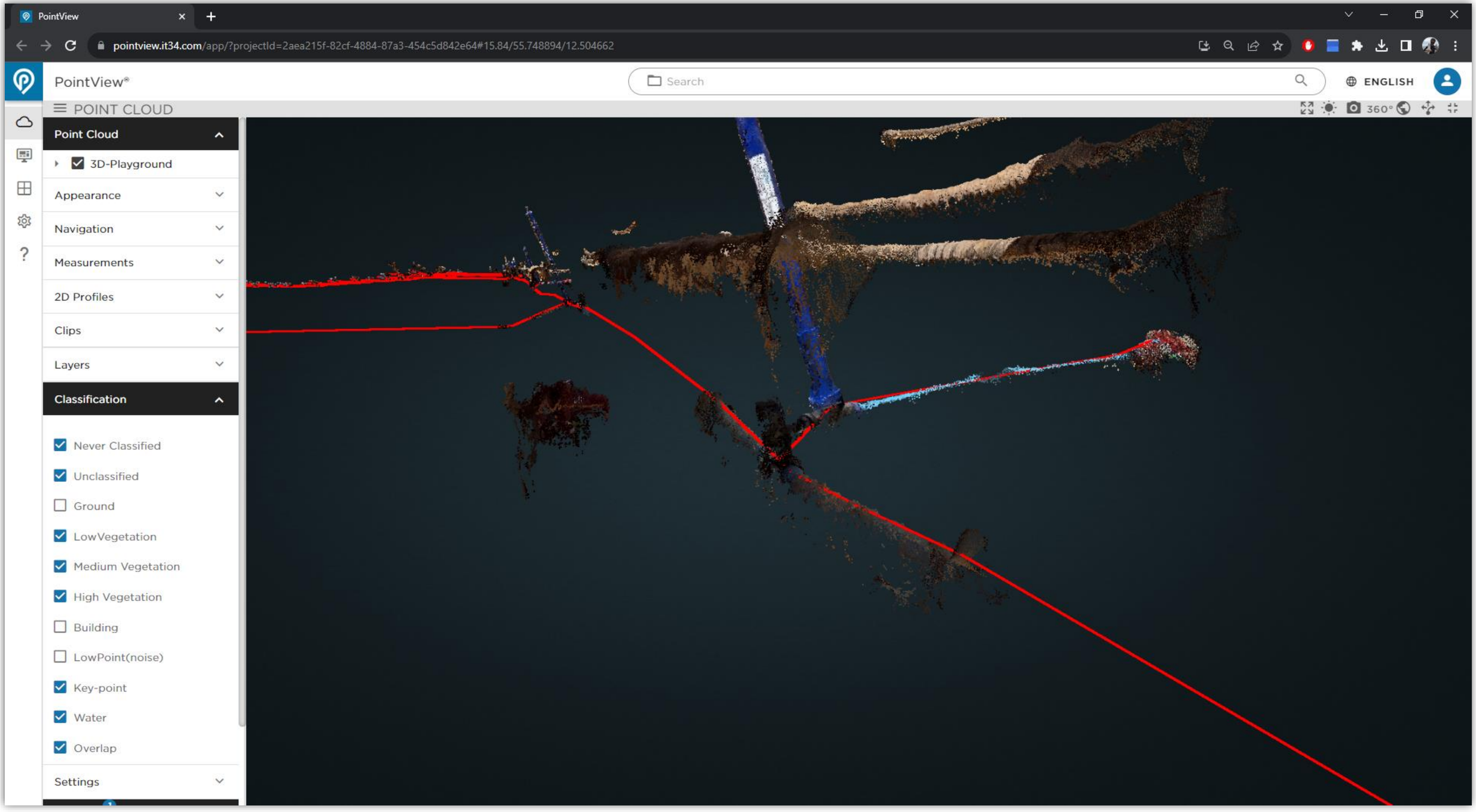
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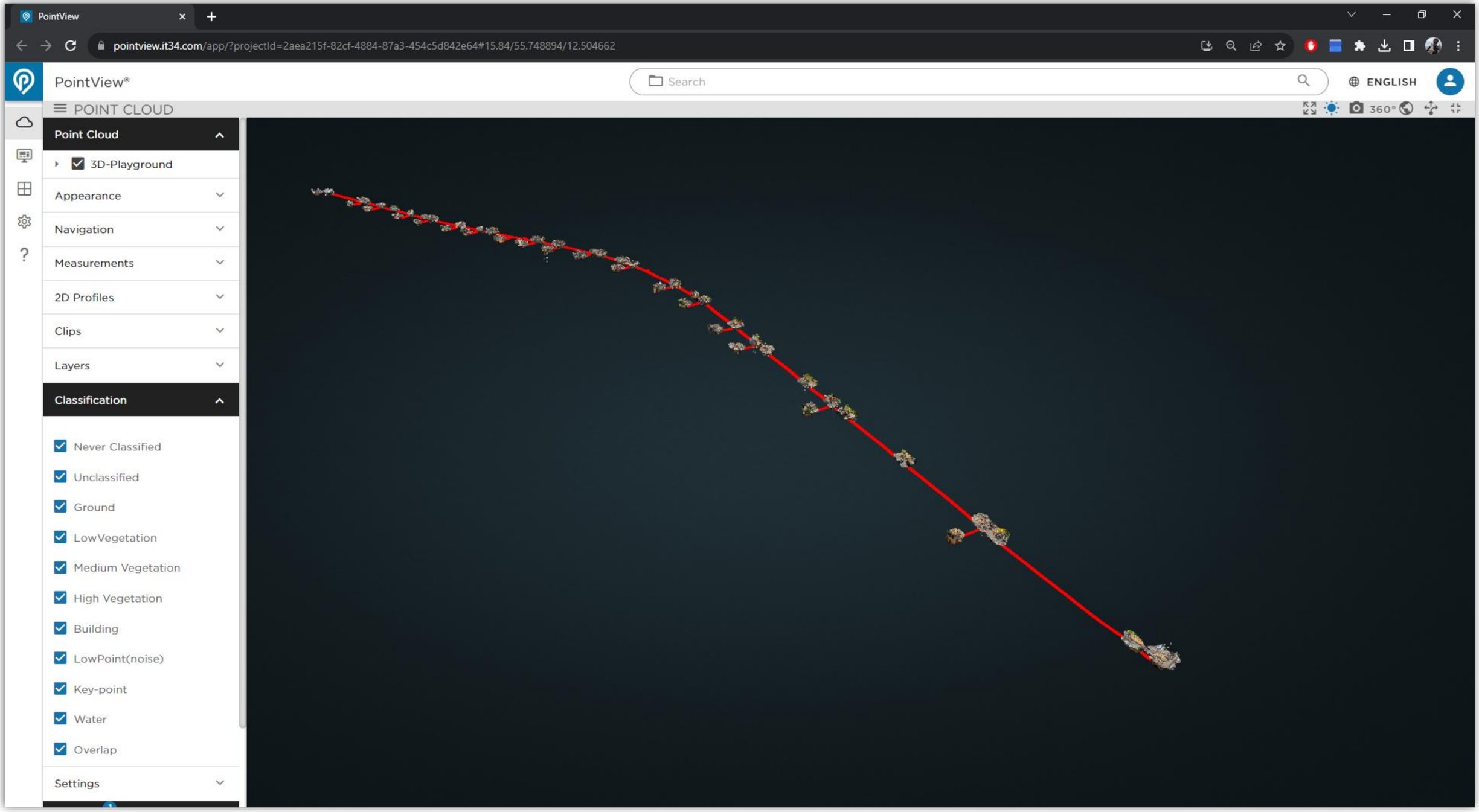
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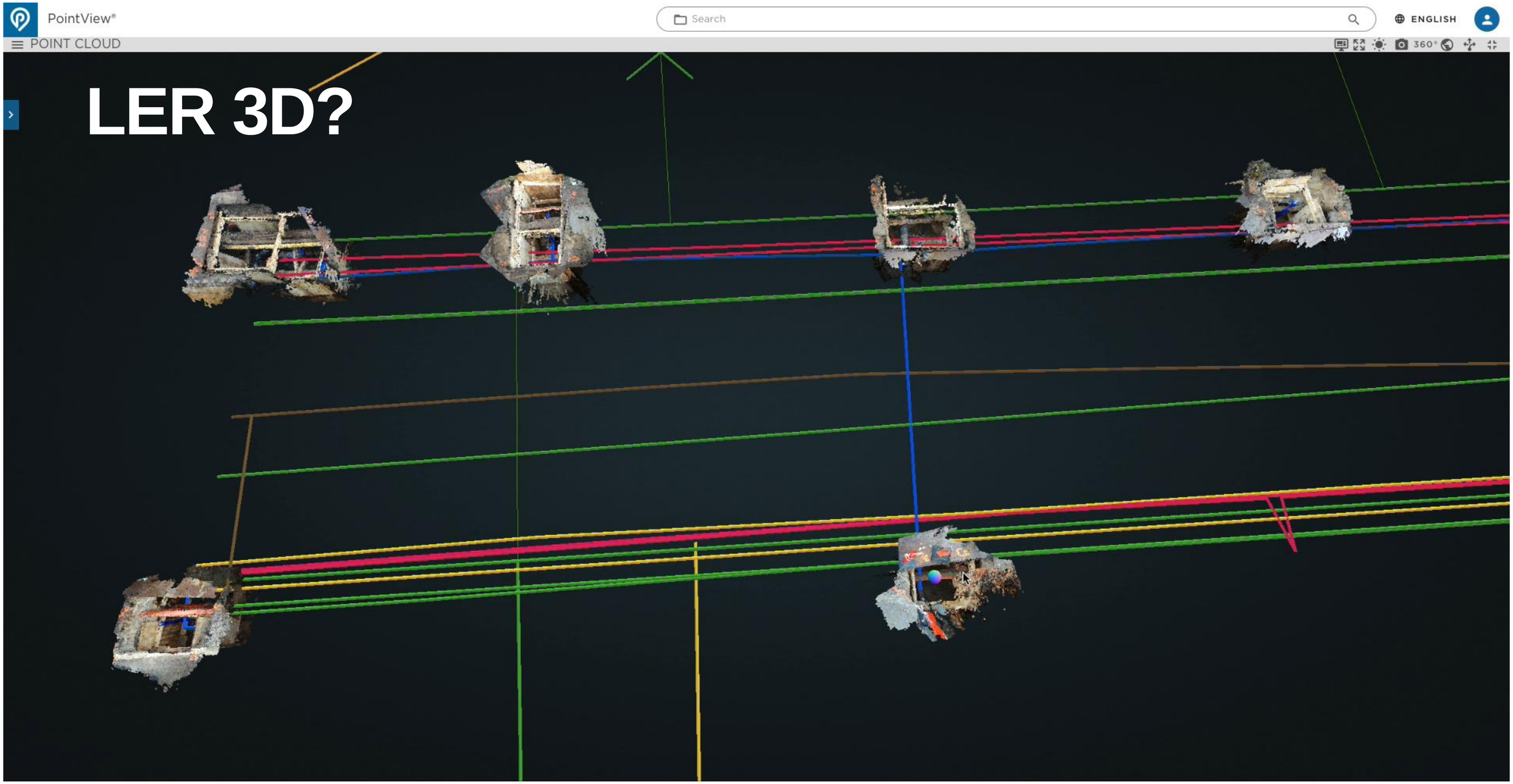
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