

Universal Test Trench (UTT)

Reusing Underground Utility Data



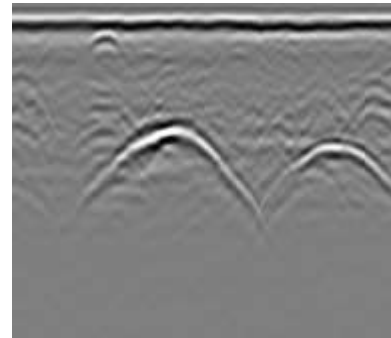
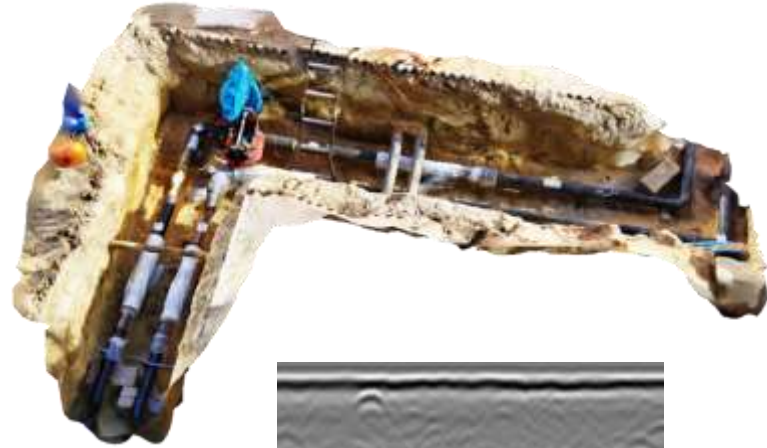
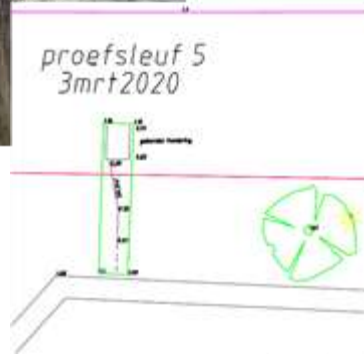
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Faith Tangara – EngD

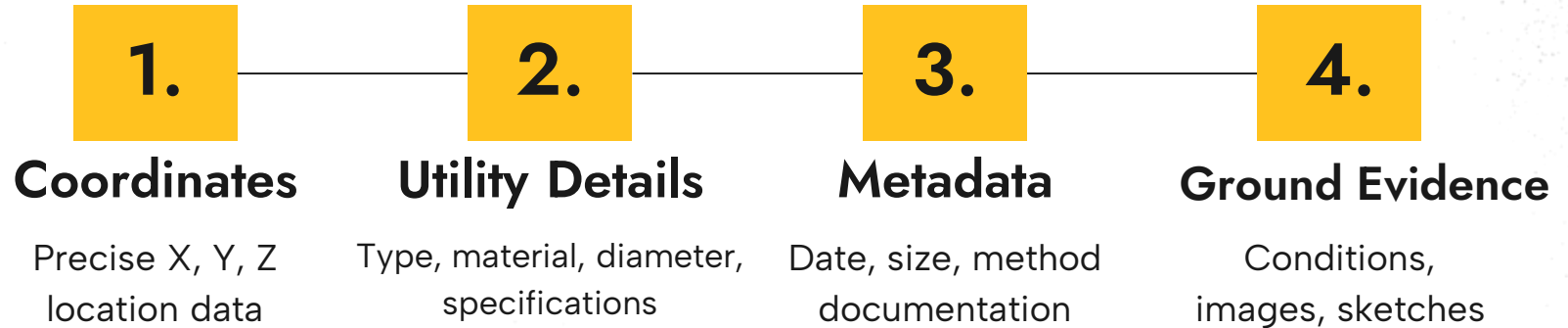


**UNIVERSITY
OF TWENTE.**

Reusing Underground Utility Data



Utility Data Fundamentals



The Challenge: Variability

Data varies across contractors, utility owners, etc, tools of data collection, and hence formats of storage

Quick Poll: How do you currently store trench data?

UTT Data

Hoe sla je momenteel sleufgegevens op?



Responses are hidden
0 / 1 responded



The Challenge: Variability



+ Data Fragmentation

Utility data is siloed in different organizations, typically collected per project and rarely shared afterward.

+ Lack of Standardisation

Data collection methods, formats, and representations vary among organizations and lack standardization.

+ System Limitations

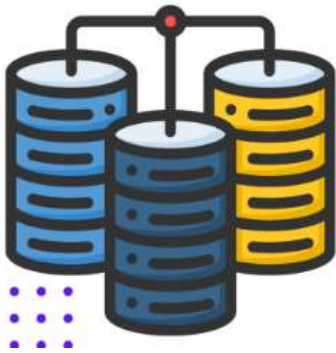
Current data often contains incomplete records and missing metadata.



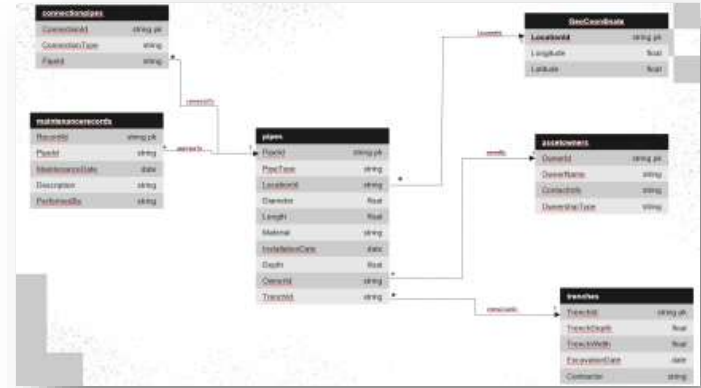


The UTT EngD Project: A Technical Analysis and Prototype Development

The UTT System Core Components



Data Storage & Management

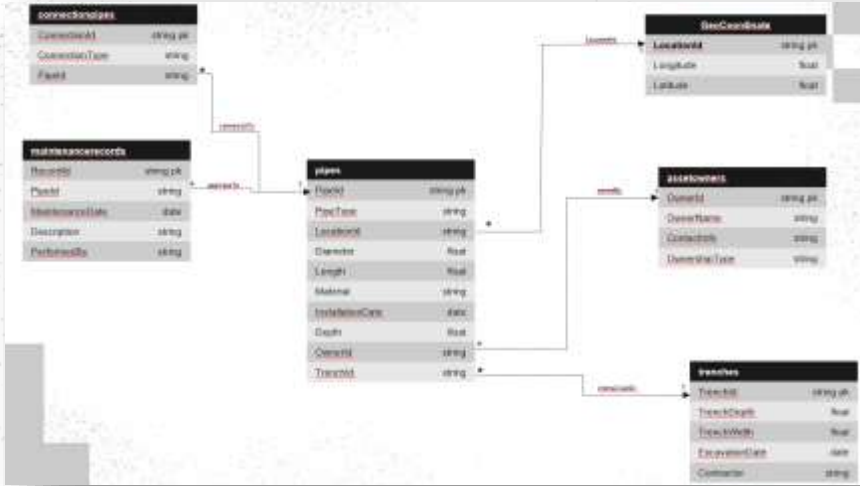


Data Model

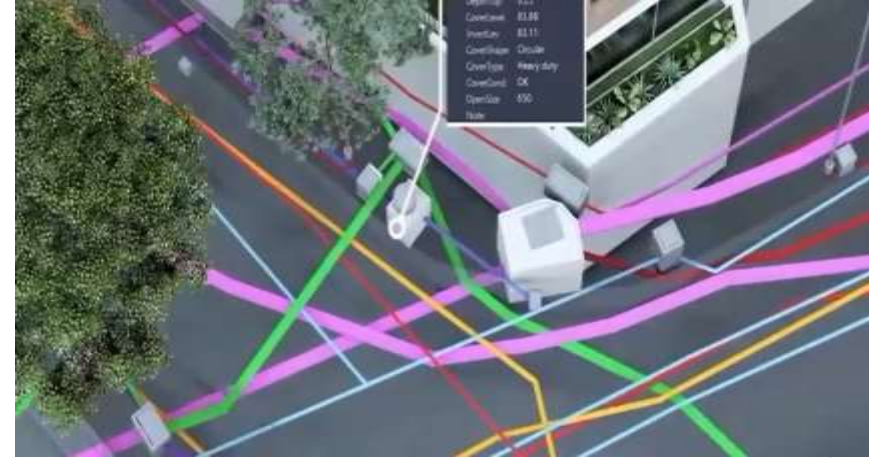


Data Visualization

Data Modelling & Visualization



Data Model

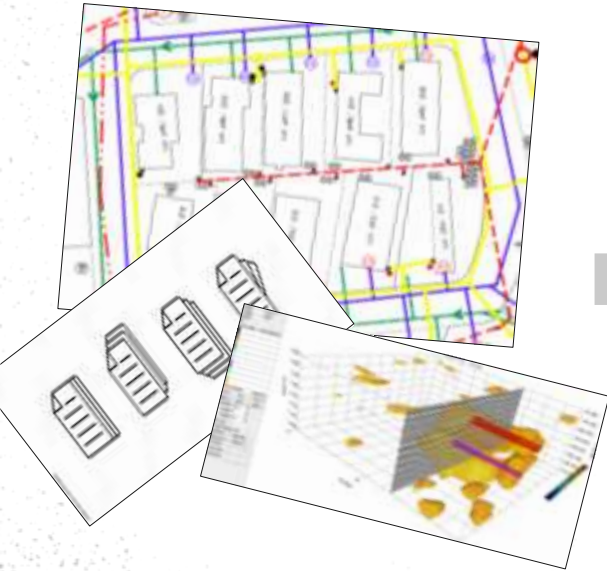


Data Visualization

What minimum information, semantics or metadata is required to achieve effective data exchange and re-use?

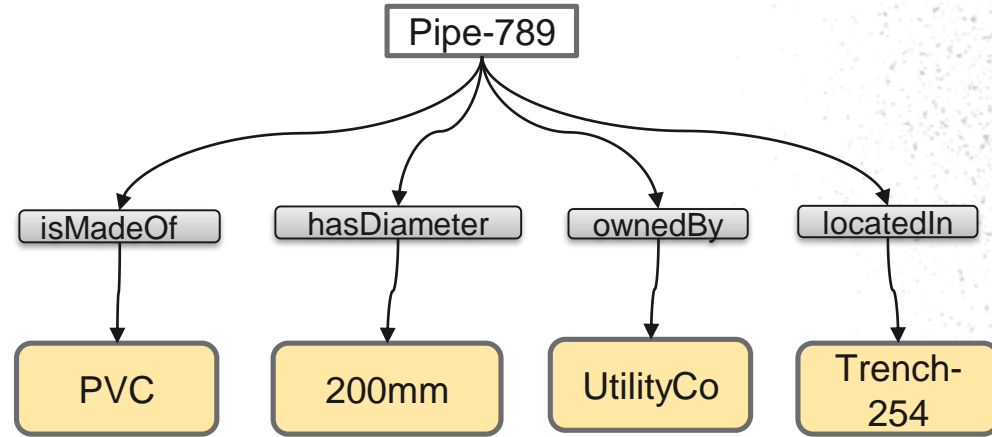
Semantic Web Ontology?

Today: A Web of Documents



Heterogenous Formats

Tomorrow: A Web of Data

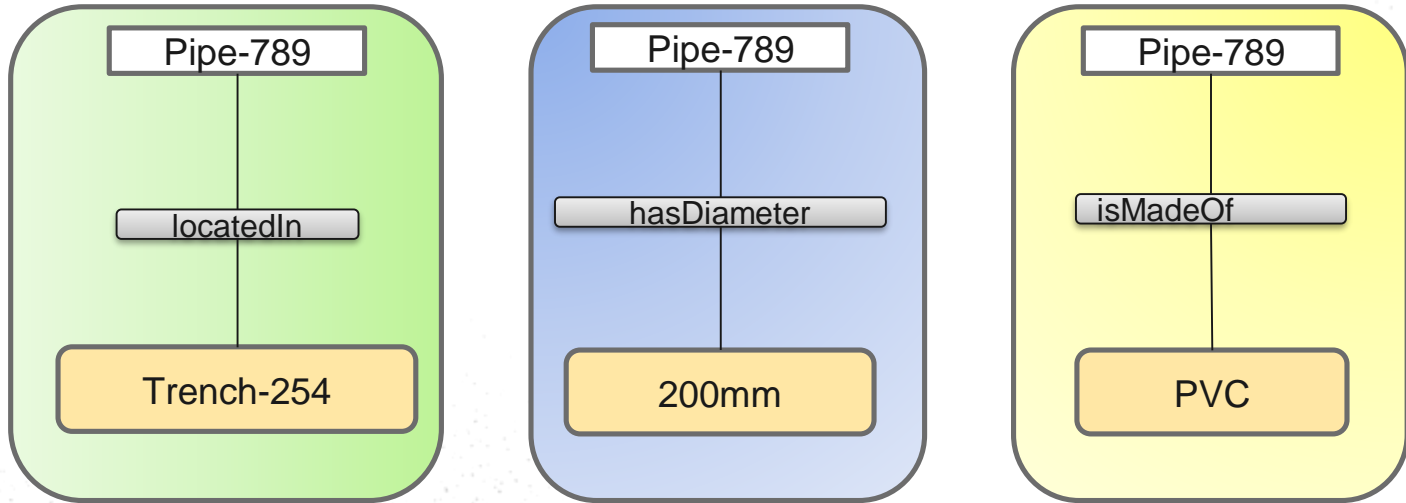


Standardized Format

Why Semantic Web?

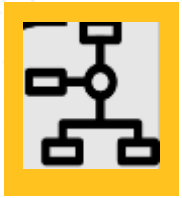
Every piece of information is broken down into a simple, unambiguous statement called a "triple".

This makes it easy for the UTT system to understand and combine data from different sources.

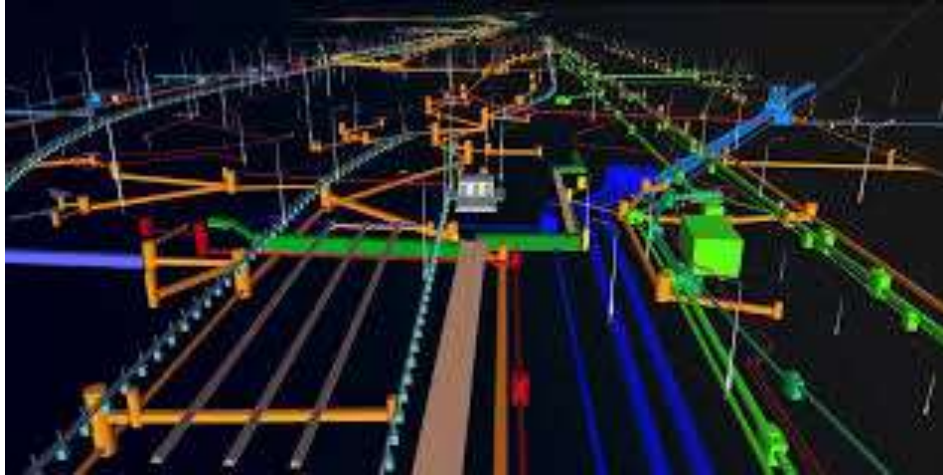


Visualization Interface

What information should be visualized?



Support queries based on the ontology







Render complex 3D trench data (meshes, point clouds, solids)?



Intuitive interface with clickable elements to explore metadata.

Work-in-Progress

Task	Feb–Jul 2025	Aug–Dec 2025	Jan–Aug 2026	Sep 26–Dec 26
Exploratory & Ontology Modeling				
Workshops & Prototype Use Case				
Interface & Visualization Dev				
Finalize, Test & Document				

Thank You!



We welcome you to participate in workshops and provide
feedback

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**What minimum information,
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achieve effective data exchange and
re-use?**