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Business Domain

Geospatial Sector,
Utility Management

Project Type

Subsurface Utilities Mapping, Data Integration, Attribute Mapping and Correction

Structuring Survey Data for Utility Network Integration: Improving Data Quality for Philadelphia's Water Utility

Client

A leading water utility company serving multiple urban and rural areas in North America.

Project

Structuring and preparing diverse survey data for seamless integration into the Client's utility network, including attribute mapping, data correction, and standardization.

Objective

The Client aimed to improve the accuracy and completeness of their utility network data by integrating various sources of survey data, standardizing attributes, and preparing the data for use in advanced network analysis and asset management systems.

Team Reinforcement

A team of three experts in data processing, attribute mapping, and utility data modeling, along with a leading project manager, was assigned to the project. Within a compressed timeframe, the team efficiently transformed raw survey data into structured, high-quality information ready for network integration.

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Challenge

The Client faced challenges in integrating survey data, mapping to a standardized schema, ensuring data quality within a scalable solution, and improving automated attribute mapping processing.

The main difficulty in solving the problem independently was the client's lack of available expertise and technology for seamless integration—resources our team provided to overcome these obstacles effectively.

Quick Facts

- Processed over 500,000 survey records covering 15,000 km of water infrastructure
- Integrated data from 5 different survey methodologies and 3 legacy data systems
- Achieved 98% automation in attribute mapping and data standardization
- Reduced data processing time by 70% compared to previous manual methods

Technologies

PostgreSQL/PostGIS / ML / ESRI / Python

Solution

★ 01

The Client successfully integrated heterogeneous data into a unified utility network, thereby enhancing the efficiency of water asset management.

★ 02

Integrated data enables more efficient management, assessment, and decision-making for water resources, reducing risks and improving services.

★ 03

Created a custom quality assurance workflow to identify and flag potential errors, inconsistencies, and missing data for manual review and correction.

★ 04

Developed a robust attribute mapping system using machine learning algorithms to automatically match source attributes to the target utility network schema (including CSV, shapefile, and CAD drawings).

★ 05

Designed a scalable data processing architecture using cloud computing resources to handle large datasets efficiently.

Client Reference

“The data structuring and preparation project has improved our approach to managing utility network information. Thanks to effective project management, the work was completed on time, met the required quality standards, and boosted our data processing efficiency and accuracy.

Benefits and Results

- Enhanced data quality across 15,000 km of water infrastructure, achieving 99.5% accuracy in attribute mapping and classification.
- Reduced the time required to integrate new survey data into the utility network by 80%.
- Improved data integration efficiency with a machine learning-driven attribute mapping system.
- Facilitated seamless integration with the Client's new asset management system using cloud computing resources.

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Techstack:

PostgreSQL/PostGIS, ML, ESRI, Python

Team: 4

Project Manager, GIS experts