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## Addressing Common Inconsistencies in Sewer Networks Data

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In sewer networks, adding a new element involves multiple phases, including planning, installation, and ongoing maintenance. At each stage of the element's lifecycle—whether it is a pipe, a structure, or an apparatus—different stakeholders and experts are involved. Due to variations in data practices, maintaining accurate and standardized data becomes a significant challenge. However, managing these networks requires consistent and reliable data to ensure effective decision-making and operational efficiency.

These imperfections can stem from various reasons, including discrepancies in data collection methods, outdated or incomplete documentation, and human errors during data entry. Additionally, the integration of data from diverse sources, such as GIS systems, maintenance reports, and sensor networks, often lead to inconsistencies and redundancies, complicating data processing and analysis.

For large datasets, which are common in sewer networks, it becomes increasingly difficult to identify and address inconsistencies. To address this, we built an Ontology-Based Data Access (OBDA) system which provides a unified semantic view of the data facilitating data access and integration. The system consists of a conceptual layer that provides the controlled vocabulary of sewer networks, a data layer where Montpellier Metropole open data is stored in relational databases, and a mapping layer between the two. Through this framework, common inconsistencies were identified such as missing node connections, duplicate entries, and conflicting attribute values for a specific dataset.