Group 23
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Description summary

The Underground Infrastructure Planner is a system designed to improve how cities and engineering teams manage and plan around underground infrastructure. Modern urban environments rely on dense networks of water, gas, electrical, and communication systems, but this information is often fragmented across multiple agencies. As a result, construction planning is inefficient and prone to errors such as utility strikes, safety risks, and project delays.

This project proposes a centralized platform that integrates infrastructure data into a single, interactive system. Users can visualize underground utilities through a map-based interface, submit construction proposals, and run simulations to detect potential conflicts before work begins. The system highlights high-risk areas and generates reports that help planners and engineers make safer and more informed decisions.

The design of the system focuses on accuracy, usability, and scalability. It supports multiple user roles, integrates with existing GIS tools, and provides features such as data validation, conflict detection, and report generation. The system is intended to fit within existing municipal workflows while improving coordination between different stakeholders, including city departments, construction teams, and utility providers.

Key benefits of the system include reduced infrastructure damage, improved safety, faster planning processes, and better communication across organizations. While challenges such as data availability, system integration, and user adoption remain, the proposed solution provides a strong foundation for improving urban infrastructure management.

Overall, the Underground Infrastructure Planner demonstrates how combining centralized data, simulation capabilities, and user-focused design can significantly enhance the efficiency and reliability of infrastructure planning in modern cities.