Using Digital Project Data for Modern Communication

Abdelrahman Abounida , Sanika Acharya , Sunmeet Kohli , Neha Shashidhara , Nupur Joshi , Pranal Sunil Pawar

Project Sponsors: Michael Nagel, Friederike Jebens

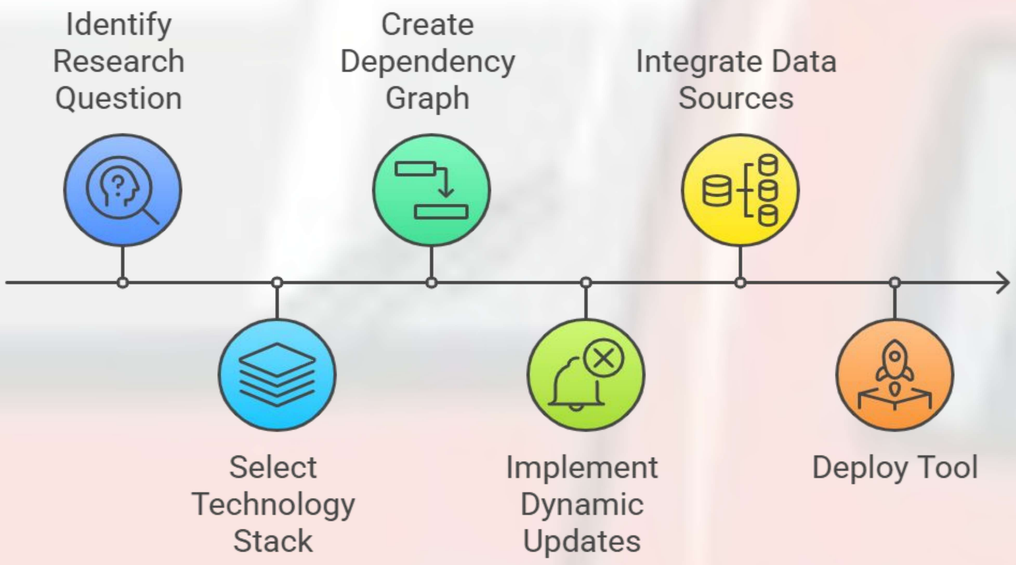
INTRODUCTION

Managing rail infrastructure projects involves coordinating multiple timelines, dependencies, and stakeholders. Delays in one project can have a cascading effect on others, making clear visualization and efficient communication essential. DB InfraGO AG, responsible for Germany's rail network, faces challenges in organizing and presenting project data in a structured and accessible way.

This project aims to develop an interactive digital tool that simplifies project management by visually mapping dependencies between construction projects. The tool helps identify potential delays, understand their impact on other projects, and support better decision-making. By providing a clear and intuitive representation of project relationships, it enhances planning, communication, and coordination for all stakeholders involved.

METHODOLOGY AND APPROACH

Research Question:
"How can a digital visualization tool improve project planning by illustrating dependencies and the impact of delays in rail infrastructure projects?"

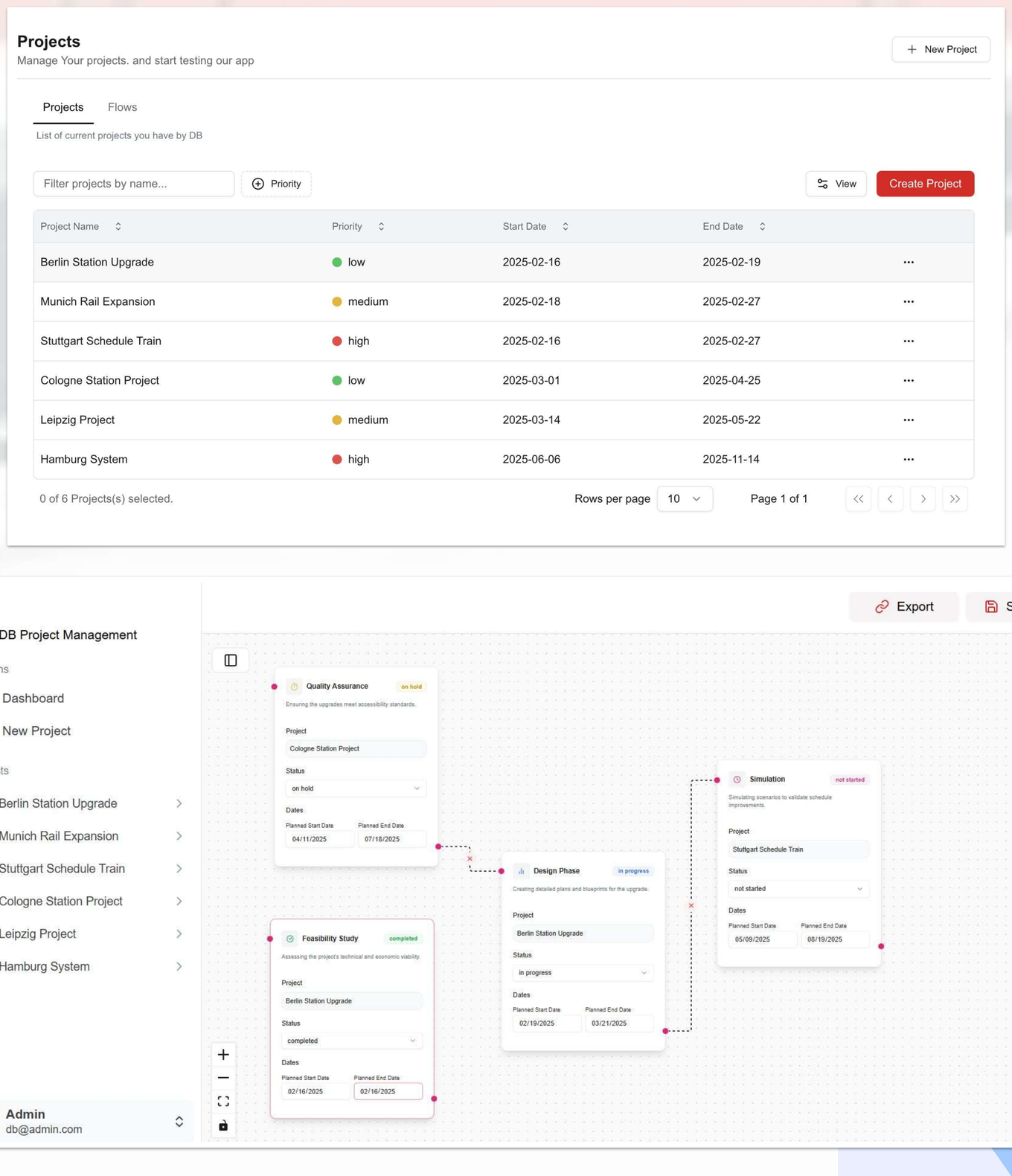


INDIVIDUAL WORK PERFORMANCE

Team Member	Task Areas	Devoted Time (Hours)
Sunmeet Kohli	Product Owner	130
Sanika Acharya	SCRUM Master	130
Abdelrahman Abounida	Developer	140
Neha Shashidhara	Project Management and Visual Communication Design	130
Nupur Joshi	Project Management and Visual Communication Design	130
Pranal Sunil Pawar	Developer	130

RESULTS

- Designed a dynamic user interface to visualize and analyze railway project data, enabling clear tracking of project dependencies and timelines.
- Implemented an interactive dependency graph that identifies and highlights impacted projects in case of delays, supporting proactive decision-making.
- Showcased how DB InfraGO can leverage data-driven insights for improved planning, conflict reduction, and efficient resource management.
- Outlined future enhancements, including real-time data integration, predictive delay analysis, and automated evaluation of project interdependencies.



Web Tool
Developed a web-based tool using React-Next.js, Node.js, and MongoDB.

Dependency Warning
Designed a system to trigger warnings for expired dependencies.

Evaluation Method
Proposed an automated method to analyze commissioning stage impacts.

Project Display
Implemented React Flow for dynamic project dependency visualization.

Key Factors
Considered project scope, time, cost, and constraints for visualization.