

INET SMART WORKPLACE

A Smart Workspace Management System



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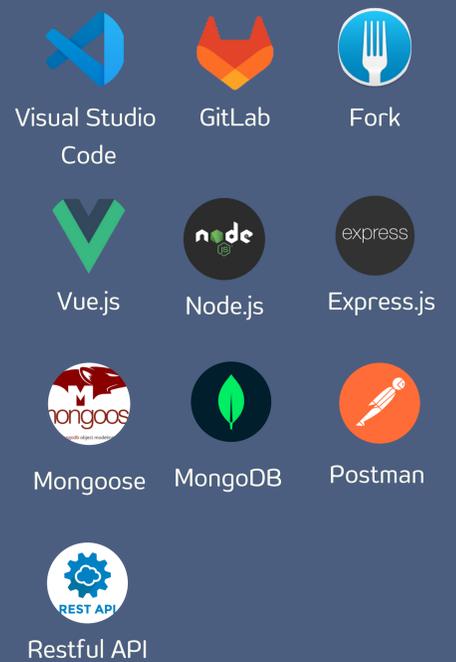
Abstract

INET Smart Workplace is a web-based application developed to manage employee seating within an organization. The system replaces traditional spreadsheet-based manual processes that lack real-time updates. It provides digital seat layout visualization, real-time seat status monitoring, and dashboard summaries to support administrative decision-making. The backend follows a RESTful API architecture using Node.js, Express.js, and MongoDB. Data processing is optimized through MongoDB Aggregation Pipeline, ensuring performance, scalability, and reduced operational workload.

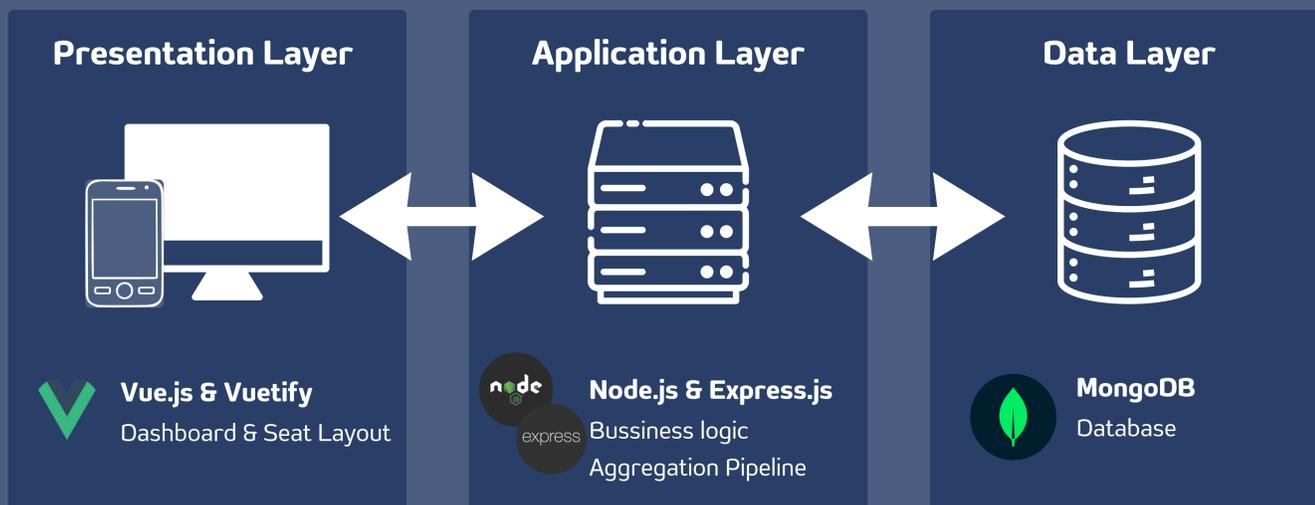
Introduction

Previously, seat tracking was performed manually using spreadsheet tools such as Excel or Google Sheets, resulting in delayed updates and limited visibility. The Smart Workplace concept introduces digital transformation to enhance workspace management efficiency. This project aims to develop a centralized system that visualizes seat layouts, monitors seat status, and supports data-driven workspace planning.

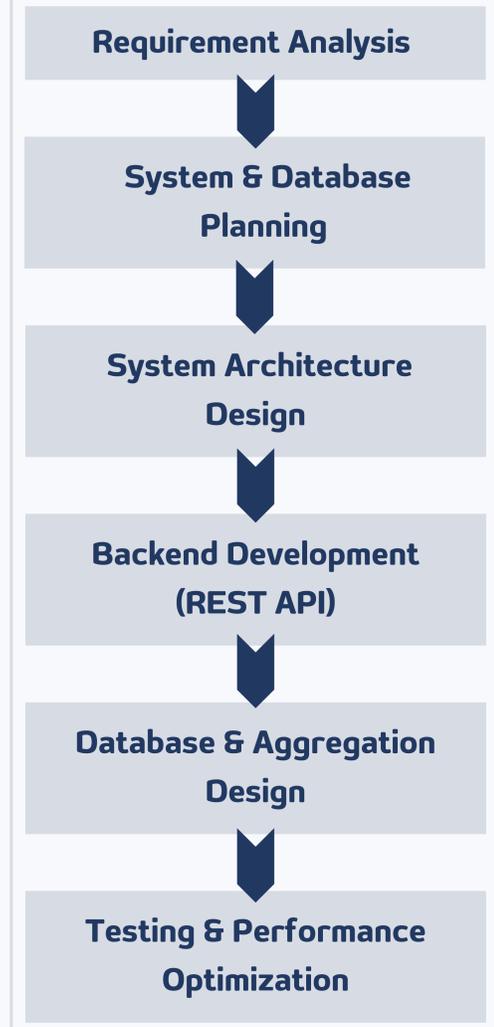
Technology



System Architecture



Methodology



Result

The implementation of INET Smart Workplace significantly reduced manual workspace management processes by transforming them into a centralized digital system. The platform enables real-time seat monitoring and dynamic data visualization, improving operational transparency and efficiency. Data accuracy was enhanced through structured validation and optimized database processing using MongoDB's aggregation pipeline. The system supports fast and flexible filtering capabilities via an interactive dashboard.

Conclusion

INET Smart Workplace successfully transforms traditional workspace management into a real-time digital system. The architecture ensures scalability, maintainability, and performance optimization. Future extensions may include advanced space utilization analytics and IoT integration.

[1] A. Alavi, Smart workplace solutions: How IoT and analytics redefine office spaces, Journal of Facilities Management, vol. 18, no. 4, pp. 373-387, 2020.

[2] RESTful API Design, RESTfulAPI.net. [Online]. Available at: <https://restfulapi.net/>. Accessed: July 23, 2025.

[3] MongoDB Aggregation Pipeline, MongoDB Documentation. [Online]. Available at: <https://www.mongodb.com/docs/manual/core/aggregation-pipeline>. Accessed: July 23, 2025.