Streamlining Internal Finance Operations: Developing a Micro-Frontend Solution in CoStar Group's Web Enterprise Application

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ABSTRACT

To address CoStar Group's need to migrate financial data from Navision to Oracle, I developed a UI within the Web Enterprise application to streamline data synchronization. Following the Software Development Life Cycle (SDLC), I gathered requirements, created mock-ups, integrated endpoints, tested, and deployed the application. Within a day of production, multiple teams began using it, freeing backend teams from manual syncing tasks. Future updates will enhance efficiency by preventing duplicate entries and adding safeguards for customer contact information updates.

1. INTRODUCTION

Effective data management is essential for speed, efficiency, and reliability in today's business world. To stay current, CoStar Group prioritized migrating customer financial data from the legacy platform Navision to the more modern Oracle Cloud. Previously, backend teams had to sync updates manually, impacting productivity and risking data integrity. This project aimed to streamline processes, enhance collaboration across departments, and improve efficiency while advancing CoStar's commitment to modern financial operations.

2. RELATED WORKS

What is CoStar Group?: CoStar Group aims to digitize real estate, empowering users with insights and connections to improve their businesses and lives, while simplifying interactions between buyers and sellers (CoStar Group, n.d.).

What are Micro-Frontends?: In the summer of 2024, I focused on developing Micro-Frontends (MFEs)—a modern approach that breaks down monolithic frontends, with a single, tightly coupled codebase, into smaller, independently developed units—in CoStar's Web Enterprise CRM platform (Prajwal, et al., 2021). MFEs enhance scalability, maintenance, and team autonomy while addressing challenges like shared state management and consistent user experience.

Navision vs. Oracle Cloud: CoStar Group's migration from Navision to Oracle Cloud aligns with Daviy's (2022) research, which highlights how regional technological environments enhance Enterprise Resource Planning (ERP) productivity. As a global leader in a tech-driven industry, CoStar requires Oracle Cloud's scalability, advanced analytics, and global compliance—capabilities Navision lacks. This modern, cloud-based solution supports CoStar's growth, global operations, and digital transformation goals, ensuring competitiveness and improved efficiency.

3. PROJECT DESIGN

To address these goals, my team developed an MFE to streamline data migration, enabling non-technical users, like finance teams, to efficiently handle the syncing process and free backend teams for higher-value tasks.

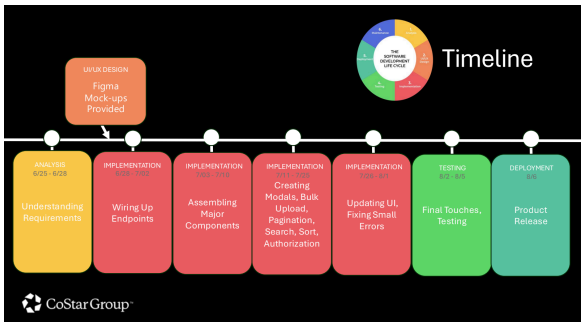

Fig 1. Steps of the Development Process

As seen in Fig. 1, this project followed the Software Development Lifecycle (SDLC).

3.1. Analysis

The project started with gathering input from stakeholders to understand the requirements. Given that the application would primarily serve internal customers with limited technical expertise, it was essential to design a UI that was intuitive, fast, and tailored to different types of authorized users, such as the finance team. Additionally, maintaining visual consistency with other MFEs on the Web Enterprise was a key priority.

3.2. Design

The UI design was carefully planned during this stage using mock-ups. Using a software called Figma, a UI/UX Design team supported this project by developing images of what the application should look like at the time of deployment. These mock-ups were used as a guide in assembling the different components of the MFE.

3.3. Implementation

This phase involved translating the mock-ups into a functional system by developing the software's major components. This application was built using React, a JavaScript library used specifically for building user interfaces.

3.4. Testing

Rigorous testing was conducted to verify the tool's functionality, performance, and usability. In collaboration with software testing teams, the MFE was reviewed and updated repeatedly to make sure that the final users would interact with a successfully functioning application.

3.5. Deployment

Once testing was complete, the tool was successfully deployed for use, enabling internal teams to efficiently perform data migration tasks with minimal technical assistance. This deployment marked a significant step toward streamlining financial operations and enhancing user autonomy.

3.6. Maintenance

Post-deployment, the tool entered the maintenance phase, where ongoing support has been provided by MFE development teams to address any issues, incorporate feedback, and make updates as necessary.

4. RESULTS

The UI streamlines user interaction, allowing non-technical users to perform tasks like bulk data upload, search, and sorting independently of technical teams. Its intuitive design reduces the learning curve, minimizes errors, and speeds up the migration process. Within a day of deployment, over 50 employees reported its effectiveness in processing customer financial data. These outcomes support the project's goal of bridging the gap between technical and non-technical teams, improving user satisfaction and system performance.

5. CONCLUSION

The UI developed for CoStar's data migration tool has successfully streamlined syncing between the legacy Navision system and Oracle Cloud, empowering non-technical users to perform tasks independently. This has improved efficiency and saved time. Adhering to the SDLC ensured a structured, reliable solution, with positive feedback from over 50 internal users. Planned improvements, such as limiting updates and preventing duplicates, will enhance usability. Overall, the project has bridged the gap between technical and non-technical teams, supporting CoStar's goals of digital transformation and operational excellence.

6. FUTURE WORK

Two key improvements are needed to enhance the application's functionality and performance. First, bugs must be addressed, including duplicate data from API calls and insufficient permission controls in update contacts capabilities, which should restrict unauthorized edits to customer financial data. Second, loading speed needs optimization to ensure responsiveness as user interactions and data volumes grow. These updates will be implemented during the maintenance phase of the SDLC to improve usability and efficiency.

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