

Crosslinx



Blue Flamingo transforms CrossLinx
Transit Solutions' operational
systems to support one of Toronto's
largest infrastructure projects.

blueflamingo



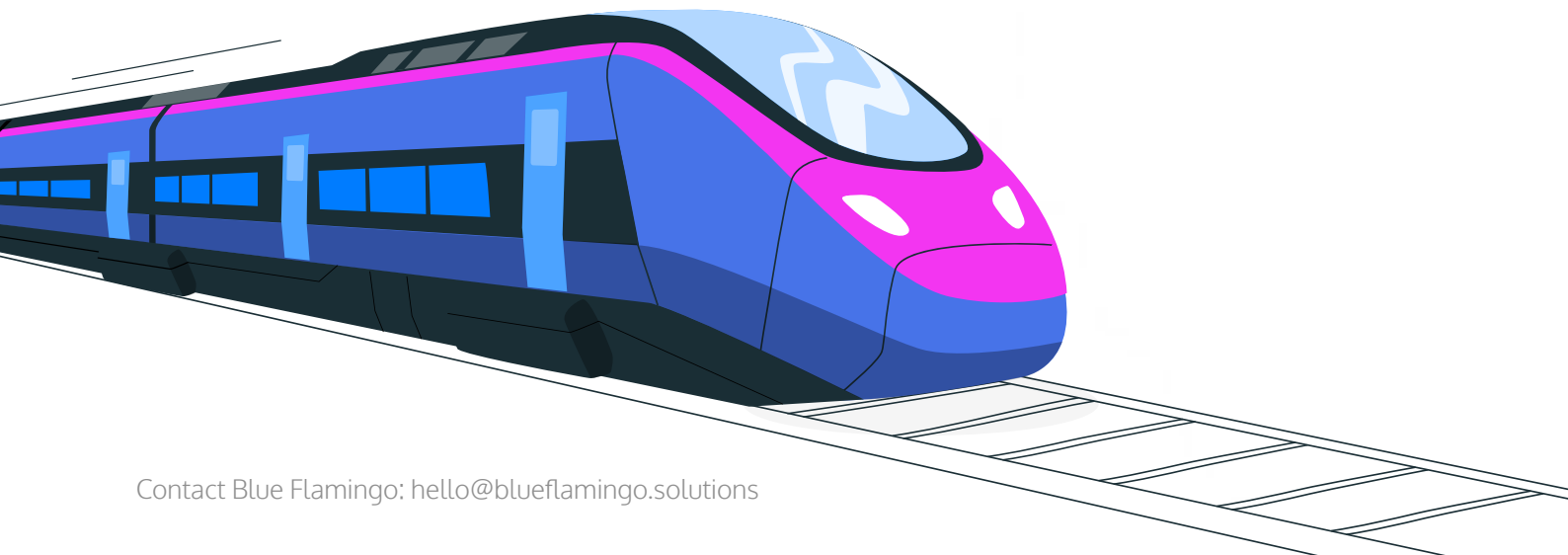
CrossLinx Transit Solutions, responsible for the Eglinton Crosstown Light Rail Transit (LRT) project, undertook a comprehensive overhaul of their internal systems. This multimillion-dollar transit expansion demanded cutting-edge software to ensure smooth operations, real-time field management, and scalability to support ongoing construction and maintenance efforts.



The Customer

CrossLinx Transit Solutions is managing the design, construction, financing, and maintenance of the Eglinton Crosstown LRT, a pivotal transit infrastructure project in Toronto. This 19-kilometre light rail line includes 25 stations and stops, connecting key parts of the city and alleviating congestion.

CrossLinx's internal operations were heavily reliant on a custom PHP-based application that had become outdated. The system suffered from slow performance, limited scalability, and an unintuitive user interface, all of which hindered daily operations and risked delays in the broader infrastructure project. Without intervention, these challenges could have jeopardised one of the largest transit expansion initiatives in Toronto's history.



The Brief

CrossLinx needed a robust and scalable operational platform to manage the complex logistics of the Eglinton Crosstown project. This platform had to address key issues in the existing system:

⚡ **Performance Bottlenecks:**

Slow query handling and unoptimised database structures led to inefficiencies in operations.

⚡ **User Experience Issues:** An inconsistent interface and navigation made training difficult and workflows cumbersome.

⚡ **Mobile Capability Gaps:** Field teams lacked a mobile application for real-time data access and defect tracking.

⚡ **Security Risks:** Vulnerabilities such as weak session handling and inadequate data encryption exposed the system to potential breaches.

⚡ **Infrastructure Limitations:** The system was unable to scale dynamically, causing reliability issues during high-demand periods.

The new solution had to integrate seamlessly with existing operations, enhance security, and provide tools to manage field operations efficiently, all while ensuring scalability for future growth.



Our Solution



Initial Audit and Analysis

We began with a thorough audit of CrossLinux's existing application, infrastructure, and operational workflows. The audit revealed critical gaps in performance, security, and usability. A detailed roadmap was developed, outlining prioritised improvements across three streams: infrastructure modernisation, database optimisation, and mobile application development.

Infrastructure Modernisation

To address scalability and reliability, we migrated the production environment to Cloudways. This provided a stable and robust hosting solution, capable of handling dynamic operational demands. Backup strategies were implemented using Digital Ocean Spaces, ensuring data security and disaster recovery readiness. We also optimised server configurations and resolved critical deployment issues, including DNS setup for multiple environments.

Database Optimisation

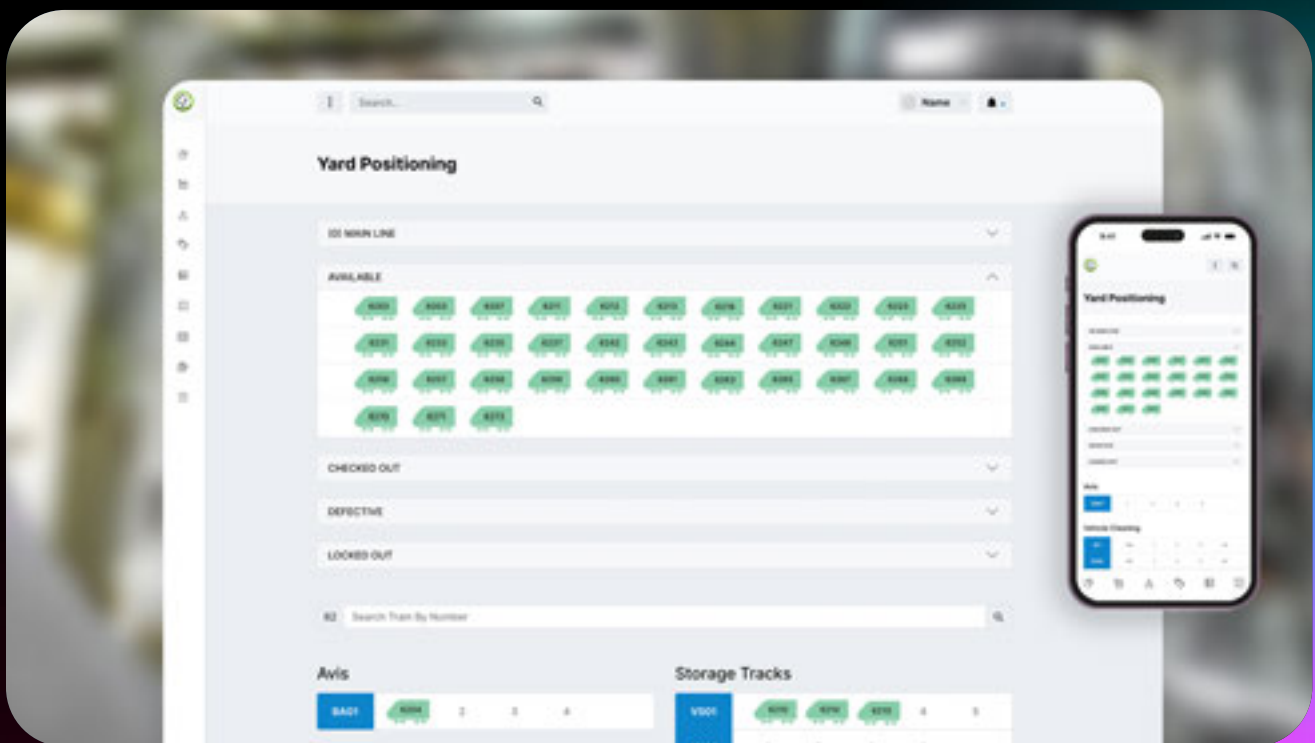
The database architecture was redesigned to improve performance and streamline data handling. Unused tables and views were removed, while indexes, primary keys, and foreign keys were introduced to reduce query latency. MySQL was upgraded to modern versions, and Memcached was integrated to accelerate frequently accessed queries. These changes enabled the system to handle complex data operations efficiently.

Back-End Development and API Integration

The back-end system was overhauled to support advanced API integrations, enabling seamless communication between web and mobile platforms. APIs were enhanced to support workflows such as train monitoring, yard positioning, and operational defect tracking. Additional endpoints were created to ensure compatibility with third-party tools, such as PowerBI, for advanced reporting and analytics.

Mobile Application Development

React Native was used to develop mobile applications for iOS and Android. These apps provided real-time GPS integration, defect tracking, and operational notifications. Offline capabilities were built into the apps, ensuring functionality in areas with limited connectivity. This empowered field teams to access critical data and tools on the go, improving responsiveness and decision-making.



User Interface Redesign

The application's user interface was completely redesigned using OneUI principles. Consistent layouts, improved navigation flows, and modern dashboards were introduced to enhance usability. New modules were developed for operations logs, yard positioning, and real-time train tracking, reducing user training requirements and increasing satisfaction.

Security Enhancements

To mitigate risks, we implemented modern encryption protocols, secure session handling, and API access controls. Cloudflare WAF was deployed to protect against unauthorised access and other vulnerabilities. Regular penetration testing ensured compliance with industry security standards.

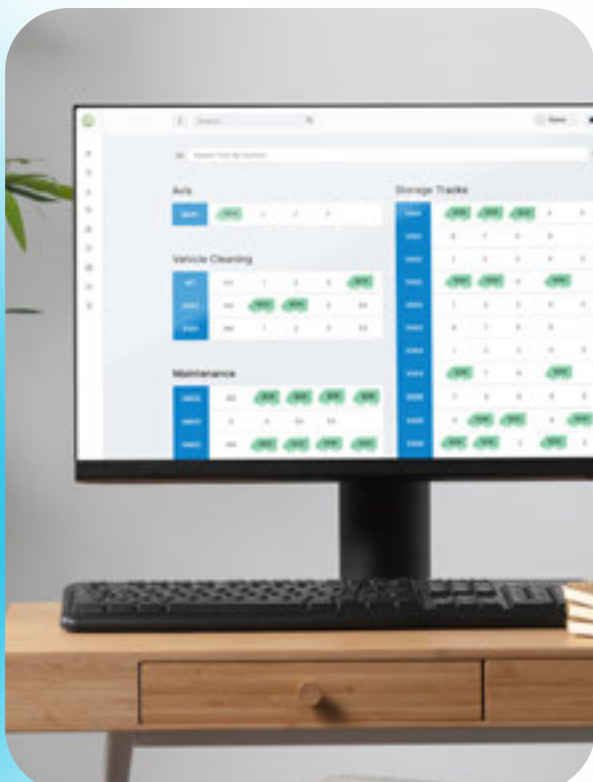
Deployment Automation

A CI/CD pipeline was established to automate deployments, reducing errors and accelerating development cycles. GitHub was adopted for version control, with approval workflows ensuring stability during feature rollouts.

The Result

The transformation of CrossLinx Transit Solutions' internal system has delivered remarkable improvements:

- **Operational Efficiency:** The modernised platform supports dynamic scaling and efficient workflows, enabling the smooth execution of one of Toronto's largest infrastructure projects.
- **Real-Time Field Operations:** Mobile applications provide field teams with real-time access to tools and data, improving responsiveness and decision-making.
- **Enhanced Usability:** A redesigned interface has streamlined user interactions, reducing training times and increasing productivity.
- **Improved Security:** Advanced measures protect sensitive data, ensuring compliance with modern standards.



- **Scalable Infrastructure:** The new hosting environment dynamically adjusts to operational loads, ensuring reliability and minimal downtime.
- **Faster Development Cycles:** Automated deployment processes have reduced errors, allowing for faster rollouts of new features.

Trading off inefficiencies for a state-of-the-art operational system, CrossLinx now has a tool that supports its ambitious transit project with confidence.

Contact Us

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