Modernising The Client's In-Store Production Control System

Client: Anonymous
Business Size: Corporate
Industry: Food and Beverage
Country: Global
Technology: Angular 19, C#, HTML, CSS, GitHub, Collaboration and communication

Objective: Upgrade Application to a new technology stack.

Introduction

This case study documents the complete technical rewrite of a global food and beverage company's business-critical, in-store Production Control Report (PCR) application. The strategic objective was to migrate a legacy AngularJS application and its backend API to a modern technology stack. This was a mission-critical project aimed at addressing a severe operational risk, as the legacy system's obsolescence threatened daily production continuity across the company's global stores. A single framework failure could halt kitchen operations, impacting revenue and customer experience.

The central challenge was technological obsolescence. The application was built on AngularJS, a framework that is no longer supported, leading to significant business risks. This fragility meant the core tool for kitchen production was vulnerable due to the inability to patch security flaws, difficulty finding developers for maintenance, and the impossibility of adding new features. The primary goal was a complete technical rewrite of both the frontend and backend (API) to mitigate this risk and future-proof this cornerstone of the client's daily operations.

Background

The client is a global food and beverage company that relies on precision and efficiency within its in-store kitchens. The original PCR application was the digital heart of this operational model, deployed on in-store tablets for the Manager on Duty (MOD) to manage daily food production schedules, enforce mandatory quality standards, and track product labelling.

Challenges

The project faced two key obstacles:

- **Initial Setup Blockers:** Project initiation was delayed by infrastructure hurdles related to provisioning development environments with correct network permissions and access rights to the client's identity management systems.
- **Deployment and Testing Challenges:** During User Acceptance Testing (UAT), the deployment pipeline proved to be unreliable and manual because

of several problems with authentication and access rights, in addition to DNS problems, posing a direct threat to the production release schedule.

Solution and Implementation

Addressing the obsolete technology required a comprehensive, full-stack rewrite rather than a simple patch. The new system was designed from the ground up to replicate and improve upon the complex, established workflows essential to the client's operational DNA, ensuring a stable, scalable, and maintainable technical foundation.

Modernized Technical Architecture

The core of the solution was the adoption of an industry-standard technology stack:

- Frontend: Complete rewrite of the client-side application from AngularJS to a modern version of Angular (v19), creating a robust and responsive user interface.
- Backend: The API was rewritten using C# and .NET, ensuring a high-performance, secure, and scalable server-side infrastructure.

Re-engineering Critical In-Store Workflows

The project successfully delivered critical features based on detailed operational workflows, reflecting a deep understanding of the client's business rules:

- **Production Management:** The system provides real-time tracking of planned versus made items. Production schedules set in the client's central planning system are synchronised to the tablets. For data accuracy, a pop-up confirmation appears if a MOD enters a Made quantity that differs from the Planned quantity.
- **Quality & Label Checks:** The application enforces a mandatory workflow where the MOD must perform and digitally record a Quality Check (QC) and a Label Check (LC) for all products. Crucially, the system prevents data submission to the client's central planning system until these checks are completed, ensuring strict compliance.
- **Dynamic Production Sections:** The application supports specialised workflows for items like "On-Demand," "Hot Chef," "Platters," "Preparation," and "Repackaged" items, each with unique data capture requirements.
- **User Management & Authentication:** To ensure accountability on shared tablets, the application integrated with the client's existing identity infrastructure. This links every quality check and production submission to a specific manager, reducing the security risk of credential sharing.
- **Connectivity Handling:** The application was engineered for an "offline-first" experience to cope with unreliable kitchen Wi-Fi. Staff can perform all core production tasks without interruption, guided by a visual "traffic light" connectivity indicator. Data synchronisation occurs automatically when a connection is re-established. The system design also included a "paper version" fallback plan.

Collaborative Development Process
The project utilised a highly collaborative and iterative methodology. Regular meetings with the client team were essential for displaying development progress, gathering immediate feedback, and ensuring tight alignment between the development team and business stakeholders.

Results

The primary outcome was the successful delivery of a completely rewritten and modernised PCR application on a scalable and maintainable technology stack (modern Angular and .NET). This successfully mitigated the security and maintenance risks associated with the legacy platform.

The most critical strategic insight gained was the need for proactive planning for deployment. This experience mandated shifting the approach to start with deployment and testing processes from the very beginning. For future modernisations, I mandate the creation of a 'thin slice' deployment to a production-like environment as a Sprint Zero task, treating the deployment pipeline as a core feature. This strategy ensures infrastructural issues are surfaced in week one, dramatically reducing late-stage risks.