

# Revolutionizing Dairy Supply Chain Management with Automation

## ORGANIZATION

Our client, one of Canada's leading dairy companies, faced the intricate complexities of managing a dairy supply chain. Dairy supply chains are inherently complex, and traditional tools often exacerbate collaboration challenges, leading to costly mistakes and delays. To tackle this, our client developed groundbreaking cloud-based software that seamlessly connects producers, cooperatives, processors, and haulers, uniting all data under one shared database.

Their vision was clear: to ensure customer satisfaction by facilitating a seamless connection between all stakeholders in the supply chain. From producers transporting dairy to processors daily to labs verifying quality, this system ensured that every step, from farm to table, was meticulously managed and optimized.

## CHALLENGE

As the client's software application began handling the end-to-end tracking of dairy movement, ensuring that demand and supply were perfectly balanced, they encountered several hurdles:

1. **Frequent Changes and Deployments:** The dairy industry is dynamic, with constant updates and changes to processes and requirements. These frequent changes made it difficult to maintain a stable and reliable automation framework, causing interruptions in the testing process.
2. **Complex Folder Structure:** The existing framework had an intricate folder structure with inconsistent and lengthy paths, leading to difficulties in managing and maintaining the codebase. This complexity increased the risk of errors and made the automation scripts less efficient.
3. **Lack of Reusability:** The initial framework lacked reusability, resulting in duplicated code and increased maintenance efforts. Every new feature or change required significant modifications across multiple scripts, slowing down the development process.
4. **Code Redundancy:** Changes to the application, such as the removal or modification of fields and functionalities, led to redundant code. This redundancy cluttered the codebase, making it harder to manage and increasing the likelihood of bugs.
5. **Custom Reporting Needs:** The existing framework did not support detailed custom reports, which were crucial for the client to gain insights into the testing process and results. The lack of customized reporting hindered their ability to make informed decisions based on test outcomes.
6. **Extensive File Validations:** The application required extensive file validation to ensure data integrity and accuracy. This validation process was manual and time-consuming, leading to delays and potential errors.
7. **Ensuring Multi-tenancy:** The application had to function correctly across different user types, including producers, cooperatives, processors, and haulers. Ensuring multi-tenancy functionality was critical to provide a seamless user experience for all stakeholders.
8. **Localization Testing:** The application needed to be validated for region-specific views and functionalities. Each region had unique requirements and workflows, necessitating thorough localization testing to ensure the application met local needs.

## TECHNICAL SOLUTION

Our QA team, excited by the challenge, dove in to transform the automation process. We provided a comprehensive and optimized solution that addressed every challenge:

- **Frequent Changes and Deployments:** We developed a **flexible and adaptable automation framework** that could easily accommodate frequent changes and updates. This framework included version control and modular design, allowing for quick and efficient updates without disrupting the entire system.
- **Complex Folder Structure:** To address the complex folder structure, we **reorganized the codebase** into a more logical and manageable hierarchy. We created a standardized structure with clear and consistent paths, simplifying navigation and maintenance.
- **Lack of Reusability:** We focused on creating **reusable components and libraries**. By developing a library of reusable functions and modules, we significantly reduced code duplication and streamlined the development process. These reusable components could be easily imported and used across multiple scripts, ensuring consistency and reducing maintenance efforts.
- **Code Redundancy:** We implemented a robust **code review and refactoring process** to identify and eliminate redundant code. By centralizing common functionalities and removing duplicates, we improved code quality and maintainability. Any changes to the application required updates in only one place, making the process more efficient and error-free.
- **Custom Reporting Needs:** We developed a **custom reporting solution** that provided detailed and customized reports. This solution integrated with the existing test management and CI/CD systems, allowing the client to gain insights into the testing process and results. The custom reports included comprehensive data on test execution, results, and trends, enabling informed decision-making.
- **Extensive File Validations:** We created a **reusable function** for file validations, automating the process of reading and validating stream data against expected values. This function ensured data integrity and accuracy, reducing manual efforts and minimizing the risk of errors.
- **Ensuring Multi-tenancy:** To ensure multi-tenancy functionality, we implemented **thorough testing** for different user types. We validated that the application worked seamlessly for producers, cooperatives, processors, and haulers, providing a consistent and reliable experience for all stakeholders. This testing included authorization and authentication validations, ensuring that each user had appropriate access and permissions.
- **Localization Testing:** We conducted **extensive localization testing** to validate region-specific views and functionalities. This testing included verifying that the application met local requirements, workflows, and language preferences. By ensuring accurate localization, we enhanced the user experience for stakeholders in different regions.

## KEY ACHIEVEMENTS

Our solution yielded impressive results:

- **Scalable Framework:** Designed for future component inclusion, the framework ensured that new features and modules could be easily integrated without major disruptions.
- **Automated Execution:** Achieved complete automated execution for targeted modules, significantly reducing manual testing efforts.
- **Custom Reporter:** Developed in Playwright to log test results effectively, providing detailed and customized reports.
- **Extensive Automation:** Automated 80% of manual tests, with 65% of the code made reusable, improving efficiency and consistency.

## BUSINESS RESULT

The client experienced transformative results. The testing cycle time was slashed from weeks to mere hours, dramatically improving efficiency. Web-based execution control and automated test reports minimized physical involvement, cutting operating costs and minimizing human errors. This solution fostered quicker collaboration with supply chain vendors, significantly enhancing overall operational efficiency.

### Metrics:

- **Testing Time Reduction:** Reduced from 3-4 weeks to a few hours.
- **Cost Savings:** Operating costs decreased by 25%.
- **Error Reduction:** Human errors reduced by 30%.

**Client Feedback:** *"The automation solution provided by XTIVIA has been a game-changer for us. It drastically improved our testing efficiency and accuracy, allowing us to focus on innovation and growth."* - Client Representative

## SOFTWARE

Visual Studio Code, Playwright, Confluence, Jira, TypeScript, Test Rails, Git Repository

## ABOUT XTIVIA

At XTIVIA, we've been providing IT solutions and consulting services for over 30 years. We offer a wide range of services, including technology assessments, IT service and asset management, software development, data analytics, cloud migration, DevSecOps, ERP, and enterprise content management. Our team of experts is dedicated to each discipline, ensuring that our clients receive the best possible service. We've partnered with industry leaders such as Atlassian, IBM, Microsoft, Oracle, and more to bring our clients the latest solutions. Through strategic acquisitions, we've acquired talented people who are experts in their industries, passionate about what they do, and committed to providing exceptional service to our clients. Whether you need to improve your IT infrastructure or implement new software solutions, XTIVIA is here to help you achieve your business goals. Contact us today to learn more about our services. XTIVIA has offices in Colorado, New York, New Jersey, Texas, Virginia, and India. [www.xtivia.com](http://www.xtivia.com)