

# Transforming Legacy Systems: Overcoming Data Migration Hurdles with Agile Testing Solutions

## ORGANIZATION

Our client is an industry-leading provider of enterprise management software solutions tailored for the convenience retail and petroleum wholesale markets. With over three decades of expertise, the company offers innovative solutions to various sectors, including Consumer Packaged Goods (CPG), logistics, Quick Service Restaurants (QSR), retail, and wholesale markets. By leveraging cutting-edge Artificial Intelligence (AI) and Machine Learning (ML) technologies, they empower businesses to gain a competitive edge, optimize operational efficiency, and enhance profitability.

In addition, their extensive rewards program seamlessly integrates with numerous brands, enabling millions of consumers to earn cents-per-gallon rewards through their purchases. This program supports the diverse needs of retail brands across different industries, driving customer loyalty and engagement.

## CHALLENGE

Our client's sophisticated application provided deep insights into rewards programs and customer data, generating real-time and historical reports from an Oracle database. The client sought to migrate this application to the cloud, specifically to Amazon Redshift, without compromising the intuitive data visualizations and analytical capabilities that the users depended on.

The primary challenges for this migration were the significant interdependencies within the data and the following specific concerns:

- **Data Accuracy:** Ensuring the integrity and correctness of the migrated data from Oracle to Amazon Redshift.
- **Seamless Integration:** Guaranteeing that new data flowing from various systems into Redshift would not disrupt ongoing operations or cause delays in the rewards calculation process.
- **Enhancements:** Implementing minor enhancements to reporting functionality and rewards calculations while ensuring these updates are integrated smoothly into the migration.
- **Performance Optimization:** The project aimed to enhance system performance while maintaining secure customer data storage and processing.

- **Short Timeframe:** The project had a tight deadline due to the impending Business Intelligence/Data Warehouse (BI/DW) sunset.
- **Lack of Functional Knowledge:** Despite the client's QA team lacking detailed knowledge of the application's functionality, it was crucial to test reports and rewards efficiently.
- **Complex Reporting:** A substantial need for extensive testing across a variety of reports, ensuring data accuracy and report integrity.

## TECHNICAL SOLUTION

Leveraging Agile methodologies and collaborating closely with the client's development and QA teams, XTIVIA successfully mitigated the challenges and delivered a streamlined data migration and testing solution. Our expert team worked with data engineers and key stakeholders to gain a deep understanding of data dependencies, transformation logic, and rewards calculations to ensure smooth migration to the cloud.

### Key elements of the solution included:

- **Data Dependency Mapping:** Identifying and analyzing dependencies across different data sources and tables, ensuring all critical relationships were maintained during the migration process.
- **Data Flow Understanding:** Mapping the data flow from source systems to Amazon Redshift, including any lightweight transformations, to ensure that no data was lost or misrepresented during the migration.
- **Comprehensive Test Artifacts:** Developing and maintaining a suite of test cases and validation procedures to ensure all functionalities, including complex reporting and rewards calculations, were rigorously tested.
- **Optimized SQL Queries:** Crafting efficient SQL queries to validate large data sets, ensuring that the migrated data was accurate and correctly mapped in Amazon Redshift.
- **Exhaustive Test Data:** Identifying a comprehensive set of test data, including edge cases and high-volume data scenarios, to thoroughly validate data accuracy and system performance.
- **Automated Testing:** Developing automation solutions to validate millions of records with speed and accuracy, significantly reducing manual testing efforts and increasing test coverage.

- **Functional Support:** Providing continuous functional guidance and support to the client's QA team to enhance their understanding of the testing process, particularly around complex reporting and calculations.

XTIVIA's solution empowered the client to migrate to Amazon Redshift while preserving the integrity and functionality of their legacy reporting system. By ensuring that all data was correctly migrated and validated, XTIVIA ensured seamless integration with the cloud infrastructure and optimized performance across the entire system.

## BUSINESS RESULT

XTIVIA's meticulous testing process successfully ensured that all data was accurately migrated to Amazon Redshift, maintaining the integrity and consistency of business-critical information. As a result, the client's end customers continued to access legacy applications with full functionality, benefiting from improved performance, scalability, and data integrity.

This migration not only ensured secure storage and processing of customer data but also unlocked new possibilities for real-time analytics and business intelligence, providing the client with a scalable platform for future growth and innovation.

## KEYWORDS

*Data Migration, Oracle to Redshift, Cloud Migration, Data Validation, Data Integrity, AI/ML, Data Warehouse, Reporting Solutions, Business Intelligence, Automation Testing, Agile Methodology, Functional Testing, Performance Optimization, Seamless Data Flow, Testing Automation, SQL Workbench*

## SOFTWARE

*Oracle, Amazon Redshift, SQL Workbench, Excel Macros, Test Automation Tools (e.g., Selenium, TestNG), Data Validation Scripts*

## ABOUT XTIVIA

At XTIVIA, we've provided 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 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)