Ensuring Data Accuracy and Consistency in Global Fleet Systems

ORGANIZATION

XTIVIA's client is a global leader in car rental and fleet management services, catering to millions of customers annually with a fleet of five million vehicles spread across more than 15,900 locations worldwide. In addition to its direct rental operations, the company collaborates with approximately 60 international franchises, further expanding its global presence. Furthermore, the client provides insurance replacement services for major insurance providers, including Allstate and State Farm, offering tailored solutions to corporate clients in a range of industries.

CHALLENGE

The client faced significant challenges during the migration of location data from its legacy systems, GDD (Global Database) and iRAC (International Rent-A-Car system), to its target MDM system (EBX, a robust Master Data Management solution). The integration process was disrupted as the GDD load service failed to retain previously mastered data during incremental loads to MDM from iRAC. Additionally, both the bulk and incremental load services in iRAC were constrained by limitations that allowed only one child version, leading to discrepancies between the rules governing bulk and incremental data loads for certain location-specific attributes, such as location indicators and types. These issues resulted in data inconsistencies, complicating the overall data management and governance efforts across global locations and vehicles.

TECHNICAL SOLUTION

To resolve the data governance and integration challenges, XTIVIA deployed an advanced, multi-tiered solution based on industry-leading practices in Master Data Management (MDM) and data migration. Architectural blueprints were meticulously crafted and reviewed with InFact and client leadership to ensure alignment with business objectives. A comprehensive strategy for consolidating and aligning the bulk and incremental load business rules was developed, with custom EBX services engineered to handle both bulk and incremental data processes.

Key to the solution's success was the optimization of the incremental load strategy, which was re-engineered to preserve data integrity and prevent data loss during migration from GDD and iRAC to EBX. A robust framework for matching, merging, and deduplicating data was implemented, ensuring that data accuracy and consistency were maintained throughout the load process. The team conducted extensive system integration testing (SIT), utilizing industry-standard ETL testing methodologies to certify the accuracy and completeness of data transformations.

As part of the quality assurance activities, comprehensive data validation was performed at each step of the process. This included:

- **Incremental and Historical Data Load Validation**: Ensuring that both bulk and incremental data loads were correctly processed, with full traceability from source systems (GDD, iRAC) to the target system (EBX) and consuming systems.

- **End-to-End Data Movement Testing**: Leveraging data pipelines to test the seamless flow of data as JSON objects from the source systems (GDD, iRAC) through EBX to consuming platforms such as Digital and Fleet Management systems, ensuring that the data is consumed in the expected format and meets business requirements.
- **MDM Business Rule Validation**: Verifying the implementation of key MDM rules, such as **Match**, **Merge**, and **Dedupe**, during the incremental load process to ensure that data quality remained intact and business rules were consistently applied.
- **Data Integrity Auditing**: Conduct automated regression testing to assess data transformations, validate data lineage, and ensure that no data discrepancies occurred between source and target systems during migration.

XTIVIA's QA and testing approach adhered to agile best practices, with iterative testing cycles and real-time collaboration between the development and business teams, ensuring that each stage of the migration process was rigorously validated.

BUSINESS RESULT

XTIVIA successfully implemented a streamlined, high-performance data migration solution that effectively consolidated location data from disparate systems into the MDM repository. This ensured a single, authoritative source of truth, which the client's digital and fleet systems could easily consume. By aligning and automating the bulk and incremental load processes, XTIVIA reduced operational risk, minimized data discrepancies, and enhanced data accuracy across all systems, significantly improving data governance and decision-making capabilities. The solution was delivered on time, adhering to XTIVIA's stringent quality standards and performance benchmarks.

KEYWORDS

ETL Testing, Incremental Load, Historical Load, Data Migration, Master Data Management (MDM), Data Integrity, Data Validation, Data Transformation, System Integration Testing (SIT), Automated Regression Testing, JSON Data Pipelines, Data Governance

SOFTWARE

Informatica (ETL tool), EBX (MDM), GDD (Global Database), iRAC (International Rent-A-Car System), Digital Platforms, Fleet Management Systems

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