

## Leading RegTech Provider Enhances Performance and Scalability with Automation Testing

Qualitest addressed the client's slow deployments and extended development times by implementing a comprehensive automation framework and shifting performance testing earlier in the SDLC.



### Challenges

The Client's limited testing capacity was causing slow deployment lead times.

They needed to enhance their RegTech solution's quality and identify defects earlier in the development process.



### Solutions

Qualitest implemented a comprehensive automation framework, integrated two third-party entities, and rigorous regression testing for release updates and hot fixes.

Performance testing was shifted earlier in the SDLC to enhance the development process, identify critical bottlenecks and speed up system performance.



### Results

Faster testing, expedited deployments and development. Improved quality via early defect detection and thorough regression testing, including third-party integration.

Streamlined performance testing, halving setup time through automation, identifying and preventing three potential bottlenecks.



## Client overview

Our Client provides services in the regulatory compliance and financial crime area for leading banks and financial institutions. It collaborates with prominent financial institutions and reliable industry allies to provide a highly effective and streamlined next-gen platform solution for unifying compliance standards.

## Testing bottlenecks were hampering agility

The Client needed faster deployments and shorter development times and so automation was required to accelerate sluggish manual testing processes. The Client also wanted to improve the quality of its overall solution, and to detect defects earlier in the development lifecycle.

The Client's objectives also included the extension of test coverage to the integration of two third-party entities, to ensure comprehensive regression testing for all release updates and hot fixes. Additionally, the Client needed to scale across multiple environments.

The Client needed to improve the performance efficiency for current peak load and scalability for future platform growth. To achieve this, they required a robust performance test framework to support and test at each release level.

The Client also needed to enhance its enterprise data management for:

- Compliance Assurance - Ensure adherence to stringent regulatory standards, safeguarding data integrity, and mitigating legal risks.
- Operational Optimization - Enable efficiency improvements across the organization.

## A triple-pronged approach to driving quality

With testing bottlenecks hampering agility, Qualitest's expertise was sought in three key areas: automation, enterprise data management and performance testing.

### End to end test automation

Qualitest engineers integrated into the Client's scaled agile scrum teams helping to drive planning, acceptance, smoke, and regression tests. Automation testing saved time on list alterations and complex scenarios, while speeding up message review and log analysis through AWS CloudWatch integration. Qualitest experts crafted standardized test packages for capability regression and end-to-end testing, addressing critical scenarios.



The automation pack handled third-party integration scenarios with different inputs. Additionally, automated testing covered every solution component, emphasizing end-to-end test automation. Test sets were tailored for each capability. Automated integration tests were executed, enabling successful end-to-end testing — a milestone achieved in the first half of 2023.

The automation framework ensured quality and reliability, utilizing Cucumber for behavior-driven testing, Rest Assured for API testing, Swift Messages testing, and Kafka Topic Consumer design pattern for event-driven systems. It adeptly manages test data, provides robust reporting, supports multiple environments and allows extensibility.

## Enterprise Data Management

The enterprise data management (EDM) workstream involved developing two Minimum Viable Products (MVPs). One MVP utilized Snowflake, and the other leveraged Iceberg tables, both within the AWS ecosystem, utilizing Parquet files stored in Amazon S3.

EDM capabilities were enhanced by incorporating robust reporting functionalities. Apache Superset was selected as the Client's Business Intelligence tool, enabling customized reporting based on the rich data within their data lakes.

Automation of EDM played a crucial role in expediting manual data testing tasks, particularly in scenarios requiring frequent updates. This streamlined daily processes and enabled quick review of messages and log analysis, facilitated by integration with AWS CloudWatch through automation frameworks.

## End to end performance testing

Shift Left Early testing was implemented in the lower environment to identify possible performance bottlenecks, and suggestions were made to speed up the system's reaction time.

On the tooling side, we used a proof of concept to recommend appropriate frameworks and methods for testing the critical system. This gave the Client a clear understanding of how to specify performance requirements, and it created a standard for upcoming versions.

Reusable script harnesses were made available by Qualitest for verifying AWS SQS system, and these will be helpful in the event of a regression pack release in the future. We created several automation frameworks for data set-up and output generation, which significantly reduced the execution time.

By setting different types of dashboards on the AWS cloud system, engineering-level analysis was performed to detect potential performance bottlenecks.



## Key Benefits

### Immediate Impact in a Complex Environment

- Reduced a week's manual test effort to just an hour.
- Achieved a 50% reduction in setup time.
- Proactively identified issues early through a shift-left approach, minimizing bugs in later stages.

### Enhanced Testing Efficiency

- Automated tests developed for capability testing utilized for regression testing, smoke tests, and development pipelines.
- Reduced test data setup efforts by 50%, addressing performance concerns early.

### Streamlined Processes and Improved Feedback:

- Enabled faster feedback for every deployment and critical change during UAT phase using automation.
- Uplifted hardware capacity by 10% based on deep dive analysis with cloud-level performance metrics.

### Strategic Problem-Solving:

- Identified and prevented three+ potential bottlenecks (P1 Defects) with custom cloud dashboard setups.
- Created 10+ reusable assets for upcoming releases and adaptable to various environments.

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