



CASE STUDY

Thomson Reuters Healthcare

ABOUT THOMSON REUTERS

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CHALLENGE

To quickly create a solution for hospitals to use for Meaningful Use reporting, store data securely, and submit to the Center for Medicare and Medicaid Services. The application would allow hospitals to monitor the results and make needed changes—resulting in improved quality of care for patients.

SOLUTION

To integrate the testing process into the construction phase of the product. Using Robot Framework, Java, HtmlUnit, AspectJ, and Jenkins. In 18 months, the team created test automation that performs 1,900+ hours of testing per night - 9,000+ test cases, resulting in over 90% code coverage.



The Challenge

Thomson Reuters' Healthcare division was tasked with creating a solution for hospitals to use for the quality measure component of meaningful use (MU) reporting. The solution would enable eligible hospitals to qualify for incentive payments from the Center for Medicare and Medicaid Services (CMS) by demonstrating their use of Electronic Health Records (EHRs). In addition, the product would allow hospitals to monitor the results of their quality measures and make needed changes—resulting in improved quality of care for patients.

The Thomson Reuters Healthcare team needed to launch a Meaningful Use product in less than one year. The measures engine would need to include the following features:

- ⚙️ Allow facilities to submit data from their EHRs to the Thomson Reuters MU system
- ⚙️ Calculate the MU measures from submitted data
- ⚙️ Allow facilities to review and attest to the quality and validity of the measures
- ⚙️ Allow facilities to submit measures to CMS in the required format
- ⚙️ Secure All Personal Health Information (PHI)

The Thomson Reuters Healthcare development team needed to develop and test the solution in a tight timeframe, ensuring a quality product that would assist hospitals in improving quality and enable them to qualify for government incentives. In order to meet the deadlines and deliver the needed functionality, Thomson Reuters needed a partner with a unique set of skills—specifically, software engineers who specialized in creating test automation infrastructure and frameworks (SDETs). They searched for a partner.



The Solution

Thomson Reuters partnered with Beaufort Fairmont to integrate the testing process into the construction phase of the product using Scrum. This approach ensures that testing drives development—no code is written without a failing test. For example, as the engine was being built, tests were already in place. Each component of the system was built to pass automated tests cases resulting in a full, comprehensive test suite of both white-box and black-box test cases.

9,000 test cases were created in eleven months by a small team, comprised of two software engineers, one full-time quality assurance professional, one part-time quality assurance professional and one Beaufort Fairmont Automation Engineer. The team utilized open source tools (Robot Framework, Java, HtmlUnit, AspectJ, Jenkins) to create an automation solution that performs over 1,900 hours (or 11.50 months) worth of what would otherwise be manual work—**every night**. The test-driven approach resulted in over 90 percent code coverage.

The Thomson Reuters team is notified every morning if any test fails. The automation architecture allows the team to drill down to the issue and resolve the problem quickly.

The Results

Working together, Beaufort Fairmont and Thomson Reuters launched the solution ahead of schedule, with the full feature set, plus a reporting solution and a Web application with a user interface. **Benefits of the solution include:**

- ⚙ Every three to seven days the automation pays for the cost of the labor used to create and maintain it.
- ⚙ Every developer has the ability to run any test case locally on their machine.
- ⚙ Approximate code coverage for the project is over 90 percent.
- ⚙ Approximate percentage of manual tests is less than 10 percent of all test cases.

Thomson Reuters Healthcare has since partnered with Beaufort Fairmont to provide training in Test Driven Development and Continuous Integration for its software engineers for all teams across the Thomson Reuters Healthcare division. In addition, the initial automation project was so successful that automated testing with the Robot Framework has now been implemented across all the Thomson Reuters Healthcare development teams.



Beaufort Fairmont was a key contributor to this project — we never would have met the deadline and reached these quality levels without their support.



— DIRECTOR OF PRODUCT DEVELOPMENT,
THOMSON REUTERS HEALTHCARE



ABOUT BEAUFORT FAIRMONT

Beaufort Fairmont is the software industry's source for automated testing staffing, consulting and training. Our engineers have a passion for implementing automated testing—allowing more companies to take advantage of the many benefits of automated quality assurance. We attract the industry's top talent, combining decades of experience and creativity in developing solutions for our clients. Our engineers are focused on writing high quality software in less time. This expertise, coupled with our extensive experience, results in a fast time-to-value for our clients. Learn more at beaufortfairmont.com.

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