Accelerate Patient Diagnosis and Treatment with Automated Medical Device Testing

KEYSIGHT

Profile

Software Development Arm for FUJIFILM Group Turned to Eggplant to Automate Testing of its Embedded Software for Medical Devices

Headquartered in Kanagawa, Japan, FUJIFILM Software Co., Ltd. is the main developer of software products and ICT infrastructure for the entire FUJIFILM Group. In recent years, the former has redefined its mission to include a commitment to delivering a superior healthcare experience for customers and patients, with a variety of medical imaging, radiography and endoscopy solutions. FUJIFILM Software Co. manages the development and testing of these products; a task that can easily become labor and time-intensive given the systems' complexity and multi-lingual requirements. In addition, with physicians and other healthcare workers relying on these products to diagnose and treat patients, it's critical that FUJIFILM Software Co. ensure that its technology is devoid of errors prior to shipping. To address these issues, the company began looking for a testing partner that could modernize its testing environment and bring greater efficiencies.

FUJIFILM Software Co. reduces testing time by 92% with Eggplant test automation

A Push to Improve Quality and Efficiency

As part of its central mission of "Value from Innovation," FUJIFILM Software Co. integrates cutting-edge digital technology into medical devices such as X-ray image diagnostic systems, endoscope systems, and ultrasonic diagnostic equipment. Manually testing these globally traded devices required significant time and resource investments, as the multi-lingual systems must be tested in all the language patterns. In addition, there was always the risk of human error resulting from manual approaches; something FUJIFILM Software Co. could not afford given the critical function its products serve.

Running parallel to this need for high-quality products was a push for greater efficiency. Mr. Wataru Sasaki, Deputy Department Manager of the Software Development Department at FUJIFILM Software Co., explains, **"With the progress of technological advancements in recent years, shortening lead time and cost reduction are becoming important tasks for us to enhance competitiveness, along with maintaining good quality and reliability of our products to meet healthcare needs. In addition, changing the way we work to use time more efficiently and increase productivity is an area of focus."**

FUJIFILM Software Co.'s previous manual testing environment caused issues with quality maintenance and efficiency management, which occupied one-third of development time. The company knew that automating the testing environment could reduce this time and engender greater efficiencies, however, many of the testing vendors it evaluated struggled to automate testing on embedded devices.

Overcoming the Testing Challenges of Embedded Devices

According to Mr. Yohei Yamada at FUJIFILM Software Co.'s Medical Device Group, **"In many cases, a test automation tool needs to be installed in a device under test. However, in the testing process during development of embedded devices, installation of a test automation tool can be difficult because of limitations related to disk or memory. Therefore, such a test tool was incompatible with our needs."**

In its search for a test automation partner, FUJIFILM Software Co. narrowed its list to Eggplant and one other vendor. Following a trial in which the company simulated model cases assuming actual testing processes, Eggplant was the clear leader due to its usability, unique user-centric approach and technology-agnostic platform.

The industry's only completely noninvasive testing tool, Eggplant ensures comprehensive test coverage without ever touching the source code or installing anything on the system-under-test (SUT). In addition, its image recognition technology enables FUJIFILM Software Co. to automate testing across the entire user interface—a key capability for its embedded devices.

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Mr. Yohei Yamada

Test Automation Dramatically Reduces Resources

Deploying Eggplant has enabled FUJIFILM Software Co. to realize numerous efficiencies. Chief among these is the reduction of man-hours related to testing the tens of thousands of test patterns associated with its products.

Ms. Mio Azuma, a researcher in the Medical Device Group of the Software Development Department, describes the results of automating testing of an ultrasonic endoscope. **"There are 30,000 patterns of screen transition, but these are generated from about 30 combination patterns of operation procedures. We managed to reduce man-hours of test generation drastically by combining test scripts of each procedure and generating tests automatically. Eventually, we succeeded in reducing the man-hours of the entire testing process by 92% compared to those required by conventional manual testing."**

In addition to the benefits Eggplant brought from a resource optimization perspective, FUJIFILM Software Co.'s modern testing environment has helped it significantly improve product quality. Ms. Azuma explains, **"By conducting tests that have to be done manually during the daytime, and executing automated unmanned tests by using Eggplant during the night and holidays, lead time can be greatly reduced. There were some errors that could be detected only because we created the 24-hours-a-day, 365-days-a-year test circumstance to conduct a test with more than a few tens of thousands of test patterns. Also, the risk of human errors has been eliminated by automation of the testing system."**

Extending Automation's Benefits Enterprise-Wide

FUJIFILM Software Co. was so pleased with its Eggplant implementation that it's considering using the technology for testing all medical devices with a UI. In addition, other departments within the organization are availing of test automation as well as other Eggplant offerings like its Robotic Process Automation (RPA) solution.

As FUJIFILM Software Co. extends its Eggplant deployment, the technical assistance and support it receives from the company and its local reseller, Marubeni Information Systems, has been critical. Overall, the organization is thrilled with the benefits test automation has brought and looks forward to seeing additional ROI from its Eggplant investment in the months and years ahead.

> First of all, partnering with Eggplant significantly contributed to reformation of the way we work by drastically reducing man hours. In addition, it allowed us to enhance product quality by strengthening test coverage and shortening lead time by executing automated tests during the night and holidays.
>
> **Mr. Wataru Sasaki**

His colleague Mr. Yamada sums it up simply, **"We highly value the versatility of Eggplant."**

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