Centers for Medicare and Medicaid

Case Study

Mission

The mission of the Centers for Medicare and Medicaid Services (CMS) is to ensure that the voices and needs of the populations represented are present as the agency is developing, implementing, and evaluating its programs and policies. To better support the needs of beneficiaries as well as the organizations who provide their care, CMS made the decision to shift systems application development methodology away from a predominately waterfall approach to one leveraging Agile principles. The goal of this shift was to deliver new capabilities using modern system development methods and tools (such as DevOps and Cloud services) to provide features more quickly to the various user communities. To support this shift, CMS required a testing contractor that was able to keep up with application development sprints to rapidly validate system functionality prior to delivery.

Titania's Mission Support

In support of this mission, Titania focused on testing automation as a key to meeting the needs of CMS. This approach helps move CMS towards their goal of a push-button deployment pipeline by validating both in-sprint work and executing a regression testbed in a hands-off manner. To meet this challenge, Titania began implementation of a lightweight scripting language automated testing framework using Story/Behavior Driven Development principles (Gherkin Given… When… Then… syntax). Existing manual testers were able to model test cases leveraging Gherkin, in-sprint embedded with the agile teams, as stories were developed, while automated testing engineers implement the automation for the steps. The automation coverage for applications increased rapidly as more user stories were developed by re-using common steps across test cases. The easy-to-use framework enabled manual testers who did not have programming experience to quickly learn and grow their skills allowing them to eventually contribute to automated test case development. The validation of systems' Application Programming Interfaces (APIs) was prioritized, as these services provide the core building blocks for system functionality and can be tested more quickly through automation than User Interface components.

As automated testing capability grew, Titania began to leverage Cloud services (AWS) to execute tests. This enabled both scheduled and triggered orchestration testing using CI/CD tools (Jenkins). Additionally, framework enhancements incorporated the integration of additional tools allowing the expansion of testing types beyond traditional functional testing, to include security and accessibility, without any additional work on the part of the tester. The SauceLabs SaaS was incorporated to provide scalable cross browser/platform UI testing support. To promote the visibility of results, a real-time testing dashboard was developed that showed the status of system testing at all levels and types, from an easy to interpret green/yellow/red icon down to the execution of individual test steps. These were seamlessly integrated within the other tools of the environment to provided stakeholders easy access to results.

Nearly all testing performed by Titania is now automated in-sprint as stories are developed. The regression testbed continues to grow over time and can be executed alongside newly developed stories at any cadence required. Results are made available to all members of the product team to evaluate the status of the application. Survey results indicate that applications that have moved to this model experience higher levels of satisfaction among their user base through higher quality releases and faster delivery.

About Titania

Founded in 2012, Titania delivers valued services to the federal government in support of their most critical missions. In 2020, the company was acquired by Swish Data and operates as an independent business subsidiary. Titania professional services include operational intelligence and training, program and data management, test and evaluation, and healthcare information technology. **www.titaniasolutionsgroup.com**

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