



Coveros Automates Testing to Expand Test Coverage and Support Legacy Systems

CASE STUDY



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CHALLENGES

- Unwieldy legacy systems
- Inconsistent release process
- Insufficient test coverage and data
- Manual testing

SOLUTIONS

- Streamlined test management
- Test automation strategy
- Custom-built testing framework
- Continuous integration tools

Delta Dental of Wisconsin is the largest dental insurance provider in the state. Named North America's number one call center, Delta Dental of Wisconsin Inc. is a not-for-profit dental service corporation offering benefit services, claims processing, and plan administration to employers throughout Wisconsin since 1962. The company provides benefits and services to more than 1.4 million subscribers and their families and is also a member of the Delta Dental Plans Association, whose member companies provide benefits to over 51 million people in 93,000 groups across the United States.

CHALLENGES

- Delta Dental legacy systems were supported on uncommon hardware, software languages, and configurations, increasing difficulty of test management and automation tooling implementations
- Their release process was highly responsive and variable
- The test process, coverage, and test data all needed improvements
- Their testing was mainly manually executed

Delta Dental needed a means to manage and automate testing for its legacy systems to support development of system enhancements and ongoing maintenance

and support activities. Delta Dental's infrastructure had business and data logic on their three-tiered architecture, necessitating testing to be done on the front-end, web services, and back-end application.

SOLUTION

Coveros started by performing a testing assessment using Coveros's Enhanced Test Process Improvement model. After understanding Delta Dental's application configuration and tester capabilities, Coveros outlined a roadmap forward, including test management and automation strategy recommendations.

Next, Coveros implemented a behavior-driven development proof of concept for test automation capabilities supporting development and production release activities.

Coveros custom-built a testing framework for Delta Dental, which allowed the same test to verify functionality at the front-end, web services, and back-end levels, effectively testing all three tiers of their application. This framework was built on top of Cucumber-JVM, which enabled Delta Dental's subject matter experts to write tests using business logic, instead of through code. These business workflows were then implemented through the framework, allowing the subject matter experts to execute tests at different levels simply by looking at different results.

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Coveros used Selenium to verify the correct user response from what was provided to the UI, along with custom Java code to ensure web services calls were returning expected responses and the database was properly updated. These pieces of business logic were mapped out using Cucumber glue code, providing the ability to write one test and have it executed in three different ways.

Coveros built up a suite of tests, then provided documentation and training to Delta Dental testers and developers to help them expand on the suite. Coveros also set up Jenkins integration through a SecureCI server, making it simple to constantly execute tests and ensure tests did not go stale. Additionally, the team provided the ability to run tests over multiple environments, allowing testing as code to progress from dev to test to production.

TECHNOLOGY SOLUTIONS

Test Management

- Zephyr standalone and Jira plugin
- Test Automation
- Cucumber
- Selenium WebDriver
- Custom Java tooling
- Test data solution to keep data evergreen

Continuous Integration

- Customized SecureCI (Trac, Jenkins, SVN, Git, Tomcat, Apache)

BUSINESS VALUE

Coveros was able to help Delta Dental of Wisconsin achieve a number of business benefits, including increased ability to implement system improvements while reducing risk, escaped defects, test cycle time, and cost. With an updated testing strategy, Coveros took typical test case workflows and expanded them to allow branching coverage of between ten and three hundred times the previous reach. These tests were run in the same amount of time a single manual test used to take, and found errors early in the cycle. Previously, no rigorous web services or back-end testing was performed; Coveros's framework allowed for a simple extension of the front-end testing into these areas, greatly increasing coverage and confidence in the application.

“Coveros did an excellent job reviewing and addressing our software test automation challenges. They identified and helped us implement a custom and innovative solution to set us on a path toward test automation.”

—John Okeefe, Director of Infrastructure and DevOps