PARASOFT®

Velera Accelerates Unit Test Generation by 100% With Simulated Test Environments

OVERVIEW

Velera is the nation's premier credit union service organization and an integrated technology solutions provider, supporting the growth of more than 2,400 financial institutions and processing more than 8 billion transactions annually.

Hirakant Shet, the Manager of Integration Services at Velera, oversees more than 400 APIs—and counting—in use every day for their multiple business domains. These APIs bundle business capabilities in a microservice architecture, covering typical retail banking and credit union-specific units of work including the following:

» Digital banking

» Digital issuance and wallets

» Card origination

» Card processing

» Fraud and disputes management

» Card management

» Bank account management

» User management

» Member management

Velera wanted their clients to be able to count on them for thoroughly tested products developed following Agile practices.
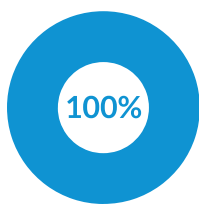
velera

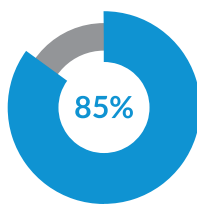**Industry:**
Financial Services

Company Size:
3,400

Location:
St. Petersburg, FL

Solution:
Virtualize, CTP

KEY RESULTS

100%

Accelerated unit test generation by 100%.

85%

Achieved 85% code coverage in a few weeks.

Zero wait time for testing environment with virtual assets.

THE CHALLENGE

The world of software architecture has evolved.

"We're now in the century of connected architecture, where organization A uses applications hosted and managed by organization B, which in turn uses services from organization C. In real life, this chain can be much bigger than just three organizations. It can also be three different departments or teams within the same organization. The point here is dependency," explains Hirakant. "With cloud-based systems, the first thing we learn is that we need to build software that's resilient. It must be as resilient to all failures as possible."

These kinds of dependencies on third-party systems not only created additional steps in the SDLC, but also made it impossible for the development team to fully test all scenarios. Additionally, Velera continues to expand its business capabilities and its consumer domain. These expansions required the development team to re-examine the way they approach software testing.

Velera's API platform incorporates a lot of third-party APIs and other elements that affect software testing. Shet discovered that third-party data providers and third-party hosted elements posed the biggest challenge to make the API Delivery channel successful. And this required tackling other issues such as:

» Testing in production.

» Creating robust and thorough testing scenarios.

» Preconditioning data.

» Implementing static code analysis.

» Improving code coverage.

» Integrating with the CI/CD or a conveyor belt style of software development.

» Improving agility with changes or rollbacks to flagship products.

» Avoiding build failures.

In some environments, the Velera development team could not go beyond 30% code coverage because they could not generate all the unit test cases required for testing.

THE APPROACH

Creating an easier and more streamlined workflow for testing stood out as Shet's primary goal for the development team. Testing in production should not be how you find serious issues with software.

Describing one specific project challenge, Hirakant said, "We literally had to discover issues in production one credit union at a time, fix it without the ability to test that specific fix, and deploy to production."

Shet attributed this inefficient process to the dependency on third-party testing environments. They did not have the same customizations for each Velera credit union. Rolling out updates or changes required individual developer attention. This made the process unnecessarily lengthy in terms of time.

With the goals of reducing time to market, increasing test robustness, and reducing dependency on third-party environments in mind, Shet and his team looked for solutions that could help them address their concerns.
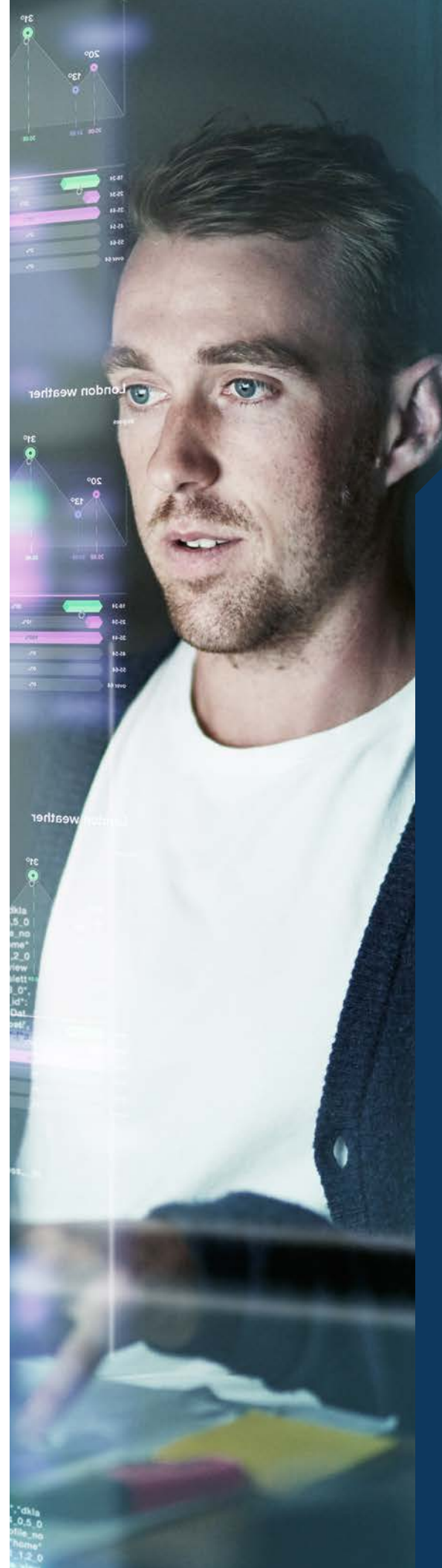
THE SOLUTION

The Velera team uses Parasoft's service virtualization solution to achieve their goals. The consistent and exceptional technical support from Parasoft played a pivotal role in Shet's selection of service virtualization as the solution for his team. But the technical aspects of the solution also played a major part. In fact, Shet describes Parasoft Virtualize as an evolution of mock testing and test stubs.

Stubs execute an interface minimally to return hardcoded information connected to the test suite. These come in handy for uncomplicated tests but have hard-coded infrastructure dependencies and are not platform agnostic. Mocks, in contrast, are programmable interface observers that determine if a development's output fits expectations defined in the test. These often require third-party libraries and are common in large test suites.

Parasoft Virtualize iterates on these concepts by incorporating the following upgrades.

1. Reduces testing required thereby reducing development time.

2. Reduces third-party component dependence.

3. Establishes a common vocabulary that all teams can understand.

4. Supports various protocols.

5. Records traffic that can be used to generate virtual assets automatically.

6. Enhances code quality with more thorough and accurate testing.

> "With Parasoft Virtualize, the wait time for virtual assets and a testing environment is zero minutes!"
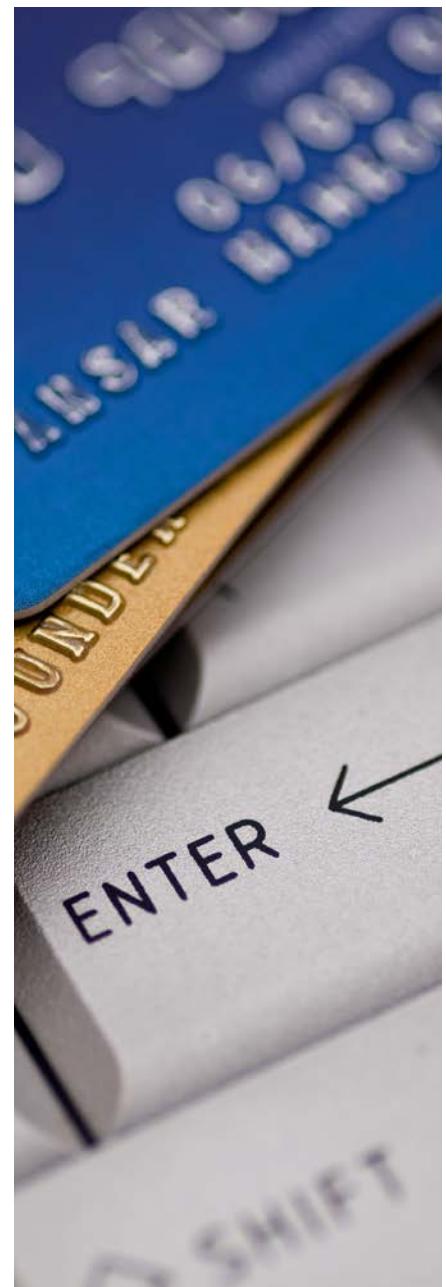
THE RESULTS

After comparing Parasoft's solution to competitors, Velera found that Virtualize offered a scalable, cost-effective, and supported option that worked best for their goals. The Velera development team has seen great improvements in code coverage and code quality while also seeing reduced development and test execution times in the CI/CD pipeline.

With an ambitious goal of .5 KLOCs, Velera has already improved code coverage in the short time since they implemented service virtualization from the previous baseline of 30% to the new baseline of 85%, which exceeds the industry average of 80% code coverage.

> **"This Parasoft solution could have significantly reduced our previous project timeline down to one or two months."**

Virtual assets give the team control over creating responses for the third-party data enabling them to increase code coverage. They established a gate of 85%. If the team doesn't meet that gate, then the build automatically fails. With the gate in place and the ability to use virtual assets, they've been able to achieve higher levels of code coverage.

Service virtualization not only offers all the above benefits, but it also enhances the team's ability to precondition data and helps to eliminate inconsistent backend latency—two traits especially important to Shet and his team at Velera. With virtual assets in place, the team isn't dependent on data from third-party providers that could potentially leave them in a serious bind if services go down, which could take two to four weeks to fix.

"With Parasoft Virtualize, the wait time for virtual assets and a testing environment is zero minutes! We can go to production confident with the virtual assets and a proper test environment without waiting for a third party to make the environment available, which took at least two months," said Hirakant. "This Parasoft solution could have significantly reduced our previous project timeline down to one or two months."

Due to the gains seen across the development team, Velera plans to adopt the solution across the SQA and performance teams, as well.

TAKE THE NEXT STEP

Download the whitepaper to learn about critical features and key capabilities to look for in a service virtualization solution that will maximize your organization's return on investment.

ABOUT PARASOFT

Parasoft helps organizations continuously deliver high-quality software with its AI-powered software testing platform and automated test solutions. Supporting the embedded, enterprise, and IoT markets, Parasoft's proven technologies reduce the time, effort, and cost of delivering secure, reliable, and compliant software by integrating everything from deep code analysis and unit testing to web UI and API testing, plus service virtualization and complete code coverage, into the delivery pipeline. Bringing all this together, Parasoft's award-winning reporting and analytics dashboard provides a centralized view of quality, enabling organizations to deliver with confidence and succeed in today's most strategic ecosystems and development initiatives—security, safety-critical, Agile, DevOps, and continuous testing.