

PARASOFT CASE STUDY

Company: Wipro www.wipro.com

Topic: Increasing productivity through automation

Parasoft WebKing

Parasoft SOAtest

Parasoft Jtest ■

Parasoft C++test

Parasoft Insure++

Parasoft GRS

Parasoft .TEST

Parasoft BPEL Maestro

Given Wipro's demanding objectives around code review and error reduction, the company decided to implement automated testing solutions from Parasoft. Such moves have certainly paid off in recent years.

Wipro Meets Exacting Software Quality Standards and Fuels Global Growth through Parasoft's Automated Testing Infrastructure

Wipro, a recognized provider of IT services to Global 1000 companies, has always emphasized the high quality of its code. The Bangalore-based company maintains software standards that often are far more rigorous than those that its clients have previously experienced or presently demand. Code testing coverage, for instance, must always reach 80% to meet Wipro's exacting standards.

However, the company is challenged to reach these high levels of software quality in a rapid and cost-effective manner. Given Wipro's demanding objectives around code review and error reduction, the company decided to implement automated testing solutions from Parasoft.

Such moves have certainly paid off in recent years. Indeed, Wipro's software quality commitments have helped establish the firm as a leading force in the global IT services market, contributing to its dynamic growth and solid reputation for customer-focused excellence.

Objective: Maintaining Exceptional Software Quality

Considering the whirlwind growth that Wipro has experienced in recent years, the challenge of

maintaining high quality standards is always a top priority for the company. The constant initiation of new client projects means that code review is a persistent issue.

While the firm's clients have stringent quality requirements, Wipro's demands are often even more exacting. When the company conducts project evaluations, it rigorously tests software code to ensure it adheres to fixed quality standards.

However, rapid growth, intensifying competition, and complexities associated with technology-mixed solutions eventually began to create severe pressure to find more productive ways of meeting these standards. "We had to find ways of doing things faster, consistently and more dependably," says Vidya Kabra, Head of the Software Engineering Tools Group at Wipro.

Wipro needed an automated solution that could evaluate the entire code base against one single standard. Automated testing would be critical to ensure code reviewers would always deliver consistent and dependable reports without spending time on activities that could be handled by a tool.

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Action: Implementing Parasoft Automated Testing Solutions

In order to reconcile its commitment to software quality standards with its desire to continue driving growth, Wipro began exploring ways to automate software testing.

"Our challenges led us to a tool-based approach," explains Vidya. "It's not only software quality, but requirements, design, integration testing, regression testing, and unit testing that needed to be productively enhanced. We were under pressure to complete projects faster with in-built quality. The tool-based approach represented an automated approach – one that would save time and effort while meeting our quality goals."

After a rigorous review of potential solution providers and a series of pilots, Wipro chose to implement automated testing products from Parasoft and a few others based on technology specific needs. "The products were reliable, customizable and cost effective," Vidya adds.

Initially, the Software Engineering Tools Group, which is responsible for procuring and advocating key software development tools, implemented Parasoft Jtest. The product, a comprehensive Java testing solution for development teams building Java EE, SOA, Web, and other Java applications, enabled Wipro to automate and standardize code review.

"Parasoft Jtest has evolved well to become a comprehensive Java unit testing solution," says Sambuddha Deb, Chief Quality Officer, Wipro.

"Wipro has been using Parasoft Jtest successfully for years, and it is an excellent fit for Wipro's enterprise-wide Java development needs. By using Parasoft Jtest globally, we can deliver top-quality code to clients faster and more cost effectively."

Gradually, the group also introduced Parasoft C++test and Parasoft .TEST to the Wipro developers. Like Parasoft Jtest, Parasoft C++test is an integrated solution that enables coding policy enforcement, static analysis, comprehensive code review, and unit and component testing to provide teams a practical way to ensure that their C and C++ code works as expected. Parasoft .TEST offers similar code enforcement and testing capabilities for developers using .NET code.

Parasoft's automated testing infrastructure enables teams to reduce the time and effort by 25% to reach to code coverage objectives.

Wipro's Software Engineering Tools Group is responsible for evangelizing these new solutions across the company and across projects. "We showcase features of the products and pilot them," Vidya says. "We work with project teams and provide them with a scope-based usage approach for deploying the tools. Ultimately, the tools and new approaches get embedded in the organization. Our job is to set standards of quality within different project teams throughout Wipro and enable sustained commitment to these standards with code quality tools. Violation reports from these tools are also used as an input to code quality audits, which are run frequently by Wipro's audit office."

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Results: Enhancing Code Review Productivity by 25%

Wipro's Quality Management System, which provides a baseline for software quality, is known as "VELOCIQ." Under the standard, projects are expected to have 80% code coverage.

Parasoft's automated testing infrastructure enables teams to reduce the time and effort by 25% to reach to code coverage objectives, estimates Alexis Samuel, General Manager of Wipro's SEPG, Tools Group and Office of Productivity. "Despite the dramatic mix of size, technology and complexity of the projects that Wipro executes today, customer quality expectations are only increasing. Parasoft tools help us deliver a quality product commensurate with the technical depth that we are known for," he says.

Central to Wipro's success in the development process has been its policy of reviewing projects to determine how to drive continual improvement. Wipro uses a unique framework to track and enforce effective usage of tools.

In one unit testing case, for instance, Parasoft Jtest was used on a project in the manufacturing domain to improve code coverage and ensure quality code. The tool was used extensively for static analysis. With 27.4 KLOC reporting, 2060 violations were identified.

(All except 230 minor violations were fixed using Parasoft Jtest.) In this project, 1191 test cases were automatically generated, contributing to overall code coverage. As the Software Engineering Tools Group reported, Wipro developers met customer requirements on code coverage with 23.84% effort savings.

In another case that revolved around static analysis, a Wipro team developed a printer driver on behalf of a client using C++test for code evaluation. The objective was to identify coding standards deviations in the development code. Through extensive use of C++test, the team identified 22,000 coding standards violations against 187 automated coding guidelines. Here, Wipro's team met the customer's objectives in one third of the time that would have been required using manual resources for a coding standards adherence review.

As such examples suggest, Wipro has strengthened its position as a provider of high quality software through its usage of Parasoft tools. "We have automated and standardized our best practices for providing customers the highest quality code," concludes Vidya. "We have dramatically improved the productivity of our testing efforts and this helps strengthen our position as a global provider of IT solutions."

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