



# Siemens Energizes Its Testing Landscape

Global Conglomerate Uses Automation to Boost Quality, Drive Efficiency, and Become More Strategic

by **Ken Murphy**, Editorial Director, Data & Analytics

**W**ith eight business divisions, more than 370,000 employees, and nearly 300 worldwide major production and services sites, Siemens has many systems and technologies, creating a complex infrastructure. Siemens drives its IT activities in a centrally shared service organization (GS IT) with delivery centers (centers of excellence or CoEs), demand units (business partner organizations), and a governance unit consolidated to create a unified IT infrastructure. Within GS IT under the CoE for divisional ERP systems, the service management organization is specifically responsible for defining process frameworks and guidelines for the operation and maintenance of more than 60 SAP systems worldwide — including roughly 20 systems that run core, mission-critical business processes requiring continuous upgrades and enhancements to keep pace with process changes.

While central IT consolidation helped reduce complexity by simplifying systems management and maintenance, testing still presented major challenges. One imperative issue was regular support package upgrades that required heavy business unit involvement. Another was the company's shift to an agile development methodology for projects to shorten the innovation cycle, which required more testing than its previous waterfall approach. And Siemens was also moving many small process changes into production which, because of tight SAP process integration, tended to have a downstream effect on later project stages.

Before IT consolidation, Siemens relied mostly on manual testing, but realized that an anticipated heavy volume



# Siemens AG

**Headquarters:** Berlin and Munich, Germany

**Industry:** Global technology

**Employees:** 370,000+

**Revenue:** \$98.5 billion [€83.0 billion] (2017)

**Company details:**

- Has stood for engineering excellence, innovation, quality, reliability and internationality for 170 years
- Focuses on the areas of electrification, automation, and digitization
- Produces energy-efficient, resource-saving technologies worldwide — supplying power generation and power transmission solutions, infrastructure solutions, as well as automation, drive, and software solutions
- Is a leading provider of medical imaging equipment — such as computed tomography and magnetic resonance imaging systems — as well as laboratory diagnostics and clinical IT solutions
- [www.siemens.com](http://www.siemens.com)

**SAP solutions:**

- SAP ERP
- SAP Solution Manager

**Third-party solution:** Worksoft Certify

of technical upgrades for complex SAP systems, support packages, and SAP HANA upgrade projects to include a planned move to SAP S/4HANA would strain resources. The company was devoting the full-time equivalent of roughly 1,000-person days to carry out required testing for complex SAP systems and each project.

In 2013, Siemens completed a small-scale automated testing project for an SAP ERP 6.0 upgrade and, based on its success, adopted Worksoft Certify for a larger project — and ultimately across its entire SAP landscape. Siemens had evaluated and tested several other solutions prior to the upgrade project, but found the speed and ease of use of Worksoft Certify as well as its support and experience for SAP S/4HANA upgrades to be key differentiators. Business analysts could map and create test scenarios after roughly 20 minutes of training without any programming or prior experience with the solution. “After that first project where we saw promising initial results, we moved to the next SAP system, which entailed a much larger consolidation project involving the integration of a separate SAP system into a core divisional system,” says Jens Neuhaus, Director of Test Automation Service at Siemens. “This project was a good candidate for test automation because of its multiple test cycles, and we achieved 60% coverage of the core functionality in the SAP system that was automated using Worksoft Certify tests.”

This consolidation effort was named ATLAS Lincoln, and resulted in the company’s first set of core end-to-end automation for integration and regression testing. The 60% coverage of core functionality represented roughly 350 separate business process transactions and 10,000 test steps specific to the power and gas division, covering locations in Sweden, Germany, and the Netherlands.

**A Mindset Change**

Today, Siemens is using Worksoft Certify to support end-to-end testing for more than 20 SAP systems. Beginning with a single upgrade project before advancing to ATLAS Lincoln was a helpful strategy in building a business case for expanded test automation, Neuhaus says. Siemens was able to demonstrate gains with each successive project and quantify the benefits and savings achieved with end-to-end automated testing of standardized business processes. “With every test cycle, we gain more from test automation,” he says. “And we found the best candidates for automated testing are those core processes that are standardized across many organizations, like value-added tax determination.”

**Goals:** Reduce manual testing efforts for technical upgrades of complex SAP systems (many projects require the equivalent of 1,000 days of testing by full-time business and IT users); increase test coverage by creating a test repository for harmonized processes across business units; and increase the value of automated testing in subsequent projects and service activities

**Strategy:** Implement Worksoft Certify and integrate it with SAP ERP and SAP Solution Manager for automated, end-to-end business process testing

**Outcome:** Optimized testing of short-cycle releases, audit reports, and process documentation; detected fewer issues during system go-live; and achieved faster projects and maintenance releases with earlier, more frequent test cycles

To reinforce the benefits of automated business process testing, Siemens stressed the importance of moving away from institutional knowledge — unwritten rules or information known to some individuals within Siemens but not common to others — as the lone source of high-level test design. Previously, a tester might take for granted that he or she knew all the downstream process steps if there was a discrepancy in a bill of materials, for example. One of the key benefits of test automation, of course, is to increase the complexity of test scenarios far beyond what an end user would be capable of handling manually.

“Business users who design automated test cases need to be aware of the variables that prevent interaction during testing,” Neuhaus says. “They need to know that these variables are now accounted for in the tests.” This is especially important for a conglomerate like Siemens, according to Neuhaus, because the company is so large that there are very few people with a complete understanding of what end-to-end processes look like — such as purchasing, invoicing, or distribution.

Neuhaus says that bolstering test documentation through Worksoft Certify’s integration with SAP Solution Manager was instrumental in the company’s ability to change the testing mindset and solidify users’ trust in test automation. Further, the documentation of system changes helped satisfy audit and other IT general controls (ITGC) requirements. “When we implement a change, we store the technical specifications and process documentation in SAP Solution Manager,” he says. “Because we can link test scenarios from Worksoft into SAP Solution Manager quite easily, we use it for planning, tracking, and monitoring test execution. And by having process documentation in SAP Solution Manager, we have the foundation for test management because test designs rely on that process and technical information.”

#### **A Short-Cycle Fix**

One of the biggest unanticipated benefits of the test automation program at Siemens has been the use of automated business process tests for smaller process changes or bug fixes. If there is an error in the creation of a process order, for example, the legacy process was to limit testing to a spot



“The motivation was to align with the company’s larger objective of using test automation to support a more strategic transition to agile development, which leads to much shorter innovation cycles or change cycles during a project. That dramatically increases the test effort because for every sprint or wave, there’s another test cycle to consider that test automation can help cover.”

— **Jens Neuhaus**, Director of Test Automation Service, Siemens

## Worksoft Helps Siemens Drive Faster Projects with End-to-End Test Automation Across Its SAP Landscape

Worksoft, an SAP partner, provides a fourth-generation automation platform for enterprise applications, offering automated business process discovery, documentation, compliance, testing, risk analysis, and robotic process automation. Enterprises worldwide use Worksoft intelligent automation to innovate faster, lower technology risk, reduce costs, improve quality, and deeply understand their real end-to-end business processes.

Siemens turned to Worksoft to support an initial SAP consolidation project and achieved 60% automation coverage of core functionality, representing 350 separate business process transactions and 10,000 test steps. Today, Siemens uses Worksoft Certify to support automated business process testing for more than 20 SAP systems. This entails a heavy volume of technical upgrades for complex SAP systems, support packages, and SAP HANA upgrade projects. Worksoft also helps reinforce the company's shift to an agile development methodology to shorten the innovation cycle — an approach that requires more frequent testing.

“Worksoft is proud to help Siemens be more innovative by accelerating delivery of its mission-critical enterprise application projects, including the move to SAP S/4HANA,” said Shoeb Javed, Chief Technology Officer at Worksoft. “Additionally, Worksoft is pleased to help strengthen the company's process documentation, management, and execution efforts through Worksoft Certify's unique integration with SAP Solution Manager. Worksoft Certify automation is linked to SAP Solution Manager where technical specifications and process documentation is stored and readily available for audit and compliance reports.”

Companies worldwide rely on Worksoft to support critical packaged applications, including those from SAP, Salesforce, Oracle, Workday, SAP SuccessFactors, ServiceNow, and more. Worksoft's fourth-generation automation platform helps enterprises accelerate innovation and change, lower technology risk, and increase efficiency.

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check of that specific functionality. Siemens discovered that end-to-end business process test automation could also be used for all these small bug fixes.

“If we have a process with 1,000 test steps, on a weekly basis, we can organize that for every small bug fix and run an entire end-to-end test,” Neuhaus says. “That's the really big benefit, so it's not just large annual or business-driven projects, but also smaller changes where test automation increases the quality of what we deliver.”

That benefit, Neuhaus says, lines up with the company's larger strategy of using test automation to support a move to agile development. “The motivation was to align with Siemens' larger objective of using test automation to support a more strategic transition to agile development, which leads to much shorter innovation cycles or change cycles during a project,” he says. “That dramatically increases the test effort because for every sprint or wave, there's another test cycle that automation can help cover.”

To handle the increased testing workload, Siemens expanded its GS IT testing requirements, such as developing a collaboration model for every SAP system that is supported with test automation. The new collaboration model calls for a dedicated test coordinator and test architect to ensure adherence to proper testing protocols.

Close collaboration with the business organization represents an evolution from the company's initial view that using Worksoft Certify was a technical undertaking requiring Basis experts or other developers, according to Neuhaus. And it did not take long to dispel this notion. “At first we thought test automation was very technical, but we came to understand that Worksoft is not a developer tool but rather an intuitive, easy to learn tool for business users,” he says. “That was a big takeaway for us.” ■

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