



Automating Business Process Testing at Applied Materials

by **Ken Murphy**, Senior Features Editor

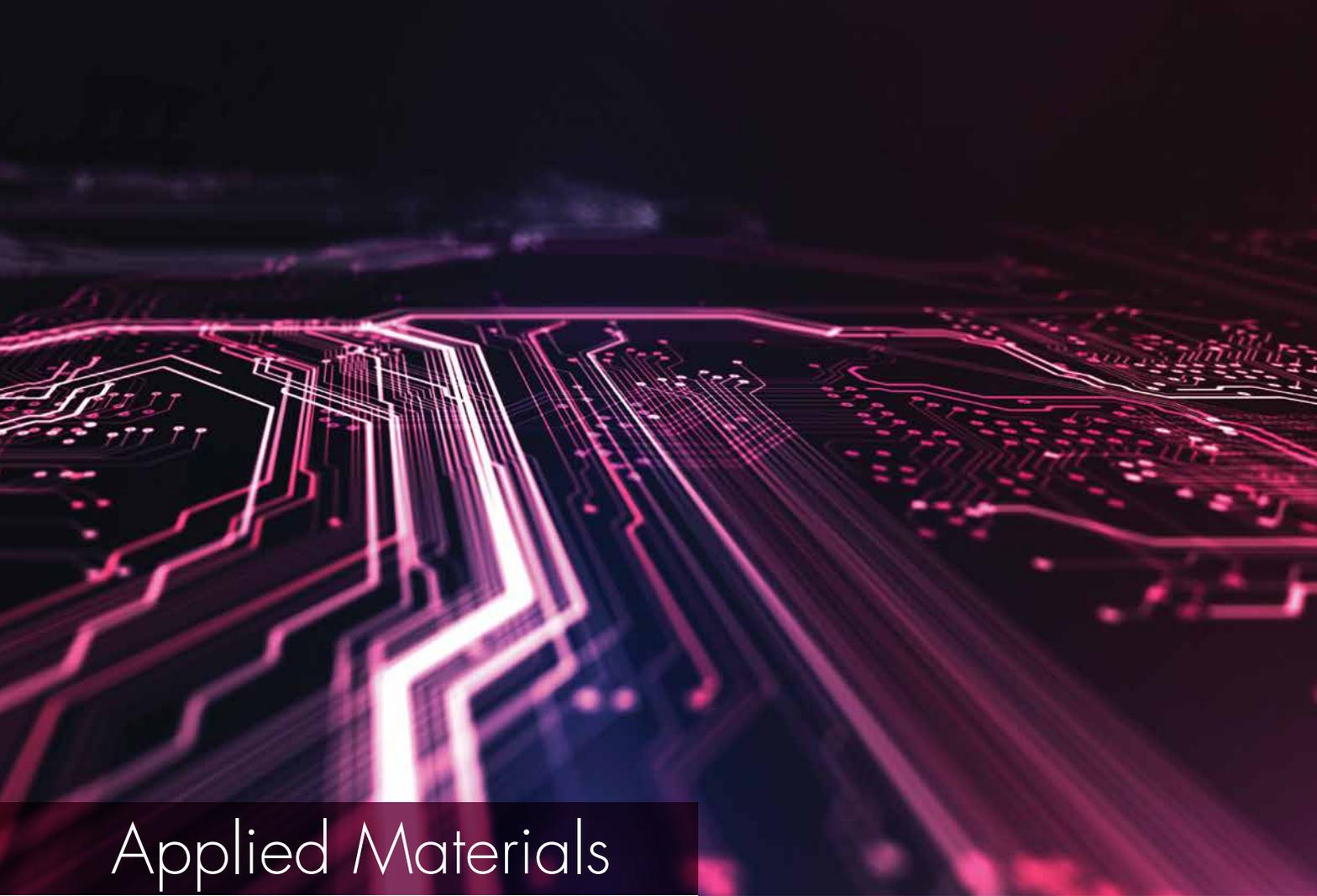
Appplied Materials is a leader in materials engineering solutions used to produce virtually every new chip and advanced display in the world. In addition to producing innovative technology, Applied Materials is at the front of the pack when it comes to using innovative technology to support its business. The company has been running various business units on SAP software for more than 20 years and is in the midst of a large SAP migration. This significant and continued expansion of its SAP infrastructure was a key driver for Applied to begin a search for an automated business process testing solution to replace an existing solution that simply couldn't scale with the demand.

At a Glance

Goals: Remove manual business process testing burdens, free up functional analysts to perform more strategic project work, and deploy more projects faster and with a reduced manual effort to support company growth

Strategy: Implement Worksoft Certify for automated end-to-end business process testing across SAP systems

Outcome: Eliminated hundreds of hours of manual effort, reduced test cycles by 40% or more, deployed more projects faster to support company growth, enabled new SAP functionality, and leveraged reusable test scenarios to increase productivity and business process quality



Applied Materials

Headquarters: Santa Clara, California

Industry: Technology

Employees: 15,600+

Revenue: \$10.8 billion

Company details:

- Holds 11,200+ patents
- Has 82 locations in 17 countries
- Founded in Mountain View, California, in 1967
- Went public in 1972
- www.appliedmaterials.com (NASDAQ: AMAT)

SAP solutions:

- SAP Customer Relationship Management
- SAP Supply Chain Management
- SAP governance, risk, and compliance solutions
- SAP Business Warehouse
- SAP ERP
- SAP Solution Manager
- SAP Process Integration
- SAP HANA
- SAP Supplier Relationship Management
- SAP Global Trade Services
- SAP Enterprise Portal

Third-party solution:

- Worksoft Certify

“We wanted a solution that could be a lot more effective for SAP testing because most of our work was going in that direction,” says Heather Whitfield, Program Manager of the SAP Test Support Office at Applied Materials. “Moving to a single SAP instance, we faced the challenge of a multi-year roadmap with several projects, and we needed to become more efficient and effective with our testing.”

Investing in Automation

With the focus squarely on automating business process testing in its SAP environment, Applied decided that Worksoft, an SAP partner, was the logical choice because the Worksoft Certify solution automates testing across end-to-end SAP processes. This automation would allow the company to continuously introduce change to the enterprise landscape. Worksoft best met Applied’s requirements for an automated test solution that would allow the company to deploy more projects faster and with reduced manual effort to support company growth.

“We decided Worksoft Certify was the ideal solution for SAP quality execution, which was our most immediate requirement,” Whitfield says. “And because it’s easy to use and doesn’t require coding, we could bring people up to speed faster. This allowed our non-technical staff to drive the testing efforts without relying on input from our IT team.”



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— **Heather Whitfield**, Program Manager of the SAP Test Support Office, Applied Materials

With that, we were able to get started faster and realize the value of automation sooner.” (For more information about Worksoft’s solution, refer to the sidebar at the end of the article.)

Because Applied was, for the most part, new to a fully automated testing environment, the company took a crawl-walk-run approach for expanding test automation. It set out to establish a significant return on investment by automating a small project rather than tackling a one-time conversion of all the manual tests in its library. To determine the starting point, Whitfield and her team identified which projects would return the most value from automation and decided that technical upgrades fit the bill as a consistent project that was sure to continue as the company expanded its SAP environment.

“To define our automation targets for technical upgrades, we went back and looked for commonalities in all the tests that were done for previous upgrades,” Whitfield says. “And then for the next upgrade that came along, we planned to heavily use automation from the beginning and committed to have 60% of the tests automated in preparation, which was a very aggressive goal for us at the time.”

The strategy to start small paid off; the planned five-month technical upgrade took only three months, and Whitfield received buy-in from senior executives to continue the path to more automated testing. “It was an opportunity to give our executives visibility into what we could achieve and how it saved the company time and money,” she says.

Centralizing the Testing Function

System refreshes were next on the list as Whitfield’s team began to develop a subset of automated processes that functional or business analysts could execute quickly and

easily validate. These tests were re-used for disaster recovery (DR) testing, which added to the cost savings. The team worked with the production support organization to identify monthly processes or audit reports that were good candidates for automation. The return on the automation investment continued to grow and became a key feature of the IT organization. Automation replaced a significant amount of manual testing for technical upgrades and other projects.

Because of the continued growth and success, Applied centralized the responsibility for all SAP testing, governance, and strategy under the purview of the newly established Test Support Office, led by Whitfield. The crawl-walk-run approach was a key factor in the eventual transition to a centralized testing function, according to Whitfield, because the office likely wouldn’t exist had the initial team not been able to prove automation value with early projects. “We had a very lean but very strong team that grew slowly as we proved the value of automation in our testing environment,” she says. “Automation was the first step in the creation of a centralized test organization.”

Now, Whitfield meets biweekly with the vice president of IT to share benchmarks and demonstrate continued value. “Strong executive support was a key success factor,” she says. “The ability to demonstrate a consistent financial return helped ensure executive commitment and the directive that project funding is tied to an investment in building up and maintaining automation.”

Saving Time and Money

Applied’s use of automated business process testing has reached a level where the regression test library, according to Whitfield, doesn’t even fully reflect automation coverage because of the volume of changes moving into

Worksoft Automation Helps Improve Quality and Cost Savings at Applied Materials

Worksoft, an SAP partner, provides automation software for high-velocity business process discovery and testing. 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.

With Worksoft, Applied Materials has expanded automation test coverage for technical upgrades and lowered testing costs for system refreshes and disaster recovery (DR) validation efforts. When tasked with eight system refreshes over a six-month period, Applied utilized Worksoft automated business process testing to reduce the timeline nearly in half, replace thousands of manual tests, and achieve significant test cost savings for each system refresh.

“Worksoft automation is utilized at Applied Materials to support SAP DR validation, customer relationship management (CRM) upgrades, regression testing, and more,” said Shoeb Javed, Chief Technology Officer at Worksoft. “We are thrilled that an industry leader like Applied Materials is using our technology to accelerate innovation, mitigate technology risk, and streamline operations.”

Worksoft Certify eliminates manual effort and enables shorter project timelines, fewer software glitches, and a high-quality user experience with new digital technology. With Worksoft, companies can validate half a million process steps in a matter of hours across hundreds of business processes on hundreds of cloud-based virtual machines.

Global 5000 companies across all industries choose Worksoft for high-speed process discovery and automated testing of digital, web, cloud, mobile, big data, and dozens of enterprise applications, including SAP, Oracle, and Salesforce.com.

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production that the Test Support Office must account for. Worksoft automation extends beyond project regression testing to ongoing production quality control, application compatibility testing, and system readiness. Worksoft Certify is also utilized to create customized templates for improved documentation that is used for test validation and for the creation of training materials.

For the repeating projects that Whitfield’s team tackled first, however, the results exceeded initial expectations. In addition to automated testing for technical upgrades, coverage produced concrete results. At one point, the company faced eight system refreshes in six months, for example. With automated testing replacing thousands of manual tests, the team shortened the timeline for each refresh by nearly 50% while also enhancing quality and achieving significant savings on each refresh. The enhanced quality enables the team to better flesh out changes that they would likely be unaware of in a manual testing environment.

“There is now a very quick turnaround for projects, much better quality, and the first week of project activity is no longer spent finding refresh bugs,” says Whitfield.

Applied regularly refreshes its DR system with production data. By adding Worksoft Certify to its list of critical production apps, the Test Support Office ensures the Worksoft tools are available to validate that the DR system is fully functional and ready for production failover. “That was important because we have to be able to test if we ever have to flip the switch to our DR system,” Whitfield says. “There was an enormous cost savings there, and now 98% of all the system refresh and DR validation work is done using automation.”

As part of the migration to a single SAP ERP instance, the remainder of the business units will have moved over from a non-SAP database. Due to the anticipated volume of production changes and processes to be tested, the Test Support Office is designing a production quality control process where changes are tested together before being released to production.

“Looking ahead, we see expanding the use of automation into a process where changes go into our quality system, we run all the automation we have, and upon approval from us, the changes can move forward,” Whitfield says.

A more structured process would serve to maintain and ensure production environment quality, which is a crucial step considering the anticipated volume of change, according to Whitfield. To enable this process, the Test Support Office will refine and optimize its regression test library prior to moving to a single SAP ERP instance, identifying critical business processes and filling in any automation gaps prior to go-live. “We have to be completely ready to pull the trigger when that project goes live,” she says. ■