

A woman with curly hair, wearing a floral patterned top, is looking at her smartphone. She is standing on a balcony with a railing, and a city skyline is visible in the background under a bright sky.

T-Mobile USA: Delivering ERP Excellence Through Testing Excellence

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T-Mobile USA

Industry

Telecommunications

Products and Services

Mobile telephone service

Web Sitewww.t-mobile.com**SAP® Solutions**

SAP® Quality Center application by HP, SAP LoadRunner application by HP, SAP Test Acceleration and Optimization application



How does an IT department provide high-availability, defect-free applications to its business users time after time? Mobile telecommunication leader T-Mobile USA uses SAP® testing solutions with strong business processes to support a **comprehensive application lifecycle management strategy**. On over 50 projects to date, including a massive upgrade to the SAP ERP application, IT used these solutions to consistently deliver application environments that have no critical postproduction issues.

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Using automated testing to increase customer satisfaction

T-Mobile USA provides wireless voice, messaging, and data services throughout the United States. Headquartered in Bellevue, Washington, the company is the fourth-largest wireless carrier in the country with over 33 million customers, US\$21.3 billion in revenue, and 42,000 employees.

Customer service is of paramount importance to T-Mobile USA. J. D. Power and Associates, a global marketing information services firm, ranked T-Mobile USA highest among major wireless carriers for retail-store satisfaction five years running and highest for wireless customer care two years running.

Continuing this record for excellence in satisfying customers requires support of many kinds from the company's IT department and the tools it employs. Enterprise resource planning (ERP) applications touch every aspect of T-Mobile USA's business. The company runs its core business

using software from SAP but also uses many non-SAP applications. Managing the lifecycle of these applications properly is vital for supporting business users and their customers, and no aspect is more vital than testing.



33 million
Customers



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Building a world-class automated testing environment

T-Mobile USA knows that inconsistent test methodologies and manual testing, siloed across business functions, make it difficult to deliver high-quality ERP applications in a timely, consistent manner. To better serve the business and keep postproduction issues from impacting operations, the company's IT department has established a world-class environment for end-to-end application testing as a key component of application lifecycle management. T-Mobile USA wanted to reduce the amount of manual labor spent in the testing process through automation, improve consistency of testing methods, and cut transaction times for users. Two types of testing were required: functional testing to identify and fix preproduction defects,

and performance testing using varying loads to identify and address performance issues that impact transaction processing times.

The company developed a "follow the sun" model for its testing environment, with dedicated subject-matter experts both onshore and offshore who are involved in every phase of the software development lifecycle. It adopted a modular approach in which all business processes are broken down into individual components that are reusable and help streamline the testing process. With the resources and methodology in place, all T-Mobile USA needed was the right set of testing applications.

"One of the trigger events for creating our new testing environment was that we hired a new CIO who understood the value of a right-shoring model and the contributions it could make to cost-effectiveness."

Michael Cooper, Senior Director of Enterprise IT Quality Assurance, T-Mobile USA



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Automating testing for SAP and non-SAP solutions

The new testing solutions had to be not only tightly integrated with core SAP software but also equally applicable to both SAP and non-SAP applications. To meet tight release cycles and minimize labor costs, they had to equip the company to automate a large portion of the testing and update and change processes. Ease of use was also important.

T-Mobile USA selected the SAP Quality Center and SAP LoadRunner applications by HP to improve the quality of applications delivered into production and better ensure their performance. SAP Quality Center manages all functional testing activities as well as all critical test management, such as defect tracking and requirements management. SAP LoadRunner tests application performance under

different load conditions. In addition, the company implemented the SAP Test Acceleration and Optimization application to leverage thousands of predeveloped, reusable test components that reduce the time required to bring new applications into production. T-Mobile also implemented Business Process Testing and Quick Test Professional, both from HP. All these testing solutions are integrated with the SAP Solution Manager application management solution to provide a single source of the truth.

“Seamless integration with SAP ERP is essential, and we found that there were simply no comparable solutions on the market,” says Kirthy Chennaian, director of quality assurance for T-Mobile USA.



“There is nothing like our testing software from SAP for creating scripts on the fly and quickly identifying and correcting scripts when process changes occur.”

Kirthy Chennaian, Director of Quality Assurance, T-Mobile USA

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Structuring the testing environment and methodology

T-Mobile USA developed a highly structured testing environment and methodology. Under the “follow the sun” methodology, onshore subject-matter experts are involved in every stage of the software development lifecycle, while automation and test execution are done primarily offshore. On each project T-Mobile USA performs two or three quality test passes and one regression test, which inevitably deliver consistent results.

SAP Quality Center is the firm’s primary tool for identifying functional defects in applications. Its dashboard provides at-a-glance tracking of the status of tests. The tight integration among the applications automates the sensing of the impact of IT environment changes to test scripts and

making adjustments to accommodate them – for enormous time savings in IT. “The latest release of SAP Test Acceleration and Optimization offers a business process change analyzer that allows us to see all the test cases impacted by any change to SAP ERP at the click of a button and, if we choose, automatically repair them at the click of another button. This speeds up the creation of automated scripts without the need to assemble components,” explains Chennaian. “Its process flow analyzer is a huge help in creating automatic test cases. To develop a ready-to-use script, all we have to do is create a test case in SAP ERP and input data. That saves lots of time building components and stringing them together.”

“SAP Quality Center has provided significant cost and time benefits to T-Mobile. It allows us to reduce ERP postproduction defects by 75% and cut transaction times through automated scripts by 50%.”

Kirthy Chennaian, Director of Quality Assurance, T-Mobile USA



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Delivering a successful SAP ERP upgrade

Of all the testing projects T-Mobile USA has conducted with its new environment, the biggest and most critical was its upgrade to SAP ERP from an earlier version of SAP software. It covered all of the firm's business process flows including order to cash, procure to pay, hire to retire, and financials and controlling. Eighty-eight applications and their associated interfaces were impacted. The project had a very short six-month schedule, an ambitious goal for a change of this magnitude. To complete it, the team generated over **2,000 test scripts** and succeeded in **automating 83%** of them, improving consistency and freeing experts to spend their time on the most difficult test cases. "We delivered one of the most successful upgrades in our history and met our aggressive deadline, which would have been impossible with purely manual testing," says Chennaian. "Without all the automation we put in place, we would have needed hundreds of testers."

Another major project entailed restructuring the company's cost centers from 40 to 3 to align them with organizational changes and gain the associated efficiencies. Again the team faced an aggressive schedule and complex testing requirements – 80 applications and interfaces – and once again it succeeded in every respect.

"These projects, like many others, were successes in every way," Chennaian says. "We met our deadlines while keeping resource expenditure to a minimum and had absolutely no critical postproduction issues."



83%

Test scripts automated



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Reducing defects and performance bottlenecks

T-Mobile USA has used its testing environment not just to satisfy immediate testing needs but to make subsequent testing efforts even easier. The test suite developed for the SAP ERP upgrade has proven to be very reusable and repeatable in six projects since then with minimal modification. The firm has developed over **5,000 business process testing (BPT) components** and more than **11,000 BPT scenarios** to date, all of them reusable. User-discovered defects in the applications the team has delivered are down by 75%, and virtually none of them are critical.

Performance testing has been just as successful. Using SAP LoadRunner, T-Mobile USA identified and repaired performance bottlenecks that allowed it to cut transaction times by 50%, greatly improving user productivity.

Besides these clearly quantified accomplishments, T-Mobile USA achieved an extremely important intangible benefit: with a single source of test information, it has improved its control over the business and reduced its risk going forward.



75%
Decrease in
postproduction
application defects

“In short, we are now able to deliver high availability for our ERP applications,” summarizes Michael Cooper, senior director of enterprise IT quality assurance for T-Mobile USA.

Because of these achievements, HP presented a pair of prestigious awards to T-Mobile USA for its testing environment: the 2009 HP Software Awards of Excellence – IT Transformation and the 2011 HP Software Awards – People’s Choice Award.



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Streamlining T-Mobile USA's first application of SAP HANA™

T-Mobile USA continues to pioneer the use of cutting-edge technologies from SAP. The company is now preparing to begin its first production use of the SAP HANA™ platform, and the testing environment is playing an essential role in making the project a success. SAP HANA will accelerate query responses by orders of magnitude for the company's marketing department, which plans to manage its campaigns much more effectively as a result. "We are expecting another smooth, issue-free rollout now that we have finely tuned our world-class test environment and methodology," concludes Chennaian.

"Our testing environment has delivered outcomes that we consider truly amazing in terms of cost-efficiencies, time savings, and improved quality."

Michael Cooper, Senior Director of Enterprise IT Quality Assurance,
T-Mobile USA

