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Driving Business Agility and Reducing Operational Costs Through Effective Software Quality Automation

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The business critical nature of software and the need for rapid responsiveness continue to drive growth for quality assurance as the costs of software failure can be prohibitive, especially in a difficult economy, with dwindling availability of human and financial resources. The need to reduce spend, improve service, and be adaptive has driven and will continue to drive quality and process improvements, particularly for business-critical enterprise packaged applications. We recommend bringing automated software quality (ASQ) solutions in this context to augment limited resources and to help cut the significant impact of production software defects and downtime.

Larger companies in particular are increasingly seeking the ability to test ERP applications, which becomes all the more pressing in the context of challenging economic conditions and highly constrained IT and quality assurance staffing resources. The major ERP vendors' move toward service-oriented architecture is driving user demand for an effective application life-cycle management strategy for both quality and change management. Historically, automation tools have often been difficult for business process experts (non-IT personnel) to use, expensive in terms of both licensing and implementation costs, and resource intensive to deploy, requiring significant expenditures and organizational commitment. More recently, there has been an evolution of innovative third-party vendors, some of whom supply solutions that are intuitive for nontechnical users and cost-effective. Also, there is an increasing need for application-specific quality automation solutions, which IDC sees as a motivating driver for larger organizations moving into 2010.

The following questions were posed by Worksoft to Melinda-Carol Ballou, program director of IDC's Application Life-Cycle Management and Executive Strategies research, on behalf of Worksoft's customers.

Q. What are the top trends in application life-cycle management today?

- A. The primary trends involve complex sourcing, evolving approaches to testing due to emerging technology architectures and end-user demands, and the adoption of software-as-service (SaaS)-based automation.

Organizations are currently struggling with extreme levels of complexity regarding software development and quality. Software continues to enable innovation and survival in a difficult economy; over the next two to three years, as the economy hopefully gets stronger, organizations will have to do more with fewer resources in the wake of financial and staffing constraints and will need efficient approaches to maintaining and running business-critical

software. In this context, organizations — typically larger ones — will augment their internal staff with complex sourcing, utilizing service providers both offshore and onshore as well as using open source code that necessitates strong teaming, effective testing, and quality management with automated tools.

There is also a need to coordinate changing approaches to application testing as ERP packages evolve to new architectures. So many businesses, of course, are dependent on these business-critical types of applications for financial, for general ledger, and for human resource management, yet these applications are changing and emerging, and they need to have effective quality management for both customized and newer implementations. The evolution of service-oriented architectures for ERP vendors needs to be supported by targeted quality automation solutions that are able to evolve with the vendors' composite applications.

A changing approach to the end-user experience and the challenges of emerging Web technologies, including Web 2.0 and social networking, also affect testing. These developments increase levels of complexity from a user experience perspective and from a performance perspective, both of which need to be addressed through quality automation. In conjunction, the emergence of license and delivery mechanisms with SaaS enables faster adoption and more immediate uptake by user communities as well as greater flexibility with regard to vendor choices.

The emergence of SaaS solutions is critical and helpful to organizations that are struggling to bring in more effective quality approaches but may not have either the staffing or the financial resources to commit to on-premise solutions. It's interesting to note that both larger organizations and SMBs are adopting SaaS, and we see SaaS testing initiatives as an on-ramp to testing "in the cloud" over time.

Q. From a packaged application perspective, which priorities are companies currently focused on in order to reduce costs or improve efficiencies?

A. Organizations are bringing in automated testing and life-cycle management tools to facilitate quality approaches in order to be more effective at managing both the functional challenges that they experience with customizations and the performance challenges and other issues that they experience with upgrading existing applications. Many organizations that have deployed packaged applications have found that manual approaches to testing are just not viable given the lack of resources as well as the business-critical nature of these applications. With application failure or poor performance unsustainable in a difficult economic climate, organizations need to adopt automation.

Even if the economy isn't as dismal in 2010 as it was 2009, organizations still are dealing with the aftermath of significant layoffs and fewer human and financial resources to devote to quality initiatives for their packaged applications. As a result, expect to see a bigger push among organizations to adopt automation for testing and other life-cycle management needs — for example, impact analysis. Many organizations have experienced the consequences of reducing their quality staff in the past 12 to 18 months, resulting in a backlog of application updates, increased performance issues, and additional application defects. These organizations have learned firsthand how such issues affect their end users and their businesses. Increasingly, these companies are willing to invest in automated testing tools, and IDC expects to see more investments in 2010 for automated testing, particularly for packaged applications.

Q. How prevalent in the packaged application market is the use of automation to validate changes to business processes or technical upgrades?

A. As mentioned previously, organizations are struggling with human resource and financial constraints, and yet the need to validate changes to business processes and to effectively sustain and support technical upgrades of packaged applications is as great as or greater than it has been in the past. Organizations have very thin margins for failure, and their business-critical solutions that support financials, manufacturing, customer care, human resources, and other business-critical functions must work, or organizations will be in a position to fail. The environment remains fragile for companies seeking to grow or survive as the economic climate remains difficult. In the past, there may have been less adoption of automation for use with packaged applications due to time or staffing limitations, or both; now the environment is ripe for automation because the consequences of not using it are currently more obvious and more painful.

IDC expects to see additional adoption of automation for testing packaged applications. A typical driver could be a major upgrade of an existing ERP system and the need to be able to coordinate around the changes that it introduces. In such situations, quality, integration, and change management issues need to be addressed. IDC also sees a trend toward periodic, recurring testing in this context. More iterative and risk-based approaches to testing can enable organizations to be more agile as they try to move forward with new implementations of packaged applications.

Q. Automated testing has been around for a while. What has slowed or prevented the adoption and subsequent promised ROI?

A. The biggest single barrier to adoption of automated testing tools is the human or cultural element. In many organizations, manual approaches to testing have been the norm. Human beings are wired for consistency and thus change behavior with great reluctance. In more practical terms, organizations are reluctant to make a transition to automation in part because of the expense and in part because of the effort involved in implementing automation. This is why SaaS models are beginning to be such a promising alternative for organizations trying to get a jump start on automation. Another reason why organizations haven't pursued the ROI of automation is that there isn't enough knowledge about the significant cost savings and benefits of automation. Calculating the costs of defects that go into production, particularly defects that lead to downtime of critical business applications, can help organizations understand the impact and likely ROI of quality automation.

Organizations are still testing manually because that's what they've done before. Those that are making the transition to automation are doing so because the cost benefits are becoming so clear. The role that outsourcing and offshoring play in testing and how that affects complexity and costs often requires the use of automation. There is just no other way to bridge multiple cultures and to coordinate multiple staff members who are geographically dispersed. Trying to address a complex sourcing environment with manual approaches is cost-prohibitive; with an increase in complex sourcing for offshore and onshore, as well as with distributed development internally, there is already a natural evolution toward automation.

Q. What is "risk-based testing," and why is it important?

A. Risk-based testing enables organizations to prioritize and focus on areas that are of greatest potential risk or challenge to their business viability. At a time when organizations are severely resource constrained, it becomes all the more important for organizations to prioritize testing in those areas that represent the greatest potential cost, problem, or risk.

Because organizations simply can't afford to test everything, prioritizing which areas of business-critical applications to test makes excellent economic sense and can contribute to corporate survival in an environment in which problems with applications can mean the difference between success and failure.

It's also important to look at risk-based testing in the context of value. In addition to targeting potential challenges, there is an inherent risk in not focusing on what will provide the greatest value to the organization. There is a complementary relationship between risk- and value-based testing that IDC sees as an important element to understanding effective risk-based testing approaches. Essentially both risk- and value-based approaches to testing take into account impact analysis — a pragmatic testing approach that's based on how much impact there will be on business-critical processes if problems occur with certain applications and key capabilities. On the other hand, typical functional testing involves coordinating the people, technology, and processes to target areas where there could be problems in the code. Such testing doesn't necessarily encompass prioritized approaches to testing that focus on the greatest potential challenges to the organization.

Organizations often overlook stress and load testing until it's too late in the process. IDC encourages organizations to prioritize their performance testing, as well as their stress and load testing, on those applications that are business critical — for example, revenue-generating applications, customer-facing applications, and any applications where there may also be variations in performance based on the time, day, week, month, or year. If organizations don't understand when their peak loads occur, they cannot plan for them; they may lose revenue, market share, and potentially their ability to compete in the market.

Risk-based testing is really an evolution beyond typical functional approaches; it involves testing more intelligently and requires proactive approaches to resource allocation. This is a trend in the software development market overall as well as in packaged application environments.

ABOUT THIS ANALYST

Melinda-Carol Ballou serves as program director for IDC's Application Life-Cycle Management research. In this role, Ms. Ballou provides thought leadership, expert opinion, research, and analysis through comprehensive research on application life-cycle management (ALM), with a specific focus on software life-cycle process configuration and management, software quality, and IT governance software.

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