



*High performance. Delivered.*

Technology

## Final exam

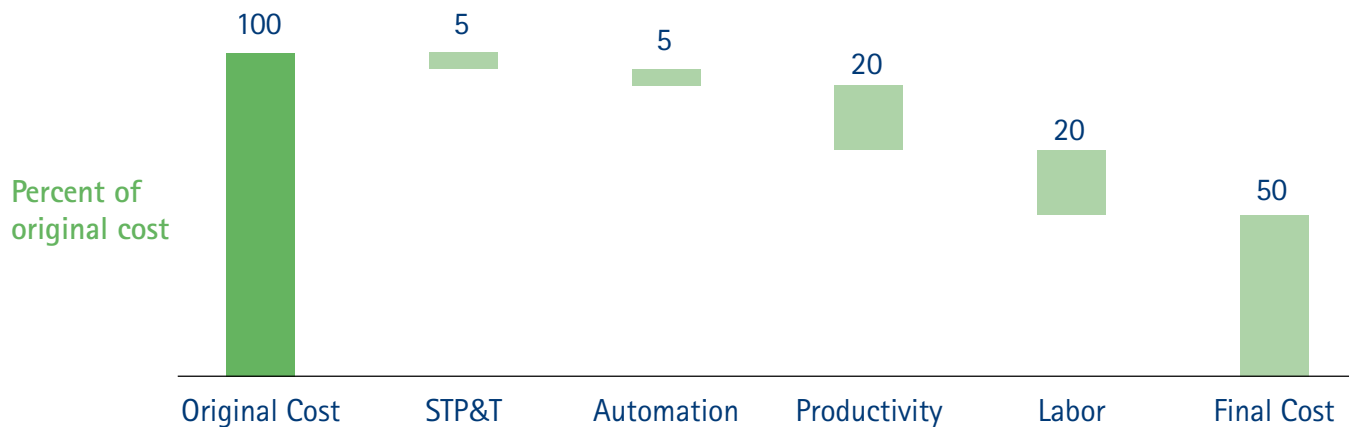
Are your application testing services making the grade?

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## Passing the test

Competitive pressures have made technology a critical resource and put a premium on speed to market. As a result, organizations are moving quickly to implement new technologies, often too quickly so that they arrive to market with underperforming applications that burden rather than benefit their business and technology infrastructure.

## Based on Accenture research across multiple applications testing services clients



Savings from...

**Standard Testing Processes & Tools:** 5 percent—Increased quality due to reduction of defects and identification and resolution of defects earlier in the systems development lifecycle

**Automation:** 5 percent—Revenue enhancement via speed-to-market and cost reductions due to judicious use of automation

**Productivity:** 20 percent—Gain due to improvements in testing methods, application of enabling tools, and better governance

**Labor Arbitrage:** 20 percent

**Total Cost Reduction:** 50 percent

There is a better way (see the figure above). Enterprises that adopt best practices for testing can expect to save up to 50 percent through test automation, productivity improvements, resource reallocation and labor savings. And along with cost and execution efficiencies, organizations can achieve the high performance and competitive benefits of getting to market faster with best-of-breed, proven applications that work the first time.

No company should go to market with untested applications. Yet many companies continue to rollout new or revamped applications in which testing has been inadequate and ineffective. And poor testing can result in time and money lost. For example, the cost of a single development defect can snowball to 10 times the original cost if not discovered until the quality

assurance phase of testing, while a defect can cost 100 times more than the initial cost if left undiscovered until the production phase.

The market impact of substandard application performance can be even more costly. Remember the late 1990s, when companies cared more about jumping on the "New Economy" bandwagon than about quality? Corporations seemed to forget the quality lessons painstakingly learned in the 1980s (remember the focus on Japanese manufacturing and service culture). Testing investment as a percentage of IT spend plummeted between 1995 and 2000, and other areas of quality assurance suffered as well. When the Internet bubble burst in 2000, many overconfident Internet start-ups collapsed to virtual rubble. These companies suffered the damage

wrought by production applications lacking in basic quality—e.g., during e-Toys' 1999 Christmas season the company's website failed when it could not handle even a moderate amount of user traffic.

Today more companies are recognizing that testing excellence plays an integral role in high performance. Accenture works with organizations to help them build and refine testing skills, functionality and achieve economy-of-scale savings and efficiencies through our Testing Center of Excellence, a global network of developers and testing professionals.

# The evolutionary ladder

So what separates high performers from the rest when it comes to testing? Imagine an evolutionary ladder with five steps, each representing a degree of progress towards testing excellence.

## Level one: crawling along

Organizations on this level may not look too bad. They usually have development processes, project plans and managers and developers in place. Yet some important things are missing. Often there is no clear distinction between software development/debugging and testing, and, as a result, there is no real guidance for testers. In turn, there is generally no formal process for tracking defects. Project plans do not provide for testing tasks, effort and schedules, and managers and developers seldom create or support testing standards, plans or templates. A lot can slip through the cracks.

## Level two: first steps

On this level, organizations take their first steps toward testing excellence, recognizing testing as a distinct discipline that is separate from software development/debugging. At this level, the enterprise provides appropriate guidance to define and apply formal testing techniques, though, at this level, they often fail to determine or enforce criteria for how to initiate testing. And although their testing techniques may be advanced, they often apply them inconsistently throughout the organization. Similarly, training on individual projects may be available but not uniform through any enterprise-wide program of professional training. Another characteristic of organizations at this level is the gap

between "official" documented testing processes and what is actually happening on the ground.

## Level three: walking strong

Organizations at this stage have overcome the obstacles of the first two levels. They have clearly mastered the basics, and it shows in their performance and processes. Here testing is conducted—even embedded—early in the delivery lifecycle. Yet despite the positives, this group still underperforms because, ironically, their strong focus on testing leads them to spend too much time and resources on testing—e.g., a more efficient use of resources would yield the same end benefits. For example, organizations at this level tend to rely on their controls to keep them on the straight and narrow path, but often lack the flexibility to learn from experience and improve upon their testing processes for future work.

## Level four: off and running

These organizations are almost fully evolved in their testing capabilities. They review deliverables throughout the development lifecycle, thereby minimizing defects and errors. They collect testing measurements to monitor progress and productivity, and evaluate software on key quality attributes, such as usability, maintainability and reusability. They minimize faults with this approach, which leaves them better able to address any remaining deficiencies. Still, at this level of testing, there can still be issues. First, delivery lifecycle reviews do not always focus on root causes but merely on fixing deliverables. Second, testing measurements must go beyond simply tracking progress

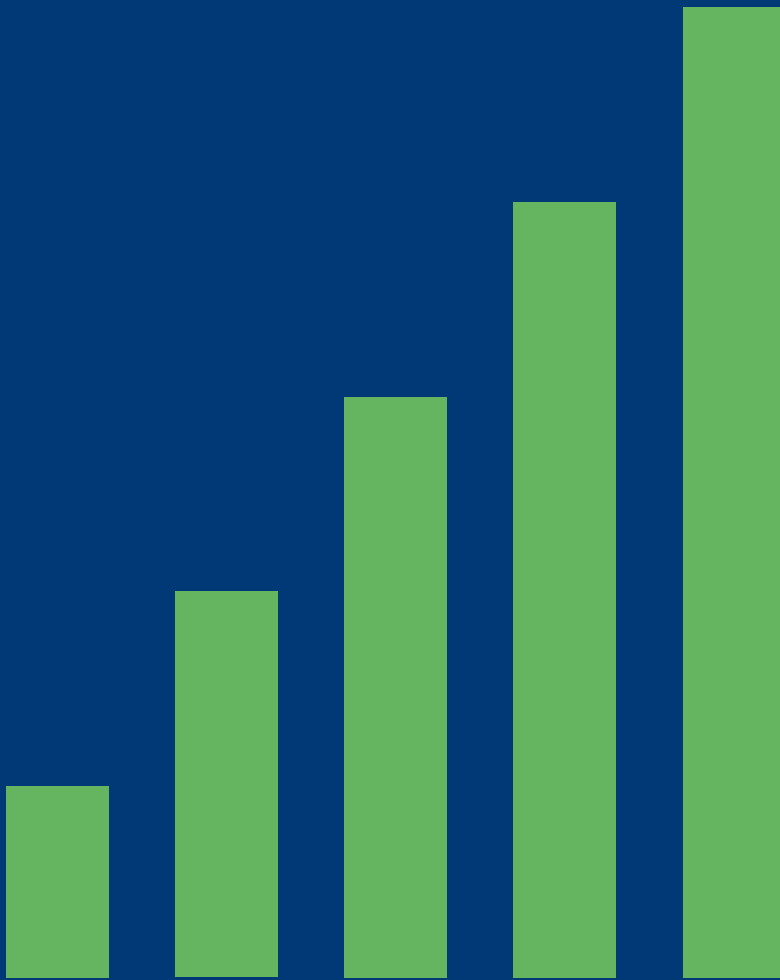
and productivity in order to maximize testing processes. Finally, organizations at this level need to build quality into the software sooner, rather than assessing the software for quality after the fact.

## Level five: achieving high performance

High performance in testing means continuously reducing testing inputs while maximizing testing outputs. The right toolkit for high performance helps organizations to:

- automate processes to conduct tests more rapidly
- apply statistics-based approaches, such as using orthogonal arrays to design test cases
- optimize error-detection coverage
- apply testing standards and quantitative criteria to determine success
- leverage a global sourcing model to manage costs and optimize workload

At this level, organizations can use root-cause analysis to identify and record reasons for defects. Root-cause analysis generates actionable data, resulting in continuous delivery improvements. Organizations at this level also perform periodic evaluations to improve all testing processes and artifacts, using and re-using proven testing templates across the organization. Most importantly, high performers track and evaluate test process improvements on the basis of results and actual business benefits delivered.



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# Testing the testers

So how does an organization know where its testing capabilities stand? The Accenture Test Assessment Framework builds on expertise and work from Carnegie-Mellon University's Software Engineering Institute (SEI) and The Illinois Institute of Technology (IIT). Our framework includes models, such as SEI's Capability Maturity Model Integration (CMMI®) and IIT's Testing Maturity Model (TMMSM), to leverage, combine and extend these capabilities to deliver a universal, standardized tool set that can improve testing strategy and performance.

Such frameworks help assess the scope of testing throughout the enterprise and demonstrate how testing can help create real business value—e.g., faster speed to market, lower costs, better business focus. Our framework supports two types of assessment: a high-level, short-term quick assessment, and a more in-depth, long-term full assessment when appropriate. The framework is standard, reusable and enables organizations to measure themselves on the testing maturity scale. This helps them to identify potential improvement opportunities and create further business value.

To optimize testing, organizations should implement best-practice processes to ensure they reap the benefit of standardized methodologies and tools. However, in many cases, organizations wish to avoid the capital investment required to build an in-house core testing competency. So it can make strategic and fiscal sense to take advantage of the right third-party services that provide geographic reach, capabilities and expertise for testing solutions.

For example, a large global bank asked Accenture to assist in the development of its overall testing strategy, supported by an appropriate testing organization. The engagement began with a handful of participants driving strategy. Over time, the team grew to incorporate retail banking testing activities as well, and today comprises several hundred testing professionals. More importantly, Accenture has reduced the number of defects found in the user testing phase and in production by 67 percent, and, in the first year alone, we were able to increase automated testing by 50 percent, with more improvements to come.

Today, Accenture employs more than 4,000 client-dedicated professionals in the Accenture Testing Center of Excellence, in both on and off-shore testing environments. A leading-edge testing center can transform an organization's processes and technology to deliver sustainable quality and high performance. It can lower costs, as well as raise the availability and quality of applications. It can also help evolve organizational culture in order to achieve the best in testing quality on a long-term basis. Such a center should have a staff well-versed in testing components, assembly and products for application development and application management. A top testing center should also be able to draw on best practices gained from dozens of engagements around the world and benefit from ongoing investment in the tools and proprietary technology necessary to enhance service and execution.

The global and highly competitive nature of business and government makes speed-to-market a priority.

Testing is a critical part of addressing that imperative. Companies cannot afford to linger on the lower rungs of the testing maturity ladder, suffering the consequences and lost opportunities due to underperforming applications that affect end customers. Ascending the evolutionary ladder of testing maturity can help organizations achieve high performance and yield dramatic return on investments. Yet before they make that climb, organizations must know where they stand as well as where they need to improve. The right assessment framework and testing centers can provide the services that speed the climb and deliver economies of scale en route, all of which help your organization make the grade for testing effectiveness and achieve high performance.

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# What's next?

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