Transformation to World Leading Quality:
Is Your Organization Ready?

As new technologies emerge and demand rises for faster time-to-market with the highest quality, QA organizations need to transform from traditional quality control to a predictive quality management function.

Executive Summary

The emergence of new-age technologies and the hyper-connected consumer space are demanding an alteration in the traditional time versus cost versus quality conundrum. Today, enterprises are under pressure to constantly deliver zero incident products in continuously shrinking development timelines. To succeed in the new marketplace, enterprises need to establish world-leading quality assurance (QA) functions, which will deliver quality products at faster-than-ever time-to-market and with the lowest possible costs. To achieve world-leading quality, enterprises need to transform their existing QA function along the axis of capabilities, processes, tools and measurements. The business and end-user outlooks on QA are core to such a cutting-edge quality transformation.

This white paper describes what it means to be a world-leading quality organization and highlights the necessary transformation levers. It also outlines the measures that should be used to define a successful transformation.

A World-Leading Quality Organization

A world-leading quality organization addresses the following four fundamental shifts in the business and technology world:

- **Zero defect shift**: Zero defect release is the new normal for software development. Customer quality intolerance and escalating cost-of-defect fixes warrant building it right the first time. Developing quality products needs precise requirements and a focus on an end-to-end integrated view of quality.

- **Agile shift**: The hypercompetitive marketplace requires enterprises to be nimble and develop new products with the shortest possible lead time. The rapid adoption of Agile and Agile-like methodologies is a testament to this shift. Delivering predictable quality across monthly or weekly releases requires that QA processes are redefined along the lines of Agile practices.

- **Technology shift**: Social, mobile, analytics, and cloud (SMAC) technologies are changing the way business is delivered. SMAC technologies are leading to the growth of new business models, richer customer experience products and innovative IT consumption models. Delivery of quality products over new technologies demands the development of new QA capabilities, nonfunctional testing practices and niche tools.

- **Value shift**: Today, quality is core to business philosophy. The increasing importance of quality in business has created a need for mani-
festing the business value of QA. Faster release of new products, quality-led competitive differentiation, customer endorsements and lower cost of business operations define the new objectives of a world-leading quality function.

Transformation to World-Leading Quality

The majority of the leading businesses worldwide have an established QA function with defined goals and objectives.

The transformational approach is centered along the key tracks of people, process, metrics and tools – as these form the basis of any QA organization.

The transformation to world-leading quality involves a well-defined and multipronged approach. Key tasks are carried out as specific, time-bound initiatives, each with quantifiable success criteria. A prioritization exercise is typically carried out to ensure that transformation tasks are tightly aligned with the organization’s business priorities. In sum, an effective change management process is the foundation for a successful transformation. The following are the four key transformation levers:

• Workforce.
• Processes.
• Measurement.
• Tools and infrastructure.

Workforce

Transforming roles is the most important and strategic aspect of quality transformation. Competency profiling, workforce development and managing organization culture are the keys to people transformation. Practical training with the principle of positive reinforcement must be a part of the cultural DNA and periodically activated to enable a consistently high-performing workforce that adapts to new technologies and methodologies.

The key benefits of transforming testing roles to end-to-end quality management roles is to facilitate, coach and govern quality across the lifecycle. This helps to reduce the overall cost of quality (CoQ) and defect density. It also increases the ability of the QA team to accurately assess risks based on design, code and build quality and to effectively perform risks-based testing to optimize testing costs.

Transformation is imperative across all IT roles to achieve world-class quality standards (see Figure 2 on the next page).

Processes

Processes have traditionally operated in silos. They are compartmentalized by the SDLC phases. One of the most important characteristics of a quality world leader is the seamless integration of processes across the SDLC. Processes must communicate with each other to produce the right quality of work output.

One of the significant aspects of process transformation is laying down the steps for adaptability.

New methodologies, such as the following, significantly help transform processes and work product quality:

• User advocacy.
• Unified test strategy.
• Test design automation.
However, new methodologies still maintain the agility of a quality organization.

Process transformation begins with a stock-taking “as-is” assessment of existing processes. Existing QA processes need to be analyzed for effectiveness and reusability.

**Quality Measurement and Analytics**
Quality measurements are often inadvertently coupled with effort and defect metrics within the testing phase or post release. The quality performance index (QPI) is a comprehensive metric which provides a holistic view of quality. QPI works in conjunction with earned value metrics such as the cost performance index (CPI) and the schedule performance index (SPI) to provide a unified view across cost, quality and schedule.

CoQ is a business measure that captures the total cost associated with testing and QA from requirements to application release.

Quality analytics helps in predicting the quality of a product as it moves in the development lifecycle. Advanced quality statistics using defect records, business process complexity, technology stack and defect flow can enable business executives to predict the downstream quality of in-progress products and applications.

The other important area is standardization of QA effort sizing metrics. Most organizations profess efforts to articulate the end quality of software. However, a world-quality leader establishes a standard sizing method such as function points and complexity points. Leading organizations

**Process Transformation**

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Figure 2

Figure 3
are adopting outcome-based quality models to transform the estimation behavior for IT teams.

Tools and Infrastructure
Tools and infrastructure transformation is the fourth lever for QA transformation. Many quality organizations have multiple toolsets across different divisions. The other reason for varied tools usage is emergence of niche technology-specific testing tools. The first step for tools transformation is consolidation and standardization of tools across the enterprise. The consolidation can be centered on activity-based tool standardization or stack-based consolidation. The next step is to integrate the tools used in silos to create a unified view of quality across multiple SDLC activities.

Advancement of cloud and virtualization technologies offers an exciting opportunity in the testing space. Cloud-based test environments help in the variabilization of infra costs by leveraging on-demand capacity provisioning and usage-based pricing. Cloud-based infra is being used for application performance analysis under peak demand. Simulation of applications and interfaces during integration testing is now possible by implementing service virtualization techniques. This not only helps in lowering costs, but also enables higher velocity for testing activities.

Achieving Success
How often do we hear that transformation achieved its desired business outcomes? One key to executing a successful transformation is defining baselines and establishing guidelines that enable the evaluation of achieving business goals. The following aspects are vital for achieving successful transformation to a world-leading quality organization.
Transformation Calibration
The success of transformation lies in measuring initial baselines and measuring improvements consistently.

The following are a few suggested measures for calibrating transformation as it is executed across the stages:

- Production defect leakage based on usage and delivered size.
- SDLC defect density by delivered size.
- QPI.
- CoQ across the lifecycle of software.
- Cost per function point.

Organizational Change Management (OCM)
This is the trickiest and also the most underrated piece in the execution strategy. Remember, not only the QA group but also other business and IT stakeholders are seriously thinking about adopting world-leading quality changes. Being a downstream function, QA needs to interact with business, development, infrastructure and production support teams. A carefully crafted OCM plan covers elements of organizational redesign, will-skill approach to transition, risk management, communication and governance.

Time-Boxed Plan
Transformation must follow a time-boxed approach with specific entry-exit criteria and deliverables at the end of the time period. This helps in determining progress toward the defined end point.

Looking Ahead
Existing market dynamics and changing customer profiles and demands require organizations to produce defect-free applications and services every time. Multiple avenues of service delivery, such as mobile and cloud-based applications, have enabled organizations to improve agility and shorten time-to-market.

Quick Take
Business Outcomes: Case in Point

A Fortune 500 U.S.-based insurer rolled out new insurance products across the North American market.

Challenge: At the first release, the new products rollouts went live with critical open defects. Visibility into quality was known in the testing phase only. The next rollout of products involved the adoption of mobile technologies and business analytics. The goal was to build quality right the first time, reduce overall CoQ and ensure on-time delivery.

To address this and truly promote a culture of total quality, the insurance company partnered with us to transform its QA organization to world-leading quality.

Transformation Initiatives
- Shift left task force, which ensures transformation in quality with emphasis on business collaboration.
- Workforce transformation initiative to build new competencies and training for IT and QA roles.
- Integrated quality control and CoQ models.
- QPI model to assess work products quality across SDLC.
- Tools and rule sets for structured static and dynamic code analyses.

Business Results
- Enterprise view of quality across the lifecycle with predictable outcomes, by using the QPI model.
- 12% savings in CoQ at the end of warranty.
- Zero post-production defects.
- Rollout that went live two months ahead of schedule.

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Change Management Solution

In the middle of all these market forces, companies must still provide overall business value to customers. Organizations need to transform themselves to meet these challenges effectively. A planned transformation exercise with an effective change management process is the way forward for organizations that seek to achieve world-leading quality organization status.

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