CONTINUOUS QUALITY ASSURANCE

Deliver great software the business needs
Your business is built on applications. These systems sell your products, manage your inventory and report on your revenue. In fact, your company has millions of customer, partner and employee interactions each year without any human contact at all. So it is imperative that your systems are efficient and perform as you demand.

**63% of all software projects don’t succeed.**

Chaos Manifesto 2010 – highlights that 63% of all software projects don’t succeed. This shows improvement from the Chaos Summary of 2009 which reported on 68%.

Quality in delivery of software projects is slowly increasing, and this is being affected by a greater move to iterative development projects such as agile. With industry reporting that approximately 40% of projects are now adopting an Agile Process. The 2010 Chaos report attributes the increase in success directly to projects resolved through agile process. This is also highlighted by the decrease in traditional Waterfall type projects which in the last 10 years represented almost 50% of all new application development projects, highlighting the drive for organizations to move to more adaptable flexible development approaches.

A decrease in Enterprise packages such as ERP or CRM is also viewed to have impacted the overall project success rate due to the complexity and risk of large enterprise packages such as ERP or CRM.

Indications with industry highlight that there is ever increasing focus on ensuring quality of delivery within the early stages of development projects, driven by the fact that organizations are focussing on cost and time to market. With focus on cost being so key to IT executives, building quality into the development process earlier on within the cycle becomes of paramount importance.

This has partially been satisfied by increased focus on ensuring that the applications which are developed are 'fit for purpose' and are validated to meet the business needs earlier on within the development cycle.

The increase in the number of organizations adopting an agile approach to development provides earlier visibility into the development of applications to the business teams and sponsors ensuring earlier verification and validation of what is being developed.

This therefore has direct impact on the cost and time aspects of delivery, by ensuring what you are developing and delivering is right at earlier stages of the cycle you increase accuracy on delivery of a project for cost and time – thereby reducing overruns within these areas. Chaos Manifesto shows that for 2010 cost overruns decreased from 54% in 2008 to 46% in 2010, with time overruns also decreasing from 79% to 71% respectively.

Conventional approaches to ensuring quality results leave you with little margin for error. This makes it difficult for you to:

- **Fulfill business needs**: Software isn’t developed in a vacuum but is created to solve business problems. However, the gap between what business users need and what development delivers can be wide. The two sides just can’t effectively communicate, with the result that delivered software doesn’t perform as needed. That is why The Standish Group estimates that 68% of software projects are unsuccessful – they simply don’t achieve what the business required.

- **Deliver quality on-time**: Applications can be complex. They may be built in .NET, Java, and Web 2.0 using agile, waterfall or scrum methodologies, for instance. Development and maintenance teams may be spread across the globe and may be outsourced, and they can rely on a mix of proprietary and open source tools and assets. This complexity means that change can’t be effectively managed, deadlines are missed and software may fail when needed.

- **Eliminate waste**: With extremely tight deadlines can you afford to waste nearly half of your developers’ efforts? That is today’s reality, as developers deliver capabilities that don’t match business goals and rework is a constant hazard. There is a steady cycle of defects being repaired. You need a new solution to assure business and technical quality in your outcomes.

So, how do companies address this challenge? They tend to do so through software testing that is concentrated at the end of development. That is, after requirements have been defined, test plans created and development completed, at last the code is turned over to QA for testing. As a result quality levels can only fail to meet the standard demanded by the business:

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1 Chao Summary 2010, The Standish Group.
• Business quality issues arise because end-user requirements change over time and aren’t reflected in development or in test plans.

• Technical quality issues occur because development teams are under tight timelines, and defects naturally creep into the software.

The result of this ‘correction cycle’ is that errors are up to 100 times more expensive to fix. When you are looking to boost efficiency and redirect resources toward innovation this waste must be driven out. Critically, it also leads to software that may not perform as the business needs. That can cause catastrophic failures of critical business processes.

**A new approach: Continuous Quality Assurance**

How do you address these challenges to deliver software that your business needs? Borland® helps.

Borland ensures that you efficiently deliver great software that the business demands through Continuous Quality Assurance. Rather than controlling quality only at the end of the development lifecycle after months or years of IT investment has been made, Borland provides solutions that ensure organizations are able to build quality into the early stages of the development cycle. The result is applications that meet business needs, with less risk and less cost.

Continuous Quality Assurance is an efficient, business-centric alternative to traditional vendors’ ‘last minute’ methodologies and provides capabilities across three key areas:

- **Requirements:** Borland uniquely combines requirements definition, visualization, and management into a single ‘3-Dimensional’ solution. This gives managers, analysts and developers the right level of detail about how software should be engineered. By cutting ambiguity the direction of the development and QA teams is clear and the risk of poor business outcomes is slashed.

- **Change:** Borland lets development teams regain control in their constantly shifting world. Development professionals and managers gain a ‘source of truth’ to prioritize and collaborate on defects, tasks, requirements, test plans, test script (manual and automated), and other ‘in-flux’ artifaxes. Even when software is built by global teams with complex environments and methods, Borland controls change and increases the quality of your outputs, whilst providing you with central dashboard reporting with real time visibility of key metrics and analytics.

- **Quality:** Borland automates the entire quality process, from inception through to software delivery. Unlike solutions which emphasize ‘back-end’ testing, our solution ensures that quality is built in at each stage of the development lifecycle – ensuring that tests are planned early and synchronized with business goals, even as requirements and realities change. Providing methodology-agnostic solutions which support organizations using iterative approaches such as agile, through to traditional methodologies whilst encompassing the process, practices and toolings within central test management hub is easily achieved.

This shifts the focus from removing defects to preventing defects; from a risky, uncontrolled approach to a predictable managed path and from enduring costs to confronting waste and focusing on innovation. In short, towards delivering great software that the business needs.

Let’s look at how Borland delivers this value in three areas:

1. **Continuous alignment of software delivery with business needs.**

2. **Continuous validation to efficiently deliver quality software.**

3. **Continuous visibility and control to deliver quality on time.**
1. Continuous alignment of software delivery with business goals

The goal of software development is to produce applications that give you competitive advantage. However, some strategies consider business needs to be an afterthought – something to be tested after software has crystallized. Continuous Quality Assurance takes a business-centric approach to the requirements process, emphasizing business needs at the point of inception, through development, and finally in quality assurance.

Capture ‘business intent’ of users

It is notoriously difficult for business users to communicate their needs to development teams. In fact, up to 70% of all production defects stem from poorly defined requirements. The reason is that defining requirements is complex – they come from numerous stakeholders, across geographies, and in disparate spreadsheets and documents. Often users can’t say what they need until they actually see it.

Borland enables development teams to capture the ‘business intent’ of the software. Unlike document-centric tactics for requirements management, Borland’s visual approach allows analysts and end-users to quickly prototype their applications. Users instantly see what their application will look like and how it will function. Unlike alternatives, Borland lets developers, analysts, managers and users interact via interfaces that matter, such as a browser-interface, so collaboration is assured.

70% of failed projects are due to poorly defined requirements

Even global teams can quickly collaborate on defining how the software should behave. Developers can ask the right questions and understand precisely what they need to develop. Including business users early in the process means, developers can proceed even as requirements change. In fact, comprehensive impact analysis tools let teams quickly spot how shifting requirements will affect their development activities.

QUALITY CHALLENGES

GOAL – EFFICIENTLY DELIVER GREAT SOFTWARE

COMMERCIAL IN CONFIDENCE

Figure 2: Match delivered software with “business intent”
Ensure that quality matches business quality

We know that unmanaged business requirements can lead to unexpected development outcomes, and that business needs also change over the course of a software development lifecycle. This means that quality assurance plans are often out of sync with the reality of the application under construction. It also can lead to test coverage being concentrated on areas of low-importance while critical business needs are inadequately evaluated.

Borland ensures that business needs are a main priority in the quality assurance process. Unlike quality approaches that focus only on technical perspectives, Borland lets users generate test cases that are matched to defined requirements. This ensures that even as requirements change, test plans are synchronized and risk points identified.

By offering the richest performance assurance technologies, Borland enables you to validate that your applications can scale to handle even the largest peak loads. Cloud-based options from Borland add more flexibility to your testing regime so you can ensure that global users will have access to applications that perform under stress. What’s more, Borland offers the most comprehensive testing automation to ensure that the delivered software not only functions as required, but also behaves in real world conditions as business users demand.

Tribune Media Services has regained control over the change management process. This provided faster project execution, improved team visibility into projects, and 25-50% time savings.

2. Continuous validation to efficiently deliver quality

With up to 80% of development budgets devoted solely to ‘keeping the lights on’ fewer resources than ever are available to focus on delivering quality. This carries the risks that applications that run your business are unresponsive to new business strategies. At the same time your budget is under intense pressure, making it imperative to remove waste in the process of assuring quality.

Borland offers a better approach. Our quality tooling is highly automated and built around visual interfaces and the notation of reusability. This ensures that tests can be run frequently and earlier in the development lifecycle, so that defects are caught and eliminated fast. And our range of testing tools range from unit testing, validating nightly builds, functional testing from manual to automated including mobile testing, through to performance testing with provision for Cloud Based testing and Mobile Testing. This allows users to spot and correct weaknesses rapidly across their application portfolio regardless of technology in use. With strong focus for Web 2.0, Mobile Testing across distributed architectures can be achieved, as well as within Mainframe solutions.

Whilst organizations are increasing the volume of automated tests across the development lifecycle – a large volume of tests within the functional area remain manual. Whilst manual testing remains key to all organizations – it is fundamental that organizations are able to make informed decisions around the planning, scheduling and prioritization of the testing – ensuring focus and effort addresses the business need.

Supporting this need the test Management tooling – Silk Central™ empowers managers to be able to efficiently plan what to test, where to test, who will test and when to test. In so doing ensuring that all business priorities are taken into account. Silk Central supports organizations with defining quality goals against both tests and requirements, allowing the planning and scheduling of testing to be aligned to the business needs with clear reporting and analytics regarding status within central dashboard reporting.
Continuous Quality Assurance

Ensure that developed code is quality code
Monitoring the quality of code as it is being developed is vital because it is always cheaper to detect and correct errors early in the development process. This applies whether you are developing in a waterfall, agile, scrum or another methodology. But how can development teams ensure that the code they produce meets accepted standards for quality?

Borland’s development tooling gives users instant access to quality tools that spot inefficiencies and poor coding practices. Integration into IDEs means that developers become first-class participants in quality initiatives rather than relying on an end-of-game quality enforcement model. Because Borland makes quality a continuous process, one that doesn’t start at the end, waste and rework are driven out earlier in the lifecycle.

How can you make everyone in the organization obsessed with delivering high quality code? Borland provides flexible tooling that lets developers, quality assurance professionals, business analysts and others test while code is still in development. Everyone in the process becomes a ‘quality agent’ through a ‘visual’ approach geared to different usages.

This flexible approach aligns with traditional and agile methods and applies to applications developed in .NET, Java, and even Web 2.0. Managers can monitor for adherence to quality standards even in highly heterogeneous environments.

Automate quality practices to slash costs and rework
We’ve seen the cost of leaving quality assurance to the end of the lifecycle, but for many organizations this is done out of necessity. Testing for some companies may be largely manual, expensive to conduct and time-consuming. This leads to quality processes that wait until the back-end of a project and are incompletely applied.

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“We stay within budget by minimizing misinterpreted requirements and eliminating rework late in the design cycle. Our goal, which I believe we can meet, is to reduce the amount of rework related to requirements by at least 50%.”

Terry Tutt, director of technology services at CEVA Logistics

ROOT CAUSE – LAST MINUTE QUALITY APPROACHES

Figure 4: Make every participant a “quality agent”

Figure 5: Automate quality practices to meet business goals
3. Continuous visibility and control delivers quality on time

Business complexity is compounded by the complexity of the development process. Development organizations have to deal with software written in diverse languages, from Java and .NET to Web 2.0. At the same time they rely on diverse toolsets and methodologies to accelerate development. These elements combine to increase the risk that software will not perform as expected or will be delivered late.

Continuous Quality Assurance gives you visibility and helps you stay in control even during large and complex changes. Borland provides a seamless connection of quality technologies – from requirements definition through testing – unlike silo’d strategies that separate business users and developers from the quality process.

Stay in control of change

Application development is an extremely complex set of activities which are often in flux. Environments change, requirements change, test plans change and more. Each of these moves has a significant impact on how developers and quality assurance professionals respond. At the same time managers must understand the current status of changes.

Borland lets development organizations control change in their processes. Global teams can create and update assets related to the SDLC. Software defects, change requests, development tasks, testing plans and requirements can all be viewed, updated, and managed from Borland technology.

The Borland approach emphasizes an open framework to address complexity. This architecture enables teams working in .NET, Java, and other environments to collaborate. It ensures that 3rd party and open source tools are integrated into Continuous Quality Assurance, providing visibility into your progress toward delivering high-quality software.

This ‘central source of truth’ lets teams efficiently synchronize and collaborate to deliver higher quality code with less risk – across diverse development tooling, processes, or environments.

“The pace of change was accelerating at an unbelievable rate. We needed a solution that was powerful enough to help us keep pace. Our development organization was going agile, and we needed to adapt – and our QA solutions needed to be able to adapt right along with us.”

Marc Nadeau, Senior Director of QA, Blackboard
BlackBoard saved 200,000 hours in just one year and enabled 600 hours of testing each night.

Ensure release readiness

Development and maintenance is about delivering applications that the business needs. But how can managers ensure that the software that they plan to release is indeed ready? Managers need visibility into application quality as it moves from inception to delivery. Are defect rates declining below thresholds? Will the application perform as expected? Can the system handle expected loads?

Managers must know the answers to these questions before giving a release the green light and in order to make the complex development process more predictable.

- Borland provides a centralized quality management platform. Managers use the dashboards to instantly track and trend risk exposure, defect rates, change volatility and more. Thorough test coverage analysis ensures that even as applications and requirements change you will have tested your code thoroughly.
• Users can integrate information and the ability to control diverse test assets from across tools, from across methodologies and from across teams. This gives managers unmatched ability to synchronize tests and ensure coverage.

• Critical metrics are available ‘front to back’ throughout the process. Managers can review their dashboard at any stage in the development lifecycle and reallocate resources as necessary to correct problems in a timely manner. Powerful diagnostic capabilities help users to correct performance issues before they become business outages.

Conclusion
Continuous Quality Assurance provides clients with a comprehensive ‘front to back’ approach to delivering technical and business quality.

• By bringing the business and end-users into the process early, Borland ensures that actual business requirements are always the priority. This means that software under development and test is continually aligned with the needs of business users.

• By providing an open framework that integrates diverse toolsets, teams, and environments, managers gain continuous control and visibility over the development process, ensuring that quality output is delivered on-time.

• By ensuring correct deliverables, automating test processes, and encouraging reuse and integration, the Borland solution continually and efficiently validates your critical software.