

Why Test?



We all know that Software Development is an activity which is creative and challenging. The problem is that humans, as Jerry Weinberg highlights, are not perfect thinkers! We also make mistakes when we are distracted or under pressure and regardless of how good our thinking is we certainly are not perfect implementers. Therefore as a result there is a chance with every piece of Software Development that something important might go wrong – with potential consequences!

When good (context-driven) testing is performed it allows several business objectives to be achieved. These revolve around four key aspects:

Inform

Good testing is a process of discovery that can significantly improve our knowledge of project / product status in a number of ways:



Gerald M Weinberg, *PERFECT SOFTWARE and other illusions about testing*, ISBN: 978-0-932633-69-9, 2008

Summary:

- Mistakes in software development can be extremely costly, brand damaging and even life threatening!
- Good testing
 - **provides qualified information** on quality vs your requirements
 - **reduces cost, risk, time to market** and the **timescales required to successfully implement business change**
 - **ensures delivery of business value** and enables successful innovation and process improvement
 - **protects your brand** and your investment in systems and technology as well as maximising the business value they deliver now and in the future

Provide Information – Testing can provide clarity of requirements and quantification of risk thereby helping to assure the quality of the software / systems under test. This enables the business to make confident and informed release decisions, with a known and accepted risk profile, optimising release timeframes.

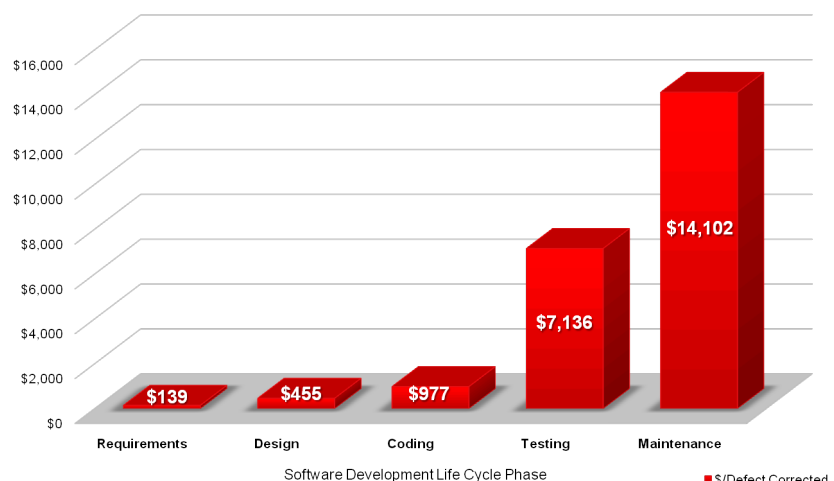
Quality Assessment – Finding defects before release is often seen as one of the main objectives of testing and by doing so effectively and efficiently you can work with the development team to assure the quality of the software you are implementing leading to cost saving.

Evidence of requirements being met – Another key objective of testing is to provide a means to demonstrate that requirements have been satisfied. This doesn't just apply to the functional requirements but also to the non-functional ones such as performance, usability and reliability.

Mechanism for control / acceptance of supplier delivery – Where the solution being delivered is based wholly or in part upon externally developed software testing can provide a robust mechanism for control / acceptance of supplier delivery.

Cost Of Correcting Defects

Source: B. Boehm and V. Basit, "Software Defect Reduction Top 10 List" IEEE Computer



Assurance against Standards – Where there are industry, regulatory or legal standards that must be met you are able to clearly demonstrate compliance.

Reduce

Cost – the cost of failure is generally higher the later defects are found. Good testing will find defects earlier and their efficient removal will reduce both the direct cost of failure and the lifetime cost of system maintenance.

Residual Risk – Depending on the context of your software / systems the risk profile of implementing change can vary massively. In safety critical environments this can mean reduced risk of personal injury or even death. In more general terms there will be a reduced risk of project overrun/spend or even project failure.

Efficient and effective testing will identify defects and their removal will lower the level of residual risk. When the business is actively engaged in test planning, alignment with their goals and objectives will result in a corresponding reduction in business risk.

Time – Rework is the hidden enemy of all too many projects and the reduction in rework achieved by early removal of defects found in good static and dynamic testing will result in both faster time to market and reduced timescales to implement business change. This will result in faster, more responsive IT.

Deliver

Business Value / Benefits – Using risk and benefits based reporting you can demonstrate that the business objectives and their associated benefits have been achieved and quantified business value is added by every project.

Successful Innovation – The introduction of new and innovative technologies and business processes comes with many challenges. The best way to ensure they are delivered fit for use by the business is to thoroughly test them both from a functional and non-functional perspective.

Process Improvement – Perhaps ultimately the most important objective of testing is to facilitate and encourage process improvement through effective defect prevention.

By applying the lessons learnt from root cause analysis and project retrospectives, you can significantly enhance your ability to both assure and ultimately improve the quality of your development and testing processes. By giving a better understanding of where and how defects are introduced, as well capturing data on where they are being captured, you can implement effective and powerful quality assurance rather than just quality control.

Increased Confidence – By understanding how well requirements have been met and the scale of residual risk you can achieve increased confidence of successful implementation giving higher certainty of outcomes.

Protect

As a consequence of all of the above good testing is capable of offering protection from adverse impact on your business.

Reputation – When you have spent considerable time and effort establishing your organisation's reputation it makes sense to protect it from the considerable damage that poor quality can very quickly cause.

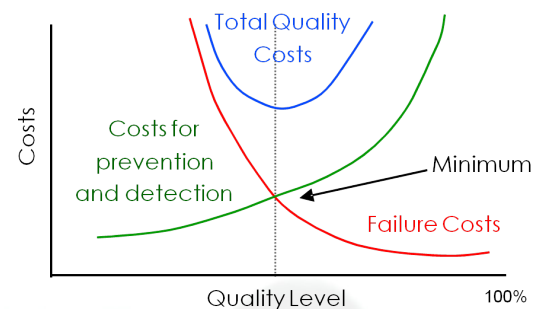
Brand – Whatever your business the quality of what you deliver to customers sets the benchmark for how you are perceived against your competition.

Business Value – Your IT systems are a vital part of your business and without the functionality and value they add it is not an understatement to say you will struggle to survive. Good testing ensures that you can implement change with the confidence your existing functionality continues to operate as expected.

Investment – You have probably spent considerable time, effort and money to build and maintain your systems. This investment must be protected and good testing will ensure lower lifetime costs and maximise the value of your IT investment.

Future Plans – The ability to grow and develop your business is dependent on many things. Being able to accurately predict outcomes and the degree of confidence in your ability to deliver quality systems on time and on budget are key factors. Good testing will increase confidence and reduce risk.

Bottom Line – In the current economic climate all businesses, regardless of their purpose or sector need to carefully consider their bottom line. Good testing can ensure total quality costs are appropriate to the business operating model you are using.



Source: Juran, 1988

James Bach and Michael Bolton in their Rapid Software Testing training course emphasise the role of testers to 'light the way'. Testing has a vital role as 'the headlights of the project' – if you need to make important decisions about quality then they need to be informed decisions and you need to test!

The cost of **not** testing will be:

- Increased cost and risk
- A reduction in your ability to respond to and facilitate business change
- Damaging to your brand
- Damaging to your business.

For further information please see www.sopragroup.co.uk/services/testing or contact info@sopragroup.co.uk