

Issue
18 THE
TESTER
December 2006

NEXT CONFERENCE

**Thursday
14 December 2006**

**Time And Test
Wait For No Man**

- Preventative Testing
- Formal Reviews – improving results
- Using Orthogonal Arrays
- Steps towards quality governance
- Web technology for testers
- Improving Test Quality
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- Test automation model
- Communication, leadership and innovation.

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Please note that any views expressed in this Newsletter are not necessarily those of the BCS.

FROM THE EDITOR

Here we are near the end of another year! Our next conference is on Thursday 14 December at which we welcome Rick Craig as our Keynote Speaker and a packed programme of interesting speakers to fill the programme for the day.

This time Lloyd Roden, our Programme Secretary, has introduced some mini-tracks of just 20 minutes. He plans to include mini-tracks at future conferences, so if you have thought of presenting a paper but found the prospect of 40 minutes a bit daunting then please contact Lloyd or me.

As our December conference is in the festive season we have a guest presenter with a difference to bring the day to a close. Neil Mullarkey from the Comedy Store will provide a presentation about communication, leadership and innovation in the workplace and we hope you will find this to be an entertaining end to the day.

I am pleased to include articles in The Tester this month from two members Kevin Buchta and Martin Cunnington. My thanks to both. If you would like to include an article in future issues then my contact details are below!

The December conference is likely to be very well attended, so please book your place early! See you there!

Pam Frederiksen
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BCS SIGIST website: www.SIGiST.org.uk

SIGIST Standards Working Party: www.testingstandards.co.uk

SIGIST UML Testers Forum: www.umltesters.org

FUTURE SIGIST CONFERENCE DATES

13 March 2007

13 June 2007

BOOKING INSTRUCTIONS

1. Download a booking form from:
<http://www.SIGiST.org.uk/bookingForm.pdf>

A. Complete and fax to:	OR B. Post to:
Phil Dyson 01793 417444	Phil Dyson Specialist Groups Officer First Floor, Block D North Star House North Star Avenue Swindon SN2 1FA

NEXT MEETING – PROGRAMME

BCS SIGIST – Time and Test Wait for No Man Thursday 14 December 2006 Royal College of Obstetricians and Gynaecologists, 27 Sussex Place, Regent's Park, London NW1			
08:30	Coffee & Registration, Exhibition opens		
09:25	Introduction and Welcome – Stuart Reid, SIGIST Chairman		
09:30	Featured Speaker		
	Preventative Testing <i>Rick Craig, Software Quality Engineering, Inc.</i>		
10:30	Networking session and commercial break		
10:45	Coffee & opportunity to visit the exhibition		
11:15	Formal Reviews – how to radically improve your results <i>Fran O'Hara,</i> <i>Insight Test Services</i>	Featured Speaker	Workshop: Web technology for testers; testing beneath the GUI <i>Paul Gerrard, Gerrard Consulting</i> Please bring a wireless enabled laptop
12:00	Steps towards achieving Quality Governance™ <i>Sarah Saltzman,</i> <i>Compuware</i>	Workshop: Using Orthogonal Arrays and All Pairs in Test Design <i>Rick Craig, Software Quality Engineering, Inc.</i>	
12:45	Lunch & opportunity to visit the exhibition		
13.45	Mini-Track Improving 'Test Quality' through 'Quality Stubs' <i>Lee Clifford,</i> <i>Virgin Mobile</i>	Mini-Track Test Automation Model <i>Nitesh Shah,</i> <i>CapGemini</i>	Workshop: Web technology for testers; testing beneath the GUI <i>Paul Gerrard, Gerrard Consulting</i> Please bring a wireless enabled laptop
14:05	Featured Speaker		
	Testing as a Measurement Activity <i>Rick Craig, Software Quality Engineering, Inc.</i>		
15:00	Tea & opportunity to visit the exhibition		
15:30	Featured Speaker		
	Improvisation <i>Neil Mullarkey, The Comedy Store.</i>		
17:00	Closing Remarks		

The SIGIST committee reserves the right to amend the programme if circumstances deem it necessary.

ANNOUNCEMENTS

SIGIST Library

Looking for a testing book but not sure which topics are covered? Or are you trying to decide which testing book to buy? Or do you simply want to increase your testing knowledge? If the answer to any of these questions is 'yes' then the SIGIST Library could help!

The SIGIST Library has lots of testing books covering a variety of topics and they are available to borrow for a period of 4 weeks - free of charge. Extended loans are allowed as long as the book has not been requested by another SIGIST member.

Topics include (amongst others) Requirements testing, Reviews/Inspections, Test Management, Techniques, Test Process Improvement

If you would like to know more about the library and books available, or for any queries, please contact Julie Gardiner on 07974 141436 or email her at gardinerjulie@yahoo.co.uk. Alternatively, download the book loan form on the SIGIST website www.SIGiST.org.uk. Happy Reading!

UML Testers' Forum

Are you interested in model-based development and testing? If so, we invite you to the next UML Testers' Forum meeting on Monday 18th December at the BCS's London offices, Davidson Building, 5 Southampton Street, London WC2E 7HA.

The main presentation is entitled 'From Use Case to Test Case' and describes a UML development project from a tester's perspective. The meeting is from 1300-1600hrs and is preceded by a light buffet lunch at 1200hrs. For full details of the programme and to register for a (free) place please visit the Forum's website at www.umltesters.org."

ABSTRACTS AND BIOGRAPHIES

Featured Speaker:

Rick Craig, SQE Inc.

Author: "Systematic Software Testing" Preventative Testing

Abstract:

It is common knowledge that the longer it takes to find and fix a defect the more it costs.....Several effective techniques such as inspections and reviews have been used for years to facilitate the early detection of defects. There are, however, other lesser known techniques that have been successfully employed by progressive engineers for an equally long period of time. We call these techniques, simply preventive testing. In a nutshell, preventive testing is the concept of using test cases as a way to model the requirements specifications before the design and coding of the system begin. When testers create test cases, they are focusing not only on whether the system works correctly, but on how it might fail. Most testers have written test cases that they knew would fail before they ever even executed them!! If those tests were written early, many defects could be prevented all together.



We do concede, however, that often there are no viable requirements specifications, which makes preventive testing problematic. In this instance, we employ a preventive technique known as "inventories" as a way of determining the functionality of the system from a testing perspective. Together these techniques are an effective addition to the techniques available to testers.

Learn:

- How testers can improve the quality of requirements specifications
- How testers can discover defects prior to the design and coding of the system
- What to do when adequate requirements specifications do not exist
- Shortfalls of preventive techniques.

Biography:

Rick Craig is a frequent speaker at testing conferences and is well-received worldwide as a test and evaluation instructor. He has implemented and managed testing efforts on large-scale, traditional, and embedded systems, and co-authored a study that benchmarked industry-wide processes. Rick is also co-author of *Systematic Software Testing*.

Fran O'Hara, Insight Test Services Formal Reviews – how to radically improve your results

Abstract:

We all know formal document and code reviews are supposed to be a great way to find major problems/defects early in the lifecycle. Reviews should improve product quality and help reduce timescales and rework costs as well as being a good way to learn and build capability in teams.

Most of us are doing reviews in some form or another so everything is OK, right? WRONG! Most formal reviews are poorly planned and managed and are not delivering anything near their effectiveness potential.

Also, testers need knowledge to test – reviews are a practical way to gain much of that requirements/system knowledge. Testers are excellent at finding documentation faults so their involvement adds considerable value. Key documents that benefit significantly from collaborative review involving developers, business analysts, users and testers include User Requirements and Functional Specifications as well as Test Strategies and Plans

This presentation will take the main industry reported pitfalls as well as participants issues with reviews and present an approach to formal reviews that

- addresses issues such as poor buy-in from reviewers, poor planning, lack of preparation, inefficient meetings, etc.
- is practical, efficient and, most importantly, effective (finds a high percentage of major faults)

A light weight definition of the peer review process with supporting templates and review checklists will be made available.

Biography:

Fran is (co)founder and director of

- Insight Test Services (2003), providing test consulting, training and managed test services,
- Insight Consulting (1996), providing process improvement services, and
- RPI Alliance (2002), advancing process improvement know-how.

He specialises in pragmatic approaches to process improvement and associated best practices with a particular emphasis on people issues.

Fran is a regular speaker at process improvement and testing conferences and seminars, including ICSTest, SofTest, BCS SIGIST, EuroSTAR, European SEPG and the U.S. SEPG. He is an ISEB/ISTQB tutor, a trained SEI CMM lead assessor and TickIT auditor, a fellow of the Irish Computer Society and co-founder of the Irish SIG in Software Testing - SoftTest.

Previously he worked as development manager in the area of safety-critical software for implantable defibrillators in Australia and in solid-state physics research in the Netherlands.



Sarah Saltzman, Compuware

Steps towards achieving Quality Governance™



Abstract:

Today's IT organisations face many challenges, from cutting costs to enabling business innovation. IT is an integral part of business today, which means that a focus on quality is a high priority. Quality must be built in to every phase of the development lifecycle; from requirements gathering through to testing.

In conjunction with Forrester, Compuware commissioned a study on quality initiatives within large IT organisations to determine how quality is perceived and what steps are being taken to ensure that Quality becomes an integral part of the business of IT. In this presentation Sarah will share the results of the survey and introduce Compuware's Quality Maturity Model, which can be used to determine your level of quality maturity within your own organisation. Sarah will then break down each phase of the model giving insights in to approaches that can be taken to improve software quality at each phase of the model as we move from Quality Control to Quality Governance™

Biography:

With more than 21 years experience within the IT industry, Sarah has a thorough technical and business level understanding of user and management requirements from mission-critical software applications. Sarah joined Compuware in 1995 and is responsible for innovating solutions that meet specific Quality and Governance requirements for key Compuware clients.

As a frequent speaker at trade shows, seminars and user groups etc., Sarah is Compuware's European spokesperson on all quality, risk management, project management and testing issues. Sarah is also involved in Compuware's business development and partner liaison within the European software quality market and is a key influencer to Compuware's product management division regarding the future direction of our software quality solutions.

Prior to Compuware, Sarah held various pre-sales, consultancy and database/programming positions at Sequel Ltd (latterly Platinum Technology), Safeway plc and Dixons plc. Sarah holds a Diploma in Management from the Institute of Leadership & Management.

Featured Speaker:

Rick Craig, SQE Inc.

Author: "Systematic Software Testing"

Workshop: Using Orthogonal Arrays and All Pairs in Test Design



Abstract:

Trying to determine what to test is always a challenge, but in some systems the sheer number of possible combinations of parameters seems overwhelming. For example, if a system had 13 different parameters and each one could take on 3 different values, the number of combinations would exceed 1.5 million. Using a technique like all pairs it is possible to test all pairwise input combinations with just 15 test cases!! All pairs and orthogonal arrays are very useful tools when used under the right set of circumstances. Like all techniques, they involve compromise and a certain degree of risk. In this tutorial you will learn the basics of orthogonal arrays and all pairs and learn when these techniques may (or may not) be useful. All attendees will do a manual mapping of a problem on to an orthogonal array.

Learn:

- How orthogonal arrays can greatly reduce the number of tests required
- Why these techniques may cause black box testers to overtest.....
- Why it is important to understand the dependencies of the parameters
- Why it is important to conduct risk analysis and/or user profiles in addition to orthogonal arrays/all pairs
- Whether it matters if you choose orthogonal arrays or all pairs?
- How to use one of the available free tools.

Biography:

Rick Craig is a frequent speaker at testing conferences and is well-received worldwide as a test and evaluation instructor. He has implemented and managed testing efforts on large-scale, traditional, and embedded systems, and co-authored a study that benchmarked industry-wide processes. Rick is also co-author of *Systematic Software Testing*.

Paul Gerrard, Gerrard Consulting

Author: "Risk-Based E-Business Testing" Workshop: Web Technology for Testers; testing beneath the GUI



Abstract:

- How do the web and web pages work?
- How can free tools be used to test websites?
- When can I start testing my own website with tools?

Most system and acceptance testing of web and internet applications is still done manually. The test automation tools that do exist are all GUI-based, proprietary and expensive. GUI test tools are incredibly sophisticated and usually require programming skills to operate. Most of the complexity is required to deal with the vagaries of the GUI, not the essential tests themselves.

Testing Frameworks are emerging as the required 'front-end- to' test execution tools. But what is happening here? The complexity of the GUI is managed by two test tools and the browser. We aren't testing those, are we?

For the purpose of most functional testing is to execute transactions on the web server and supporting infrastructure. The browser is just a means of presenting a usable interface to a human being.

What if we separated our tests into those which require the user interface, and those which do not? The tests that must use the user interface can be run manually or using a proprietary tool. We can use free tools to test under the GUI. These tools are much faster, simpler and easier to use than GUI test tools.

Bring a laptop and use a real tool to test on our portable wireless networked environment. Bring a laptop with wireless capability or a 5m standard network cable.

Biography:

Paul is the founder and Principal of Gerrard Consulting, a services company focused on increasing the success rate of IT-based projects for clients. He > has conducted assignments in all aspects of Software Testing and Quality Assurance. Previously, he has worked as a developer, designer, project manager and consultant for small and large developments using all major technologies and is the webmaster of gerrardconsulting.com and several other websites.

He has degrees from the Universities of Oxford and London, is Web Secretary for the BCS SIG in Software Testing (SIGIST), Founding Chair of the ISEB Tester Qualification Board and the host/organiser of the UK Test Management Forum conferences. He is a regular speaker at seminars and conferences in the UK, continental Europe and the USA and was recently awarded the "Best Presentation of the Year" prize by the BCS SIGIST.

Paul has written many papers and articles, most of which are published on the web. With Neil Thompson, wrote "Risk-Based E-Business Testing" – the standard text for risk-based testing. He is a regular keynote speaker and tutorial presenter and has presented over 200 talks at conferences in the UK, continental Europe, USA and Australia since 1993. He is also a coach for Maidenhead Rowing club.

Lee Clifford, Virgin Mobile

MINI-TRACK: Improving 'Test Quality' through 'Quality Stubs'

Abstract:

This presentation will explain how the Virgin Mobile Test Team re-wrote the existing static stubs used within our Test and Development Environments. The dynamic capabilities of the new stubs created has enabled more meaningful testing, both at Component level and when testing systems integration. This has resulted in increased systems coverage, and has also reduced the dependencies on connectivity to 3rd Party test systems.

The main aim of this presentation is to provide some generic ideas regarding best use of stubs, analysis of current use and future stub development. However, by describing how the VM Test Team developed their new stubs, it will also provide some detail regarding the use of the Green Hat Tester tool used for all Stub Development.

Biography:

Lee Clifford is the Senior Technical Tester from Virgin Mobile in the UK. He has worked in Software testing for over 3 years, with Virgin Mobile UK but has also spent some time with the Virgin Mobile USA Test Team in San Francisco. Lee was the key driver and developer of the 'VM Test Team Stub rework' project.



Nitesh Shah, CapGemini

MINI-TRACK: Test Automation Model

Abstract:

In his presentation Nitesh will describe the Automation Model (N Model) and how this fits with the traditional V-Model approach. The N model has a number of extra stages relating to test automation:

- Test Automation Strategy
- Test Automation Architecture
- High Level Plan
- Low level design
- Scripting.

Nitesh will briefly explain the purpose of each of these documents and their associated importance in the development lifecycle and how they can be used to improve your test automation regime.

Biography:

Nitesh Shah is the Test Automation Leader on E Delivery for the Aspire project within CapGemini. As a Test Automation leader he provides technical expertise generating automation strategies, architecture documents and low level plans. He has also designed and developed automation infrastructures and scripts. He has worked in testing for over 6 years for a variety of different organisations and industries.



Featured Speaker:

Rick Craig, SQE Inc.

Author: "Systematic Software Testing" Testing as a Measurement Activity

Abstract:

Testing is a measurement activity. Testers and test managers must collect metrics on the quality of the software under test and of the testing process itself. Collecting, analyzing, and using metrics can be difficult and the problem is further complicated because many developers and testers feel that the metrics will be used "against them". No metric is perfect and all metrics suffer from inconsistencies in collection and interpretation. Rick will address some common metrics such as measures of product quality, defect removal efficiency, defect density, defect arrival rate, testing status, when to stop testing and the benefits and pitfalls of each. He will provide some measurement guidelines, rules of thumb, and tips on how to avoid "metrics dysfunction".



Learn:

- The relationship of testing to development
- Some common and uncommon metrics
- What measures can do for you
- Measurement pitfalls and problems
- Measurement guidelines
- How to avoid measurement dysfunction

Biography:

Rick Craig is a frequent speaker at testing conferences and is well-received worldwide as a test and evaluation instructor. He has implemented and managed testing efforts on large-scale, traditional, and embedded systems, and co-authored a study that benchmarked industry-wide processes. Rick is also co-author of *Systematic Software Testing*.

Featured Speaker:

Neil Mullarkey, Improv. Improvisation

Abstract:

Neil will introduce improvisational theatre skills and to consider how they could be used in the business world where communication, leadership and innovation are much in demand. There will be a range of exercises - individually, in pairs and altogether. The workshop is highly interactive and great fun, but participants will begin to understand more about their own thought processes and begin to embrace new approaches as well as their own and others' creativity.

Biography:

Neil Mullarkey is a comedian. He co-founded Britain's top improv troupe, THE COMEDY STORE PLAYERS in 1985 and continues to improvise with them twice a week at London's famous Comedy Store, alongside Paul Merton and Josie Lawrence. His many credits include Austin Powers movies (International Man of Mystery and Goldmember), Whose Line Is it Anyway, I'm Sorry I Haven't A Clue, Just a Minute, and the recent series of QI. He runs workshops using improv techniques and has worked with many organisations including the BBC, KPMG, Saatchi & Saatchi, the NHS, The LloydsTSB, Unilever, Vodafone and BP. For more information about Neil and his workshops, visit www.Improvyourbiz.com.



ARTICLE: GONZO QA: FEAR AND LOATHING IN THE MORNING

By Martin Cunnington

I arrive at work somewhat frazzled. I had set off an hour early in order to storm up a mountain of work before the mist had lifted but events have conspired to make me arrive at my desk 30 minutes later than usual. I log on to my PC knowing there will be a 15 minute delay between entering my username and password and seeing the desktop, due to network policies, virus scans and Windows patches. Every day this happens. Note to self: raise this to IT Support once more. Two hundred people at an average of £50 per billable hour waiting 15 minutes is, ooh, £2,500 per day lost income, around £625,000 per year. I'd commit to fixing that for half the price, cash in hand, no questions asked. Fortunately my diary is paper-based and the café around the corner is staffed by Croatians with a vigorous approach to coffee-making. As I wait, I plan my day with a vengeance, knowing that whoever booked me yesterday for work due today will get priority over anyone trying to book me today for work due yesterday. I kill the next 14 minutes by taking a walk round the building. There's no one in. Reasons will vary from "my goldfish was poorly in the night" through "my social worker wouldn't bail me" to "I forgot". "I was working till midnight" there's no argument with. Commitment to the work, each other, the client is all.

I'm in. Start Outlook, MSN Messenger (isn't the new Windows Live Messenger limp?), Yahoo! and Gmail. Much Spam has arrived overnight, so I take a quick look at what's getting through; is there anything new or clever of which we should take note? No. There never is, but you never know; inspiration comes from the strangest places. Much of the bulk-mail we sent out last night has come through as well, so I take a quick look at that while I'm on. It's far too late to correct anything that has gone out, but it's never too late to spot mistakes and learn. Here's an unusually long newsletter from one of our clients that, yes! It has the body copy repeated twice. Fortunately it's not one of ours. Ha! It's tempting to dump on the other agency that sent it but discretion is the better part of valour. Unless you're pitching for new business, of course.

My schedule has changed overnight. There's a bunch of unlikely looking assignments which would be better handled by others in my team. Click, click and the reassignments are complete. I like this new scheduling system. It was an internal and thus non-billable project, so we didn't have time to test it. The Technical Director says this means it has no bugs. I like the Technical Director. There's some new business, so obviously that's top priority. Then there's a task due yesterday which wasn't ready to test but now is, so that's obviously top priority. Then there's an email about a project I have never heard of which was due last week, so that's obviously top priority. And here's an escalation to bring a task due tomorrow forward to today. It's marked top priority. By virtue of the power vested in me, I reject the whole lot. This clears my schedule to allow me to concentrate on the future. Now that's top priority. Anything I can do now to reduce the risk of projects going pear-shaped in the future is worth the effort, assuming of course that the projects are real, the risks are high, mitigation factors are available, the costs billable and the clients are up for it. Assuming quite a lot of things, actually. Maybe I should talk to the project managers before I go on.

I have half an hour before a project status meeting, so I will just check these banners. What can go wrong with Flash banners? The concept is story-boarded, the copy written, checked and signed-off. The height and width are specified, along with the number of rotations, the maximum file size and the version of Flash required. The requirement for GIF back-ups is stated and so is the type of click-through code. Into the banner test harness we go (another internal and thus bug-free application). Hmm. The brief I am reading did not reach the person who did this work, at least not all of it, or possibly this release. Not only that, but not all of the banner is clickable and the background is transparent and not solid. I've not seen that before. Note to self: add to list of cruel and unusual bugs. An hour later I have missed the project status meeting discussing banner production with the person responsible. It turns out she means well but is new and hasn't been inducted. It is difficult to get medieval on someone who should have been trained to know better but hasn't. I'll reserve that for the Creative Director. Talking of whom, here he is now, dazed smile on face, award in hand, last night's formal dress jacket draped over shoulder. We like awards. Especially big shiny heavy ones we can use to prop open doors when the air-conditioning is jammed on hot all summer (e.g. this summer). We spend 27 minutes congratulating each other on another outstanding agency success and I almost forget what I came here to do. We spend three minutes discussing Flash banner production. It turns out that all we had to do was to localise some banners developed in the USA to suit the UK market. The issues I described were present in the supplied originals and are therefore

not ours to fix. We succumb to 'Not Invented Here Syndrome' for a few moments and then decide to fix the banners regardless. Note to self: We must define and agree minimum specifications for assets we will accept from third-parties. This will make it easier to identify faulty asset deliveries and have them sent back for rework at their cost, not ours.

I walk back to my desk and check my watch. Is it lunch-time yet? I need to speak to HR about developing an induction programme for new hires. We traditionally drop people in at the deep end. Sink or swim! Only the fittest survive! It's the agency way! But the turnover of new staff this year is unsustainable. It's time to stop filling these peoples' pockets with lead. It's time to start offering them brightly-coloured buoyancy devices like rubber rings, arm bands and swim noodles. On brand, of course.

To be continued? Let Pam Frederiksen know if you want to read part II of this article. Let Pam know if you do *not* want to read part II of this article. Vote early, vote often!

About the author



Martin Cunnington is Head of Quality Assurance at MRM Worldwide, a leading digital marketing agency servicing some of the world's bluest of blue chip companies. Martin joined MRM Worldwide (then Zentropy Partners) in 2000 from HP (then Compaq) after 10 years Marketing IT service in Munich (then München), Germany. His influences include John von Neumann, Donald Knuth, Philip Kotler, Geoff Quentin, James Whittaker, Johanna Rothman and Hunter S Thompson.

From the Editor (and the net):

Gonzo journalism is a style of reporting that mixes fiction and factual journalism. It uses an unconventional, exaggerated and highly subjective style, often including the reporter as part of the story. It is used to describe the style of American journalist Hunter S. Thompson, among others.

ARTICLE: HORSES FOR COURSES

By Kevin Buchta

Is it always appropriate to employ a test specialist on a project?

On many systems projects, testing is carried out by staff with different job roles, having skill sets and disciplines that do not include system or software testing. For a professional test specialist this may appear to be flawed approach to the way that the project team is built and managed, however from a business manager's viewpoint this may be perfectly reasonable. A project team structure and size is governed by many factors, because projects often differ in scale, complexity, timescale and business needs. The organisation's lifecycle and culture govern the approach to the management of projects. Test managers and test specialists will have observed examples of this, and should be confident in promoting reasoned arguments about the appropriate level of testing that should be applied.

These arguments need to be put forward within the context of the organisation and project environment, and this background is considered next.

Organisational Lifecycle

Start-up Company

There are many examples of large companies that evolved from a business idea that was implemented by two or three innovators using few resources. They spotted a business opportunity, developed and produced a product, tested it and sold this to a customer, without the support of a project team. The successful innovators then identified further opportunities and the customer base grew. One of the more well known ones was Hewlett-Packard, when the two founders produced their first product in a garage. I have previously worked for several companies with similar origins, and have noticed patterns in the way that development and testing has evolved with the growth of the organisation. Some of these patterns are described next.

Initial company expansion.

The company expansion results in hiring additional staff, and development and sales staff are often among the first staff hired. With further sales, multiple project streams are created. Projects may vary in size and complexity and the systems functionality sometimes diverge to meet individual customer needs. As the company grows further, separate teams are formed with responsibility for supporting different customers. Developers in each project team work directly with customers to identify requirements, produce the product and test/demonstrate that it meets these requirements.

There were incomplete records describing the delivered functionality of the initial product. In some cases the customers understand the functionality better than the development staff. New projects are based on the initial product, and further development starts to affect the functionality that customers wished to have retained. The newly formed development team may not fully understand the core functionality, and they occasionally rely on customers to perform their testing for them. Customers identify defects in the core functionality that the developers then need to rectify within the existing project timeframe. The late discovery of problems by the customer, impact the schedule and cost. Tensions within the team increase as developers have less time to retest, because of the additional unplanned effort in reworking and re-releasing the system.

The first test specialist is recruited so that:

- Developers can concentrate on their primary task – developing code and delivering products.
- Business risk will be reduced by testers identifying problems early enough for developers to fix, and before customers get visibility of them.
- Systematic regression testing of the core functionality is carried out.
- Managers can receive independent status reports regarding test progress.

Established company

The company may now have established separate business units addressing different types of markets. Testing may be applied with varying levels of rigour according to the type of system, and in

some cases its life expectancy. Quality and development standards may be established for certain business areas.

Development silos have been discouraged within business units, and testing across projects provides benefits through common tools usage, domain knowledge of the test specialists and re-usable test artefacts. Interoperability testing is applied to test system interfaces across multiple systems. Automated regression testing is introduced, improving test efficiency and reducing test cycle times.

Regeneration

Changing market conditions and poor cash flow will affect the organisation, and attempts will be made to cultivate an environment that encourages staff to innovate and return to the core business. In this climate, roles and responsibilities are reviewed, often with reduction in roles considered non essential. There will be an attempt to return to the approach taken during the start-up and early expansion of the company for some groups, and developers once again may be expected to perform system testing. Test specialists with good domain knowledge and an understanding of the customers systems and business processes will be well placed to deliver the business benefits that testing can bring to the organisation.

Providing Business Benefits

What are the benefits of testing? Professional testers understand this, however most managers will understand this as one means of risk reduction, and to demonstrate that the system meets the customer requirements.

Each manager however is likely to have different expectations from testing e.g.:

- The senior management team will use test reports as one source of management information to measure progress.
- A project manager will have to deliver business benefit to the customer and reduce risk while balancing cost, schedule and quality.
- The development manager will see testing as a way that the development team have checked their output before delivery to a customer.
- Business managers will view it as key to the business users' acceptance of the product.
- A test manager will view all test phases within the project, but extending to other projects.

The test manager and test specialist need to recognise the viewpoints of these key stakeholders on a project, particularly when the following question is raised:

What are the benefits of having test specialists perform testing when developers or business users could carry out the tests themselves?

The most obvious answer is this is the test specialist's job role, and that the division of labour, where specialists concentrate on specific areas is a well established technique to improve productivity. A trained and experienced test specialist will be better placed than most other specialists to deliver business benefits through the following areas:

- Maintaining business resilience.
- Early validation and verification.
- Risk management.
- Maintaining quality.
- Applying test techniques utilising industry standards.
- Preparation and execution of manual and automated test suites.
- Test tool familiarity, and newly emerging toolsets.
- Timely status reporting to management of the quality of the deliverables.

Stage in the Organisational Lifecycle	Developer	Test specialist	Business User	Summary
Start-up – First single product with a short life expectancy	Performs unit test, and then the functional tests together with Business users.	Not engaged.	Performs initial functional test and then the final acceptance test.	Business user has early visibility of problems and this may impact the credibility of development team. Lack of IS test records is not likely to be a problem with the short life expectancy of the product. Future regression test pack is not required for a non strategic product that will not be developed further.
Startup – Strategic product that will form the basis for the company expansion.	Performs unit test, and then the functional tests together with Business users.	Engaged to establish test artefacts – tools and test re-use pack. Test team takes responsibility for test tools, scripts, records and defect management.	Performs UAT tests on specific Business transactions.	Business user has early visibility of problems and this may impact the credibility of development team. Records of delivered working functionality exist.
Startup –Application interfaces to other established subsystems.	Performs unit and functional test of the application.	Reviews the functional specification and identifies system interface issues. Uses system level knowledge to check that the application works with other systems. Regression test pack produced for future use.	Performs UAT tests on specific Business transactions. Access to tools and test artefacts that the test specialists make available.	Test specialists review the requirements and identify potential interface problems early. Test cases are produced and reviewed by developers and business users.
Initial company expansion.	Performs unit tests and few functional tests on the application. Code management across projects is introduced, but faults introduced in the core functionality may impact multiple projects.	Use test artefacts to perform regression tests of core functionality across multiple projects. Manage defects across projects. Review functional specifications for testability; identify early problems before coding starts, reducing the number of defects delivered into system test. Produce test cases that are reviewed and agreed with developers and customers. Perform system tests.	Performs UAT tests on specific Business transactions. Access to tools and test artefacts that the test specialists make available	Developers focused more on coding and unit tests. Less time wasted on rework because less defects are delivered after test specialists review requirements and have test cases signed off. Test specialists responsible for running regression tests, and reporting on test successes across projects. Fewer defects delivered to the Business User team for UAT testing.
Established company	As above	As above. Automated testing implemented to reduce test effort	As above	As above, and test cycle times reduced as regression test effort is automated.
Regeneration	Performs unit test, and then the functional tests together with Business users.	Test specialists preserve the test artefacts, and technical systems knowledge base for the support of existing customers. Regression testing is a stable point of reference to the management team.	Performs initial functional test and then the final acceptance test.	The test artefacts take on increased value as a definitive record of the systems capability. Test specialists with good systems and business process knowledge are retained to support the existing customer base.

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Developers and test specialists may have identical technical training and qualifications but choose to follow different career paths. Some test specialists may also have become test specialists after an early career within a business team focusing on business processes. A test team with this mix of technical and business skills can provide a holistic view of the delivered system using their collective systems and business process knowledge.

Comparison of testing provided by developers, testing specialists, business users

As described earlier in this article, arguments regarding testing need to be considered within the context of the organisation and the project environment. An organisational lifecycle was described, together with some of the patterns noticed across several companies.

In the table on the previous page, the stages in the lifecycle are shown, with the test activities compared between for developers, test specialist and business users. Some of the benefits of including a test specialist at each stage are identified.

Although this is not a comprehensive list, the exercise illustrates that each of the three types of specialist have a role to play during testing. The emphasis will change dependent on the project type and organisational maturity.

When promoting an argument about which role delivers the best benefit, then the business benefit should be considered first, and then the appropriate balance applied to testing between the developer, test specialist and business user.

Summary

It is almost always appropriate to consult a test specialist in the early stages of a project to develop a test strategy in consultation with the management team.

Some of the benefits in employing a test specialist, rather than relying only on developers and business users to perform testing are:-

- By consulting a test specialist for each project, even for a newly formed company, then the risk of project failure could be reduced by reducing waste and rework.
- Test specialists tend to focus on traceability to requirements, and through an early review of technical specifications they can identify unclear and ambiguous requirements before they are converted into code. They will help to minimise the number of defects delivered, and can reduce the loading on a developer even before they have prepared a test case or executed any test.
- Production of a re-usable set of regression tests and test records for a new product will help to minimise disputes between the project team and the business users regarding the core functionality on subsequent versions of the product.
- Test tool expertise, can be applied and made available across project teams, reducing costs by economy of scale, and producing standardised management reports.
- Test script and defects management can be applied across projects.
- Automated testing can be introduced to improve test coverage of regression tests with shorter test cycles. A number of industry standard tools exist that can support this approach.
- By looking outside the individual project, focusing on business benefits, understanding business processes, and taking a holistic approach to systems, test specialists will be well placed to add business value while developing their skill sets further.

Test managers and test specialists should be aware when presenting arguments about the benefits of employing a test specialist on a project, that there isn't always a clear benefit perceived by the management team. The viewpoints of different managers, the organisational maturity, project type, complexity, project team size and structure all need to be considered when identifying the benefits.

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