Achieving Software Quality Through Teamwork

A tutorial based on the book

By

Isabel Evans

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Who is Isabel Evans?

• More than twenty years in IT industry
• Author Achieving Software Quality Through Teamwork
• Chartered IT Professional and FBCS
• Worked in many types of project and business domain

• Quality Manager at Dolphin Computer Access from October 2010
  – Dolphin’s range of computer software delivers independence to computer users with vision impairments and learning disabilities.

www.YourDolphin.com
Dolphin’s Vision

“It is our vision to deliver independence to people with vision and print impairments all over the World. With over 160 million visually impaired people and 600 million dyslexic or learning disabled people, that's no small challenge. But we're determined to make a difference and have been working hard on that goal since Dolphin started in 1986.”

Noel Duffy
Managing Director
Dolphin Computer Access
This tutorial...

- Builds on experiences of the last 20 years inside and beyond IT
- And on published information from the IT industry and other industries
- Looks across the whole IT / test industry
- Focuses on our industry’s need to improve
  - Whatever the business we are in...
Agenda and timetable

• 0900-0915 intros
• 0915-1030 presentation & activities
• 1030-1100 break
• 1100-1230 presentation & activities
• 1230-1330 lunch and informal Q&A
• 1330-1500 presentation & activities
Objectives for the session

• Improving software quality is about the team working well
  – technical excellence of testing.
  – interactions and collaboration between people
• The *dream team* is:
  – Not necessarily the best people
  – People understanding each other better
Objectives for the session

• Key learning points:
  – To understand the roles; both one’s own role and the other roles on the project (What should we be doing and who with?)
  – To understand the tasks and responsibilities at each stage in the lifecycle (What should we be doing now?)
  – To be able to use techniques to help us improve communication (How can we communicate efficiently and effectively?).
PART 1:
SOFTWARE QUALITY MATTERS
Software quality matters – more and more…

• Quality, quality management, and software quality.
• Why quality matters.
• Process and product definitions of quality.
• Organisational and personal models that have been defined to aid in the provision of quality.
Importance of software quality

• The nature and scope of the IT industry has changed significantly, and continues to expand for both embedded and IT systems:
  – It is increasingly pervasive; year on year, the number of IT systems and embedded systems continues to grow
  – The business complexity and technical complexity of the projects in which we are engaged is increasing
  – The customers for IT are a wider group – global society rather than “just” business and government so the impact of software failure is more public
  – The customers require higher level quality attributes to support the complexity and change in their lives, so increased reliability, maintainability, usability, performance characteristics are required.
• If any of these pertained, the demand for quality would increase.
• In fact all of them pertain, therefore we have a multiple increase in demand for software quality.
• This had led to an increased demand for software testing which will continue.
Importance of software testing

• Solutions:
  – Increase the number of software and system testers
    • Either tempt people with high aptitude from other industries
    • Or we drop the aptitude level for entry to the industry.
  – Increase the efficiency and effectiveness of existing software and system testers
  – Improve the methods and tools used in software and system testing
  – Increase the scope and maturity of software and system testing
  – Do better development and reduce the need for testing

Reid 2007
Evans 2007
A challenge to our comfort from Capers Jones

Cutbacks

Recession

Poor SW engineering

Poor software engineering

Flawed economic models

Flawed economic models
Test community is (partially) culpable...

BAD DEVELOPMENT & MAINTENANCE

BAD TEST

BAD MEASUREMENT & INFORMATION

Poor SW engineering

Cutbacks

Recession

Flawed economic models
Let other pens dwell on guilt & misery...
(Jane Austen)
What is Quality?

- IT
  - Manufacturing: farm method, blemishes
  - Product: Size, shape, taste, colour

- Business
  - Value: Shelf-life, price
  - User: right for our recipe, taste

- Transcendent: We always source our tomatoes from...
Organisational excellence models
e.g. EFQM™

Continuous improvement feedback
Organisational excellence models e.g. Australian Excellence Model

- Measurement in each part?
- Involves financial, customer, people and society measures

Image is from www.saiglobal.com/business-improvement/process/framework/excellence.htm
Organisational Excellence Models
e.g. Baldridge USA

http://www.nist.gov/baldrige/publications/business_nonprofit_criteria.cfm
Look at how people are affected:

- No leadership
- No clear vision
- Low skills
- Poor motivation
- Disagree about the “rules”
- Problems with e.g. environments, 3rd party SLAs
- Poor inappropriate processes
  - (Too much testing
   Too little testing
   Wrong focus
   Over bureaucratic
   Rigid)

We only measure defects and test progress
People become de-motivated – we don’t realise and they leave
Customers are dissatisfied – we ignore them and lose the business
Society is appalled by the failures in IT – we are never seen as professionals
Business loses money

We only improve the process – may not improve it right
Rowing boats and liners...

“...a rowboat does not need the same rigor of development as does a cruise ship...”
Capers Jones

“... you can’t build a cruise ship by assembling 8000 rowboats...”
Capers Jones
Organizational frameworks e.g. Balanced business scorecard

- Financial
- Innovation
- Customer
- Internal
Combined scorecard – EFQM+Qualities

BBSC

- Financial value
- Innovation (user, value, transcendent)
- Internal (manuf. & product)
- Customer (user)
- People (user, value, transcendent)
- Society (transcendent)

Testers measure...
Techniques for assurance & acceptance

Acceptance is by a combination of QA and QC

QC
- e.g. test
- Techniques For QC
  - Samples
  - Measures

QA
- e.g. audit
- Techniques For QA
  - Samples
  - Measures

Your might call these by different names – that may not matter...

Product
- Design
- Define
- Build
- Deliver

Process
PART 2: THE TEAM IS BIGGER THAN YOU THOUGHT
• The team is bigger than you thought...
Understanding the software team; The team who build quality into software and the stakeholders for quality: the software customer, the project manager, the development manager, the test manager and the IT operations/IT support manager. For each role: who they are; role; quality viewpoint; communication lines; what the rest of the team needs from them; tasks, tools and techniques which aid software quality.
Teams in disunity

• “I.T. is not a close-knit community of like-minded professionals. Many negative attributions are made about other groups lacking the motivation for quality.

• Each group within the profession makes negative attributions about other groups.”

• MIP Survey
Five groups make up the team

Customers

Builders

Measurers

Managers

Supporters

Society
Activity 1: group interactions

Customers

Builders

Managers

Supporters

Society

What information does each group provide to the others?

What information does each group need from the others?

See workbook
Interactions between people, processes and projects
We also talked about...

• Hierarchy triangles:
  – The role of the manager is to enable people to get their jobs done
  – Large agile projects Scrum of Scrums idea
Sergey reminded us about RACI (thanks Sergey!)

<table>
<thead>
<tr>
<th>RACI</th>
<th>Agile</th>
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<tbody>
<tr>
<td>• Responsible</td>
<td>• Pigs</td>
</tr>
<tr>
<td>• Accountable</td>
<td></td>
</tr>
<tr>
<td>• Consulted</td>
<td>• Chickens</td>
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<tr>
<td>• Informed</td>
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<table>
<thead>
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<th>Person</th>
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<th>Ken</th>
<th>Lydia</th>
<th>Matteus</th>
<th>Norman</th>
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<td>Tasks:</td>
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<tr>
<td>Integration test plan</td>
<td>R</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>I</td>
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<td>Performance test plan</td>
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<td>R</td>
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<td>C</td>
<td>A</td>
<td>C</td>
<td>I</td>
<td>R</td>
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</table>
Vicious circles of communication

Customer trusts developer not manager - goes directly to builder

Developer dislikes manager - ignores him, conceals information

Customer gets wrong information from Manager but information from Developer is right

Manager reports incorrect information to the Customer
Crossed and uncrossed communication

Adults

Or parents and children
What game are we playing?

Wagner “Transactional Manager”
Stakeholders...?
PART 3: LIFE-LONG CARE AND ATTENTION
Life-long care and attention

- Life-long care and attention... Software quality throughout the software life; How the choice of lifecycle affects communication. Quality models and life cycle models. The life span of a software system from initial conception through development, delivery, support and maintenance to decommissioning. Communication in agile projects – why it is better and why traditional projects need agile communication
Changes happen post-delivery

SU = Project Start up
SDLC/SMLC = the sw development life cycle or the sw maintenance life cycle
D = Delivery
PD = Post delivery
Aims and objectives for a project

**Aim:**
To increase customer spend while decreasing costs

**Specifically our aims are:**

- To increase the opportunities for customers to buy from us
- To decrease the cost to the organisation of serving the customer

**Objectives**

- By researching customer preferred shopping options
- By building a secure, user friendly, reliable on-line shop
- By streamlining our back office systems
- By improving our warehousing and delivery systems

**Indicators:**
- increased customer spend
- decreased costs
- increased profit
- increased investment in new opportunities

**Targets:**

- initial research complete (date)
- on-line shop plan complete (date)
- deliver stage 1 by (date)
- budget for stage 1 (cost)
Activity 2: Draw up a Weaver Triangle

• Put together a Weaver Triangle for the aims and objectives of your project.
  – P1 New product to market
  – P2 Upgrade to existing product
  – P3 Movement of a product to a new platform
  – P4 Retirement of a product

• Compare with the other projects

• See workbook

• Also see planning cards...
PART 4: IT’S NOT JUST HUGS...
• **It’s not just hugs...** Techniques to aid understanding and communication; Team dynamics and meeting behaviour (e.g. de Bono’s Six Hats); Communication styles; techniques to identify, classify and resolve problems (e.g. root cause analysis, solution analysis); techniques to clarify ideas and requirements (Heuristics, prototyping).
Technical measures become corporate – financial, marketplace, and societal

- We MEASURE the same things
- We analyse those measures more thoroughly
- We build up metrics and predictive indicators
- We REPORT indicators
Let’s look at what we need to do

GOOD MEASUREMENT & INFORMATION

WHAT to measure

GOOD EVIDENCE

HOW to present it

CONVINCES FOR THE RIGHT REASONS
Financial results: What is your cost of failure?
Comparing organisations

COF is Cost of Failure - COQ is Cost of Quality

- Failure
  - Compromised security
  - NO measurement of results
  - Development worst practices
  - High costs

- Quality
  - Security
  - Measurement of results
  - Development best practices
  - High costs?

- Costs
  - Low costs
  - High costs
Financial results: What is your cost of failure? Comparing organisations – other possibilities...

COF is Cost of Failure - COQ is Cost of Quality

But actually we are here

We thought we were here...

Spend a lot on BAD testing...
The BAD testing becomes a failure cost...

COF  COQ
Financial and value quality – tester’s “S curve” – is it enough?

Typically, testers will track an S curve or similar model to show the number of defects found peaking and tailing off...
Financial and value quality – project estimation of cost of failure

Also plotting a predicted cost of dealing with failure in live is more interesting …
Financial and value quality – project estimation of TCOQ

Slope drop is predicted *money saved by doing testing*
Example TCOQ: testing in progress – shall we go live yet?

Cost in $

TODAY – week 18

COF (predicted live)

COQP (includes rework costs)

TCOQ to date

TOO EARLY...?
TCOQ – testing in progress – shall we go live yet?

BY DOING MORE TESTING & REWORK WE REDUCED THE TCOQ...

WHAT IF WE DO MORE?
TCOQ – testing in progress – shall we go live yet?

OH DEAR... BY DOING MORE TESTING WE HAVE INCREASED TCOQ
## Defect predictions/potentials and defect removal efficiency

### Defect potential (after Capers Jones)

<table>
<thead>
<tr>
<th>Language</th>
<th>Code size</th>
<th>Non-code defects</th>
<th>Code defects</th>
<th>Total defects</th>
<th>Removed</th>
<th>Leaving</th>
<th>Removal efficiency</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>125,000</td>
<td>3000</td>
<td>2000</td>
<td>5000</td>
<td></td>
<td></td>
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### Project A

<table>
<thead>
<tr>
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<th>Non-code defects</th>
<th>Code defects</th>
<th>Total defects</th>
<th>Removed</th>
<th>Leaving</th>
<th>Removal efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspections</td>
<td>2550</td>
<td>800</td>
<td>3350</td>
<td>3350 / 5000</td>
<td>450 +1200</td>
<td>67%</td>
</tr>
<tr>
<td>Static analysis</td>
<td>0</td>
<td>800</td>
<td>800</td>
<td>800 / 1200</td>
<td>450+400</td>
<td>66%</td>
</tr>
<tr>
<td>Testing</td>
<td>200</td>
<td>300</td>
<td>500</td>
<td>500 / 850</td>
<td>250+100</td>
<td>58%</td>
</tr>
<tr>
<td>Pre release</td>
<td>2750</td>
<td>1900</td>
<td>4650</td>
<td>4650/5000</td>
<td>250+100</td>
<td>93%</td>
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<tr>
<td><strong>Post release</strong></td>
<td><strong>250</strong></td>
<td><strong>100</strong></td>
<td><strong>350</strong></td>
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### Project B

<table>
<thead>
<tr>
<th></th>
<th>Non-code defects</th>
<th>Code defects</th>
<th>Total defects</th>
<th>Removed</th>
<th>Leaving</th>
<th>Removal efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing</td>
<td>1600</td>
<td>1500</td>
<td>3100</td>
<td>3100/5000</td>
<td>1900</td>
<td>62%</td>
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<tr>
<td><strong>Post release</strong></td>
<td><strong>1400</strong></td>
<td><strong>500</strong></td>
<td><strong>1900</strong></td>
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</table>
Made into time and money

Defect potential (after Capers Jones)

<table>
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<th>Language</th>
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<th>Code defects</th>
<th>Total defects</th>
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<tr>
<td>C</td>
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<td>3000</td>
<td>2000</td>
<td>5000</td>
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<table>
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<tr>
<td>Static analysis</td>
<td>$81,250</td>
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<tr>
<td>Testing</td>
<td>$150,000</td>
<td>$775,000</td>
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<tr>
<td>Pre release</td>
<td>£400,000</td>
<td>$775,000</td>
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<tr>
<td><strong>Post release</strong></td>
<td><strong>$175,000</strong></td>
<td><strong>$950,000</strong></td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td><strong>$575,000</strong></td>
<td><strong>$1,725,000</strong></td>
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We discussed sources for the predictions...

• Industry surveys and figures
  – E.g. Capers Jones book
• Previous projects in your organisation
  – Look at live failures and how much they have cost to resolve (include reputation costs and lost opportunities)
  – Work out whether they could have been avoided and what that prevention would have cost
  – Work out whether the organisation is spending its money before or after delivery...
  – Ask senior stakeholders where on the TCOQ they want to be... and plan quality activities accordingly
Key Result: Productivity

Effort per:
- Regression test (deleted FP)
- Regression test (unchanged FP)
- Test changed FP
- Test new FP

Process improvements
- Doing more
- Finding more

Adding automation tools increases the effort to find the same # defects (reduces productivity before it improves productivity)

Now we should have true productivity – effective and efficient

Not much effort made – many failures in live
Key Result: Productivity

Effort per:
- Regression test (deleted FP)
- Regression test (unchanged FP)
- Test changed FP
- Test new FP

Could plot the failures in live or COF as well as the COQ

Could add a desired next trend
George Orwell “Why I write” (essay)

Four reasons to write

Sheer egoism
- Desire to seem clever and be talked about...

Aesthetic enthusiasm
- Pleasure in good prose & layout; also pleasure in sharing...

Political purpose
- To make something happen; to influence other people

Historical impulse
- To reflect on what has happened; explain things as they are
Dashboards can be too simple

Ford Car Norfolk Island
How to report...

- timely
- objective
- truthful
- brief
- relevant
- political
- aesthetic
- historical
- reduced ego...
Belbin – team roles and work styles

- **Shaper** - challenging, dynamic; prone to provocation, offends feelings
- **Implementer** - reliable, efficient, practical actions; inflexible
- **Specialist** - self-starting, knowledge; narrow, dwells on technicalities
- **Team worker** - co-operative, perceptive, diplomatic, listens, averts friction; indecisive
- **Monitor Evaluator** - strategic, judges accurately; lacks drive
- **Completer finisher** - conscientious, anxious, searches out errors; inclined to worry unduly, reluctant to delegate
- **Co-ordinator** - good chair person, clarifies goals, delegates well; seen as manipulative, off loads personal work
- **Resource investigator** - extrovert, enthusiastic, communicative; over-optimistic, loses interest
- **Plant** - Creative, unorthodox, solves difficult problems; too pre-occupied to communicate effectively.
Kirton’s adaptors and innovators - approach to change – KAI

• Some people want to innovate WITHIN the current framework
• Others prefer to build a new framework
• Most of us are in the middle
• Both types of change and innovation are important.

• See also Myers Briggs, Honey & Mumford
Improving meetings

- Simple meeting rules
  - No mobiles
  - Stick to timings
  - All have an equal voice
  - One voice at a time
  - Park difficult issues
  - Evaluate ideas not people

- Six Hats approach:
  - Role playing
  - Focused effort
  - Lateral thinking
  - Specific thinking modes and rules (Hats)
  - Effort

- Six Hats delivers:
  - Common goals and understanding
  - Higher performing teams
  - Personal development (and challenges)
  - Fast results
  - Consensus
  - Prioritised actions
  - A plan to resolve the problem
The Six Hats are...

- White for Information & Data
- Red for Intuition, Feelings & Emotions
- Black for Caution & risks
- Yellow for Optimism & Benefits
- Green for Ideas, alternatives and suggestions
- Blue for Planning & Next Steps
There are Six Rules...

– 1) Suspend disbelief (it will work!)
– 2) Treat it as a role-play
– 3) Everyone wears the same hat at the same time
– 4) Wearing a specific hat means you need to think in a specific way for a short period of time
– 5) use the blue hat to decide on a sequence e.g.
  • Bl, Y, W, Bk, R, G, Bl
– 6) No destructive challenges
Activity 3: Six Hats

• You try it for your project:
  – Blue hat – state topic and rules
  – White hat – identify facts everyone can agree
  – Red hat – say how you feel about the topic (not just the negative feelings, not just the positive feelings)
  – Yellow hat – identify positive points
  – Black hat – identify negative points
  – Green hat – ideas for change and improvement

• One hat at a time!
Root cause analysis

Fishbone diagram before start of discussion about customer complaints

- Customer complaints about help desk staff
- Customer complaints about help desk processes
- Customer complaints about help desk technology
- Other Customer complaints about help desk

Customers unhappy with help desk provision
Root cause analysis in progress

Fishbone of customer complaints about the helpdesk

Customer complaints about help desk staff
Help desk staff sound patronising in their responses
Help desk staff do not have knowledge of newly installed software
did not have known problems list

Help desk staff do not understand customer's business viewpoint/problems
Help desk staff give over-technical responses - hard to understand

Customer complaints about help desk processes
Customers forget their call numbers and have to start a new call
Help desk is slow to follow up calls

Frequently asked questions web page only supported on some versions of IE - not all customers have that
FAQ web page

Customer complaints about help desk technology
Customer complaints about help desk processes

Wait too long in phone queue
Customers unhappy with help desk provision

Customers unhappy with help desk provision

Solution Analysis Fishbone diagram - customer complaints

Customer complaints about help desk staff
- new s/w not enough - does not address staff attitude

Customer complaints about help desk processes
- allow customers to access system by their name rather than call number
- Allow customers to browse online for their problem

Customers unhappy with help desk provision
- expensive solution
- security issues?

Implement new help-desk software?
- update FAQs daily
- investigate customer browsers support wider range

Phone Q waits will not be addressed by technology - need more staff to do this?

Conclusion from discussion so far:
A new help desk system will not solve the problems within budget or a reasonable timescale. Consider another solution e.g. look at staff training and processes, with addition of a FAQs page to the intranet this year. Log the other suggestions for consideration when help-desk software is upgraded in 3 years.
Types of fishbone

• PIGPEN
  – People - Information - Geography - Process - Environment - aNyother

• MMMM
  – Manpower - Machines - Materials - Methods

• PEMPEM
  – People - Environment - Methods - Plant – Equipment - Materials

• MMMMMM (good for solutions)
  – Money and constraints - Manpower - Machines - Materials - Methods
# Groups and quality definitions

<table>
<thead>
<tr>
<th></th>
<th>Customer (User)</th>
<th>Manager (PM, Business)</th>
<th>Builder (Developer, analyst, author)</th>
<th>Measurer (Tester, reviewer, auditor)</th>
<th>Supporter (Infrastructure, maintenance, helpdesk)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User view</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td>Some times</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Value view</strong></td>
<td>Some times</td>
<td>Yes</td>
<td></td>
<td></td>
<td>Some times</td>
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<tr>
<td><strong>Product view</strong></td>
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<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Manufacturing view</strong></td>
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<td></td>
<td>Yes</td>
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## Groups and the SDLC

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<th>Measurer (Tester reviewer auditor)</th>
<th>Supporter (Infrastructure maintenance helpdesk)</th>
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<tr>
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<td>Yes</td>
<td>Not always but should be?</td>
<td>Not always but should be?</td>
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<tr>
<td><strong>Project</strong></td>
<td>Not always but should be?</td>
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<td>Yes</td>
<td>Yes</td>
<td>Not always but should be?</td>
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<tr>
<td><strong>At go-live</strong></td>
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<td>Yes</td>
<td>Yes</td>
<td>Not always but should be?</td>
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<td><strong>Post go live</strong></td>
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<td>Not always but should be?</td>
<td>Not always but should be?</td>
<td>Not always but should be?</td>
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</table>
Review roles and groups for the test plan

<table>
<thead>
<tr>
<th>Group</th>
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<th>Risks</th>
<th>Constraints</th>
<th>Acceptance criteria and plan are...</th>
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<tbody>
<tr>
<td>Customer</td>
<td>User</td>
<td>Impact on organisation</td>
<td>Business, service level, time, cost</td>
<td>Realistic, time bound</td>
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<tr>
<td>Manager</td>
<td>Value</td>
<td>Impact on other projects</td>
<td>Cost, time, skills, resources</td>
<td>Realistic, time bound</td>
</tr>
<tr>
<td>Builder</td>
<td>Manuf.</td>
<td>Likelihood--technical</td>
<td>Technical skills, infrastructure</td>
<td>Achievable, realistic</td>
</tr>
<tr>
<td>Measurer</td>
<td>Manuf.</td>
<td>Likelihood--previous failures, predictions</td>
<td>Technical skills, infrastructure</td>
<td>Specific, measurable</td>
</tr>
<tr>
<td>Supporter</td>
<td>User</td>
<td>Impact on systems</td>
<td>Technical skills, infrastructure</td>
<td>Achievable, realistic</td>
</tr>
</tbody>
</table>

See: “Achieving Software Quality Through Teamwork” Evans
Activity 4: understanding the customers of testing

- TUSK – test user satisfaction kit
- Based on SUMI idea (usability questionnaire)
- To start a conversation with your customers
- Try it...

- See activity pack
People Results: Motivation Potential Score

- Skill Variety (V) – the range of different skills needed
- Task Identity (I) – the degree of completing a whole job
- Task Significance (S) – the importance of the job
- Autonomy (A) – the level of control of their own time
- Feedback (F) – the degree of supervisory and results-based feedback on performance.

MPS can be too high or too low – the “right MPS” depends on the individual

\[
MPS = \frac{(V + I + S)}{3} \times A \times F
\]
People Results: Test Roles and Motivation

“How could anyone believe that a job below MPS=60 could keep the simplest human being occupied” (The MIP Report).

Activities in traditional test approaches:
- Exploratory testing
- Model based testing

Bar chart showing:
- Exploratory testing
- Model based testing
- Test analysis

Bar chart activities:
- Exploratory Testing
- Model-Based Testing
- Black Box Test Design
- White Box Test Design
- Test Reporting
- Test Execution
- Automated Test Support
- Test Env't Support
- Reviewing
- Test Analyst
## Effect of Team v. Individual work

<table>
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<tr>
<td>• Ability to check conformance with specifications</td>
<td>• Read/check methods • Test case design/test coverage (testability)</td>
<td>• Create/ review models • Domain knowledge</td>
<td>• Plus all the earlier abilities</td>
<td>• Coding ability • Ability to select test cases</td>
</tr>
<tr>
<td>• Ability to check adherence to standards</td>
<td>• Identify and record anomalies • Soft skills</td>
<td></td>
<td>• Plus all the earlier abilities</td>
<td></td>
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</tbody>
</table>
Effect on MPS Scores of team work

MPS for review types - compared

Team reviews are more satisfying to do than individual reviews AND find more defects

Greater range of skills AND increased feedback

- MPS for review types compared
  - Individual review
  - Inspection
  - Technical review
  - Walkthrough
  - Agile cross functional review team

Effect on MPS Scores of team work

Team reviews are more satisfying to do than individual reviews AND find more defects.

Greater range of skills AND increased feedback.
EFQM Result: People – Stress
People need contact and withdrawal

- Requires rest
- At rest
- Responds
- Requires or aware of stimulus

Gelstalt Theory
What expertise do we require?
PTMM - Tester skill space (Reid & Harty)
What new expertise do we require?
PTMM+: enlarging the tester skill space

- Test skills
- Interpersonal skills
- IT Skills
- Managerial Skills
- Domain knowledge
- Business skills

Evans STARWest 2010
PTMM+: enlarging the tester skill space

Test skills
- Functional testing; Technical testing; Tools; Reviews; Techniques; Test management; Quality and improvement; etc..

IT Skills
- Hardware; Platforms; Middleware; Comms; Architecture; Design; Programming; etc..

Domain knowledge
- Financial; Retail; Defence; Transport; Utilities; Government; Not-for-profit; Medical........... Specialists or generalists?

Managerial Skills

Interpersonal skills

Business skills
PTMM+: enlarging the tester skill space

Communication; Negotiation; Listening; Empathy; etc..

Project management; People management; Strategic thinking; Leadership; etc..

Costing; Budget control; Estimating; Sales and marketing; PR; Ideas generation; etc..

Test skills

IT Skills

Domain knowledge

Managerial Skills

Interpersonal skills

Business skills
PTMM+: an individual

- Test skills
- IT Skills
- Domain knowledge
- Business skills
- Managerial Skills
- Interpersonal skills
PTMM+: a team shares skills

Each individual brings different skills

WHO DO WE RECRUIT NEXT?

Joe
Lois
Mary

MANAGERIAL
INTERPERSONAL
TEST
IT
DOMAIN
BUSINESS
PTMM+: enlarging the tester skill space

To get better we need the personal attributes to support our desire to improve
Aspirations to higher levels via SFIA:
Skills Framework for the Information Age

7 set strategy, inspire and mobilise
6 initiate and influence
5 ensure and advise
4 enable
3 apply
2 assist
1 follow

- Education courses
- Evidence from work done
- Acclamation from peer group
- Public recognition

See SFIA Website http://www.sfia.org.uk/
Activity 5 – PTMM+

• Use the PTMM+ radar diagram to score your personal strengths and weaknesses and reflect on what you need to improve

• Use SFIA to think about the level you have achieve and your aspirations

• See workbook
Society results?

• How would we look at these?
  – Match to the organisation’s policies
  – Environment
  – Corporate social responsibility
  – Organisational view of risk

  – What risks do IT people usually consider...?
  – Do they include the risks for society?
INTERNAL RISKS OF INTEREST TO IT

COMMUNICATION

- Process not followed
- Process wrong
- Process wrongly focused
- Process not understood

Human error

Functional Defects

- Functional failure
- Non-functional failure
- Non-functional defects

Project risks and failures

- Timescales
- Budget
- Equipment and resource
- People skills/knowledge
SOCIETY AND ETHICAL RISKS

LEGAL AND REGULARATORY RISKS

CONTRACTUAL RISKS

- KEY FINANCIAL
- CUSTOMER
- PARTNERS RESOURCES
- INNOVATION
- PEOPLE
- INTERNAL
Serving society:
“A true professional contextualises work”

• “... professionalism is very important ... you need to think about the context / motivation / justifications of what you're doing...”
• “ID cards: ‘an opportunity to do a good software job’ but has fundamental effect on people's lives”
• “(if I) only think about what the spec is and whether I can do a good job of it ... I could probably write a very good program for choosing people to be killed for some reason, selecting people from a population by a particular criterion.”
• “A true professional would say, 'I don't think I should be writing programs about this at all.’”

Quotes from interview by the BCS with Karen Sparck-Jones – 1935-2007
Winner of the 2007 BCS Lovelace Medal
http://www.bcs.org/server.php?show=nav.7305
SUMMARY AND CONCLUSIONS
Be part of the team

• Testers need technical and non-technical skills
  – Communication is important
  – Viewpoints and communication styles are important
  – Acknowledge quality viewpoints across the team
  – Acknowledge and be part of the software life span
  – Use strengths of the different viewpoints e.g. in reviews
Be part of the team

• Techniques and ideas we have considered:
  – Consider transactional analysis, communication styles
  – Use meeting rules and Six Hats
  – Decide what needs to be done using prototyping, Weaver triangles, Ishikawa fish-bones for cause-effect/solution analysis
  – Use of measurement and excellence models including improvement cycles
  – Use of planning and control aids
  – Improvement of graphics, prediction and reporting.
Evaluation and Action

• Use the Six Hats method to discuss:
  – What will you do to follow up?
  – Do this as a group discussion
  – Then complete a personal action plan

• Also please use the Six Hats discussion when you complete a tutorial evaluation form
  – All constructive comments welcome!
References

• Evans: Achieving Software Quality Through Teamwork
  – Other references are made at the chapter ends of ASWQTT, esp: De Bono; Honey & Mumford; Kirton; Belbin; Myers Briggs; TQMI; Robson; Berne; Wagner; van Veenendaal; EFQM; ISO; TSP; PSP; MIP Survey; Kaplan & Norton; Weaver; Tufte; Huff
• Capers Jones “Software Engineering Best Practice”
• Jane Austin “Mansfield Park”
• George Orwell “Why I Write”
• Kaplan & Norton “Balanced Scorecard” & “Alignment”
• Norman Lindsay “The Magic Pudding”
• For MPS see MIP Report (Warden & Nicholson) and Hackman & Oldman (Job Design)
• PTMM – based on work by Stuart Reid and Julian Harty
• SFIA – see website www.sfia.org.uk

Excellence models:

Thanks and discussion:
• David Hayman & Stuart Reid for ideas and help; UK Testers’ Retreat for discussion
Achieving Software Quality Through Teamwork

Thank you for taking part!

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