Th14 - How Much Testing is Enough?
Achieving the Optimum Balance
Agenda

• Introduction
• Test improvement based on ECL
  • Identify current position
  • Define goal: Next position
  • Define and implement measures
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The question is:
How to convince the project/organisation of the added value of testing?
Inspired by Joseph Juran

- Lived from 1904 - 2008
- One of the two Quality gurus
- Specialized in managing quality
- Pioneer of Six sigma
- The Lean approach
- Founder of the pareto principle
Six sigma

- Define
- Measure
- Analyse
- Improve
- Control
Jurans curve

- Internal and External failure costs
- Prevention and Appraisal costs
- Total costs
Agenda

• Introduction
• Test improvement based on ECL
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Six sigma approach

• Define -> Improvement goals
• Measure -> current process & establish metrics
• Analyse -> problems and causes within process
• Improve -> by identifying and piloting solutions
• Control -> by standardization and monitoring
1. Initial
- Test policy and strategy
- Test planning
- Test environment

2. Managed
- Test policy and strategy
- Test planning

3. Integration
- Test organisation
- Test training program
- Test life cycle and integration
- Non-functional testing
- Peer reviews

4. Management and measurement
- Test management
- Software Quality Evaluation
- Advanced peer reviews

5. Optimisation
- Defect prevention
- Test process optimisation
- Quality control

Preventive
Corrective
Detective
Reach the balance

1. Identify Current Position
2. Define goal: Next Position
3. Define and Implement Measures

A. Define Global
B. Measure
C. Define Detailed
D. Analyse
E. Improve
F. Control
Agenda

• Introduction
• Traditional test improvement
• Test improvement based on ECL
  • Identify current position
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Software quality Maturity levels

Software Quality Costs

Reactive  Passive  Balanced  (Over)Active

ECL

- Corrective costs
- Preventive and Detective costs
- Total costs on software quality
Quality measures

Corrective
  • Measures taken to correct the failure itself, damage and reduce the cost/damage of failures
  • Measurement: Categories the failures on cost:
    • Effort needed to correct the failure +
    • Cost needed to correct the loss of image +
    • Financial damage (downtime, lost of turnover)

Detective
  • Measures taken to detect the failures, before going live
  • Cost: Effort needed and other costs to find the bugs
  • Benefit: Corrective cost saved on the bugs

Preventive
  • Measure taken to prevent failures/bugs
  • Cost: Effort needed to prevent the bugs
  • Benefit: Corrective cost saved on the bugs
Calculation

Corrective = Detective + Preventive

Corrective:
- # of issues * average corrective costs
- Direct costs to correct the issues
- Costs on non productive employees
- Financial costs
  (lost of image, extra letters to be sended, lost of turnover, wrong calculations, etc.)

Detective and preventive:
- # of issues prevented/detected * costs per issue

To be calculated per TESTTYPE and issue CATEGORY!
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Optimizing the balance

Software Quality Costs

Reactive  Passive  Balanced  (Over)Active
Optimizing the balance

Move towards optimum via
• Increasing/decreasing test coverage

• Introduction of extra test measures or reduction of test measures

• Introduction/reduction of preventive measures:
  • Configuration management
  • Requirement management
  • Change/release management
  • Other measures
Optimizing the efficiency

Diagram showing different levels of efficiency: Reactive, Passive, Balanced, and (Over)Active.
Optimizing the efficiency

Being more efficient in quality management by

• Detecting bugs in an earlier stage
• Testautomation

• Reducing the time needed to detect the bugs by:
  • Selecting more efficient test specification techniques
  • Reduce the number of test deliverables (or content of test deliverables)
  • Increase the re-usability of testware
  • Decrease the time needed to maintain testware.

• Optimising the cooperation between the testtypes and involved parties
Real life Example

Current position:
• Corrective about 7,5 FTE (inclusive correction)
• Detective/Preventive: 2 FTE + 1 FTE = 3 FTE

Additional problems:
• No overall process documentation available
• Large number of ‘Technical’ failures during system test
• Large number of minor releases
Optimalisation suggestions

Some of the suggestions:

• Formalising the review process (based on evaluations)
• Introduction of UAT regression testing (including process descriptions)
• Formalising Unit testing
• Informalising/Reducing System testing
• Reducing number of releases

Pragmatic and tailor made
Expected results

- Higher testcoverage
- Reduction of number of changes and issues
- Reduction of number of production failures
- Reduction of testexecution costs
- Reduction of time needed for breaking in new employees

<table>
<thead>
<tr>
<th></th>
<th>Expected (%)</th>
<th>Detective/Preventive</th>
<th>Corrective</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>+ 0.5 FTE = 3.5 FTE</td>
<td>- 2.0 FTE = 5.5 FTE</td>
<td>+ 1.5 FTE</td>
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Costs
Reconsidering the Boehm curve
Resuming

- Collect metrics on quality
- Monitor the efficiency and effectiveness of measures
- Steps to be taken
  - Identify current position
  - Define goal: next position
  - Define and implement measures

Prove the added value of testing
Sharing the experience

- Company/project culture has to be leading
- The success of test automation depends on the tool, but also on the approach
- Testing less can also be effective
- Optimizing is measuring (using metrics)
- Quality is not only testing
- Being an added value is being proactive and pragmatic
Questions

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