Recharging Test Automation

Prepared and presented

by

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Recharging Test Automation

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Need a top-up?

- has automation fallen short of expectations?
- is it delivering fewer and smaller benefits?
- is it difficult to see how to improve?
- does it still take lots of effort to automate?
- is test maintenance a growing problem?
- are automated tests available at any time?
- is improving automation someone's job?

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Why a pilot project?

- **allow time out to research and experiment**
  - try new ideas in safety without undue pressure
  - set milestones for deliverables
    - demonstrable achievements
- **tackle persistent problems**
  - if they're not solved early on people may have learnt to tolerate them – this costs!
- **visibility of importance of automation**
  - take it seriously, encourage creative ideas

Pilot project (if starting automation)

- **objectives**
  - demonstrate tool value
  - gain experience / expertise in tool use
  - identify changes to existing test process
  - set internal standards and conventions
  - refine assessment of costs and achievable benefits
- **benefits**
  - find the best way for you (best practice)
  - overcome problems once
  - establish own expertise
  - establish confidence (based on experience)
  - set realistic targets

Pilot project scope

- **small**
  - 3 to 6 months work for 3 to 6 people
  - a few tens of tests
- **non-critical**
  - not on the critical path of any project
  - will be a bonus if successful
- **important**
  - automate useful tests

Characteristics of a pilot project

Planned	resourced, targets, contingency
Important	full time work, worthwhile tests
Learning	informative, useful, revealing
Objective	quantified, not subjective
Timely	short term, focused

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Explore implementation

- **objective**
  - learn how to use the tool
    - what it can do well
    - what it cannot do
  - explore different implementations of same tests
    - looking to make it easy to build and understand
- **approach**
  - automate only a few (useful) tests (10 - 20?)
  - use stable software

Explore maintenance

- **objective**
  - learn how to maintain scripts
  - explore ways of implementing scripts
    - looking to reduce maintenance burden for most likely software changes
    - easy maintenance
- **approach**
  - run tests on different stable version of software

Explore failure analysis

- **objective**
  - learn how to analyse failures
  - explore different implementations
    - looking to make it easy to analyse failures
- **approach**
  - use unstable software

Other areas to explore

- **naming conventions**
  - conformity
- **reporting options**
  - format and content
- **measurement**
  - benefits and costs
- **testware architecture**
  - configuration management

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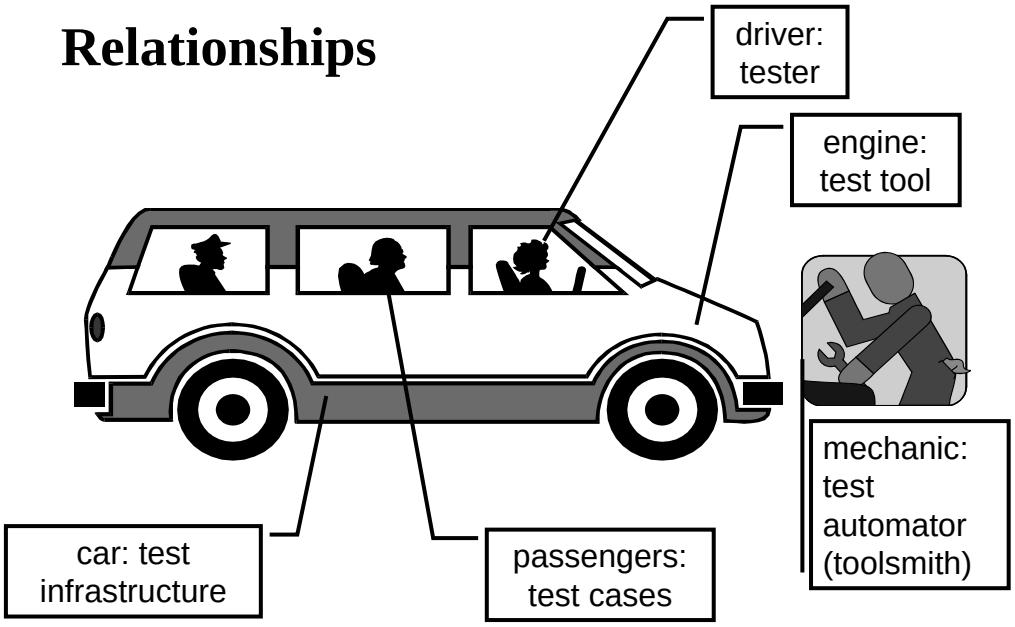
Relationships



Option 1: Testers automate tests

- **advantages**
  - no separate team required
- **disadvantages**
  - not all testers can automate (well)
  - not all testers want to automate
  - conflict of responsibilities
  - conflict of interests
    - automate tests
    - run manual tests

Option 2: Separate automation team

- **size**
  - could be 2 or more people
    - programming skill
    - interest in using test tool
- **advantages**
  - separation of responsibilities
  - best use of skills
- **disadvantages**
  - “us and them” syndrome
  - inappropriate tests automated?

Test team responsibilities

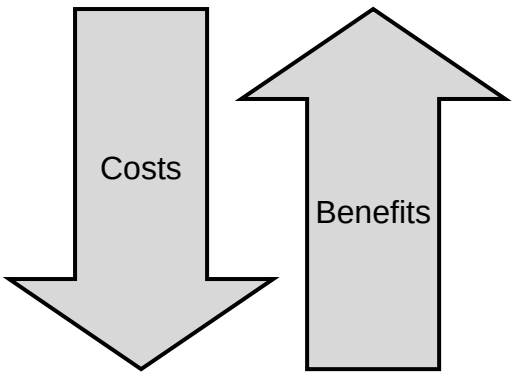
- **testing the software**
  - design/select tests for automation
  - requires planning / negotiation
- **execute automated tests**
  - automation regime must allow this
- **analyse failed automated tests**
  - perhaps with help from automation team
  - test failures

Automation team responsibilities

- **deliver**
  - automated tests (tests given to them)
  - supported automated testing regime
    - allowing testers to execute automated tests
    - providing additional (home-grown) tools
- **predict**
  - maintenance effort for software changes
  - cost of automating new tests
- **improve automation methods**

Improve automation methods

- **decreasing: (average per test)**
  - build cost
  - maintenance cost
  - failure analysis cost
- **increasing**
  - savings
  - ease of use
  - flexibility



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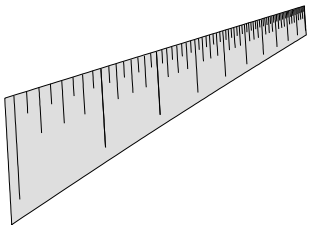
Useful measures



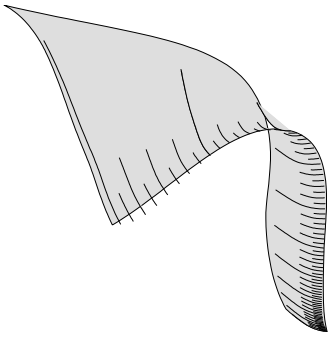
- **a useful measure:**

"supports effective analysis and decision making, and that can be obtained relatively easily."

Bill Hetzel, "Making Software Measurement Work", QED, 1993.

- **easy measures may be more useful even though less accurate (e.g. car fuel economy)**
- **'useful' depends on objectives, i.e. what you want to know**

Automation measures



- **aspects of automation**
  - number of automated tests
  - number of automation scripts
  - time to run the automated tests
  - effort saved by automation runs
  - effort to automate new tests
  - effort to analyse failed automated tests
  - effort to maintain automated tests
  - number of test failures caused by one s/w fault

Measure benefit

- **equivalent manual test effort (EMTE)**
  - hours of additional testing
  - hours of unattended testing
- **number of tests**
  - tests performed
  - additional (new) tests
  - repeated tests
- **number of test cycles**
  - additional cycles

Suggestion

Relate target to total cost of automation, e.g. benefit 10 times total cost

Measure build effort

- **time taken to automate tests**
  - hours to add new or existing manual tests
  - average across different test types
- **proportion of equivalent manual test effort**
  - e.g. 1 hour to automate 30 minute manual test
    = 2 times equivalent manual test effort

Suggestion

Target:	< 2 times
Trend:	decreasing 10% per year

Measure failure analysis effort

- **analysis effort for each test**
  - captured in fault report
  - effort from first recognition through to resumption of test execution
  - average hours (or minutes) per failed test case

Suggestion

Target:	15 minutes
Trend:	stable

Measure maintenance effort

- **maintenance effort of automated tests**
  - percentage of test cases requiring maintenance
  - average effort per test case
  - percentage of equivalent manual test effort

Suggestion

Target:	< 10%
Trend:	stable or decreasing

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Summary: key points

- **a new pilot project to focus on improvement**
  - start with specific objectives, build on knowledge
- **organisational structures are important**
  - ensure there is specific automation responsibility
- **measure and monitor**
  - set realistic but challenging targets