Stay Agile with Model Based Testing

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Agenda

- » Who is Jelle Calsbeek

- » Why change the way we work

- » Agile

- » Model Based Testing

- » Challenge

- » Combining MBT with Agile project

- » Using MBT in Agile project

- » Problems & Solutions

- » Conclusion & Advice

- » Questions

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Who is Jelle Calsbeek

» Since 1998 test professional

» First contact with Agile concepts 1998

» Came across Model Based Testing in 2006

» At present Global Solution Manager Test & Acceptance Management

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Why do ICT projects fail?

"One statistic has it that 82 percent of project rework is caused by defects in **requirements"**

Silicon Valley lab

"The real opportunity for improvement lies in **requirements** definition and in how different development methodologies treat **changing requirements."**

Forrester Research

"How many finance officers or project managers know that as much as 42 percent of a project's salary costs are rework costs?! "

Test and Data Services Ltd

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Why go Agile?

» During projects on average 25% of the requirements change

» 41% of the discoverd defects are due to incomplete or faulty requirements

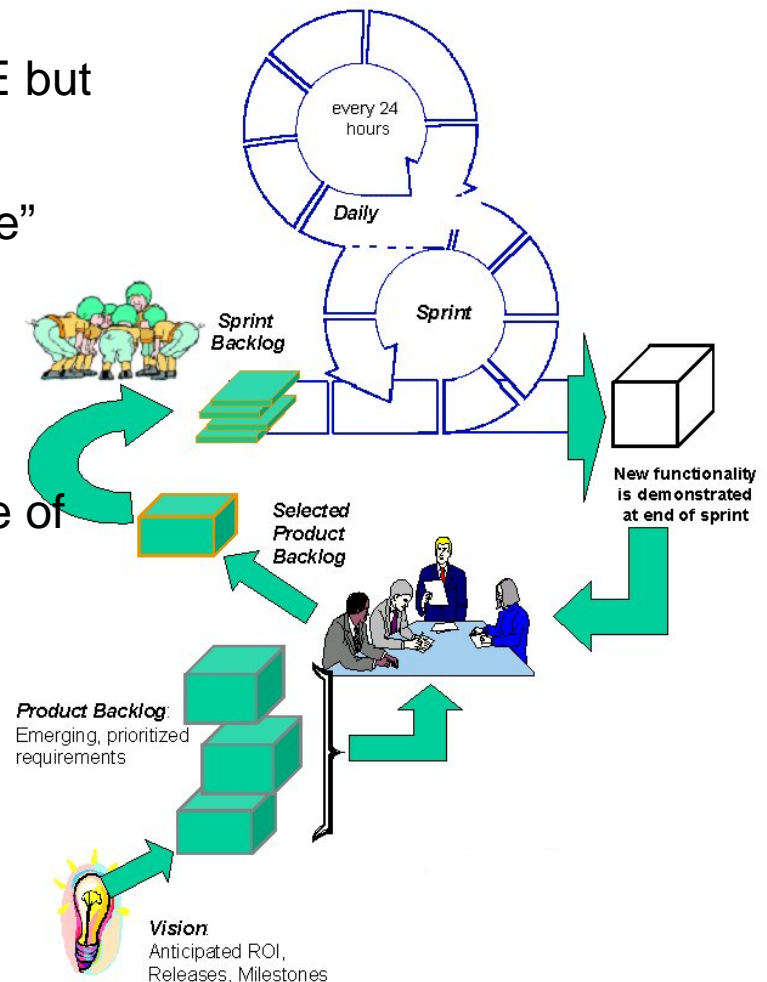» Only 20% of the realized functionality is used on a regular basis after deployment

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Agile Development

Definition Agile Software Development

» Agile methods break down tasks in small increments. In iterations of normally no longer then four weeks a full software development cycle is worked trough including planning, requirements analysis, design, coding, unit testing and acceptance testing. At the end of an iteration a working release is available (with minimal bugs). An iteration may not add enough value for a release to production, so multiple iterations may be required for delivering a full functional and operational application.

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Charateristics

» Work is DONE when testing has been DONE but time is limited

» Test specifications has to be done on "vague" functional documents

» There is no fixed set of requirements and Functional Designs

» A lot of regression testing is needed because of multiple iterations

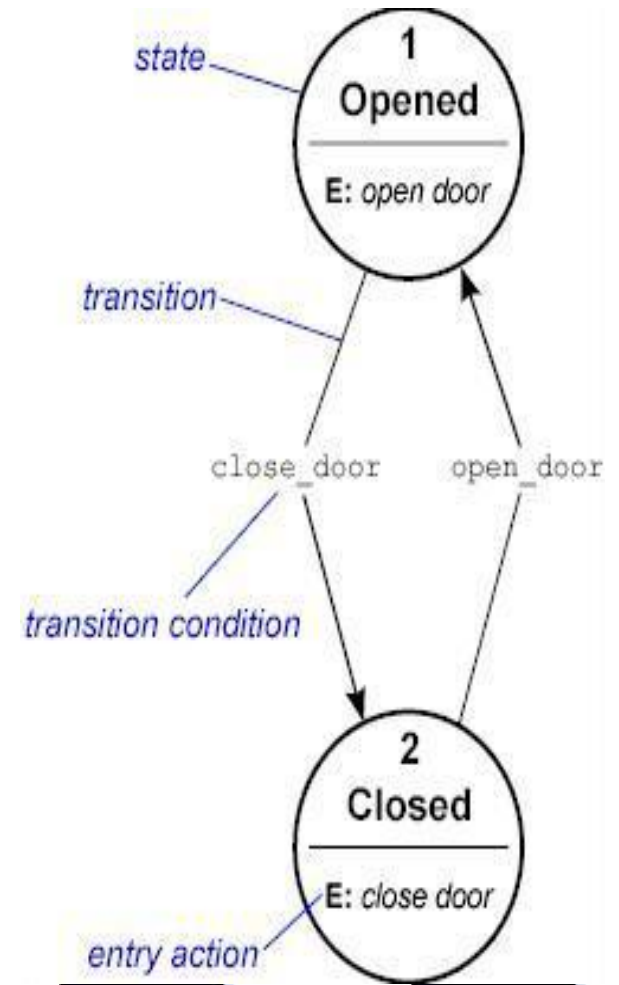**ADVANCE YOUR BUSINESS >>**

When consider Model Based Testing?

» During projects on average 25% of the requirements change

» 41% of the found defects are due to incomplete or faulty requirements

» Only 20% of the realized functionality is used on a regular basis after deployment

» If you need to redo your test cases due to changes in the requirements regularly

» If you want to review requirements and specifications at an early stage

» When you want to validate requirements before the system is build
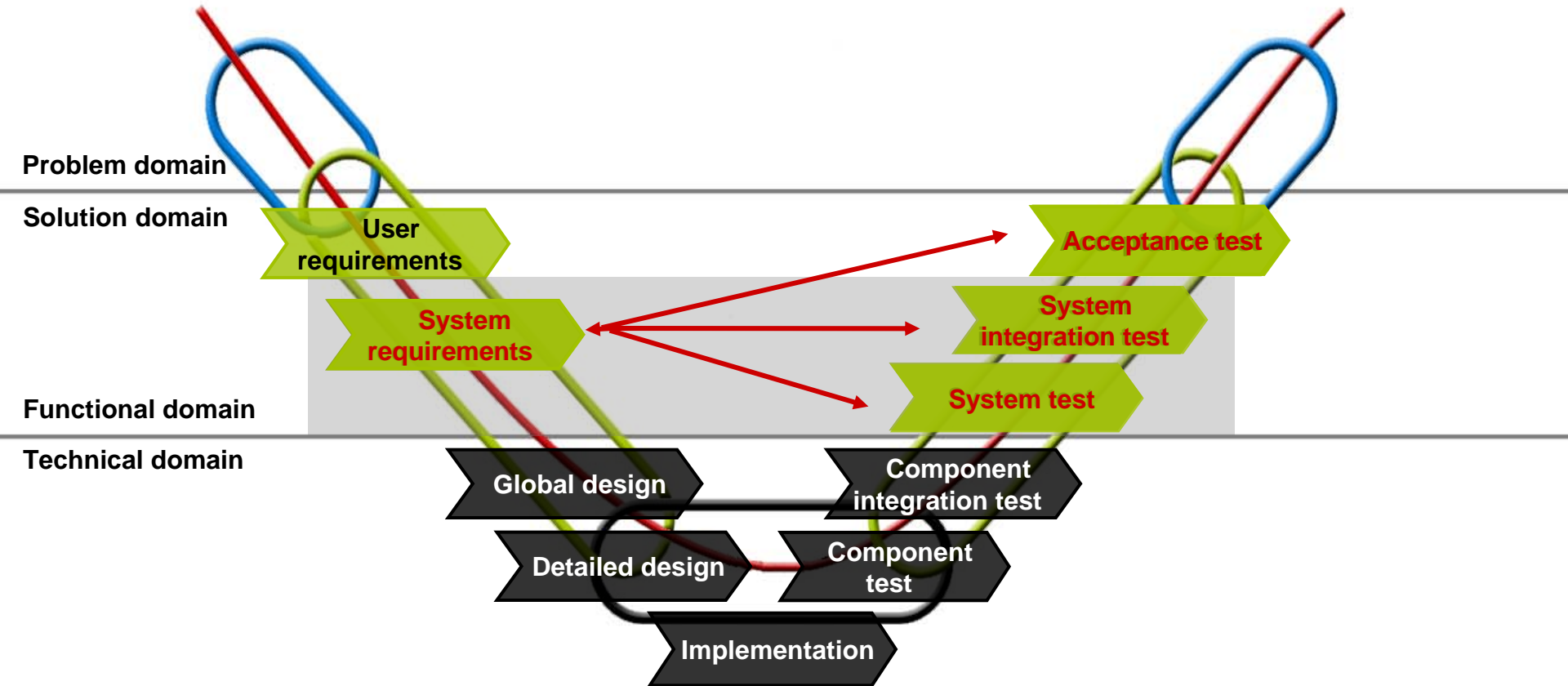
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Introduction Model Based Testing

Definition Model Based Testing:

» Model Based Testing is software testing in which test cases are derived from a model that describes the aspects (usually functional) of the system under test. The test cases are automatically generated form the model by a test generator (tool). The test will fail when the expected behaviour based on the model is not similar to the behaviour of the system under test.
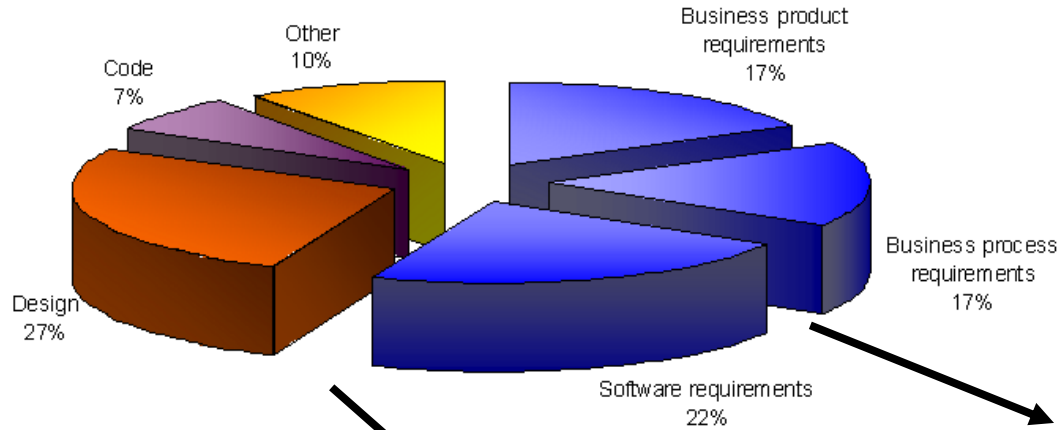
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Position of MBT in V-Model

Problem domain

Solution domain

User requirements

Acceptance test

System requirements

System integration test

Functional domain

System test

Technical domain

Global design

Component integration test

Detailed design

Component test

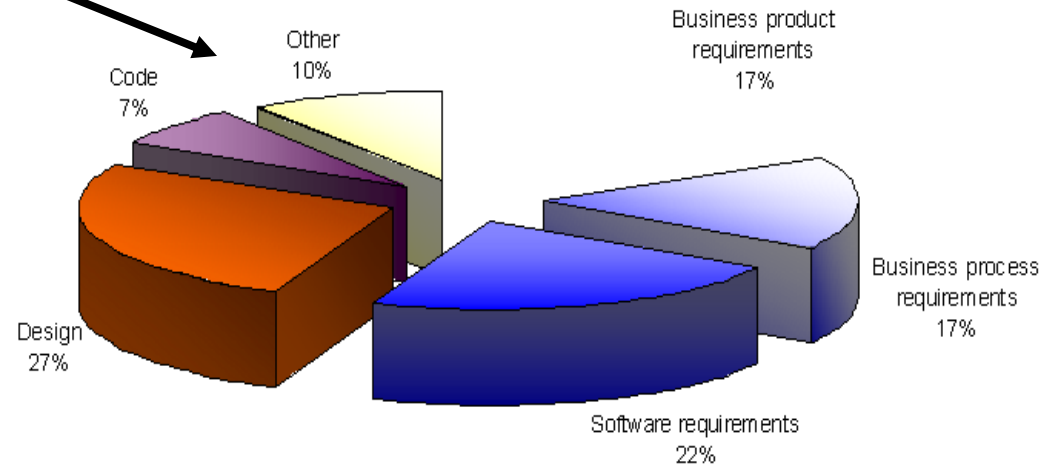Implementation

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Model Based Testing covers more defect areas

Percentage defects in software

Coverage MBT

Coverage traditional testing

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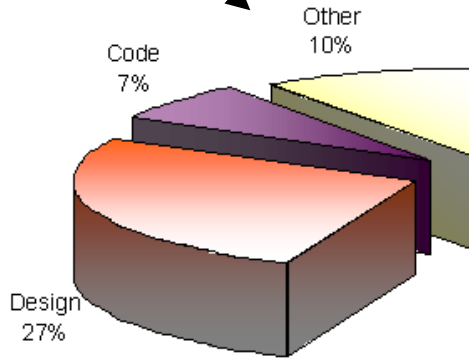
How do we use Model Based Testing?

» Requirements and Design review

» Process model

» System model

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MBT proces

Result analysis

Test results

Test Execution environment

Adaptation layer development

Test scripts

Publisher

Requirements

Reading of the requirements and modelling

UML Test Model

Smartesting Testdesigner

Validatie model

Test cases

Coverage Matrix

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Advantages/disadvantages MBT
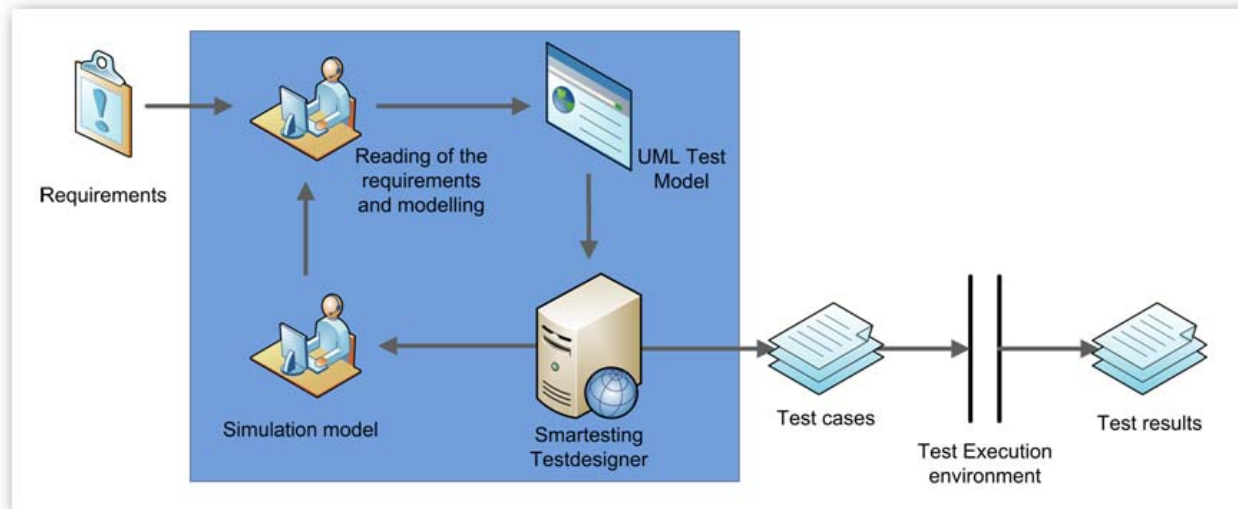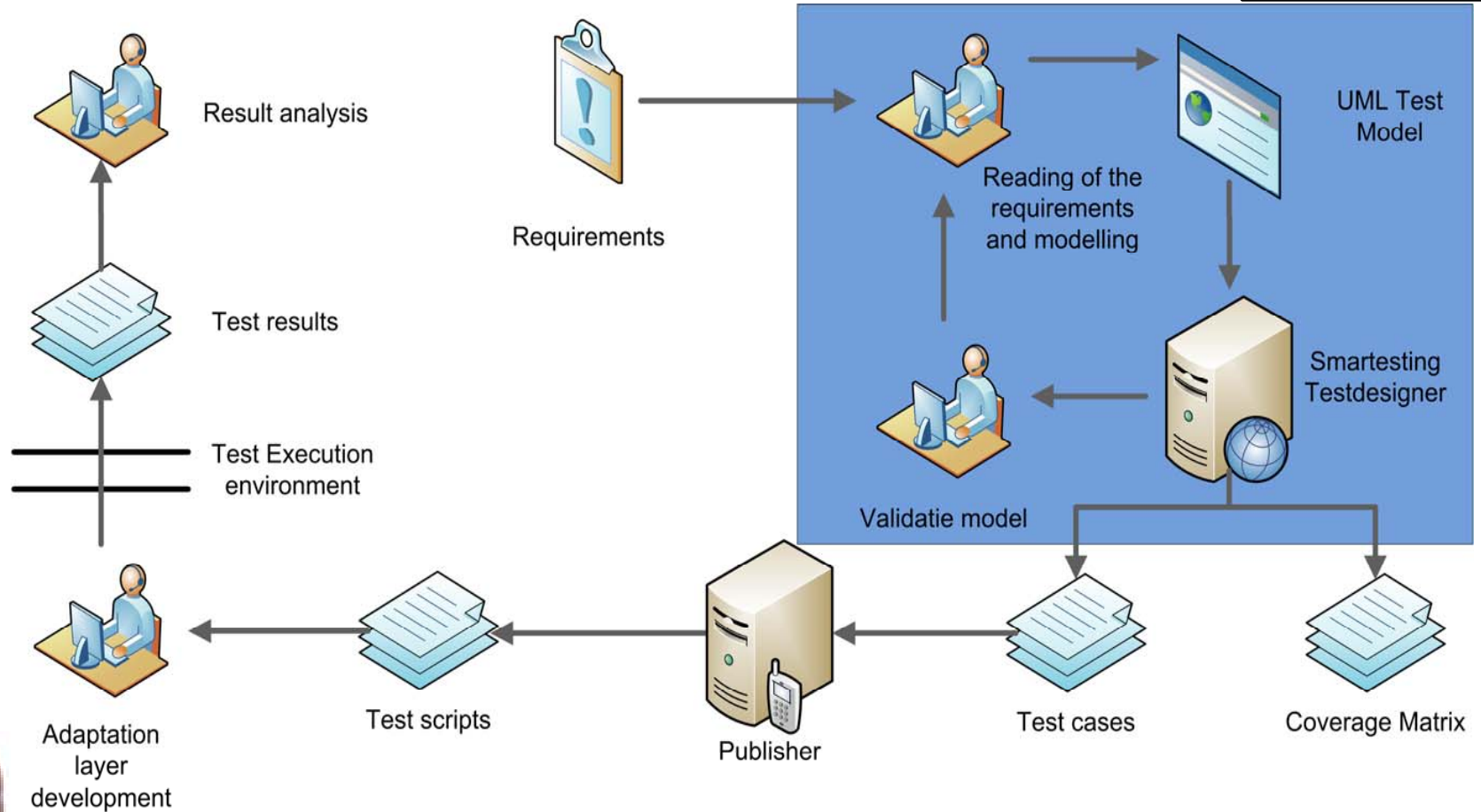
» Disadvantages
  » Additional costs on tooling and modelling
  » Additional skills are needed

» Advantages
  » Early detection of design defects and improving requirements
  » Early insight into the application
  » Time saving on test case design
  » Standardized test case design
  » Models are reusable and easy to adjust for new releases
  » High test coverage

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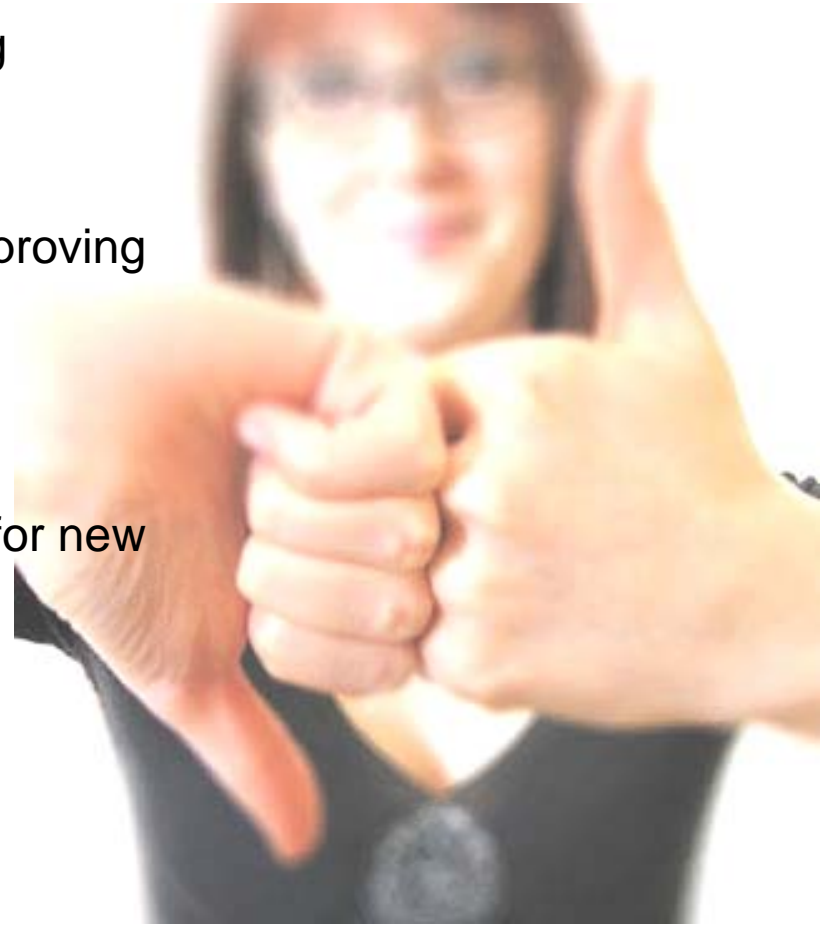
Challenge

Situation:

In the Software Factory, the development and test process has been highly industrialized. In this organization there is a constant drive to work more efficiently.

One of the developments is the projects are being done in a more Lean or Agile way.

Model Based Testing seems to be a way to industrialize the Way of Working for Testing further.

Question:

Can Model Based Testing be implemented in an Agile Project?

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Combining MBT with Agile Project

» Requirements not fixed

» A lot of regression testing

» Only DONE when Testing is DONE but time is limited

» Early review and virtual tests by use of test models

» Automated test case generation and test script generation for test automation

» Hours spent on testing is reduced

» Increased test coverage

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Manual test execution

»   Errors in requirements and functional designs can be found early

»   Automated generation of test cases on logical level

»   When requirements change, the tooling will give you a new set of test cases

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Using MBT in Agile projects (2)

» *Errors in requirements and functional designs can be found early*

» *Automated generation of test cases on logical level*

» *When requirements change, the tooling will give you a new set of test cases*

» Automated generation of scripts for automated testing

» Perform (regression) test run with "push of a button"

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Problems

» No testers available who can build test models

» Not enough testers available that can operate in Agile projects

» Tooling for generation of test cases and test scripts are not in standard toolset

» Project managers fear new developments/experiments in their project

» Agile teamleads fear MBT will make them lose agility

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Solutions

» No testers available who can build test models
  » Invest in a pool of testers with experience in Model Based Testing

» Not enough testers available that can operate in Agile projects
  » Train your testers

» Tooling for generation of test cases and test scripts are not in standard toolset
  » Have the tooling in place, preferably in standard toolset

» Project managers fear new developments/experiments in their project
  » Have your story ready and make sure it is a good one

» Agile team-leads fear MBT will make them lose agility
  » Show them it works! But be pragmatic in it.

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Advice

Don't

- » If tester has to learn MBT
- » If tester has to learn Agile working
- » If first iteration is already started

Do

- » Have trained testers
- » Have tooling in place
- » Be agile

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Conclusion

Yes!

MBT is suitable for use in Agile projects, and it will benefit the project results by means of higher quality of software with less time spent on testing.

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Questions?

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