Testing and Scrum

Fall 2007 Scrum Gathering

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PLANON
INTEGRATED WORKPLACE MANAGEMENT SOLUTION

Agenda

- Introduction
- The Classical Test Approach
- Organization
- Test Documentation
- Test Activities
- Recruitment
- Reporting
- Test Automation
- Lessons Learned

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Introduction

Planon > Personal introduction

- Ralph van Roosmalen, r.vanroosmalen@planon.nl
- Computer Science ba, studied at the Institute of Technology
- Certified Scrum master
- ISTQB Practitioner
- In Software Industry since 1997 as Software Developer, Project Manager and currently Test Manager and Scrum master at Planon.

Planon > Company

- Standard software for Integrated Workplace Management Solutions
- Private Dutch Company, Nijmegen, ± 300 employees, ± 50 employees in Software development.
- Last five years at least 23% growth in revenue, and turnover of € 21 million Euro (2006).
- Active in The Netherlands, Germany, Belgium, UK, France, Spain, Austria, Switzerland, Poland and the United States.
- Goal: to become world leader in *Integrated Workplace Management Solutions in 2010*

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Planon > Software Development

- ± 50 employees
- Six scrum teams
  - Five working on a product
  - One support team
- All feature teams
  - Team members are interchangeable
- Using Scrum since 2005
- Product Owners are not part of Software Development, customer – vendor relation
- Will engage in outsourcing development in 2008 by using distributed Scrum teams

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Planon > Products

- Planon ProCenter Windows Client
  - Legacy product, ± 15 years old, Delphi
  - Supported by team SE
- Planon Self-Service
  - ± 5 years old, Delphi
  - Supported by team Net
- Planon Talk
  - ± 5 years old, Delphi
  - Supported by team Net
- Planon ProCenter Java Client\Web2.0 Client
  - 3 years old, J2EE environment
  - Supported by teams Alpha, Beta and Gamma

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The Classical Test Approach

The Classical Test Approach

- Test team is asked to test a project
- Test Manager starts with Project Test Plan
- Test Manager or Test Leads creates Phase Test plan
- Start reviewing requirements and specifications
- Start writing test cases by test engineers
- *Wait for software, until it is almost too late to execute the test plans.*
- Start test execution phase
- Solve problems found
- 1st retesting

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The Classical Test Approach

- *Complaints from the project manager, why is the testing phase taking so much time.*
- Solve problems found during 1st retesting
- 2nd retesting
- Regression test and solve problems found during 2nd retesting
- Deliver software
- Project evaluation
- *Involvement in the next project too late: it has already started because the developers were finished with the previous project.*

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The Classical Test Approach

- Does not work in Scrum because…

- There is no test team
- You deliver potentially shippable software each sprint
  - There is no time to write test plans
  - You can't wait until the software is ready
  - There is no time to perform extensive retesting
- Requirements and specifications are lean, so
  - Reviewing of documentation cannot wait until it is finished
  - Writing test cases based on specifications is difficult
- There is no test manager within Scrum

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The Classical Test Approach

- To make testing work in a Scrum environment, you have to change…

  - The organization
  - Testing Documentation
  - Test Activities
  - Recruitment
  - Reporting
  - Regression testing approach

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Organization

- Testers are integrated into the teams
  - So no separate test team
  - Testers are always up-to-date
  - Testers can easily communicate with developers, technical writers and functional designers
- Test manager is still there, but not in the project

Organization

- Role of the tester
  - Ask questions
  - Bring people together
  - Act as the team's quality conscience
  - Testing
- Tester has to earn credit with the rest of the team to fulfil this role.

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Testing Documentation

Testing Documentation

- Test Policy
  - High level document, used for all projects
  - Just 1 A4 in size
- Test Strategy
  - Per Test Level, used for all projects
  - Just 1 A4 in size per Test Level
- Project Test Plan
  - Describes the deflections compared to the Test Policy and Test Strategy

Testing Documentation – Test Policy 1/2

- A Test Policy contains the following sections:

- Mission
- Organization
  - All testers hold the ISTQB Foundation certificate.
  - On average, each team that builds a software product should have one specialized tester on three developers.
  - The team is ultimately responsible for the quality of the delivered software.
- Testing Approach
  - The testing approach is aligned with the values of the Agile manifesto.
  - The testing strategy is based on the product risk matrix.
  - An automated regression test is available for each standard Planon software product. The regression test covers at least the product's high risks areas.

Testing Documentation – Test Policy 2/2

- Standards
- Quality Attributes
  - Functionality
  - Efficiency
- Test Improvement
  - The testing process is continuously improved by applying the improvement actions from the team- and a testing retrospective that is held after each sprint. This continuously improvement is embedded in our software process, Scrum.
- Evaluation of testing (Performance indicators)
  - Data is collected on test effort and defects; this data enables creating metrics to provide input for the test improvement process.

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Testing Documentation – Test Strategy 1/2

Unit test				
The testing of software components. Is planned and designed early in the life cycle, the tests are based on the detailed design specifications.				
Objective	Test the business logic and the application framework.			
Responsibility	The team is responsible; the developers are the operators and the testers in some cases the reviewers.			
	Risk I	**Risk II**	**Risk III**	**Risk IV**
Entry criteria	-	-	-	-
Exit criteria	➲ Jalopy executed ➲ Find Bugs executed; no Correctness bugs and Bad Practices are left ➲ 100% tests successful ➲ Unit tests are reviewed ➲ High coverage	➲ Jalopy executed ➲ Find Bugs executed; no Correctness bugs and Bad Practices are left ➲ 100% tests successful ➲ Unit tests are reviewed ➲ High coverage	➲ Jalopy executed ➲ Find Bugs executed and no Correctness bugs are left ➲ 100% tests successful ➲ Medium coverage	➲ Jalopy executed ➲ Find Bugs executed and no Correctness bugs are left ➲ 100% tests successful ➲ Low coverage
Test process	A developer creates Unit tests, often they are designed by a tester. The unit tests are reviewed by a tester.	A developer creates Unit tests, often they are designed by a tester. The unit tests are reviewed by a tester.	A developer creates Unit tests, in some cases they are designed by a tester. Sometimes they are reviewed by a tester.	A developer creates Unit tests.

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Testing Documentation – Test Strategy 2/2

Milestones deliverables	Unit tests, coverage results and Unit results.			
Test case design techniques	➲ Boundary value analysis ➲ Equivalence partitioning ➲ Statement testing ➲ Cause/Effect graphing	➲ Boundary value analysis ➲ Equivalence partitioning ➲ Statement testing	➲ Boundary value analysis ➲ Statement testing	➲ Boundary value analysis ➲ Statement testing
Type of tools that will be applied	Find Bugs (Code analysis tool), Emma (Coverage tool), Unit framework			
Environments in which the tests will be executed	Nightly test environment, subset of unit tests in a continuous build environment.			
Typical non-functional test types	Efficiency.			
Metrics	➲ Number of successful unit tests ➲ Statement coverage of successful unit tests ➲ Time behavior of the executed tests			
The approach to test automation	All tests are automated in a unit test framework, their will be no manual testing in this level.			
The approach to retesting and regression testing	If a problem is fixed in the source, all the automated unit tests will be executed and there will be one or more new unit tests to prevent reintroduction of the problem.			

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Testing Documentation – Project Test Plan

- If a project does something different than described in the Test Policy or Test Strategies, this can be described in the Project Test Plan.

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Testing Documentation – Test Policy And Test Strategy

- Why write documentation? You say it is reverse engineering, so why write it down?

- Enables to discuss test approach with management and teams
- Used to train new employees
- Regularly check to see whether we are still on the right track
- Used in presentations to (potential) customers
- It's a living document, so we adapt it when necessary.

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Test Activities

Test Activities – Sprint Planning

- Testers are present during the sprint planning
- Use risk analysis to identify testing tasks
- Testers estimate test tasks; testing capacity is finite

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Test Activities – Sprint

- Test the software
- Test Scrum; once a week
- Testers assists Developers in writing unit tests
- Testers review unit tests and/or specifications
- Testers personify the team's quality conscience
  - Daily priority of the team
  - Results unit tests
  - Keep track of problems

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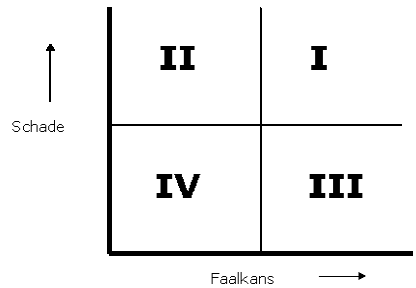
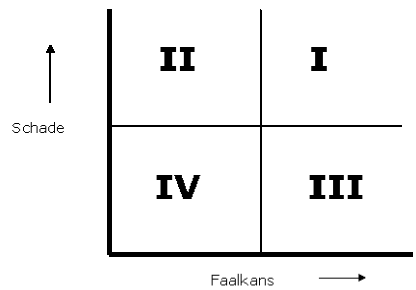
Test Activities – Sprint

- Impact
  - Part of the primary company process
  - Possibility of corrupt data
  - Number of users
- Risk of failure
  - Tools and technology
  - What kind of software: maintenance or new software
  - Number of people involved



Test Activities – Sprint

- Risk I
  - **Extensive** Exploratory Testing
  - Structured testing, all executed test are automated
  - Testing is done by the most experienced testers
  - Review of Unit tests
  - Review of the test cases on coverage and content
  - Code review
  - Review specifications
- Risk IV
  - Exploratory Testing
  - Some basic unit testing
  - Testing can be done by non-specialized testers



Test Activities – Sprint

- ET is very important, also at high risk items
  - Writing test cases based on specifications is difficult
  - ET in combination with formal techniques
- You can't wait until the software is ready
  - Testers start with automated test scripts
  - Developers have to deliver software piece by piece

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Test Activities – End of the Sprint

- Testers participate in the Sprint Retrospective
- Testers are present during the Sprint Review meeting
- Test Retrospective, retrospective about the test process
- Prepare the next sprint, investigate product backlog

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Recruitment – Process

- Looking for an “Agile Tester”
- Interview with Development Manager or Test Manager and Recruitment Manager.
- Workshop
  - Four hours – a small effort for a new job
  - Every one can say (s)he has knowledge of software testing, but can they prove it?
- Final interview

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Recruitment – Workshop

- 60 Questions about testing
  - What does the applicant know about testing (ISTQB)
  - Possibility to discuss testing with the applicant
  - How does (s)he handle stress
- Describe at least 20 test cases to test the Font dialog in Word
  - How creative is the applicant
  - Does (s)he use test techniques
  - How does (s)he describe the tests
- Case “communicate with the developer”
  - How does (s)he handle with the stereotype developer
  - Can (s)he set the correct priority and severity

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Recruitment

- We believe that soft skills are very important for testers in a Scrum environment
  - Communication
  - Flexibility
  - Collaboration
- Test techniques is something you can learn

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Reporting

Reporting

- Test Reports
  - No separate Management report
  - No *hidden* link on a corporate website
- But…
  - Visible for all team members and stakeholders in a public place
  - Simple and “less is more”

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Reporting

- What to report?
  - Open issues per module
  - Open issues per team
  - Open issues displayed in time
  - % successful unit tests
- What to report depends per organization, but…
  - Report per team, not per individual
  - Use colors: green is good and red is bad (In Western oriented countries)
  - Keep it really simple

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Reporting – Monitors in the hall

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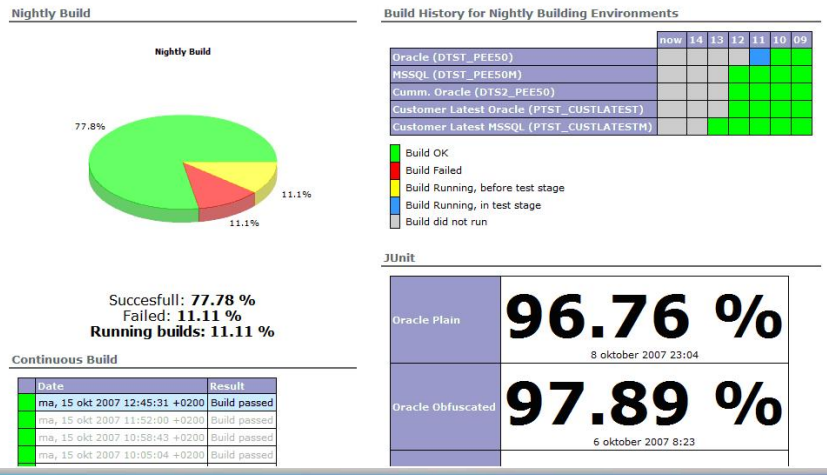
Reporting – Example report



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Test Automation

Test Automation – Why

- There is no time for extensive manual regression testing; automation is essential.
- Necessary because of incremental iterations and to support refactoring
- As Product Vendor we need to support our products for years
- Instantaneous feedback: all tests are run each night
- Makes the daily work for testers more fun

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Test Automation – Which tools

- JUnit framework
  - No testing of classes but on a higher level
  - Used by developers to test framework and business logic
- QF-Test
  - Commercial product for automating tests of Java applications with a graphical user interface
  - Used to test our Swing client
- Selenium
  - A test tool for web applications
  - Used to test our Web2.0 client

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Test Automation – Approach

- Planon Test Policy: “An automated regression test is available for each standard Planon software product. The regression test covers at least the product’s high risks areas.”
- Developers and tester discuss test automation
- Developers builds unit tests, testers reviews them or describes the unit tests, depends on the risk and available capacity .
- Tester builds a QF-Test test script to touch all GUI components and test main use-case.
- If there is special coding needed for the Web2.0 client, the tester builds a Selenium test script.
- Developer and Testers need to communicate to have the right test automation approach!

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Test Automation – Approach

- Tool smith
  - Responsible for analyzing the automated test results
  - Develops and maintains the automated test framework
  - Reviews the tests scripts
  - Prevent this role becoming a bottleneck in creating automatic test scripts

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Lessons Learned – General

- Make no statement about the quality at the end of the sprint
  - quality should always be good, and if not a product backlog item is not finished
  - Quality is a team issue not the responsibility of testers
- Testing in Scrum is different, but you can still use the same old test techniques; use them lean

Lessons Learned – General

- How to handle open (customers) issues
  - Prioritize issues
  - Add the issues to the product backlog
  - If you do not want to solve an issue, cancel or close it.
- If you plan a stabilization phase, you are going to need it.

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Lessons Learned – Test Manager

- Coach testers
- Review test approach of a product backlog item every sprint of every team
- Develop a vision on testing together with testers
- Develops and maintain the Test Policy, Test Strategy and Test Project Plan
- Increase the testing knowledge of testers; for example, hold a monthly professional circle

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Links

- Agile Testing User Group, http://tech.groups.yahoo.com/group/agile-testing/
- International Software Testing Qualifications Board, www.istqb.org
- Planon, www.planon-fm.com
- QFS, www.qftest.com
- Scrum, www.controlchaos.com
- Scrum User Group, http://groups.yahoo.com/group/scrumdevelopment/
  Selenium, www.openqa.org
- TestComplete, www.automatedqa.com

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