Using Real-World Agile Practices on Your Testing Project

John Watkins, IBM, UK
Using Real-World Agile Practices on Your Testing Project

John Watkins, IBM Partner Software Architect Team
johnwatk@uk.ibm.com
Overview

- Introduction
- Setting the Scene for Agile
- Overview of Popular Agile Approaches
- Agile in the Real World
- Summary and Conclusions

“If you try to make the software Fool Proof, they will just invent a Better Fool”, Dorothy Graham
Setting the Scene for Agile
Setting the Scene for Agile

- The Need to Respond to Extreme Competitive Pressures
- The Need to be Responsive to Customer Requests
- Need to Deliver Quality Solutions in Shorter Timescales
- Frequent Legislative Changes
- Agile Development puts Testers Under Pressure
- Testing has to be Effective & Efficient
- Developers and Testers are Increasingly Challenging the Role and Use of Heavy-Weight Processes

“Testing is Never Completed, It’s Just Abandoned”, Simon Mills, MD Ingenuity
Overview of Popular Agile Approaches
Overview of Popular Agile Approaches

- There Are Many Agile Development and Testing Approaches
  - Rapid Application Development
  - The Dynamic Systems Development Method (Atern)
  - eXtreme Programming (XP)
  - Scrum
  - And Others - Agile Enterprise / XBreed, Ruby on Rails, Evo, RUP, EssUP, etc, etc, etc

- www.exampler.com/testing-com/agile/agile-testing-essay.html

“Nanos Gigantum humeris insidentes;
We are but Dwarfs standing on the Shoulders of Giants”,
Bernard of Chartres
Common Themes

- Good Communications
- Acceptance that Requirements Will Change
- Co-location of staff & customer representatives
- Iterative Style of Development
- Agile Meetings, Start-ups & Close-Downs
- Test Design before Coding
- Well Trained, Motivated & Empowered staff
- Close Collaboration between staff – such as Pair-Programming
- Team Ownership and Responsibility for Quality
- Agile Automation

“Agile is a 30 Year Overnight Success”, Bob Bartlett, COO Software Quality Systems
Agile in the Real World
Real World Agile Research - Overview

- Based on a review of some 30+ Agile Case Studies
- Covers Many Different Agile Methods
- Covers a Variety of Different Project Environments
- Conducted as Research Towards a book on Agile Testing for publication in May 2009
- Reports Varied Views on the Successes and Failures of Agile Projects

“An Important Lesson to be Learnt, is that there are always New Lessons to be Learnt”, Tom Gilb on agile methods
Analysis of the Case Studies

- Summarises Highlights of Case Study Research
- Reviews Successful Aspects of Agile Projects
- Organises Findings Under Agile Practices For:
  - All Agile Projects (Foundation Agile Practices)
  - Agile Practices for Small Projects
  - Agile Practices for Medium Projects
  - Agile Practices for Large Projects
  - Agile Practices for Off-Site/Off-Shore Projects

“If you could just stop finding errors, we could put the time in to make sure you get the full scope of the system delivered”, MD of an Agile Testing Company to their Customer, via Geoff Thompson of Experimentus
Organisation of the Findings

- Agile Practices for Small Projects
- Agile Practices for Medium Projects
- Agile Practices for Large Projects
- Foundation Agile Practices
Organisation of the Findings

Agile Practices for Small Projects

Foundation Agile Practices

Agile Practices for Medium Projects

Agile Practices for Large Projects

Agile Practices for Off-Site/Off-Shore Projects
Structure of Results

- Within Foundation, Small, Medium, Large & Off-Site/Off-Shore, the Practices are Organised Under -

  - Agile Development and Testing Practices
  - Agile Process and Project Management Practices
    - Agile Requirements Management Practices
  - Agile Communications and Meetings Practices
    - Agile Automation Practices
## Agile Practice Check-List from the Book …

### Agile Development and Testing Practices

<table>
<thead>
<tr>
<th>Practice</th>
<th>Foundation</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Off-Shore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iteration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair Testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Involvement of Test Processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **This practice is not applicable as a foundation practice**
- **Use of this practice should be considered with care on a small project**
- **Use of this practice should be strongly considered on a medium project**
- **This practice should be very strongly considered for use on a large project**
- **This practice has particular challenges on off-shore projects**
Foundation Agile Practices
Results of the Analysis of the Case Studies, *Agile Development and Testing* …

- Early Involvement of Test Resources
- Employ Test Driven Design
- Fix All Defects Immediately
- Employ Well Bounded Iterations
- Encourage Collective Code and Test Ownership
Results of the Analysis of the Case Studies, 
*Agile Process & Project Management*… Foundation

- Employ Agile Estimation
- Employ Progress Measurement
- Employ Innovative Progress Visualisation
- Co-Location of ALL Project Stake Holders
- Process Improvement
- Everyone is a Software Engineer
Results of the Analysis of the Case Studies, *Agile Requirements Management* … Foundation

- Employ Use Cases / User Stories
- Look Beyond Requirements to Customer Needs
- Ensure All Requirements Have Tests
Results of the Analysis of the Case Studies, *Agile Communications and Meetings*... Foundation

- Daily Stand Up Meeting
- Agile Project Start-Up Meetings
- Agile Iteration Start-Up Meetings
- Agile Retrospectives

Results of the Analysis of the Case Studies, *Agile Automation* …

- Employ Automated Unit Test
- Employ Automated Configuration Management
Agile Practices for Small Projects
Results of the Analysis of the Case Studies, Agile Development and Testing… Small Projects

- Consider the use of Pair Testing
- Consider the use of Rapid Prototyping
- Adopt a Continuous Integration Approach
Results of the Analysis of the Case Studies, *Agile Process and Project Management* …

Small Projects

- Consider the Role and Use of Metrics
- Consider Making Agile Process Guidance Available
Results of the Analysis of the Case Studies, 
_Agile Communications and Meetings_ …

- Consider How to Improve Interpersonal Communications
- Consider Holding Interim Iteration Meetings
- Consider Agile Project Close Down Meetings/Extended Retrospectives
Results of the Analysis of the Case Studies, *Agile Automation* …

- Consider the Role of Static Analysis Tools
- Consider the Role of Test Harness Tools
- Consider the Role of Requirements Management Tools
Agile Practices for Medium Projects
Consider the Role of Test Refactoring
Consider Identifying the “Targets of Test”
Consider Employing Code Coverage Metrics
Employ Pair Testing
Employ a Continuous Integration Process
Strongly Consider Rapid Prototyping
Results of the Analysis of the Case Studies, *Agile Process and Project Management* ...

**Medium Projects**

- Be Receptive to the Reuse of Traditional Testing Techniques
- Make Agile Process Guidance Available
- Ensure Metrics are Collected and Used
- Reduce Documentation Overload
- Make Best Efforts to Ensure Co-Location of Project Stake Holders
Results of the Analysis of the Case Studies,
*Agile Communications and Meetings* …

**Medium Projects**

- Hold End of Iteration Retrospectives
- Consider the Role and Use of Agile Workshop Meetings
- Hold Agile Project Close Down Meetings
- Focus on Improving Interpersonal Communications
- Hold Interim Iteration Meetings
Results of the Analysis of the Case Studies, Agile Automation …

- Consider the Role and Use of a Formal Tool Selection Process
- Consider the use of Functional Test Tools
- Consider the Role and Use of Build Management Tools
- Consider the Use of Change Management & Defect Tracking Tools
- Adopt and Use Static Analysis Tools (with Build Process)
- Strongly Consider the Role and Use of Test Harness Tools
- Strongly Consider the Role and Use of Requirements Management Tools
Agile Practices for Large Projects
Results of the Analysis of the Case Studies, *Agile Development and Testing*… Large Projects

- Adopt and Encourage Test Refactoring
- Identify “Targets of Test”
- Utilise Code Coverage Metrics
- Implement a Pair Testing Approach
- Adopt a Continuous Integration Approach
- Adopt Rapid Prototyping
Results of the Analysis of the Case Studies, *Agile Process & Project Management* ...

Large Projects

- Provide Effective Access to Process Guidance
- Employ a Thorough Metrics Scheme
- Make Best Efforts to Ensure Co-location of Project Stake Holders
- Be Sensitive to the Reuse of Traditional Testing Techniques
- Adopt Accurate Solutions to Progress Measurement
- Adopt Effective Solutions to Progress Visualisation
Results of the Analysis of the Case Studies, *Agile Communications and Meetings* …

**Large Projects**

- Where Appropriate Hold Agile Workshop Meetings
- Hold Agile Project Close-Down Meetings
- Adopt Formal Methods of Improving Interpersonal Communication
- Hold Interim Iteration Meetings
Results of the Analysis of the Case Studies, *Agile Automation* … Large Projects

- Strongly Consider the Adoption of Process Enactment Tools
- Strongly Consider the use of Functional Test Tools
- Adopt and Use Change Management & Defect Tracking Tools
- Strongly Consider the Role and Use (reuse) of a Formal Tool Selection Process
- Adopt and Use Static Analysis Tools (with Build Process)
- Adopt and Use Test Harness Tools
- Adopt and Use Requirements Management Tools
- Adopt and Use Build Management Tools
Agile Practices for Off-Site/Off-Shore Projects
Results of the Analysis of the Case Studies, *Agile Process & Project Management* …

Off-Site/Shore Projects

- Adopt Effective Distributed Real-Time Progress Measurement Solutions
- Adopt Effective Distributed Real-Time Progress Visualisation Solutions
- Ensure the Availability of Distributed Process Guidance
- Adopt an Effective Distributed Real-Time Metrics Scheme
Results of the Analysis of the Case Studies, *Agile Communications and Meetings* …

Off-Site/Shore Projects

- **Adopt Effective Solutions to Manage Non-Co-Located Teams:**
  - Set up and use an effective project communications infrastructure
  - Consider Harmonising off-shore time zones
  - Consider Co-location of an off-shore representative

- **Adopt Effective Solutions to Support Agile Meetings**
  - look to Web 2 tools to assist

- **Improve Interpersonal Communications**
Results of the Analysis of the Case Studies, *Agile Automation* …

- Any Tools Must be Capable of Distributed Real-Time Use
- Ensure a Formal and Rigorous Tool Selection Process
- Very Strongly Consider the Adoption of Process Enactment Tools
- Adopt and Use Requirements Management Tools
- Adopt and Use Build Management Tools
Summary & Conclusion
REMEMBER …

- **There is NO One Size Fits All Test Process**
- **Everyone is Different:**
  - different sized projects
  - different code complexity
  - different budgets, timescales and/or resources
  - different team members of varying experience
  - different project politics
  - different purposes; in-house, bespoke, commercial, etc
- **Tailor Your Approach with Knowledge, Experience & Sense**
Summary

- Testers are under Increasing Pressure to be as Effective & Efficient as Possible; *Use of Heavy-Weight Development & Testing Approaches is Being Challenged*

- There are Many Agile Approaches that Need to be Considered; *Real World Practitioners often have Mixed Success with Agile Approaches*

- There are a Number of Agile Practices that the Case Study Analysis Suggests as being Successful

- Introduction, Roll-out and Adoption of Agile Practices can be Challenging, but the Results can be Rewarding
Thank You

John Watkins, IBM Partner Software Architect Team
johnwatk@uk.ibm.com