Interaction Design and Agile Development

Jennifer Ferreira
{jenniferferreira484@gmail.com}

James Noble
Victoria University of Wellington, New Zealand

Robert Biddle
Carleton University
Ottawa, Canada
Overview

- Related work
- What do we mean by interaction design?
- Research method
- Findings
Related Work

• Cooper-Beck (Interview, 2002)
• Jeff Patton (ThoughtWorks):
  – papers and tutorials how interaction design and agile development iterations can work together
• Lynn Miller (Alias/Autodesk):
  – papers on experience in managing projects where interaction design and the programming are done in parallel interleaved processes
• Chamberlain, Sharp and Maiden (Open U):
  – field study to ground framework for how interaction design and agile development can work together
Our Research Question

For projects using agile development, where the projects have significant interaction design:

- How do teams combine UI design activities with agile development activities?
  - techniques
  - experience
  - iterations

Focus on what actually happens, not on what should happen.
Interaction Design

• Cooper defines *interaction design* as “[referring] to the selection of [software] behavior, function and information and their presentation to users.”

• When we use the word *design*, we are talking about planning/blueprint, not implementation/coding.

• versus UI: user interface

• versus usability: desirable quality of UI
Our Study

• Interviews and observations of 9 teams
• Data analysis using Grounded Theory (qualitative)
  – Transcripts
  – Open Coding
  – Axial Coding
  – Category Grouping
  – Category Relations
Our Study

• Semi-structured interviews (13 participants)
  – developers and interaction designers in different countries

• Questions
  – 2 stages -> theoretical sampling
  – “What do you do…”
  – “What happens before/after…”
## Findings

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Approach 1: Interaction Design

• +- 95% UI designed **before implementation begins**
  – story coverage for the whole product
  – lightweight prototypes

• Evaluations with users mostly before implementation begins
Approach 1: Implementation

• During agile iterations

• Mostly refinement of existing design
  – expecting minimal changes

• Developers implement according to the paper prototype created by interaction designers

• Evaluation of implemented interaction design
  – developers adhered to 'plan'
Approach 2: Interaction Design

- UI designed **only for next iteration**
  - covers stories selected for next iteration
  - one iteration ahead of implementation
  - lightweight prototypes
- Evaluations with users happen after the implementation iteration
Approach 2: Implementation

• During agile iterations

• Incremental design
  – more stories added
  – existing design reviewed

• Developers implement according to the lightweight prototype created by the interaction designers

• Evaluation of implemented interaction design
  – during acceptance testing/demonstration sessions
Approach 3: Interaction Design

- UI designed in **parallel with implementation**
  - high degree of separation between front and back ends
  - stories covered in UI design does not necessarily match stories covered by implementation

- synchronisation point
  - just before acceptance testing
Approach 3: Implementation

• UI implemented in parallel with implementation
  – do not follow the same iterations as coding
What We Heard

• *Iteration planning affects interaction design*
• *Development iterations drive usability testing*
• *Usability testing results in changes in development*
• *Agile changes the relationship between interaction designers and developers*
• “Many things just work out during the iteration planning or during development, the UI designer doesn't have to make this absolute, final, ultimate thing that is then given to someone. You can get away with a seventy to eighty percent implementation.” *Engineering manager, Team 1*

• “The user interface design quite heavily leads the release planning that stuff. Their [developers’] task is then to snip it into pieces, put it into the framework so that during run time it's rebuilt.” *Interaction designer, Team 2*

• “When we're doing our planning meetings, we look at the items that we have on the backlog for the current sprint and we ask ourselves, ok what do the users need to be designed?” *Developer, Team 3*
What We Heard

• *Iteration planning affects interaction design*

• **Development iterations drive usability testing**

• *Usability testing results in changes in development*

• *Agile changes the relationship between interaction designers and developers*
Iterations and Usability Testing

• “We test the build everyday, we try and test with our clients up front, so after maybe, the first two week iteration.” Interaction designer, Team 4

• “Because it has turned out that that kind of iterating with built code is most expensive and that is also the most stupid thing you can do, because you can do exactly the same kind of testing with users but you can test with light-weight, hand-drawn paper prototypes.” Interaction designer, Team 2

• “There during acceptance testing, we walk through and there we actually don't mind giving a feature back to engineers, saying that it has to be implemented again, or it has to be changed because of usability.” Engineering manager, Team 1
What We Heard

• *Iteration planning affects interaction design*

• *Development iterations drive usability testing*

• *Usability testing results in changes in development*

• *Agile changes the relationship between interaction designers and developers*
Usability Testing Brings Changes

• “We mainly card fixes and negotiate between the developers, ourselves and the domain expert when we put those fixes in, which iteration those fixes will go into.” *Interaction designer, Team 4*

• “But I think it's important to get their feedback because often you can't get every type of information from them up front and sometimes it's only by them using something that you get: oh, by the way, I thought this would be in it but it's not.” *Interaction designer, Team 4*

• “With the user interface you gather as much information as you need to do some kind of real thing and then you put it through an iteration [...] so you do that, feed it back into real code and then you've got something that people can play with and look at.” *Developer, Team 5*
What We Heard

• *Iteration planning affects interaction design*

• *Development iterations drive usability testing*

• *Usability testing results in changes in development*

• *Agile changes the relationship between interaction designers and developers*
Interaction Designers/Developers

• “So we take the builds every morning, check the cards that were done yesterday and the designers can sign off on those cards to make sure they're happy with the changes that were made. And so we can kind of go back and forth between each other until we're both happy.” Interaction designer, Team 4

• “He comes to the meeting and says, ok, here's the UI and here's how we do this and this feature. And there's ten engineers sitting there and saying, look, nobody works like this, what are you doing?” Engineering manager, Team 1
Conclusions

• 3 approaches - interaction design fits into the structure of agile iterations

• In agile iterations interaction design can be:
  – implemented
  – evaluated
  – refined

• Agile iterations allow feedback and change for the interaction design as well