

Working in Harmony: Integrating the efforts of usability engineers and agile software developers

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Abstract

The goal of this tutorial is to demonstrate how usability engineering teams can integrate with agile software development organizations so they can develop more usable software without sacrificing the benefits of agile software development methods. The focus will be on how usability teams can collaborate and collaborate with agile development teams—which include agile project managers, software developers and product owners using various communication channels including iteration planning meetings and shared design artifacts.

1. High Level Goal

For people unfamiliar to agile software development, this tutorial will provide a brief introduction to the domain and how it differs from and is complementary to usability engineering methods. The primary focus of the session will be on how usability teams can integrate into agile software development organizations. These methods will use practices drawn from scenario-based usability engineering—an established usability engineering technique and XP and Scrum—two of the most widely practiced agile methods [1][3]. This session will be of most benefit to usability engineers and software development professionals who are interested in developing usable software within an agile development framework.

2. Background

Agile software development methodologies such as extreme programming and SCRUM have emerged as an effective way to mitigate major risks of software development. These methodologies strongly focus on incremental development, tightly integrated teams and close collaboration with customers [1]. However, although these methodologies can help organizations

develop software that is on-time, on-budget and that meets functional requirements, the end result was often not very usable for end users. Realizing this shortcoming, agile organizations have started exploring ways to adopt usability practices [4].

3. Approach Summary

One approach to integrating usability into agile software development teams is to have usability engineers design the user interface before development begins. However, if the usability team works too far ahead in terms of the interface design, then there is the risk of their work going to waste as requirements and circumstances change during development. Similarly, if the development team works too far ahead, then they may implement parts of the user interface without input from the usability team, resulting in a system that is less usable and may need to be redesigned. Getting the two groups to work as a single team effectively requires synchronization points during which they review each others' work, resolve conflicts, and plan for future development based on shared understanding of the client, users and high level design goals [2].

Within a particular 2-4 week development iteration—during which a portion of the entire system is designed, developed and tested—usability and agile development teams will still primarily focus their efforts on their own areas of expertise. Agile development teams will design, implement and validate system functionality while usability teams will design and evaluate the user interface. The key to this approach is defining when and how synchronization occurs. A key synchronization point—and focus of this session and the group activities is the iteration planning game. The key steps in this integrated planning game are listed below:

1. The agile development team presents what was developed in the last iteration so the product owner can first review the functionality and so the

- usability team can review the implementation of their interface design.
2. The usability team presents their design for the user interface portion of the next iteration so the product owner can review the design for acceptability and the agile development team can review it for feasibility.
 3. The usability team presents results from usability evaluations and any proposed fixes so the agile development team and the product owner get an understanding of the problems with the interface. The team prioritizes the proposed fixes based on their relative importance with respect to high level design goals and the cost to implement those fixes.
 4. The team plans for the next iteration based on the results of the previous iteration. The agile development team plans based on the remaining highest priority features which may include new or changed functionality based on usability results presented in step 3. The usability team plans to design the interface for the next highest priority features and plans to evaluate the usability of the implemented functionality from the last iteration.

4. Session Overview

This tutorial will consist of a series of presentations interspersed with a set of hands-on activities centered on a single running design problem. For the activities, participants will be separated into groups. Each group will include an agile development team, a usability team, a product owner and an end-user. The outline of the topics to be covered is presented below:

- *Presentation (20 minutes)*: An introduction to agile software development and an overview of how usability teams and agile development teams can work together. This will focus on how collaboration and communication is enhanced through development of common ground and shared design representations.
- *Activity 1 (20 minutes)*: Each team will define high level usability goals based on overall product vision, requested functionality from the product owner, and background information from end users.
- *Presentation (15 minutes)*: How incremental evaluation and improvement of the user interface is guided by the use of claims—descriptions of specific features and their associated positive and negative effects.

- *Activity 2 (30 minutes)*: Each team will split into a development subgroup and a usability subgroup. Each group will simulate an iterations worth of work.
- *Break (15 minutes)*
- *Presentation (20 minutes)*: How output from the usability team can be presented to the rest of the agile team in planning meetings and how proposed usability improvements are most effectively folded back into the project plan by taking into account factors such as ‘importance’, ‘problem severity’ and ‘time to fix’ estimates.
- *Activity 3 (45 minutes)*: Each team will come back together and run through an iteration planning game based on results from Activity 2.
- *Discussion (15 minutes)*: The tutorial will close with a Q&A and discussion session to reflect on the tutorial activities and important aspects of integrating usability engineers into agile teams.

5. Outcomes and Follow-up work

The goal of this tutorial is to demonstrate how usability engineering methods can effectively be integrated into agile organizations. Introducing these methods at HCI and usability venues will help publicize the problems associated with combining the two areas and will generate further discussion and work in this area among HCI professionals.

6. Acknowledgements

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7. References

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