How User Experience Fits in Agile

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People who do not currently practice user experience design often wonder how it would fit into their development process. It is relatively easy to understand where UX activities fit into the traditional waterfall process, but people often have difficulty understanding how they would fit into an agile development process.¹

Since agile became more widely adopted in the early 2000s, many UX professionals have wrestled with this challenge. Agile was proposed by developers as a faster and more effective way to develop software that accurately met client needs. What it did not consider, however, was how well the solution would meet user needs.² It did not include time for user research, UX design, or usability testing. So, although it may have improved the development process, it still produced poor user experiences.

Since it debuted, there has been a lot of trial and error in attempting to fit user experience activities into the agile process, and some successful conventions have emerged. This white paper will discuss those best practices for incorporating UX into agile.

**User-Centered Design**

The key to creating an effective user experience is to incorporate user-centered design (UCD) into the development process. UCD involves designing with an understanding of the users and getting their feedback on the design at various points during an iterative design process. The traditional activities of gathering business requirements and reviewing the design with the clients and project team are still included, but UCD aims to design a solution that meets both the business and user needs. An example of a user-centered design process is the Infragistics D³ approach, as shown in Figure 1.

![Figure 1. Infragistics D³ process](image)

Before design begins, the UCD process begins with user research to understand the users’ context of use, which includes their characteristics, tasks, technology, and environment. This typically involves visiting users to interview and observe them performing their usual tasks.

With a clear understanding of both the user and the business needs, design proceeds by periodically evaluating the design with users and iteratively making changes based on their feedback. Usability testing can be conducted very early in the design process with low-fidelity, paper prototypes and can continue with higher-fidelity, interactive prototypes. The advantage of testing during the design phase is that
usability and design problems are caught early and fixed when they’re easy and inexpensive to change, long before development begins.

At the end of the user-centered design process, development begins with a design that has already been proven to be thoroughly effective by the client, the project team, and the users. This saves time, avoids missed requirements, prevents rework during development, and results in more successful projects.

**Agile**

Although there are several different agile methodologies, most follow a similar process of sprints as shown in Figure 2. Sprints are two to four week long, self-contained project phases that build on top of each other. Each sprint focuses on creating a few features of a larger application and consists of its own requirements, design, implementation, and quality assurance phases. The goal is to produce working software quickly. The agile philosophy emphasizes communication and collaboration over documentation and flexibility to changing requirements over following a plan.

**Product Research and Planning**

**Product Development**

*Figure 2. The typical agile process*
Problems With Agile

The main problems with agile are that it is a programming methodology that does not begin with an understanding of user needs, does not include interaction designers, and does not include any user evaluation. In addition, focusing each sprint on a limited set of features instead of first designing the entire experience, can lead to a disjointed user experience when the features from each sprint are finally put together.

There is no time for user research during the two to four week sprints. Requirements are given verbally by business owners and sometimes people who act as user representatives, but that is not nearly the same as talking with and observing real users performing their tasks. An interface that is designed without an understanding of users is likely to fail to meet their needs.

In the original conception of agile development, there was no user experience design role. Development began directly from the requirements. It resulted in developers “designing” the user interface during coding, which often produced a poor user experience.

Traditional agile methods do include iteration and involvement of the business owners and user representatives, but they did not include usability testing with actual users. Business owners and user representatives can judge whether the application meets the business needs, but they are poor judges of whether actual users will be able to understand and use the interface. Without usability testing, the success or failure of the user experience will not be known until the application is released.

Fitting UCD into Agile

At first glance, it may seem that agile and user-centered design are incompatible, but it is possible to successfully incorporate UCD activities in an agile process. In fact, doing so overcomes the user experience problems that agile projects are prone to, while still taking advantage of the benefits of agile.

The essential elements of UCD to incorporate in an agile process are:

- Understanding the users and their context of use
- Designing the user interface before development begins
- Incorporating client and user evaluation and iterating the design
These activities fit into the process by conducting user research during the Product Research & Planning phase, by adding the high-level user experience design to sprint zero, adding UX design to the sprints, and by adding quick usability testing to the Test step in each sprint, as shown in Figure 3.

**Product Research and Planning**

![Figure 3. The agile development process with user-centered design activities incorporated](image)

**Conduct User Research First**

User research should occur at the very beginning of a project, during the product research and planning phase. After interviews and group sessions with clients and stakeholders to gather business requirements, a user experience professional conducts interviews and observations with representative users to understand their characteristics, tasks, and context of use. The UX professional documents the findings with user profiles, personas, and scenarios; which can be used as guides throughout the entire project. Although agile encourages interaction and communication over heavy documentation, personas and scenarios are relatively light forms of documentation. Ideally, in the spirit of agile, the developers should be involved in planning and attending the user research to learn about the users firsthand. The information gained about the users and their context of use makes the user stories during the sprints more
believable and relatable. Conducting user research outside of individual project sprints can build up a storehouse of knowledge to use across multiple projects.

**Design During Sprint Zero**

During sprint zero, the UX designer creates the high-level design to set the overall design direction up-front. To agile purists, this may sound the dreaded Big Design Up Front, a heresy which violates the entire notion of being agile, but the design during this stage is simply a high-level, overall design to act as a guide during each additional sprint. It provides a holistic and coherent vision that helps avoid inconsistency, while still being flexible enough so that the design and development in each sprint can remain agile. If time permits, it is helpful to conduct early usability testing to validate the design concept.

**Design One Sprint Ahead of Development**

The key to designing an effective user experience is iterative design before development begins. The UX designer creates a design in iterations, making changes based on feedback from the clients and project team, and from testing the design with users. The advantage is that changes are easy to make during design, and you begin development with a design that satisfies the client and works well for the users.

Iterative design and usability testing can fit in an agile project by doing the design activities one sprint ahead of the developers. So during sprint 1, the UX designer designs the first set of features, gets client and project team feedback, quickly tests the design with users, and iterates the design. Usability testing can be conducted quickly with low-fidelity prototypes, even with paper prototypes. The final design is then handed off to the developers to implement during sprint 2. Then during sprint 2, the UX designer designs and tests the next set of features, which the developers will implement in sprint 3, and so on. Figure 4 shows how this process works.
Each sprint is a busy time for the UX designer, who needs to do the following:

- Design and conduct quick usability testing for the next sprint
- Review how the previous sprint was implemented to ensure it matches the design
- Support the current sprint that is being implemented by answering developers’ questions and reviewing development

The advantage of designing one sprint ahead is that instead of just jumping into development, each development sprint begins with a design that has already been thought through, evaluated by the clients and stakeholders, tested with users, and iterated based on this feedback. This results in fewer missed requirements and fewer changes and rework during development. Development is easier and faster, and more can be accomplished in each sprint.

**Conduct Quick Usability Testing**

It may seem difficult, but it is possible to do quick usability testing within the short timeframe of a sprint. It requires planning and recruiting participants ahead of time for a day or two of regular testing dates during each sprint. To test quickly, you may include fewer participants for each test, but over an entire project you end up doing more usability tests, with more participants than you usually would have in a non-agile project.
Replace Deliverables with Communication and Collaboration

Deliverables take time to produce, and agile eschews excess documentation. Except during the user research at the beginning of the project and the high-level design in sprint zero, eliminate deliverables with frequent communication and close collaboration. Use prototypes rather than design specifications to communicate the design, and discuss usability testing findings in person to save time. xx

User Centered Design Fits in Any Process

With these modifications to the agile process, a project can benefit from the advantages of agile, while creating an effective user experience. User-centered design is flexible enough to fit into any development process. The key elements are:

- Conducting user research upfront to understand the users and their context of use
- Iterative design before development by someone who understands design and usability principles
- Usability testing with users at various points throughout the design process

It may seem tempting to cut corners and not include these elements. That may shorten the project timeline, but it runs the risk of creating something that is not usable, is not useful, and does not fit the needs of either the users or the business. For the most successful agile projects, these user experience research and design activities need to be included.
References


