When User Experience Met Agile: A Case Study

Michael Budwig
User Experience Manager
PayPal
2211 North 1st Street,
San Jose, California 95131 USA
mbudwig@paypal.com

Soojin Jeong
Manager, User Interface Design
PayPal
2211 North 1st Street,
San Jose, California 95131 USA
sojeong@paypal.com

Kuldeep Kelkar
Manager, User Research
PayPal
2211 North 1st Street,
San Jose, California 95131 USA
kkelkar@paypal.com

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Abstract

In mid-2007, one part of the technology organization at our company decided to develop a very large project using scrum, an agile programming methodology. The decision to go with scrum was made from a software development perspective and how the user experience (UX) teams doing the design work would fit into that methodology was not clear.

As a result, the UX teams faced many challenges and we have had to evolve our approach to how UX teams work with development scrum teams.

This case study details our UX teams' experiences working with scrum for the past 18 months, describing the challenges and issues that we faced, and the solutions that we implemented to resolve those issues. We recommend best practices for UX teams working in scrum, particularly in a fast-paced and large corporate environment. We hope that others can avoid the common pitfalls that we faced in our initial adjustment to agile and scrum.

Keywords

Agile, Agile tips, Agile-UCD, Design, Process, Research, Scrum, Technical Writing, UCD, UX, Usability, User Experience

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H5.m. Information interfaces and presentation (HCI)
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K.6.3 Software Management – Software process

Introduction

The software development community talks a lot about *agile* programming methodologies, but most of the discussion is geared towards software developers [1]. However, much less has been said about how to integrate user experience methods and practices within an agile development environment, and many researchers, designers and UX practitioners have found it difficult to rapidly adapt UX tools & practices to agile processes [2].

Some authors have recommended approaches for integrating UX teams within agile and have provided some how-to guides that have worked for them within their own business settings [3,4,6,7].

Each organization is different and there is always something to learn from each other's experiences. In this paper we present our experiences, specific examples and recommendations for best practices for integrating UX teams within agile development processes.

Our business situation

Our company has annual revenue of two billion dollars with millions of customers in many countries. The organization is split into multiple business units (BU). The authors are part of a User Experience & Design (UED) organization that supports all of these business units.

Our UED organization has a staff of over 100 designers, writers, and researchers, and is responsible for providing a world class user experience to our customers.

In mid-2007, one of the business units (BU) and its associated software development organization decided to adopt scrum, an agile programming methodology. The rest of the company remained in the traditional waterfall development process.

Scrum is an iterative programming methodology that has time-boxed development cycles called *sprints* (or iterations). Scrum focuses on cross-functional teams (*scrum teams*) that may include, for example, development and quality assurance (QA). The scrum team is responsible for estimating the work, deciding what can be done during a particular sprint, and executing against that. The team has a *scrum master*, whose job is to remove obstacles and coordinate the work [5].

The work is defined as *user stories*, which are written by the *product owner* (PO), who is responsible for defining requiring and prioritizing the stories.

The scrum literature generally does not address specific user experience roles, such as user interface designers, content writers, prototypers, user researchers, and technical writers.

Initially, we assigned eight user experience team members to these new scrum projects. This was the UX team's first real experience using an agile methodology.

Based on learning from this experience in 2007, the team made several changes for the first half of 2008. While these changes helped in some areas, significant difficulties remained. As a result, we made another round of changes during the second half of 2008

In this case study we will talk about our experiences during these 3 phases:

- Phase 1: Agile in theory, Second half of 2007
- Phase 2: Hybrid, First half of 2008
- Phase 3: UX Scrum Team, Second half of 2008

Phase 1: Agile in theory, Second half of 2007

The primary business goal of the first scrum project was to rationalize products on two different platforms into a single product on a unified platform. The UX team got involved in the project with the assumption that there would be minor front-end design work.

Two UX teams were working on two initiatives in parallel for this business unit. The UX team members were members of the development scrum teams. Several of the scrum teams were located in the US office with the UX teams; the others were located in India. Because of resource limitations, UX team members were usually members of more than one scrum team.

One team had done a significant amount of work up front, including user research, user flows and wireframes, and they were able to work relatively easily and complete their deliverables on time.

The other team did not have a chance to do work up front and started at the same time as the development scrum teams. As a result, the UX team was constantly fighting an uphill battle to provide designs to the development scrum teams, who needed the designs to continue their work. This meant long hours and often wasted effort for the UX teams as they tried to keep up and as everyone realized that the assumption of minor front-end design work was not a good one.

Despite the difficulties, the UX team did benefit from the agile process in several ways:

- Close collaboration with the broader cross-functional team.
- Issues were found earlier and addressed faster.

However, the overall feedback from the team was still quite negative for the following reasons:

- Doing the design and the development of that design during the same sprint did not work well.
- Frequent changes that were not communicated clearly caused a lot of confusion.
- Requirements were not well documented, which led to confusion about UX deliverables.
- Coordination with off-shore teams was difficult.

The most important learning from the first agile phase was that the UX work needs to be done at least one or two sprints ahead of the development scrum team.

Phase 2: Hybrid, First half of 2008

Based on what we learned in the first phase, we proposed the revised model for the next phase:

- UX team members are not part of the development scrum teams.
- The UX teams work one or two sprints ahead of the development scrum teams.
- UX and development scrum teams are co-located to reduce the coordination effort of working with remote teams.
- UX teams work closely with the BU to define requirements before UX work starts.

Our UX teams comprises of specialized professionals in various disciplines, including UI design, visual design, user research, content, editing and technical writing. In an agile environment, collaboration between the multi-disciplinary UX team and the development scrum teams, BU, and project management organization was quite challenging because of the fast pace of the project. The UX team, in collaboration with all of the cross-functional areas, came up with a process to define the level of the involvement, timing and responsibilities of each person involved in the scrum project (see **figure 1**).

In this model, a project is started by the Business Owner, who provides high-level use cases for the project. Among UX team members, the UI Designer and User Research actively work with the Business Owner to provide inputs from the user's perspective. The UI Designer then delivers user flow diagrams and high-level wireframes that support the use cases.

In this pre-sprint phase, a user researcher supports the Business Owner and UI Designer with needs analysis. This is done by consolidating & synthesizing existing research data and/or rapidly conducting additional research to provide input to user stories.

After the use cases, user flow diagrams and wireframes are reviewed and approved by the cross-functional team, the UX team begins developing design specifications that will be implemented in the development team's first sprint. Once the design specifications are reviewed and approved by the cross-functional team, the UX team moves onto the next set of requirements. During a typical sprint, the UX team works on the design specifications for the next sprint and supports the implementation of the current sprint.

Tasks that are not easy to iterate, such as localization and technical writing, are done at the end of the project rather than at the end of each sprint.

Usability testing and internal design reviews may happen in any sprint or at the end of the project, depending on whether the focus of the testing or review is on a specific design element being worked on in a specific sprint or on the overall design being worked on over multiple sprints. Inputs coming out of the testing and reviews are then incorporated into the designs and thus the implementations.

With this approach, the UX team had a reasonable time for design explorations and reviews and was able to maintain a better work-life-balance. Also, churn was reduced during development sprints because product requirements and designs were more solid before communicating them to the development scrum teams.

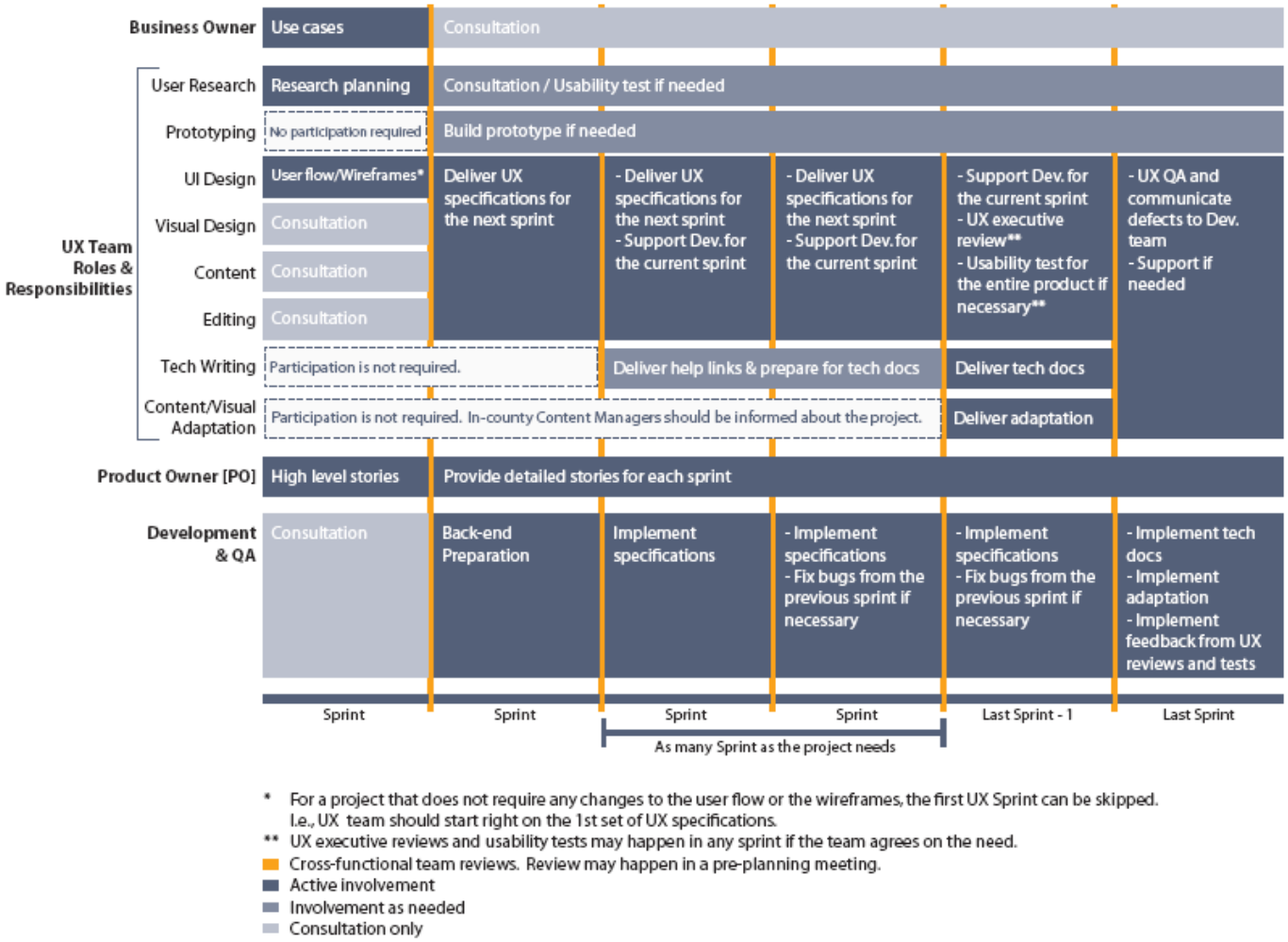

figure 1. Workflow, roles and responsibilities of UX and cross-functional team in the hybrid agile environment

However, there were still critical issues that needed to be resolved.

- Because the UX team was working before the development scrum teams were engaged, the UX teams frequently could not get necessary inputs from the development team members.
- Requirements and roadmaps from the BU were unclear or not well defined, and the UX team spent an inordinate amount of time gathering requirements.
- As new requirements and other issues arose (such as bug fixes), the UX team had to handle them as well as deliver their primary projects on time to keep the development schedule on track. This was a stressful situation and created a negative work-life balance for the UX team members.
- The fast-paced and quickly changing agile environment did not provide adequate time to look at the big picture.

The most important learning from the hybrid approach was that there needs to be a point person that monitors and communicates UX team capacity to the cross-functional team, and acts as a gatekeeper for all requirements coming through UX.

Phase 3: UX Scrum Team, Second half of 2008

Based on our experiences in the previous phases, we refined the things that were working well and attempted to fix the things that were broken.

- Schedule UX teams to run one to two sprints ahead of the development teams, as before.
- Incorporate quarterly design vision sprints into the normal sprint cycle.
- Organize UX team into a separate scrum team with its own product owner.

Seeing the Big Picture

We incorporated *design vision sprints* into the normal sprint cycle each quarter to allow the UX team to look at the broader scope of what is coming up in the next three to six months. This gives the team a chance to look holistically at the coming 3-6 months and to propose holistic design solutions to meet those needs

The inputs to the design vision sprint are the high-level business use cases coming from the product marketing team. During the sprint, the UX teams analyze the use cases and any existing, related user research, looks at overall user experience issues (such as where multiple use cases may affect the same page or page flow), and creates high-level flow maps and possibly wireframes. Being in an agile environment, these initial designs and flows are subject to change, but they provide a clear direction and vision for the designs being created in the individual sprints. Reviewing these high-level designs with the broader cross-functional team raises overall design and implementation issues that otherwise would have come up only later in the process.

Taking this time to look holistically is not just beneficial to the UX teams. It provides a major benefit to the product owners and development teams as well, giving them additional planning time. In particular, design vision sprints provide time to plan cross-business unit dependencies in large organizations where the entire development organization is not in scrum.

UX Product Owner (UX PO)

To address the issues identified in phase 2, the UX team was formed into its own scrum team with its own product owner who maintained a separate product backlog for the UX teams (see **figure 2**).

The UX PO worked in close collaboration with the program PO, the business unit, and the program manager to coordinate UX deliverables and roadmaps with the development scrum teams. The UX PO then writes UX stories for the UX team based on that collaboration.

The idea of a UX PO was somewhat controversial with the development organization who felt that the collaboration of the UX Product Owner (UX PO) and the overall program Product Owner (PO) would be additional overhead, and also felt that they owned the product backlog and that the UX teams should not have a separate one.

However, this collaboration has resulted in more complete and accurate UX stories and allowed the UX teams to focus on their work instead of spending time chasing down requirements. The collaboration of the UX PO and the program PO also ensured that the UX deliverables were considered in all stories. In the past, the PO did not fully anticipate or include UX deliverables in their stories.

The UX PO is the central point of contact for all cross-functional areas, including the development teams and the business unit. Having a dedicated person working with these teams provided a solid place at the table in planning and scheduling discussions, ensuring that UX concerns are always raised and quickly addressed. It also provided the cross-functional teams with a single point of contact for any questions or concerns they had with the UX deliverables.

UX Team Capacity

Using this new model, the UX scrum teams were able to estimate and decide on how much work they could commit to in a given sprint. In a recent sprint for example, the UX PO presented the team with 5 design stories. After some initial research, the team decided that they could commit to only 4 of those in the current sprint. The UX PO then worked with the other cross-functional areas to coordinate the overall program roadmap, based on the UX team's commitments.

The UX scrum teams have a planned capacity for:

- Creating designs based on stories in the current UX product backlog.
- Supporting development teams who are implementing previously completed designs.
- Supporting user research and prototyping for future development.

This planned capacity allowed the teams to handle unexpected new tasks, such as bug fixes, scope changes, and new requests in a more balanced way. As these unexpected tasks arose, the team modified their deliverables in coordination with the UX PO.

Tracking UX team capacity separately from that of development scrum teams also allowed the UX organization to better handle situations where one UX team was supporting multiple development scrum teams.

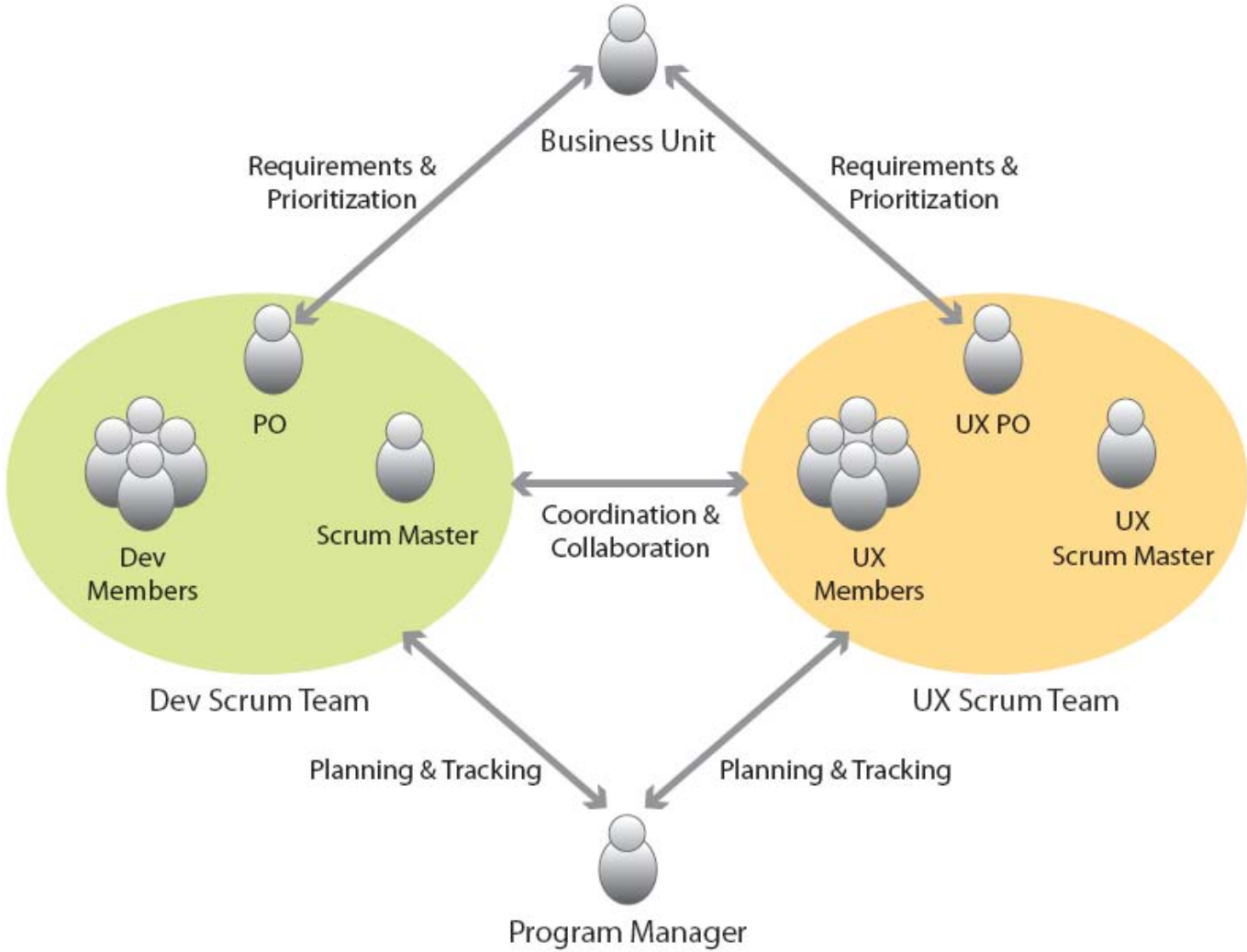

figure 2: Collaboration between the UX Product Owner, overall Product Owner, Business Unit, and Program Manager

Cross-Functional Collaboration

The UX teams work in very close collaboration with the development scrum teams. UX team members attend the development team daily stand-ups once or twice a week on an as needed basis. We have also set up standing cross-functional meetings once or twice per week that are attended by all of the cross-functional leads. The close collaboration has kept information flowing between everyone involved in the project, increased the visibility of the UX teams within the overall organization, and raised potential issues much earlier in the design process.

Recommendations & Conclusion

To summarize, the changes that we made for more effective UX support for scrum and agile product development are:

- Schedule UX teams to work one or two sprints ahead of the development teams
- Incorporate quarterly design vision sprints into the normal sprint cycle
- Organize the UX team into a separate scrum team, with its own product backlog and product owner

The main benefits that we seen from the changes that we have made are:

- Working one to two sprints ahead of the development scrum teams has resulted in less churn and an improved work-life balance for the UX team members.
- Having a quarterly design vision sprint has resulted in more cohesive and better quality designs.
- A UX product owner provides a primary point of contact to cross-functional teams and helps coordinate UX teams and deliverables.
- A separate UX product backlog helps the UX team assign resources to projects and track team capacity.
- A single UX team can support multiple development teams with less churn and better coordination.

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