

The Big Picture of UX is Missing in Scrum Projects

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ABSTRACT

The Scrum development process has gained increasing popularity during the last decade. At the same time user experience (UX) has emerged as an important quality feature. However, the integration of UX related activities into Scrum projects has not been without problems, and this area needs to be further examined. This paper describes the results from two in depth interviews with knowledgeable UX specialists working in Scrum projects in the product development industry. It describes their ways of working generally with UX, their experiences from UX evaluations and the challenges encountered from their UX work. The main concern when working with UX in Scrum projects is that the big picture of UX is often lacking. Finally, the paper discusses the differences and similarities between the experiences from the UX specialists.

Author Keywords

User experience, user experience evaluation, usability, agile software development, Scrum.

ACM Classification Keywords

H.5.2. User Interfaces-User-centered design. General Terms: UCSD, Design, Human Factors.

INTRODUCTION

The international standard ISO 9241-210 defines user experience as: "a person's perceptions and responses that result from the use or anticipated use of a product, system or service" [8]. The standard extends the concept of usability from the ISO 9241-11 standard in several ways [7]. User experience (UX) deals with much more than the effectiveness and efficiency that is the main focus of usability measurements. UX addresses satisfaction in its widest possible application, from the hedonic feelings about a product before it has even been unpacked to the feelings raised that goes far beyond the very task-oriented nature of the usability focus.

In software development the need to focus on UX keeps increasing as products and services become more

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competitive and need to function in a much broader context than previously. Recently development processes of a more agile nature have emerged that put emphasis on team work and production rather than on structure and documentation. One of the most popular agile software development processes is Scrum [14]. Many people associate Scrum with UX, but there is nothing in the process saying that user experiences are taken into considerations automatically. Hence the need to study how Scrum development projects address and manage user experience and the development of effective and agile ways of addressing usability and UX is much sought after.

User Experience Measures and Evaluation

Researchers agree that UX is a complex concept, including aspects like fun, pleasure, beauty and personal growth. UX focuses on the more emotional aspects of user interactions, shifting the focus on how the users feel while and after using the software, the sensation, and the meaning as well as the value of such interactions in everyday life. Evaluating the UX has been a challenge for IT professionals.

UX is described by Hassenzahl as having pragmatic and hedonic attributes [6]. The pragmatic attributes are task related. The main two pragmatic attributes are ease-of-use, described by effectiveness and efficiency and usefulness, described by words like clear, supporting and controllable.

The difference of usability and UX measures has been discussed extensively, especially the difference of user satisfaction and UX [11]. One of the main discussion topics is that user satisfaction is more quantitative and UX is more qualitative. Moreover, it has been pointed out that usability measures may hint to a particular problem and sometimes to a solution of it, whereas UX measures are more general. According to Law, this makes the usability measures more useful and persuasive for the IT professionals [11].

Many methods have been suggested to evaluate the different aspects of UX. The usage of 96 UX evaluation methods in various software development activities was studied in a recent study [20]. The methods were analyzed according to at what stage in the development process the method could be used. Most of the methods could be used in the implementation and testing stages, and around one-third could be used either in requirements analysis or design stages.

UX in Scrum Projects

The agile process Scrum has gained popularity in the software industry in the Nordic countries in recent years. One third of IT professionals in Iceland used this process in 2009 [9]. In Scrum, self-organizing and well compounded teams are emphasized, typically with six to eight interdisciplinary team members [14]. In Scrum, the projects are split up in two to four week long iterations called sprints. At the end of each sprint, a potential shippable product is delivered to the customer, meaning that it should be functioning for the users.

The Scrum development process has been criticized for not involving real users in the software development and for not adequately addressing their usability needs [15]. One of the main conclusions in an extensive literature survey on the integration of the end user needs into agile processes is that these have not yet been sufficiently included in the agile development processes [17]. Because of the short sprints and the emphasis on completing a particular part of the software during each sprint, the IT professionals do not have much time in their development for involving users and for conducting UX evaluation [10].

Some researchers have suggested that some human-centred activities are conducted before the actual implementation in the project starts in order to address usability from a more holistic perspective. This is also the method used in the organization described by Sy [18] where a strategic phase before the project begins, contains specified human-centred activities to understand the context of use for example. Additionally, other researchers have recommended that activities related to UI design should be performed before the actual implementation starts [4, 21].

METHOD

This workshop paper presents the experiences that two much knowledgeable UX specialists had from integrating UX evaluation into Scrum projects. These two UX specialists were interviewed in a large interview study focusing on the integration of a wider concept, namely User Centred Design in Scrum practice made in 2010. For the purpose of this workshop paper these interviews have consequently been re-examined for data regarding UX evaluation and Scrum and these two interviews were found.

The two interviews were semi-structured and an interview template was used. The interviews were carried out on site and lasted for about an hour. Two researchers conducted the interviews. One researcher was taking notes and the other asked the questions. The interviews have been transcribed verbatim. The quotations provided in the text are however not always verbatim, but sometimes slightly rephrased in order to be more readable and representative.

In the data analysis three predefined categories were used, as described for example by Silverman [16]. The categories are: 1) The UX specialists way of working, 2) their remarks on UX evaluation and 3) the challenges they have

encountered when working with UX and Scrum. The interviews were read through and coded by two researchers according to the predefined categories. The writing of this workshop paper was also a part of the analysis. Data was discussed and interpreted as a part of the writing like in Wolcott [22].

The male UX specialist is a 46 years old man who has 13 years of experience from working in different consultant companies. In his present employment he works for one of the largest IT companies in the Nordic countries with about 10 000 employees and 14 000 customers. His job title is usability designer, and he holds a PhD in Human Computer Interaction with the focus of adding a usability and user experience perspective in software development. He has worked with the integration of Scrum and UX in several different projects in industry. These projects range from "public interfaces to internal systems" but his main focus during the last years has been on public applications.

The female UX specialist is a 35 years old woman with a Master-degree in media technology science with the specialization towards human computer interaction and sound. She has worked in industry for four years. Her present employer is a large Swedish product development company founded in 1994. The company has offices in eight countries and clients from all over the world. During her four years as a UX specialist she has made much progress in her company, and she has managed to establish UX as a core activity. Her formal role is a user experience manager, and she is in the middle of a process to hire ten members for a UX team where she will be the manager. The products she is working on are adaptable custom products related to social media and the web.

RESULTS

In this section the experiences made by the UX specialists are presented. Each person's experience is categorized according to the three predefined categories: Ways of working, experience from UX evaluations in Scrum and challenges encountered. The experiences that each person has had are presented separately with the help of quotations from the interviews.

The Male UX Specialist

Way of Working – Importance of UX vision

The male UX specialist describes that the strategic vision of the product is very important for him and that he uses that as a starting point in his work with prototypes in the development: *"What I usually do when I work with products like this is to look at the vision. The strategic vision for the product is stated and then I describe that in terms of prototypes and develop it from that. So usually I work both on a strategic level and in the actual production (in the development of the product)."*

The UX specialist explains that his way of working is an adaptation of his UX work made for Scrum. The strategic

vision and the UX goals are necessary to define before the actual project starts, ie before the sprints, but also to have in mind during the whole project when defining what to do in the different sprints. He stresses that he and the team work with the UX vision before the project as well as during the project and that the vision and the development work needs to run in parallel. *“We work in the strategic level usually both before the sprints, before the project starts, but also during the project you need to both develop a vision to get the big picture, basically about the whole user experience and then from here we can decide that okay here’s a chunk of work that needs to go into production. Then it goes into the Scrum project. It’s not like first we do a lot of work beforehand and then suddenly the project starts and we do nothing more. Because I think it needs to be developed in parallel.”*

When asked about if he is a member of the team or outside a team he answers: *“A bit of both. I was a member of the teams, but at the same time I become more, almost like, since I worked more on the requirements part of the development I was a bit of both, you need to be both on the requirement side and also part of the actual production to make it work.”*

The UX specialist explains this double role of the development of the vision before the project, and the use of the vision in the development: *“You need to get the big picture, but you also need to be involved in the actual production to be sure of that what’s actually produced is what was decided on in the first place.”*

UX Evaluation – Common Understanding is Vital

When asked about how the UX is evaluated the UX specialist explains that a common understanding of the UX experience is crucial in Scrum projects since he is often not directly involved in the work during the sprints. Hence, he often has meetings before the sprints with developers and testers to set the requirements together, and to decide what to include in the different sprints. The goal of these meetings is to have a common understanding in the team regarding the product and the UX. Note that the UX specialist uses the word testing while he is actually is talking about evaluation of the user interface. *“When you have the vision clear, you can make sure that this user requirement is going to be implemented in this sprint and before the sprint starts you make sure that all the detailed requirements are set. And then we walk through it. The detailed requirements are something that we do together, some members of the team, and make sure that they are in place before the actual sprint starts. And we usually have meetings together with some developers and testers. The testers can make sure that they have the test cases in place based on this. Developers can make sure that they know what to do before the sprint starts. And then during the sprint you can be there for ad hoc discussions when a case needs to be straightened out. But most of the work is done before the sprint starts and some of the work is done during*

the sprint. Then of course when they (the team) have something to show, you can actually test it by walking through it yourselves.”

The UX specialist explains the importance of doing UX evaluation before the actual development starts in order to have a good vision of the UX experience during the project: *“I think it’s more important to do user testing before production (development) starts and then every now and then on the actual products to make sure.”*

The UX specialist stresses the importance of doing UX evaluations on big chunks of functionality when working in Scrum projects. He maintains that doing tests on small pieces of functionality is unimportant, as it is the big picture that adds to the UX. The timing of the UX evaluations depends on the progress in the project, and in his experience user tests should be done as soon as there is enough to evaluate. He describes the timing of user evaluation by saying: *“That could be anytime when you have a decent chunk of functionality to test. Again this is because I think it’s more important for us as usability people to test the big picture, to get the full, it’s not like okay I know we are able to log in, but it’s not so interesting; the interesting part is when you have the big picture in place. And then you can test maybe a number of things at the same time.”*

Challenges Encountered – UX vision Difficult to Maintain

The UX Specialist describes that despite his work and experience with the UX vision it is especially difficult to get an overview of the UX in Scrum projects: *“The drawback in Scrum is that it’s so feature oriented and the problem is that you don’t have a big picture of the whole user experience.”*

The UX specialist describes the challenge further, and maintains that the Scrum process that focuses on delivering small pieces of functionality suits most programmers perfect. The programmers have a responsibility to deliver a small piece of the software, but they often do not feel responsible for the UX or the whole system: *“I guess for a programmer it’s perfect to get a small piece of work that you can work on and deliver. But the problem is that there is now no one that actually is responsible for putting this piece of functionality into the big picture. So there is no one responsible for the actual full user experience. That’s the problem.”*

The UX specialist describes that it can be difficult to maintain the UX vision in Scrum projects: *“After a while you have added so many features that you don’t know where to put them anymore. And if you don’t have the vision clear in your head or on paper it’s starting to get quite difficult to know what to do with this piece of functionality and then you do something, just to squeeze it in. And that’s the reason for that I think it’s so important to do a thorough pre-study before prototyping and testing. Because if you have that it’s so much easier to prioritize*

and say okay say that from this vision we have decided to do this piece now and that piece then. At least we know where it all fits in. And then of course this vision will change all the time, because the market changes or whatever. But still you can work on the vision then and know where to put the pieces.”

The Female UX Specialist

Way of Working – UX is a Part of the Whole Project

The second UX specialist explains her way of working and it is noticeable that she works together with developers as well as managers, in other words she is both working in and outside the development team. She does different kinds of UX activities throughout the project: *“Right now I’m a user experience manager. Basically it’s the role of an interaction designer, but I don’t do the visual design at all. We have designers doing that. My main part is to come up with low-fi prototypes and wireframes and stories and those kind of things. I’m looking at the information architecture, the interaction architecture and then I handle it over to people who design them and implement them. In the end I also do testing as well and I take care of the focus group.”*

The specialist also explains how she prepares her work. She works in a very strategic way and influences the people that have informal power in the project. She sees to it that her solutions are presented to the developers by someone they listen to, and she does not do the presentation herself: *“When I come up with a solution I don’t do it myself. I always consult their leaders. You pick the developer that they are listening to. You kind of work around with them (the development leaders), then they are the ones telling the developers that this is technically possible and it suits our platform and it’s definitely best way to go.”*

The UX specialist explains further that in her experience the UX activities need to be a part of the whole project, from idea to testing and the UX people need to work in parallel to the developers: *“Right now the company is really focusing on user experience and have that as a mission to enhance it and provide, well as they say in the business goal, the business strategy to have an exceptional user experience so we’re going from a team of one (me) to ten people I think... we’re going to have a team, user experience team that I’m going to be managing with I think three interaction designers, two web designers and four developers as well. Because we want the whole chain. We don’t want interaction focusing on one thing and then handing it over to development, and then implementing and then testing. We want it to be within the same team, all the expertise.”*

The UX specialist explains the motivation for this change is that the company is selling UX rather than features: *“The company has noticed that it makes money. I think that’s the main force. I think they were selling features, now they are selling experience rather than features.”*

UX Evaluation – The Value of Social Skills

The UX specialist describes the UX evaluation of one particular feature, and explains that most of the evaluation was done in pre-studies. Note that the UX specialist uses the word testing while she actually is talking about evaluation of the user interface: *“We just did a huge task and we worked for three weeks doing the prototypes and testing the prototypes and those kind of things, before the development actually started. I started small defining it and then we tested out and then we came up with a concept and we presented it for developers and the product managers. This is what we think it should look like, feel like, these features are what we need in this system to be able to support it and all the motivation around the concept. Then we changed it a little bit then we got that input.”*

The UX specialist describes that often she gives feedback to the developers. Here it is noticeable that this UX specialist manages to give severe critique to the developers without them becoming really irritated. Sometimes they react when she gives comments, but she manages to solve the situation by joking and smiling. In the following the UX specialist describes how she managed to keep good attitude in the team: *“My bosses are saying you’re too diplomatic. You should be more strict. You should point with your hand and say this is wrong. But I don’t believe in that. I’ve gained respect from not doing that, so that’s what I’m telling them. If I had come in and starting doing that in the beginning, I mean I don’t think it would work but right now you know they (the developers) don’t feel threatened. It’s been more of collaboration and I’ve told them that this is how I am as a person as well. I could have pointed and said do it like this. It’s a give and take.”*

Furthermore, the UX specialist describes a very informal approach to UX evaluation where paper prototypes are used. She usually tests her paper prototypes on developers working in the company, and invites users over lunch to make them evaluate the prototype: *“We tested these prototypes in-house and with two contacts outside the company that I can test quickly with because they know who I am. Then it’s a little bit more simple to say like: ‘Hey let’s take a lunch and you can come here and test the product, rather than making such a big deal out of it. Because it’s just a paper-prototype so it’s quite hard to get people motivated to come here and assign an hour and leave their job.”* *“I think that’s the biggest struggle that we have getting people motivated.”*

Challenges Encountered – Timing of UX Evaluation is Hard

The UX specialist explains that it is hard to find a good timing for the UX evaluation in Scrum. She explains that evaluation too early in the project is difficult since the different features are too small to be relevant to evaluate the full user experience with users. If sufficient amount of features have been developed to evaluate then it is difficult to make large changes on the product because some parts of it have already been delivered to the customers and there is

little time to evaluate the remaining part before the delivery. She explains: *“When one back-log item (user requirement) is done you can’t really test that separately. Because it’s just a component within the whole feature you know. So that’s really a little bit hard because then you have to wait for all the components to be ready and that can take, it took two months I think to get it ready and then I could test it again. But then you can just tweak it a little bit, you can’t do big changes there.”*

DISCUSSION

The Big Picture of UX is Missing in Scrum Projects

Both our UX specialists mention that Scrum is feature oriented. One of them stresses that a consequence of this characteristic is that the big picture of the user experience is often missing in Scrum projects. One of their challenges is to keep their vision of the user experience of the whole software, while small pieces of the software are developed in each sprint. Salah et al. [13] argue that the HCI community and agile community do not share the same understanding of how much design and how detailed it needs to be before the actual implementation starts. The agile developers argue that UX designers want “big design up front”, meaning that the design needs to be complete and documented, but UX design iterative in nature [1]. The developers’ concern is that the requirements will change so much, so designing big parts of the software up-front will be a waste of time because some parts of the design will never be used. Successful projects that have significant user interaction have found that some level of design is necessary before the implementation [19]. It has also been argued that the fundamental requirements from the users do not change that substantially, so designing the fundamental user interaction up-front will not be a waste of time [1]. A vision of the user experience needs to be made before the implementation starts, but it needs to be iterated during the whole Scrum project, like one of our UX specialists stresses. It seems like the HCI and the agile communities do not agree on how much and how detailed design is needed before the actual implementation starts.

Designing One Sprint Ahead of Implementation

Both our informants describe the need of designing the user experience some days before the implementation of one particular feature starts. Some researchers have suggested this [12,13,18] but there is a conflict in their guidelines on when the design and evaluation of the user interface should take place. Sy et al. suggests that design happens one sprint ahead the implementation and the evaluation one sprint after the implementation [18], but Salah et al. suggest that the particular UI is designed two sprints before implementation and evaluated one sprint ahead [13]. Both our informants seem to design and evaluate before the implementation of particular feature. One our UX specialist in our study stresses that getting a clear vision of the user experience at the very beginning of a project is vital. When

designing during the project the UX specialist uses the vision as a reference point. If requirements change the vision is changed too. It is also noticeable that low fidelity prototypes are used by the UX specialist as a means to evaluate UX early on in the project.

The Collaboration - UX Specialists and the Team

Both our informants believe that UX specialists need to work closely with the developers. It has been suggested that the UX design should happen in a parallel track to the development track [12,13,18]. Still, the UX specialists should view themselves as a part of the team because the team needs to include everyone necessary to go from idea to implementation [3]. According to our informants the real life situation is not necessarily as black and white as described in the literature. They describe their roles as being both in and outside the development teams. Our informants use informal ways of collaborating with the developers, like what is practiced in general in agile development. Both our UX specialists stress that maintaining good co-operation with the developers is vital. It is also noticeable that the UX specialists do only mention a few documents in their way of explaining their work. It seems that most collaboration is informal and oral.

Responsibility for UX in Scrum is Complex

One of our UX specialists explains the big picture of UX is missing also because of the lack of responsibility for UX in Scrum projects. One interesting aspect in software development is defining the responsibility for particular activities. Responsibility here may refer to either the state of having a duty to deal with something, or the state of being accountable or to blame for something. This can be seen as either a rule based view of responsibility, or a consequence based view, as in Gotterbarn [5]. This problem can also be found in other system development processes, as is reported in Boivie et al. [2]. The notion of responsibility for UX is closely related to discussions of responsibility generally in social science in relation to groups. Here phenomena such as “the diffusion of responsibility” and the notion of “somebody else’s problem” are interesting to investigate. Diffusion of responsibility is a social phenomenon, which might occur, in larger groups, where no one in the group takes responsibility for phenomena. When a task is placed before a group of people, there is a tendency for each individual to assume someone else will take responsibility for it—so no one does. This is a negative outcome that might occur in groups where responsibility is not clearly assigned. Previous research in the area have indicated that the diffusion of responsibility might have negative effects in systems development [5].

CONCLUSION

It is hard to make any general conclusions from our study because we only analysed the interviews with two UX specialists. Still, it can be concluded that working on

projects using the software development process Scrum affects the UX specialists' way of working and their possibilities to conduct UX evaluation. Furthermore, the challenges that these two UX specialists are facing while planning, conducting and describing the results of UX evaluation are considerably affected by the overall values of Scrum especially that Scrum is feature oriented, and informal co-operation in the team is emphasised.

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REFERENCES

1. Beyer, H. User-Centered Agile Methods. In: Carrol, J. M. ed. *Synthesis lectures on human-centered informatics*, Morgan & Claypool Publishers (2010).
2. Boivie, I., Gulliksen, J. and Göransson, B. The lonesome cowboy: A study of the usability designer role in system development. *Interacting with Computers*, 18(4), (2006) 601 – 634.
3. Cohn, M. *Succeeding with agile*, Addison-Wesley, USA, (2010).
4. Detweiler, M. Managing UCD within agile projects. *Interactions*, 14(3), (2007), 40-42.
5. Gotterbarn, D. Informatics and professional responsibility. *Science and Engineering Ethics* 7(2), (2001), 221-230.
6. Hassenzahl, M. The thing and I: Understanding the relationship between user and product. In: K. Blyth, P.C. Overbeeke, A.F. Monk, P.C. Wright eds., *Funology: From usability to enjoyment*. Kluwer Academic Publishers, (2003) 1-12.
7. ISO IS 9241-11. *Ergonomics of human system interaction - Part 11: Guidance of usability*. ISO, Switzerland, (1998).
8. ISO IS 9241-210. *Ergonomics of human system interaction - Part 210: Human-centred design for interactive systems*, ISO, Switzerland, (2010).
9. Larusdottir, M.K., Haraldsdottir, O. and Mikkelsen, B. User involvement in Icelandic software industry. In: *Proc. I-Used 2009 workshop at INTERACT 2009*, (2009), 51 – 52.
10. Larusdottir, M. K., Bjarnadottir, E., Gulliksen, J. The Focus on Usability in Testing Practices in Industry. In: *Proc. HCI Symposium at WCC 2010*, (2010), 98-109.
11. Law, E.L.-C. The measurability and predictability of user experience. In: *Proc. 3rd ACM SIGCHI symposium on engineering interactive computing systems*, ACM Press (2011).
12. Miller, L. Case study of customer input for a successful product. In: *Proc. Agile 2005*, IEEE Computer Society (2005), 225-234.
13. Salah, D. and Petrie, H. Towards a framework for integrating user centered design and agile software development processes. In: *Proc. Irish CHI 2009*, (2009).
14. Schwaber, K., 1995. Scrum development process. In: *SIGPLAN Notices*, 30(10).
15. Singh, M. U-SCRUM: An agile methodology for promoting usability. In: *Proc. AGILE '08*, IEEE Computer Society, (2008).
16. Silverman, 2011. *Qualitative Research*, 3rd edition, Sage Publications Ltd., UK.
17. Sohaib, O. and Khan, K. Integrating usability engineering and agile software development: A literature review. In: *Proc. ICCDA 2010*, (2010).
18. Sy, D. Adapting usability investigations for agile user-centered design. *Journal of usability Studies*, 2(3), (2007), 112-132.
19. Takats A. and Brewer N. Improving Communication between Customers and Developers. In: *Proc. Agile 2005*, IEEE Computer Society, (2005).
20. Vermeeren, A.P.O.S., Law, E.L.-C., Roto, V., Obrist, M., Hoonhout, J. and Väänänen-Vainio-Mattila, K. User experience evaluation methods: Current state and development needs. In: *Proc. NordiCHI 2010*, ACM Press (2010).
21. Williams, H. and Ferguson, A. The UCD perspective: Before and after agile. In: *Proc. Agile 2007*. IEEE Computer Society, (2007) 285-290.
22. Wolcott, H. 2009. *Writing up Qualitative Research*. California, Sage Publications Inc.