

Matching HCI Methods and Developers Values in eXtreme Programming Development Processes

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ABSTRACT

Here within we describe our practical experience with the orchestration of human computer interaction (HCI) methods and extreme programming (XP) software development processes. We show how we selected the applied methods based on the motivating goals and values of developers by using a means-end approach. We discuss our experiences with the applied methods and conclude with some advice on which HCI methods are optimally supporting extreme programming developers.

Author Keywords

HCI methods, software development, extreme programming, usability.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

A problem when HCI engineers are to collaborate with extreme programming software developers is the difference between cultures: Software engineers on the one hand and HCI experts on the other hand come from different domains with different attitudes, approaches, backgrounds, and even different ways to express themselves. The XP process requires tight cooperation in teams, which reveals differences between engineers and HCI experts very quickly: engineers have a technical approach to software development whereas HCI experts mainly have a psychological background, hence taking a cognitive view on the software development. These differences can lead to problems. Methods to prevent this have to be integrated into the collaboration process. To avoid cultural problems HCI methods must fit the developers' needs. Our approach to provide this match of methods is to look at the psychology (goals and values) of developers and derive user-experience (UX) requirements (REQ) from them. In our case UX is meant as the programmers experience in relationship to the applied HCI methods. On this basis we select HCI methods to optimally support the development process. The insights in this paper come from a research project where the goal was to orchestrate usability and XP processes.

GOALS AND VALUES OF XP- DEVELOPERS

Foundations

In order to identify the necessary selection of HCI methods we need to consider that HCI methods - in most of the cases - are not the prime focus of XP programmers, not under their constant attention nor necessarily fit for application in XP- processes. Therefore, to achieve a higher user-centeredness and an enhanced usage and acceptance of usability methods in agile teams the following two pillars need to be fostered:

- a.) Position usability methods in a way that they fit the agile team structure and process without disturbing the primary task: software development (=adoption towards the organizational and process goals).
- b.) Align the usability methods towards the programmer's goals and values in order to achieve acceptance and use of these methods beyond indoctrination (=adoption towards psychological and developer's goals).

Developer's UX Requirements

The methods we used to elicit the requirements are focus groups due to availability of the developers and a means end approach [[2]] as it provides insights into motivating goals and values of developers. This was done to elicit the UX requirements of developers related to HCI methods. The findings suggest that the requirements are, that HCI methods:

- REQ1: have to be easy to apply
- REQ2: are efficient (in terms of time and cost)
- REQ3: are non-intrusive related to the developers workflow
- REQ4: support team orientation and inter-team communication
- REQ5: enable learning and finding new approaches
- REQ6: must make ambition (professional AND personal achievement) achievable

HCI METHOD SELECTION

Pool of Methods

When we started our research project it was not clear to us which HCI methods should be preferred in XP development processes. Hence we started with a method mix containing: user studies, usability laboratory tests, usability expert evaluations, (adopted) personas, and extended unit-tests in the sense of automated usability evaluation (AUE) [[4]]. The question then was: which HCI method to select?

Selection

Personas

Personas are archetypical descriptions of real users, representing the target user group. Personas are often described in a narrative way and are designed to help software developers to get a better understanding of the real end-user they are developing for [[1]]. We have chosen the personas method based on requirements REQ1, REQ2, REQ3 and REQ4.

Extended Unit Tests

In XP unit testing is mandatory. Our approach extends the technical unit tests by adding usability- specific test cases. At the time writing we are experimenting with a graph-based approach [[3]]. We have chosen extended unit tests based on requirements REQ2, REQ3, REQ5 and REQ6.

CONCLUSION

Personas have been a great success and have also been honoured by the developers. An observation worth reporting is that there seems to be a small fraction (in our case: one out of six) of developers who are “resistant” to the personas method – hence reject it completely. We suggest conducting a psychological screening of developers before setting up teams to be able to identify those people in order to cope with the problem.

The experience with the approach to extend unit tests is twofold: on the one hand we succeeded in including automated usability evaluations in the nightly build. On the other hand the actual testing frameworks are not suited for AUE. Hence new AUE-tools have to be developed. Our graph-based approach is promising but – by now – much to abstract (there is a need for graph- and HCI knowledge to interpret the results). For practical implementation such

tools have to provide easy to understand and clear usability feedback to the developers.

FUTURE RESEARCH

Future research will have to provide AUE-tools, which enable developers to easily grasp HCI knowledge from the tool in order to implement usability accordingly.

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