

# Usability in Agile Software Development: Extending the Interaction Design Process with Personas Approach

Jukka Haikara

VTT Technical Research Centre of Finland  
P.O. Box 1100, FIN-90571 Oulu, Finland  
Jukka.Haikara@vtt.fi

**Abstract.** The current agile software development methods do not seem to address usability and interaction design issues enough, i.e., the interaction design process may remain implicit. However, few studies with positive results have been conducted concerning integrating explicit interaction design process into agile software development. In this study, the interaction design process of Mobile-D™ is extended with the personas approach. Empirical evaluation of the resulting model is performed in a case project. The results provide view points for both industrial and scientific purposes on the applications of interaction design activities in different stages of agile development process.

**Keywords:** Agile Software Development, Interaction Design, Goal-Directed Design, Personas, Mobile-D.

## 1 Introduction

According to Constantine [1], no usability communities were invited to the formation of Agile Alliance [2]. Thereupon, Kane [3] has pointed out that the Agile Alliance web-site does not have an article category for usability or interaction design. Nowadays, however, the web-site has a category addressed to usability, which contains twelve articles [2]. This indicates the growing interest on usability in agile software development (ASD). The roles of usability engineering and interaction design process among ASD methods vary. In Extreme Programming (XP) [4], customers are equated to users and their opinions are valued during planning and release days. In Feature-Driven Development [5], well-formed user documentation and extensive on-line help are a part of its usability engineering. In Crystal Methodologies [6], an explicit interaction design process is defined. Nonetheless, this indicates that an interaction design process can be integrated in ASD.

One way to perform interaction design is to utilize personas [7]. Persona is a representation of a hypothetical user, the intended end-user which is constructed by performing research, e.g., interviews, observations or market research. The personas and their goals form the basis of the design. Although Cooper [7] and Beck [4] have discussed the relationship of XP and Personas and disagreed [8], Beck has said that interaction designers can use personas to support the interaction design process. In this study, the interaction design process of Mobile-D™ (Mobile-D) [9] of which practices are based on XP, is extended with personas. A model is constructed by

analyzing the contradictions between the principles of the personas and the agile software development. The constructed model is evaluated in one case project.

## 2 Research Design

The research approach of this study is qualitative. The author participated in the build, implementation and evaluation of the model and acted as a participant-observer in the project. The data was collected and analyzed throughout the project. None of the participants had earlier experience on the personas. After the project four face-to-face interviews were conducted in order to elicit the developers' persona experiences.

The aim was to integrate an explicit interaction design process into ASD. As a result, a model was constructed according to current knowledge in which the interaction design process of Mobile-D was extended. One starting point of the model was to compare agile principles and personas/usability principles. The summary of the contradicting (C) principles and imprecise (I) principles can be seen in Table 1. The differences between principles are categorized as follows: none = nothing; minor = consideration; medium = pay attention to; major = must be paid attention to.

**Table 1.** Differences of the ASD and personas principles

<b>ASD</b>	<b>Personas</b>	<b>Difference/ ID</b>
Welcome changing requirements...	One set of requirements per one project.	major (C1)
Deliver working software frequently...	One delivery.	major (C2)
Simplicity is essential.	Extensive design up front.	major (C3)
Our highest priority is to satisfy the customer...	Design process iterative, but implementation process not iterative.	medium (C4)
Working software is the primary...	User satisfaction is the primary focus.	minor (I1)
Continuous attention to technical excellence...	Working software is a part of using experience. Design is referred to as interaction design.	none (I2)

## 3 The Model

The integration of personas method and Mobile-D process is illustrated in Figure 1.

The build and evaluation of the model was based on two criteria: process and usage. Process criteria include the applicability of the proposed model to the used process, i.e., Mobile-D. Figure 1 illustrates how the different stages of the Mobile-D were affected by the adoption of personas. The usage criteria evaluate the satisfaction and awareness of the developers. Satisfaction represents the developers' view on the benefits and problems of applying persona while Awareness reveals how well the developers were aware that the personas exist (e.g., personas and their overall usage).

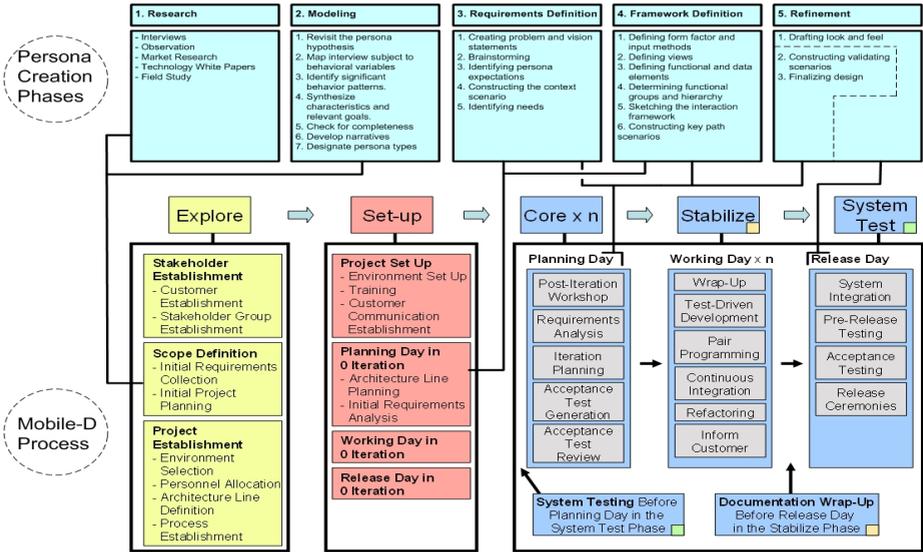


Fig. 1. The integration model of Mobile-D process [9] and Personas [7]

In Table 2, the summary of the empirical findings based on the interviews and participant-observation are identified and aligned with the phases of Mobile-D.

Table 2. Summary of empirical findings

Category	Criteria	Finding
Mobile-D Process	Explore Phase	<ul style="list-style-type: none"> <li>- In the case project, a calendar month was not enough to perform extensive research and modeling of the personas.</li> <li>- Every negligent matter performed in the explore phase can affect the whole project.</li> </ul>
	Planning Day	<ul style="list-style-type: none"> <li>- The overall target must be set, so that the whole project serves one goal. Iterations are only to refine the product.</li> <li>- The framework definition must be performed carefully to prevent extra work which can cause changes to the interface.</li> </ul>
	Working Day	<ul style="list-style-type: none"> <li>- The developers must be reminded that personas exist. The posters on the wall are an adequate reminder, but when time passes by the personas can be forgotten and therefore interaction design can be misleading.</li> </ul>
	Release Day	<ul style="list-style-type: none"> <li>- The customers should be familiarized (the customer establishment in the set-up phase) with the personas, because otherwise their opinions concerning the end-user’s needs interfere with the personas’ goals.</li> <li>- The customers were not comfortable adopting roles of the personas: an end-user representative is recommended.</li> </ul>
	Other Issues	<ul style="list-style-type: none"> <li>- Because scenarios were not constructed, decisions on interaction design were difficult to conduct.</li> </ul>
Usage	Satisfaction	<ul style="list-style-type: none"> <li>- Personas provide a clear target to focus on.</li> <li>- At first, personas might be a peculiar way to approach designing.</li> </ul>
	Awareness	<ul style="list-style-type: none"> <li>- The goals seemed to be more important than the persona’s name as proposed in the literature.</li> </ul>

## 4 Conclusions

This case study focused on the role of usability and extending the interaction design process in agile software development, namely in Mobile-D method. As a result, the interaction design process of Mobile-D was extended with personas activities affecting the explore phase, planning, working and release days. The explore phase was found to be a crucial phase of the project due to its affection to the whole project. Facilitating the customer establishment in the set-up phase should familiarize the customers with the existing personas. In the first planning day, design target, primary persona, is defined. Furthermore, the framework of the interaction design is to be defined in the first planning in order to avoid extra work in the later iterations. Thereafter, the developers can focus on a certain user interface. During the working days the personas were placed on the wall to create awareness. The release days were not successful with customers who were not familiar with the personas. The developers considered personas as a communicative tool. The personas' overall goals were more significant over the personas' names.

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