Evaluation report of requirements elicitation practices

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1. INTRODUCTION
This report describes the lessons learned on requirements elicitation practices in the industrial partners of the QURE project. In the early phases of the QURE project, the current requirements engineering practices of the industrial partners were assessed. In addition, the initial state of user requirements elicitation practices were examined in more detail by interviewing in three of the industrial partner companies. We found that the projects in these companies were technology driven and there were few direct contacts between developers and users.

As a response to the interview results, Kone wanted to develop more user-centred requirements processes as direct contact with user and customers was seen as a success factor in projects. A user study approach, which was developed in QURE, was piloted to gather user needs. The user study approach was also piloted in Tekla, Vaisala and Nokia in single projects.

2. THE INITIAL STATE OF PRACTICES
The initial state of user requirements elicitation practices were examined by interviewing in three of the industrial partner companies. Three designers representing different projects were selected from each of the companies. We found that the projects were technology driven. The companies had considerable experience of developing products, and the practitioners seemed to rely on this earlier experience, using indirect links such as sales persons to users and customers.

Five out of nine projects had no direct contact with users, or contact was not established until the late prototype phase. Consequently, in certain projects the user and customer requirements were not elicited or documented. Even if a project had direct contacts with users, gathering user information was occasionally passive, methods were informal, and the gathered information was not documented in two of the companies. One of the companies had set up a help desk to gather customer feedback. Six interviewees reported that they would need more information about customers, and three of them similarly mentioned users. Some of them felt that more information were needed about how to gather, describe, and classify user and customer requirements.

3. USER STUDY PILOTS
A user study approach was developed in QURE. The goal of the user studies is to gather user needs cost-effectively directly from users and utilise the user needs descriptions in requirements elicitation. More information about user studies is available in Kujala and Mäntylä (2000) and Sari Kujala's dissertation (http://lib.hut.fi/Diss/2002/isbn9512259001/). Kone was the first one that piloted user studies in their product development. A process improvement group, which was focused on user requirements gathering, performed the pilot. The user study approach was also piloted in Tekla, Vaisala and Nokia in single projects.

Table 1 presents the tasks, which were completed in the case companies. Stakeholder identification was seen necessary in order to consider all stakeholders and find representative users, from whom to gather user needs. User needs were described in written reports or user need tables. User need tables resemble use cases, so they help developers transfer the user needs descriptions to use case descriptions. In Tekla, user need descriptions were not used in developing use cases, as the user needs gathering, and documenting use cases, were done in parallel.
4. EVALUATING RESULTS

The user studies were found useful in all four companies. New information about user needs and requirements was gathered. When user need tables were used, they were found to be useful way to represent user needs to make them understandable and useful for designers. User need tables helped the designers translate user needs to user requirements and write use cases from the user point of view.

In Kone, the goal was to improve requirements elicitation practices by a multi-disciplinary group. The results of the user study pilot were evaluated by more profound analysis using interviews and questionnaires. It was found that the results provided new information for a product manager and increased innovations and customer satisfaction. However, the person hours spent were not more than 111.5 hours which included 1.5 hours training.

Based on these experiences, Kone decided to invest in gathering data on user needs, and one usability expert has responsibility to organise regularly new user studies. During the following two years after the user study pilots, Kone has performed several customer visits and four user studies, in which approximately 80 users and customers have been visited. In addition, new persons from Kone have been involved in performing user studies so that they could learn the methodology.

Also Tekla has formed a development group for improving requirements elicitation activities and Qure has arranged them a training session for gathering user needs. Nokia has focused on developing guidelines, processes and templates for user studies. Also Kone has plans to develop guidelines to support the user study work in Kone.

5. LESSONS LEARNED

The following lessons have been learned:

• **User needs gathering is a necessary step to develop a useful and usable product.** We need real data on users and their needs, gathering user feedback with use cases is not sufficient. Users are still interpreting use cases on the basis of their present way of performing the tasks, and these implicit assumptions risk the mutual understanding between users and designers.
• User study approach is practical in real product development contexts and the results are useful even with relatively low costs. Developers, a usability expert, salesmen and product managers found the results of user studies useful, and innovation and customer satisfaction were increased. The approach is to easy learn, no extensive training is necessary, but some support is needed.

• User need tables are a useful way to represent user needs to make them understandable and useful for designers. User need tables summarise several kinds of user needs in one table and they form a link to use cases.

• In introducing user studies to product development, small-scale pilots and multidisciplinary group represent an effective strategy. The team and also outsiders could see the results quickly and became convinced of the importance of gathering data on user needs. The multidisciplinary group ensured that all existing information and skills were available and the team learned by doing. Document templates and other guidelines are useful in supporting and disseminating the user study practices.

6. REFERENCES

More information is available in:

