On the Move with a Magic Thing: Role Playing in Concept Design of Mobile Services and Devices

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ABSTRACT

Designing concepts for new mobile services and devices, poses several challenges to the design. We consider user participation as a way to address part of the challenges. We show how our effort relates to current and past research. In particular, PD (Participatory Design) has inspired us in developing two participatory techniques. The two techniques are organized around situations either staged or real where users and designers can envision and enact future scenarios: a role-playing game with toys, and SPES (Situated and Participative Enactment of Scenarios). They were developed in an industry-funded project that investigates services for the nomadic Internet user of the future. We then discuss how the techniques help in facing the design challenges.

Keywords

Mobility, participatory design, games for design, acting out

INTRODUCTION AND MOTIVATION

This research was carried out in GO PROD, a subproject concentrating on user aspects in the project GO. The objective of the GO Project is to implement a wireless network in the campus area of the Helsinki University of Technology to investigate the Service Architecture for the Nomadic Internet User of the Future. While the project as a whole is characterized mainly by technical research, the purpose of our part in the project is the development of use scenarios for the system, consisting of both services and devices. We started studying the population of the campus and we have so far considered the user groups consisting of students and researchers. At the beginning of our project, we faced among others, three issues: designing open-end with no particular focus, designing for mobility, and designing beyond workplace boundaries.

Open-ended design

In our project, the design starts with no focus on particular practices. The type and capabilities of personal terminals

has to be co-developed along with the future services. Moreover, the new technology is expected to generate new practices through totally new services. This first issue is present in other cases of design of novel technologies, but with the rapid development of wireless networks, it is becoming a current issue. Although, many Finnish companies are pioneers in designing such services and devices, it is still an open issue.

Designing for Mobility

We are expected to address in particular the needs of future "nomadic" users, therefore we aim at developing devices and services that support mobility of people. Previous studies on mobility show that designing mobile cooperative systems requires a new way of understanding work practices. According to Luff and Heath [27], there has been a tendency for developers of CSCW systems and workplace studies to overlook important aspects of mobility. To explore mobility, one has to understand "activities in which people engage, with others, when they are mobile, and how various tools and artifacts, feature in those activities" [27].

Designing beyond the workplace

Technology like mobile devices and Internet are used increasingly for personal practices and work seamlessly. Therefore, while studying future mobile devices and services, situations of personal use should be considered as well. In these cases, life style and culture seem to have decisive influence on the adoption and use. The design faces the challenges to capture these socio-cultural aspects and project them into a future situation to develop product ideas. The users, on the other hand, can not fully articulate feedback on future non-existent products [33,34].

When designing for totally new use situations, the risk of making wrong design decisions is high. Thus, it is beneficial to iterate and keep the design-evaluation feedback loops as tight as possible. A practical way to do this is to engage future users of the new services into the design process itself, and use some variant of participatory design techniques. We ended up by constructing two role-playing user exercises to generate participatively use scenarios and link the field studies with the generative design. The purpose of this paper is to reflect on the adequacy of our two participatory techniques to face the three issues presented above.

In the next section, we relate our work to past and current research in CSCW (Computer Supported Cooperative Work) and PD (Participatory Design). We then describe the two techniques that we developed and applied to engage the user in generating use scenarios and product concepts. In role-playing game, the first technique, users play in a mise-en-scène made out of toys. According to a given situation and a set of rules users envision and try out product ideas. In the second technique, SPES (Situated and Participative Enactment of Scenarios), users are followed during their normal activities and provided with very simple mock-ups. The mock-ups help them envision and enact use scenarios as fruitful situations or incidents arise. Finally we discuss how the techniques helped us in addressing the above mentioned issues.

RELATED WORK

Open-ended Design

Scenario Based Design

During the last decade, scenarios have become one of the standard means to discuss and envision future use situations of technology [21, 4]. There are many varieties and interpretations of scenarios, but in this context and in general they are short narratives about a cast of fictive characters acting in situations with either real or imagined technology (see for example [39]). There are potential limitations in using scenarios in a traditional user-center design manner in case of non-existing products. As a way of talking about action, scenarios are far removed from the situatedness of activity. The users are asked to give feedback on a static representation of activities, which they are assessing in a passive way. Thus, we turned to PD techniques were users have an active role while assessing and envisioning scenarios.

PD and games-for-design

Using role-playing and games is relatively well established in particular in the Scandinavian Participatory Design tradition (e.g. [12, 1, 32, 37, see also 29 and 30]). Perhaps, the most serious work has been presented by Ehn and Sjögren [12]. Their objective in using games "is neither to encourage competition nor to teach a theory from above, but support situated and shared action and reflection." (p. 254) Moreover, games are a way to "create a common language, to discuss the existing reality, to investigate future visions, and to make requirement specifications on aspects of work organization, technology and education." (p. 252)

In their work, Ehn and Sjögren [12] present several different games. We discuss here the first two: a game of the late '70 in the woodlands of Scandinavia and a game used for design of Desktop Publishing. The game was organized to explore the effects of different business strategies for the design of technology and organization. Three design games were used to develop an action program for changes in their workplaces: Carpentrypoly (a game similar to monopoly), the Layout Kit, and the

Specification Game. The Layout Kit consists of a collection of cards representing machines and accessories. The cards were used on a large sheet to lay out existing shops, identify problems, and sketch new alternatives supported by a shared understanding. Carpentrypoly was used to investigate market relations and business strategies. The results from the first two games were later structured in the Specification game.

The dramatic design context of the Desktop Publishing Game was based on six concepts. The *Playground* is the subjective and negotiated interpretation of the context. The *professional roles* were in role scripts. The *situation cards* are examples of a breakdown situation. *Commitments* are considered as actions made by players in relation to situation cards. *Conditions* for these commitments are negotiated, and an action *plan* is formulated. These concepts were used through four steps: Prologue where the game is explained and playground designed. The first Act is a session in which, situation are played and commitments made under certain conditions. The Second Act is based on an updated playground where work with a real publication is played. The third Act brings back to reality the participants with a formulation of an action plan for negotiation with surrounding organization.

The work of Ehn and Sjörgen [12] helped us in understanding games as a way to create a common language in design. Moreover, they provided us with some ideas for organizing the games. The PD perspective is different because it operates in work organizations and among others, goals of the user participation are worker empowerment and workplace democracy.

More recent work, by Binder [5], proposes engaging users actively in scenario generation using video. Buur and Bagger [7] on the other hand show how to replace traditional usability testing through more participative user dialogues in product design.

One particular technique outside the PD arena, with similar goals to ours, is Focus Troupe. Salvador and Sato [34] developed Focus Troupe to collect deep contributions from potential customers on new product ideas. Traditional marketing technique such as focus groups, and surveys, are limited because the customer has yet no experience of a product that does not yet exist. "The idea of focus troupe is to use performance to elicit contextually relevant, personally experiential user feedback for products that do not yet exist." [33] In Focus Troupe, dramatic vignettes are presented to an audience of potential customers. The product concept is featured like a prop or dramatic element in a familiar situation adapted to the new invention. After the play, the audience of potential customers form small groups engaging in several conversations about the concept armed with a full understanding of the implications, operations and expectations of what the product would do.

The designers of the product concepts are present at the focus troupe to answer questions from the audience and help keep the discussion on a productive track. The comments explain reasons why the concept does or does not fit in their lives.

Further possibilities were investigated in a workshop at the Participatory Design Conference [33]. The techniques envisioned would involve performing quick, intense, immersive, and engaging activities focused on developing a shared context of use against which end-user evaluations will make sense. The workshop developed a framework with two distinctions. The sessions can be explorative if the product concept is rough and evaluative if the concept is refined enough. Moreover professional actors or the potential customer themselves can act as participants. The outcome of the workshops in terms of various participatory variants of Focus Troupe can be found in [34].

Focus Troupe seems to be appropriate when a product concept is already at hand. The two techniques developed in the GO project rather deal with the generation of product concepts.

Mock-Ups and the design by the user
The idea of mock-ups was introduced in PD projects (e.g. UTOPIA project [11, 9]), opposed to the use of traditional specification documents it was a way to try to involve users actively. Mock-ups are dummy physical representations of the future products. Their function is to allow simulation of procedure, tasks and layouts. Ehn and Kyng [11] suggest that they:

- encourage "hands on experience" and support user involvement beyond traditional system description;

- are understandable hence there is no confusion between the simulation and the real thing, no technical competence is required to modify them;

- and are inexpensive and " fun to work with".

We believe that mock-ups combined with acting out of scenarios help envision technology use in a creative and realistic way.

As we recognize that "every course of action depends in essential ways upon its material and social circumstances" [30] we were also inspired by efforts in PD research in understanding the world of users in natural settings. PD has developed not only techniques where users directly participate in activities by the designer but also techniques where designers participates in the user world [29]. In a previous work [6] the authors discuss how ethnography can be linked to design. If a trained ethnographer carries out the ethnography, the knowledge might be transferred to designer through written reports and presentations. However, the designer will have to identify the relevant information gathered by the ethnographer. The ethnography could be carried out by designers and ethnographers, or by ethnographers, designers and users. In the latter case the

"understanding and insights derived from the study would not necessarily be represented in a written report, but instead would be reflected in a co-designed artifact" [6].

In the second technique SPES, we make use of mock-ups and we participate in the user world. This helps us in having a better link between previous ethnographic studies (or other information gathering activities) and the design of future technology. Moreover, we expect to validate our understanding about the users.

Designing for Mobility
Mobility is one of our concern areas, and during the last years, it has become increasingly important in visions of future public service systems. There are a number of papers in the area of CSCW, which discuss mobility in one way or another, either from a technical point of view or as an empirical consequence. However, the research addressing the new questions and challenges that mobility sets to design is not voluminous. This paper builds upon the Luff and Heath paper cited above, and the research done by the "Mobile Informatics" group, a cooperation between researchers from the Norwegian Computing Centre in Oslo and Viktoria Institute in Gothenburg, Sweden [3, 22, 23, 10].

As shown in past field studies mobility can have different appearances. Bellotti and Bly [2] introduce, beside long distance, a *local mobility* where people simply move between rooms or buildings at a local site. Luff and Heath [27] carried out three studies to investigate mobility: Medical consultation, a construction site and the London Underground. In the case of medical consultation, they speak about *micro-mobility* as "the way in which an artifact can be mobilized and manipulated for various purposes around a relatively circumscribed, or "at hand", domain". In the construction site study, they found *remote mobility*: "individuals that move around different physical locations who require access to information and colleagues". The London Underground was consider a *remote and local mobility* case.

Dahlbom and Ljungberg [10] of the Viktoria Institute argue that IT in the last decades has found a way to support our activities, whereas Internet and mobile terminals seems to change our work conditions. They suggest, that mobility has some inherent qualities of its own, something that cannot be adequately addressed using design models and metaphors developed for stationary practices. They demand, that mobility has to be studied intimately and taken seriously into account in the design. Kristoffersen and Ljungberg [24] present a model of mobile use situations consisting of three main dimensions: environment, modality, and application. The environment dimension contains both physical and social environments where the IT use is taking place. Three different modalities are identified in the model: wandering, travelling and visiting. Wandering is characterized by extensive local mobility in a building or local area. Travelling is a process of going from

one place to another, often by means of a vechile. Visiting means spending time in a place before moving to another one. Application is divided to technology, data, and programs, and different situations may demand different combinations of these.

Moreover, the Mobile Informatics Research Framework of the Viktoria Institute [26] considers users participation as a key component in the R&D process. We contribute to this work by describing experimented techniques for engaging users actively in the design process.

Acknowledging the fact that mobility has various appearances, e.g. micro, local and remote mobility, we try to take these into account without overlooking important aspects of user practices. In other words, in our techniques, we look for future scenarios trying to support user practices in micro, local and remote mobility.

In the role-playing games, in the toy environment we represent various rooms in buildings to also allow for scenarios of local mobility. In this technique, it is less obvious to envision "micro mobility scenarios".

In SPES, we have also been shadowing the user inside buildings or during a long stay in one room. It is therefore possible to follow the user practices in all the above mentioned appearances of mobility.

Designing beyond workplace boundaries
The literature related to the design of computer technology for "personal practices" is even more rare than that focusing on mobility. Fortunately, we have been able to benefit from the experience of the EU Maypole project [31, 36], where our laboratory was one of the research partners. This experience hints, that from the viewpoint of design "personal practices" have similar characteristics to those of mobility has been found to have: it brings into the situations new kind of particularities, that must be taken into account in design.

This also sets demands for our methods to be able to deal with "soft aspects" as social and cultural characteristics. We needed to be able to operate at the level of personal actions and personal situations. In other projects, the issues of envisioning future personal technology are tackled through lifestyle studies [28] or in companies through empathic design activities [25]. Our approach differs because the users are directly engaged in generative design activities such as games and role-playing.

USER PARTICIPATION IN THE GO PROJECT
In the GO Project, the prototyping and technology development started in parallel to the concept development. Concept development is carried out by studying user groups in iterative cycles. The cycle includes:

- *information gathering*, interviews, diaries, shadowing, and focus groups

- *generation of concepts*, situated acting out, role playing games, storyboarding and mocking-it-up.

With the two techniques, SPES and the role playing games, we were aiming at generating a range of use scenarios of wireless technology in the campus to be chosen from for prototyping.

Role Playing Games
When designing mobile services and devices one has to take into account three aspects simultaneously: group activities and interaction, the mobility of participants in the interaction, and the context of each participant in term of artifacts, tools and environment [17]. We believe that visualizing these three aspects provides an appropriate platform to generate product concepts. Role games can be organized to provide this platform helping players (users, experts, and designers) to envision and act out new product concepts taking into account the three aspects mentioned.

The basic principle of our games is to let participants play roles or act as themselves in given situations. The situations and the roles are taken from the user studies or else are invented. The players imagine what kind of devices or services could support their mobility and communication, and they discuss, and act out the ideas in the given situation. Such a game can be organized in different ways. In our games, the number of the players varied from 3 to 7 participants. The story structure also varied in the games according to the presence of the following: initial scenario or situation, plot or event lists, incidents, roles and goals of players. In other words, the group interaction can be organized around an initial scenario letting the players free to improvise, or can be influenced by predefined information.

In some games, a designer played the game master (similar to role games like Dungeons and Dragons). The master guides the unfolding of the game introducing incidents and deciding who plays. As in role games, the master is the interface to the environment representing the world with its opportunities and constraints. In this way, a designer has a direct influence in the game's unfolding.

Game rules were also different in all games. In some games the group interaction was improvised and not guided by rules. In other games, rules defined the order for players to speak or act; how ideas are developed in teams, in a group or individually; when to throw the dice; to pick up a card with an unexpected incident.

The games were played in a more or less detailed representation of the environment. We reproduced locations in the campus but also commercial centers and, pubs, discos. In some buildings, we also had a representation of different rooms. In this way, it was possible to act out scenarios of *local mobility* as well. The designers prepare with toys and other material representation of places that are expected to be relevant in the game situation. Each session was opened by an introduction with which to state the goals and to inform the players about the game material.

The six games we organized lasted between 1:30 to 2:00 hours (also including a 10-20 min introduction).

After trying out different approaches in the first five games, we felt confident enough to spend some days preparing the sixth game, which we explain in more detail. The environment was prepared carefully with many details. Tools and rules were introduced to help the players to act out their ideas and play with the toys. We designed the game for five participants. Three users were the actual players and the two designers of the game played *side roles*. They were not contributing to the development of the product ideas but helping to keep the game moving. One designer was also acting as *game master*, monitoring the game and seeing that the rules were followed.

As to the *contexts* and environment, we prepared five different places that players would probably visit with their toy characters during the game. The places were prepared around the room on bookshelf and tables. Each place had a printed sign showing its name and a graphical symbol and was filled with as many contextual characteristics (artifacts) as possible (see the Figure 1 at the end of the paper).

We hung an *event list* on the wall to help players to be aware of passing time and planning the game moves. We had a box with *incident cards* to introduce some surprises and dynamism to the game. The following rules were also hung on the wall:

1. Use always the toy character

2. Act out the use of the device/service

3. Use the dice to decide about non predefined aspects

4. Everyone chooses a toy character and picks a "mobic" a mock-up representing a magic mobile device

5. Now and then a player is asked to pick an *incident card*

The game unfolded successfully meeting our expectations. The players were acting through their toy character moving around in the different places. The environment helped the players to be context aware. On several occasions, it helped the players in considering which artifacts might be part of the environment. It helped the players throughout the game to be aware of when they were changing the context. Moreover, the players were aware of the activities and contexts of the others. The action in the game was kept going thanks to 7 incident cards. As the designers were playing side roles, they could help the rest of the player to overcome inhibition in the game by giving examples of how to use the toys. The game showed the importance of a fluent flow of the story and stimulating setting that allows the players to live their roles in an inspiring and innovative atmosphere. Finally, the game provided support for a shared understanding of the scenarios and made the player aware of the context and of other's contexts and activities.

Figure 1: Role playing game, a particular of the game setting.

Figure 2: SPES, Sergey with the mock-up

In a previous project, we played role-paying games where the designer would receive a user profile and play according to it. Interpreting the same technique in a participatory design perspective allowed having real users playing, with the result of more realistic behavior of players in the scenarios.

SPES, Situated and Participative Enactment of Scenarios

This technique, SPES, includes following the users in their normal life and providing them with very simple mock-ups of future devices. The users use the mock-ups to envision ideas of services and product features acting out use scenarios as interesting situations arise.

With SPES we aim at:

- Taking into account real life circumstances as they arise,

- Helping the users articulate their point of view and contribute with creative ideas,

- Dialoguing with users about scenarios in their natural settings,

- Trying out the idea through enactment as opposed to merely talking or storyboarding it.

A designer shadows a user for one or two days in her/his normal activities. Interesting situations or incidents trigger the enactment of the scenarios. The idea can be proposed either by the designer or by the user. In the former case, during the incident or immediately afterwards, the designer suggests an idea for the scenario and invites the user to take the mock-up in his hand. In other cases, the user may take the initiative and start the enactment, however the acting out of the scenarios is always framed by a dialogue, which provides ideas and discussion on possible device or service features.

The designer is equipped with a digital camera, a diary to record user activities and take drawings about the user mobility. The user is equipped with a simple mock-up that represents a future device and is invited to carry it around everywhere. As we accompany users everywhere, with SPES it is possible to envision and enact scenarios in micro, local and remote mobility.

An Example: Sergey's Life in the Campus

Sergey is a postgraduate student at the Helsinki University of Technology. He belongs to the first group of users we studied in the project (researcher and research assistant). He accepted to participate in our *situated user acting out* for two days.

In his research, Sergey was doing experiments on wood samples at the department of Forest Products Technology. He has many other activities, among others, he owns a consulting company, he is organizing international workshops for students, he is a samba teacher, and plays basketball. During the two days he participated in the technique, Sergey was moving a great deal inside the building (what in [2] is called local mobility). During the day, he was also moving in the campus to meet friends for coffee and to go to eat. Once he even visited his bank in a nearby commercial center.

The designer who was following Sergey kept a diary of everything that happened, and was especially drawing maps of the mobility. The designer was also equipped with a digital camera to document the environment or interesting situations. Sergey always carried a simple mock-up of a device ("a magic thing")[1], which he often used to imagine how a portable device could support him in a particular situation. In the following, we report a short description of some of the *situated acting out* situations or discussion on product features:

Moving from one lab room to another Sergey imagined he could have headphones to listen to music through the magic devices (the mock-up), especially when he has manual preparation to do for the experiments.

During a visit to the bank, Sergey had a consultation in Finnish where he had problems recalling a couple of technical terms. Outside the bank, he explained how the magic device could provide him with a fast and easy translation from Russian to Finnish everywhere.

During one of his experiments, he had to check every 5-10 minutes the instruments to read and record values. The time was not enough to go back to his room (two floors up). The designer noticed during the previous day that Sergey was checking web sites for news and emails quite often. Therefore, the designer asked if he could imagine viewing the news on a portable device. Sergey took the mock-up in his hand between the two reading points in the experiments and showed what the scenario would look like (see figure 2 at the end of the paper). He remembered that in the Australian Open there was probably a tennis game going on that he was interested in. We also engaged in a discussion about screen size and alternative display solutions thinking about the type of news media he would receive.

During his experiments, Sergey moves a lot around the building visiting many lab rooms. He records everything on paper so he suggested that it would be nice to start editing a word document for the experiment also on the move. After showing what he wrote on paper he took the mock-up in his hand and acted out a scenario. He was editing a word document writing the initial data for the experiment and he imagined that the magic device would have a scrollable

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[1] This mock-up was developed in Maypole [36, 31]

keyboard that would slide down from the back and a touch-screen.

RESULTS AND DISCUSSION
Results and lesson learned
In the games, the ideas generated were immediately acted out as scenarios in the game. The games were videotaped and after each session the scenarios were extracted in storyboard form. In five game sessions, we developed 23 different scenarios. The services and devices that appear in the use scenarios are now been considered for prototyping. The scenarios featured different kind of services and devices. We grouped the services in six categories: mobile group information services, location based services making use of maps, group awareness services based on proximity, mobile video conferences, access to fixed video installations, short range connectivity of devices. Although the game focused on services and use, the players envisioned also different types of end-device ideas. The most frequent was the magic device, a small palm computing device. Display glasses were mentioned and small devices that would project multi media on any surface. Other types of end devices were intelligent badges, intelligent signs, and ubiquitous screens to connect to with the magic device. The games were flexible enough to allow a co-development of services and devices. The game situations were not limited to work or study settings but extend to personal activities such as going out with friends (to the pub, parties, movies).

The real results of the games were not the ideas of the services or devices tout-court. In fact, reading from the service categories and devices mentioned above we recognize more or less established ideas about future products. The real results are the context of use of the service or device and details that become explicit in the game scenarios. The culture of the players becomes explicit in the action choices during the game, as well as in envisioning the service or device in a particular context. To take an example, one of the services supported by students is to organize shared taxis after the pubs closed. In the Helsinki area, the sharing of a normal Taxi (not special services), also on Saturday night when there are very long queues, is rare. The users playing the game felt that a (mobile) group information system would have made such a practice possible. The game helped the process of projecting the group of players in the future situation taking into account also the cultural and social context, not in a rational discussion but rather in a natural role playing exercise.

Finally, the games took into account the mobility in a dynamic way as the action unfolded. This was important to determine, for example, particular features of location based service that included group awareness.

The results of SPES, the second technique, in the case of Sergey were ideas of services and device features in realistic use scenarios. The scenarios were filled up with

real contextual information. The examples of acting out that we presented were not confined to a particular activity (like research in the lab) but extend also to personal life practices like visiting a commercial center. In the acting out and discussions, the idea of the service was shaped along with the device in the particular context, for example in the case of sport news during the experiment.

In traditional scenario-based design, after the field studies, scenarios are developed in a design team in the lab. Scenarios are selected, refined, and presented to the user for feedback. Our approach, conversely, was to generate ideas in a situated and participative way to increase the probability of working with promising scenarios. The challenge was to find techniques that were successful in putting users in condition to articulate contribution in the early stages of design. As we have shown, the techniques are a step forward in constructing such an approach.

SPES	Role-Playing Game
Less dynamic activity	Group interaction
Realistic Scenario detailed contextual information	More creative environment
One or two days long	1:30 hour
3-4 scenarios per session	5-6 scenarios per session
Micro, local, remote mobility	Local, remote mobility

Table 1: a comparison of the two techniques

The two techniques described yielded different types of product concepts. The role-playing games seem to be appropriate for services involving group interaction and dynamic incidents. Whereas SPES helped to consider also less dynamic activities like listening to music or checking news on the web. Moreover, the scenarios extracted from SPES are more detailed because it is possible to record realistic contextual information.

Techniques for Open-ended design, personal practices, and mobility
We will now consider the three issues mentioned in the introduction and discuss how the techniques helped addressing them.

Firstly, the new network will allow totally new services to be developed and there are no particular practices to be studied in the design. SPES is an appropriate technique, because it relies on observing all the activities of users everywhere, spotting propitious situations. Another aspect of the same issue is the fact that in the project the type and capabilities of personal terminals to use the future services are not fixed beforehand. As we showed, the techniques allow for co-discovery or co-development of device and service feature.

In the second issue we mentioned that we are addressing in particular the needs of future nomadic users. The mobility becomes a central aspect to be understood and taken into account in the design. Nomadic users change context and could engage in interpersonal communication through the future services. With the role-playing game, we provide a way to consider the various use environments, the group communication and the mobility simultaneously in a dynamic way. SPES is successful in enabling users and designers to envision scenarios in all appearances of mobility.

Thirdly, the considered user activities are not limited to work but they extend to "personal practices" where life style and culture have a decisive influence. In this case, designing for the future (also in a 3-5 year term) is hard, considering that "very soft aspects" like lifestyle are increasingly influencing adoption of personal technologies. A growing turbulence [38] and complexity characterize our society. Its increasing unstable and mutable character is not graspable in knowledgeable form due to the reflexivity of our knowledge [14]. Predictions and models seemed problematic as approaches. We chose to complement these with a phenomenological approach where the design evolves through experiencing, rather than basing it on the development of abstract models (phenomenology emphasizes experiential phenomena, over the abstractions that are often used to explain them [15]).

In our case, this translates into the difficulty of relying on any user models, even on those that also consider socio-cultural aspects. These aspects are not easy to capture and they might change in the future. We address these issues in our techniques through user participation in activities where the ideas are tried out. In the role-playing game, we try the ideas out, considering the group interaction, the mobility and the contexts simultaneously. In SPES, we try the idea out in the real context, taking into account real circumstances (in the "Lebenswelt" [16]) and helping the user to project herself into the future. In both cases, the socio-cultural aspects are taken into account not in rational discussions or models but in natural enactment. This complements the design by providing not only a good way to validate the models but helping the users to contribute in a valuable way.

"Ethnography of the future"?
Finally, we hope to contribute to the growing discussion on the rationale and vistas of combining ethnographical observation and intervention in participatory design (19, 20, 6, 3, 10, 26, 18, for a tradition addressing the issue outside IT see also 13). We have not been doing any serious ethnography here, but our research suggests anyway, that mobility issues are best studied when on the move, and that personal matters are best observed in personal situations. This suggests a great deal of ethnographic work. Our experience shows that the participatory approach – participatory envisioning and enactment by setting users in

"future" situations – is a fruitful way to address our design problem. In SPES, an ethnographically oriented observation method was fluently combined with an interventionist participatory approach, and with good results.

Could there be an "ethnography of the future"?

SUMMARY AND CONCLUSION

In this paper, we outlined three problems we encountered designing concepts for new mobile services and devices in our work. The first problem was the open-end character of the design, which has to co-develop services and devices without a particular focus on user activities. Secondly, the designing for mobility is a new challenge especially in relation to group interaction and the context. Thirdly, as we move out of the workplace and away from the desktop, socio-cultural aspects are increasingly influential. We consider that both ethnographically oriented observation of minute situational details and active user participation are necessary to address the challenges.

We described two techniques that adequately face these three problems. In the techniques, we play the ideas and try them out as we generate them in a contextual and participative way. The two techniques are a *role playing game* in a toy environment and *SPES* (*Situated and Participative Enactment of Scenarios*) where a designer follows the user to envision and act-out future scenarios. The two techniques are appropriate providing a platform, which helps the designer and the users, discover use scenarios taking into account the various aspects of mobility and the situatedness of human action.

We then discussed how our effort relates to other research projects in Mobility, CSCW and PD. We were inspired by PD and hope that this research contributes back to PD research, showing the implementation of two techniques in the case of designing for mobility. Other ongoing research efforts [26,10], do not consider explicitly designing beyond the work domain in the case of mobility. As Dahlbom and Ljungberg [10] also Luff and Heath [27] recognize the need to look at mobility in a new way. This suggests a great deal of ethnographic work. However, in [10] the research starts with ethnographic, descriptive studies and ends with positivistic hypothesis testing. The research is "uninterested in both in careful description and testing for its own sake, rather as a means to further idea generation" (p. 232). We are aligned with this thought and we showed a way with the especially with SPES, to link field studies and concept testing.

Acknowledgements

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