

# Experience of Giving and Receiving – Living Lab-based Technology Design with Elderly People

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## ABSTRACT

This workshop paper presents some reflections on a R&D project aiming at fostering social interaction for elderly adults by means of domestic ICT. We follow the framework of living lab method and wish to stress some of the challenges we encountered while applying the living lab approach to elderly people's households. In focus of this paper are social measures for building up 'user-designer' relationships. Meanwhile this endeavor is lasting more than one year but is a crucial, preparatory measure to be able to set-up the technology in the project participants' households for a long-term evaluation in a later project step.

## Author Keywords

Living lab, User-designer Relationship, Action Research.

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI):  
Miscellaneous.

## General Terms

Human Factors; Design.

## INTRODUCTION

The living lab method recently has been introduced as a design framework aiming at providing some new ideas for solving the problem of the socio-technical gap in R&D projects. The concept aims at bridging the socio-technical gap [2] which is located between social practices of a (target) group and the 'translation' of related findings into design artifacts. Moreover, in a long-term evaluation phase, technology appropriation and resulting changes of social practices are to be explored. In one perspective, the living lab method can be seen as an improvement in the cost/gain relationship between qualitative research and IT design. For the assessment of technology prototypes in form of a long-term evaluation in real user circumstances, such as private households, the method surely contributes to a better understanding in terms of fit of the technology to the practices. However, from another perspective, setting-up a

living lab can require a lot of work in advance and personal commitment by the researchers. This is especially true when working with elderly adults who are not technology-affine. As described for ethnographies in digital anthropology [6] and in the participatory design field, a lot of additional work is committed to the building-up of a trustful researcher-informant relationship, to enable user participation and in the installation of reciprocity, in order for opening up a space for ongoing negotiation and mutual learning. In this workshop paper we would like to moot our related social activities and interactions in the preparation of the roll-out of ICT prototypes to households of elderly people, which will form our living lab.

## STATE OF THE ART

User participation and communication between users and developers is playing an increasingly important role during the design and evaluation phase of developing innovative ICT applications. This is even more important when designing for the mundane area of domestic life, as the design of artifacts impact upon the social systems of the users who appropriate them. That's why technology cannot be separated from its interaction within the socio-cultural context of (prospective) use [5]. Recently, in HCI, design case studies have been suggested as a framework to better understand the linkage between designing ICT artifacts and their impact on existing social practices, which are being challenged and transformed by the appropriation of the artifacts [6]. In this realm, one methodological attempt is the living lab method.

The living lab concept was introduced by Mitchell [5] and is more and more becoming a popular approach to investigate user experiences and to gather valuable information from the practice of users [1]. However, the concept itself has been utilized heterogeneously in the field. One approach of setting up living labs is to create simulated homes where technology or a product is available and where users come to stay for a period of time. E.g. Intille et al. have built up the PlaceLab to test ubiquitous technologies in simulated home settings [3]. While controlled lab has the possibility to test with a large number of participants, these tests are normally limited to short time duration and artificial settings. The approach selected by us is to make technology or products available in the homes of the users. This approach uses the everyday life and given

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CHI'12, May 5–10, 2012, Austin, Texas, USA.

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situations to involve the users into the innovation process see, e.g. [4]. This setup enables long-term evaluations with users, but the test scale is normally limited to a minor number of participants, due to a higher time and work demand in the field.

To gather requirements in the domestic domain is not trivial, as the decisive aspects are not clearly reflected. Furthermore dealing with the elderly user group requires special tender in the methodological approach. This user group is normally considered as reluctant technology adopter. This brings up special hindrances for participatory design approaches (see e.g. [9]). In this paper we describe our practice in building a long-term living lab (normally considered as “the European approach”) and reflect on the process and related issues.

### **SETTING & METHODOLOGY**

The EU-AAL project FoSIBLE (Fostering social interaction for a better life of the elderly) aims at the development of ICT for social interaction in the realm of interactive TV and easy-to-use input devices. One major project focus is the integration of end-users in the whole design process in a long-term view. For this reason, the living lab approach has been chosen, which in our definition is based on two major strands (we report here from the German partners’ experience):

1. **User participation** has been set up at project start, and is being continuously maintained throughout all three phases of the project: a. pre-study (interviews and workshops); b. prototype development; c. evaluation of the prototypes in real user households in a long-term period.
2. **Ongoing transfer of findings from the user research to the project consortium**, which consists of 9 partners from research, industry, and end-user organizations in three countries. The knowledge transfer from researchers who have tight contact with the end-user group to other partners who are not involved in end-user work is another challenge, which we do not want to discuss in detail here. We just want to mention that working with scenarios, personas, and mock-ups as artifacts had proven helpful so far in supporting negotiation and design idea generation in the consortium and in end-user-consortium relationship. However, the question of how the findings from the field can better inform the system development in the context of a big project consortium is a research challenge for itself and another important field of research with many open questions.

In this CHI workshop we would like to shed light on the considerations and challenges we have been going through with regard to the involvement of elderly adults in a long-term R&D project who are not familiar with new domestic ICT yet. From our experiences with another living lab research project aiming at domestic ICT in the context of iTV development for a younger target group, we noticed

that the initial contact with interested households (young families and singles) was rather easy to establish. This was partly due to the fact that many local (young) families were interested in the project’s innovative technologies and thus were willing to participate, i.e. the media itself served as a motivation for project participation. However, we learned that this can be very different when setting up a similar project with elderly adults. One issue is the problem of getting access to elderly people interested in joining the project.

To lower the hurdle of access we started by contacting associations where local seniors meet in different activity groups, such as sports activities, visiting local cultural events, and etc. One of the groups is a community interested in learning general computer and Internet skills, led by some volunteer seniors who are advanced PC users. We originally thought that getting access to this group would be rather easy, as a general interest for new ICT could be expected among this group. However, our actual practice showed that a lot of work has to be invested in advance before the “big” prototype evaluation step can be conducted in the households. Here, we would like to report on the related efforts we had to accomplish to approach the “final goal” of being able to involve ten households from participants of the computer club. In terms of time frame, we have built up the relationship with the club members now for approximately one year. The prototype roll-out in the households is planned for March/April this year.

### **MEASURES FOR BUILDING UP A LIVING LAB WITHIN PRIVATE ELDERLY PARTICIPANTS’ HOUSEHOLDS**

As mentioned, one of the most promising groups was a local computer club, consisting of members with heterogeneous backgrounds in terms of computer experience, education, and age. Still the members gathered in the club to learn about computers and new media on a regular basis.

We contacted the tutors of the club by phone and arranged an initial meeting. During the first meeting we were asked to clarify the project objectives and the expected role of the club and the members in the project. From our side we asked for volunteer participants to join both a pre-study (mainly in form of semi-structured interviews) and in a later stage the prototype evaluation in their private homes.

To our surprise, before we were able to contact individual club members for interviews, we were asked another two times for a project presentation to the group. The tutors of the club wanted to make sure that the members were totally aware of what they are possibly committing themselves to when participating in the project, respectively the field study. Another issue here was that even for the people interested in new media in general our project ideas were far away from their thinking space.

We learnt rather quickly that we must provide options for discussion and exchange on a regular basis. Therefore, we

set up one set of hardware equipment in the club, which was supposed to be deployed in the households later on. The set contained a flat-screen TV, a Media Center PC, and additionally three android-based smartphones for people who were interested in using and testing these at home. From some initial visits of researchers to explain the usage of the devices developed a participation in the club meetings in regular intervals.

Interestingly, the participants quickly started to use our visits to pose questions to us about their personal experiences and problems with our and, more often, their own devices. Most of the time, these questions were not directly related to the project's objectives. We would like to point out that we did value the peripheral information, since it could help us better explore and understand the (prospective) usage context. The only downside was that we could hardly do focused research (however, it could be discussed if this is possible at all in this certain application setting). During our visits we spent most of time answering their questions before we were able to ask them any questions. For example, after introducing the TV and Media Center PC, we wanted to ask what they would think about a standard remote control for entering text. In that session we spent around 90% of the time showing examples of apps already installed on the devices and answering questions about them. We were able to come back to the planned topic only after one member pointed out the inappropriateness of standard remote control for information input.

What became obvious in these sessions was that the elderly club members are much less interested in new technology like iTV or smartphones, but rather looked for their benefit in terms of possible new action spaces created by participation in the project and using new technology.

The readiness to talk to us in the club sessions varied between the club members, partly due to their roles. E.g., exchange with the tutors rather became deep and open, but some of the more peripheral members, or of those who do not come to the club regularly, did not interact with us so much. The proximity level between us and them sometimes changed when they approached us with an own concern. One example is a female club member who contacted us one day for help, as she booked an SMS subscription by accident but didn't know how to cancel it. We didn't ask her which device was used to make the booking, but according to the service booked, she had been using her own mobile phone. We spent substantially some time contacting the carrier and finally managed to cancel the subscription. In our following visits she started to talk more and more open to us.

As said, with the head tutor we had a tighter contact early from the beginning. Often we interacted with her beyond the project's objectives, advised her and gave her help on technical issues of their own software infrastructure. Not only because we were of help to her, but maybe to a big

extend, she continuously supported us in letting us join the club meetings and give us legitimation for being there so often.

After some months, the group developed a growing interest on us also and asked whether it was possible for them to visit our institution. We then invited them for a visit. We gave them a tour through our workplaces/labs and offered the opportunity to play Wii and Xbox/Kinect in our experience lab. After that, they stayed for another long discussion and question session with coffee and cake.

## DISCUSSION

In retrospective we have spent much time and effort to get access to a group of prospective living lab participants. In comparison to our experience with the living lab approach with younger families, leads to a different understanding of early stage empirical research in the field of elderly adults. It does not serve the purpose of data collecting to inform design only but is a crucial measure to gain trust for long term user-researcher relation. Some specific experiences are in the following aspects:

**Co-construction of a common notional space of possibly:** Finding elderly participants for a long-term R&D project is a challenge and requires being flexible and careful in constructing a common notional space of possibilities. Bridging abstract project ideas (as they exist as abstract imaginations in the starting stage) and concrete topics of conversation (which are needed for elderly people to be able to think about what would be meaningful for them) is an ongoing process.

**Getting access:** Finding elderly persons for only one interview is not a big problem – often people are happy to help, e.g. when grad students ask for an interview in the context of their dissertation. A contribution to science is then often seen as valuable and meaningful and is willingly given. However, it is different when not only an involvement of some hours, but rather a long-standing involvement is asked for – or better: is being offered. Then people are careful and reluctant at first, and the missing common thinking space contributes negatively to the access problem. The head tutor contributed here a lot in her function as a “door-opener” and by giving us “legitimation” and a leap of faith towards the group.

**Motivation:** At the beginning of our project we were lacking ‘anchor points’, i.e. topics of interest to the people to which we could link our view and imaginations of possible ICT usages. In other words, we did not know how to best motivate them. The media as such – as described for a younger user group – did not serve as a motivation at all. However, the interviews and even more the regular meetings and chats with the club members helped us in identifying common topics. Another issue here is the social interaction with the research team and the option to have some ‘experts’ at hand for clarifying and discussing their concerns and questions regarding their ICT practices.

**Trust building:** The build-up of a trustful relationship to tutors and club members is the most important basis of a successful living lab research and helps us to gain our targets. However, we have seen that this requires sincere and continuous personal commitment.

**Reciprocity:** A mutual relationship at eye level is a crucial milestone for trust building. That means that our research is ‘giving and receiving’, maybe much stronger than it would be when accomplishing other methods. We not only act as researchers, but also as advisers or technology supporters, and not only during face-to-face meetings, but also we are reachable for them by mail and phone. This is maybe linked to the fact that many of them are lacking trustful persons they can ask in case of trouble with their technology (e.g. PC, camera, mobiles) in general.

One could say that the special effort we put in advising and helping the head tutor with their technical club infrastructure lead to the fact that as a “reward” she put us in place and gave the legitimization to put focus on our topics during club meetings.

To invite them to our “space” in retrospective was another important activity for an ongoing installation of eye level. For the club members it was of high importance that they also could get a clearer picture about us.

#### **SUMMARY AND OUTLOOK**

We have given a short report on some of the social measures we have accomplished in advance of building up a living lab in private elderly peoples’ households. So far, we have discovered some differences to living lab approaches with households of younger and more technology-affine people. We would like to discuss and learn about other researchers’ experiences with long-term ethnographic studies with elderly people as target group. Especially we are interested in how other research groups deal with the need of a strong personal commitment of the researchers in giving (personal time and experience) and in receiving (the target group’s time and willingness to reflect project issues) and to build up a long-lasting trustful relationship.

#### **AUTHORS’ BACKGROUND**

*The authors are research assistants at the Institute for Information Systems and New Media, University of Siegen, chaired by Volker Wulf. Their scientific background is Cultural Anthropology (Müller), Computer Science (Wan), and Information Systems (Stein, Neufeldt). Due to the institute’s focus on empirically-based design and socio-informatics, reflection of qualitative methods and their ongoing development and adaption is a central topic at the institute and in the authors’ daily work.*

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