# Social Interaction through Participatory Design in a Residential Care Home

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**Abstract.** This paper describes a user-centered design process in a residential care home. We explored how to provide residents with meaningful and pleasurable internet applications via a large screen display. The paper focuses on the technological and the social development of the field in a long term view. During the development we learned a lot about the possibilities we can give elderlies, professional caregivers and relatives with new technologies.

## 1 Introduction

In this paper we wish to report about the participative and user centered design works in a residential care home. Over a period of more than three years we conducted several projects now, which altogether have the aim to develop a spectrum of infrastructure and content which serve as a meaningful and joyful contribution to the every-day live of the residents. For doing so, we accomplished a broad qualitative pre-study based on interviews and action-research based activities in the house to foster a mutual learning process: for the residents to get a feeling for media and internet applications and for the research team to develop an understanding of possible topics which could be of interest and of joy for the residents. A description of the pre-study under a methodological focus is given elsewhere (Müller et al. 2012). In this paper we wish to provide detailed information on our work with the different stakeholders which is fully embedded

in an empirically-based design approach (cf. Randall et al. 2007). This paper focuses on the related social interaction between different groups of stakeholders related to the project. The technical development and the public display system itself, which we installed during the research activities is not focused in this paper.

The development of ICT for elderly has special hindrances to deal with, see e.g. for a discussion (Coleman et al. 2010). The project's target group contains partly very old residents of a care home (80+) who have not had any contact with the internet or computers before. In addition, there arise some problems with common user-centered design methods due to the large knowledge and experience gap between researchers and the target group. This "symmetry of ignorance" (Fischer 1999) between researchers is caused by some grave factors: on the one hand, the prospective target group is often not aware of ICT to be a meaningful contribution to their every-day life; they have no related experiences and knowledge and thus, do not consider ICT as an option for them. This often leads to a full rejection of even thinking about the topic (based on different reasons, e.g. identity construction, fear of being seen as "stupid", etc.). This starting point needs to be taken up very carefully in a design project, which is, at first to start with methods which help to open up the willingness to get involved in the topic and a suchlike project. With other words: "empowerment" is not a self-evident goal, when people do not see a meaningful reason to "be empowered".

On the other end of the "symmetry of ignorance" there are researchers who do not know much about the interests of the residents which could be meaningfully addressed and supported by ICT. Thus, there are questions such as which programs could be offered on a large-screen display which serve as a contribution to their conduct of every-day life, their joy and happiness.

Besides the elderly and the researchers we have to deal with the professional caregivers and the management of the old people's home as third party with interests, knowledge and own aims and attitudes towards technology use in the facility. Furthermore we noticed that even the caregiving personnel in the old people`s homes often isn`t aware of the possibilities current technology offers for their daily work with the elderly. Here we can find a second level of symmetry of ignorance.

## 2  Pre-study

Our set of methods constantly evolved since project start, beginning with an interview series on-site with 15 persons (residents and staff), and participant observation over several days. This pre-study provided us with valuable insights. However, motivational issues, e.g. how to interest and motivate residents for the project so that they see themselves as contributing participants, needed some more interactive and participative methods which better supported mutual learning between residents, staff and researchers (cf. Blythe et al. 2010, Frost and Durrant

2002, Gaver et al. 1999). That's why in the next step we applied some more explorative and participatory methods. In doing so, we organized two days on different weekends (the 'internet days') full of activities and offers to get to know about internet applications.

Together with student volunteers we set up an internet connection, brought laptops and large monitors to the home and developed a concept on what to show the residents and how to best involve and interest them. The students started then to show for which activities they use the internet and then – step by step – a common exploratory journey started between a student and a resident in front of the computer (see Müller et al. 2012 for a detailed description of the methodological challenges in the project).

The results of the 'internet days' were manifold: by bringing the technology to the house we could trigger the residents' interest and motivation to start dealing with new media as a possible option. In other words, a common space for further collaboration and reflection had been opened by the 'internet day' activities. In addition, we could derive some 'anchor points', i.e. topics, which are of value for the residents and which have the potential to lead our further conception and development work. These 'anchor points' were the interest in photos from events and trips organized by the management and the employees of the house, the interest in news from areas near to the house and the interest in information about former living places of the residents. Altogether these points were not only of interest for the individual residents but were anchor points for social interaction, too.

On top of this development related insights we triggered a lot of social interaction between the elderly living in the old peoples home, the professional caregivers, the relatives of the elderly and people from the neighborhood of the care home.

During the 'internet day' activities, the residents noticed that there were many "foreign" cars parking near the house and many young people in the old people's home, as one lady pointed out in an interview. The internet days acted as a ticket to talk over a long period of time and besides of our lessons learned the caregivers started using the internet for their daily activities.

# 3  Workshops and regular presence of the team in the house

Based on the preliminary findings of the first interview phase we developed a first set of categories and contents of interesting information which could be digitally provided as mentioned above. After that we started conducting ongoing workshops beginning in 2009 until today which serve to deepen research and development questions or to try out technologies. Based on this long term

cooperation with the old people's home we had the possibility to strengthen the methodological approach and to verify the findings over a long term view.

For each workshop, the manager asked residents if they wish to participate. Thanks to this personal engagement we had always about five to fifteen participants in our workshops.

Altogether we accomplished more than fifteen workshops up to today with two main focuses. One focus of the workshops lays in the discussion of sketches, the tryout of prototypes or mock-ups developed during the project, the other focused on contents offered with the developed technologies.

In addition, the manager and the staff conducted biography work sessions, with individual residents and also with groups. In these sessions they collectively search for stations and entities of the residents' life, such as pictures and information of the home town, work place, etc. The material is then collected in a word document, printed out for the resident and stored in the system. A future research strand will be in the question of how to best represent this material and make it easily accessible to the residents via the social display. To follow this research direction, we accomplished workshops which aimed at developing an application on basis of google maps and to provide the people with an adequate input device for geo related content to use a map and to add narrations to a map and find them later. The actual prototype is based on paper maps – which are well known by the elderly – and a webcam which detects areas on the maps and opens the collected information about this place on the large screen display. This research here is still ongoing.

Another strand of workshops was directed to a music listening tool, the 'jukebox' prototype. We conducted group sessions in which music played the major role, such as listening music or doing exercises together with music, or only having music in the background during, e.g., a cooking group. Here, we could start a chat about favorite music groups and genres and derive categories from the view of the residents. We found that elderly have differing categories of music than we tend to have. Which plays an important role when offering music to the elderly because they feel misunderstood when we mix together different music styles from their point of view.

The genres of music interesting for the elderly were found in a three-step approach in the care home. In the first step we talked to inhabitants and employees about music flavors and took their favorite cd`s and cassettes with us. In the second step we digitalized and pre-categorized the music along the findings from the first approach. Additionally we recorded songs from the favorite radio stations of the elderly. In the third step we organized a music workshop with the elderly in which we categorized the music together with the elderly.

Those categorization workshops served to better understand the ways how elderly categorize music and helped the personnel and us to find better mixes of

music interesting for the elderly. During the workshops many elderly noticed that they liked the same music and sang songs together.

Besides the interviews, activities and workshops, one or more members of our team are regularly in the house (at least once every two weeks), for informal chats with residents and staff and for observation of the display usage. We also have located some development sessions into the home, making the development activities of the display more transparent.

# 4  Adoption processes (sociality)

The research and design activities prompted social processes in the home in various directions. While the area in which the display is located had been a frequented area before (mainly because the manager's office is located there and residents often come for a chat on their stroll through the house) there was not much social interaction between the residents themselves, which some of them articulated as a problem in sociality in general.

To give another example there is a group of 'younger' elders who come every day for lunch to the house. They usually go directly to the dining hall and do not interact with the residents in the house. Since the display was mounted in the old people's home, they come earlier to engage with the display and stay there for a while after lunch.

Another phenomenon is that people love to search themselves in the pictures on the large display. By this, new prompts for chats and interaction are given. Furthermore it is used when relatives come for visits to show what the elderly have done during events, e.g. as the participation in organized excursions by the house.

On behalf of the staff various adoption processes have started, such as using the display for reminiscence sessions with individual residents or with groups. Interestingly, there were some women working in the social service who were not familiar with ICT before and accordingly could not imagine how this could help them in their work. Now, for them, the easy-to-use input device is a first step towards new media in their biography work with residents. Their first animosity against new media could be reduced by this. Additionally another employee of the social service who used the computer in his private life before, uses the social display to enrich the biographic work sessions with media. The elderly and the caregivers feel more comfortable to get in contact through the display.

The old people's home has a protected housing for the elderly in their neighborhood. The people living there often come to the old people's home for lunch and offered activities. Some of the 'younger' elderly lunch visitors, being a bit experienced with new media, take up the role of a 'display operator' or facilitator, respectively, for the residents who also now stay there for collaboratively browsing through the programs. This role developed since the

display was installed. The visitors from the protected housing learned the usage of the display very quickly and were helping the residents of the old people's home to get into the usage of the public display. Through this development we have triggered a new way of interaction between the residents and the guests from the protected housing.

Another example is how news is being spread when new content has been uploaded: This happens by word-of-mouth in the dining hall where people come three times a day and which is located near the display area. One effect is that the residents talk more to each other and then watch the new content together, especially when new photo albums have been uploaded.

We noticed that through the communication in the dining hall the residents inform each other when new photos or movies have been added to the public display. The amount of people being in the cafeteria, where the display is located, before or after the meals increases and there is more social interaction between the persons.

# 5  Ongoing requirements collection/ Feedback mechanisms

We put a post box, with a notice that the box is intended for feedback, and sheets of paper and pencils next to the public display. Our intention was that the users could write us notices, reporting problems or feature requests as we could not be in the old people's home regularly to interview users during the first month of usage. Until now the box was empty the whole time as the users disliked to write notes for several reasons. One reason was that they disliked writing problems down as they had problems to formulate correctly what they wanted us to tell. This is on the one hand caused by missing vocabulary of technical terms and on the other hand caused by the fact that the elderly had difficulties to locate and formulate what exactly is wrong.

When talking to the users in usage situations or even in interviews without parallel display usage, we found out, that we got really interesting feedback from the users which we could mostly bring into the next release of the display. When talking to the residents we could help the elderly in their articulation of their feature requests and as we knew about technological possibilities we could give them a bigger design space for their ideas ad hoc. Using this interactional methodological stance as trigger for new design input from the elderly and to lower the symmetry of ignorance, we still have to be aware of the fact that the personal contact and related feedback is most important for our development.

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