Using Care Professionals as Proxies in the Design Process of Welfare Technology – Perspectives from Municipality Care

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Abstract. Bringing real users into the design process is often seen as a successful way of creating useful IT systems. However, when it comes to designing for elderly, this is not always possible since many elderly suffer from age-related decline, both with respect to physical and cognitive abilities. This paper elaborates on the approach of working with proxies, in this case elderly care personnel. Different groups of people (N = 117) working with elderly and well familiar with needs and contexts around elderly were engaged in this study. Using a questionnaire and a more in-depth workshop we explored with municipality care professionals their experiences as well as the need to create a framework to improve such a proxy approach, and whether a method using care professionals as mediators could be possible to establish in elderly care. The results described in this paper are complementary to ours and others previous knowledge and show promising commitment and willingness to work in accordance with the proposed method.

Keywords: Welfare technology · Elderly · Community-based participatory research · Participatory design · User-centred design · Community networks · Professional-patient relations · Proxy

1 Introduction

From research literature we know that usability and user-centred aspects should be brought in early in the information technology (IT) design process [1, 2]. Bringing real or potential users into the design process is often seen as a successful way of creating useful IT systems and devices. However, there is a need to develop technology towards the demands of older adults in the future, but for people in this target group it may be difficult to participate in a design process. Many of the elderly suffer from age-related decline, both with respect to physical and cognitive abilities, which hinders an active involvement in the design of new technology.

This fact places the design of new technology and new services in a situation where participatory design [3] are not enough and where we need to get feedback about user needs in other ways. Inspired by Boyd-Graber et al. [4] and their work regarding using people close to the intended user in the design process, we explored this concept in the

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context of elderly users of technology. In a number of studies people familiar with elderly persons' presuppositions were involved and different ways of using care personnel as mediators of the needs of the elderly was investigated [5]. In this approach the aim was to involve the senior end-users as much as possible, but when this inclusion was not entirely feasible, elderly care personnel was also involved. The authors adhere to human computer interaction (HCI) as research field and apply user-centred and participatory design methods as main methodologies. Nevertheless, the possibility of using people close to the end-users became useful in this setting and was therefore elaborated further. It should be noted however, that this approach was adopted only when the information could not be gathered from the elderly themselves and is thus a deviation of the recommended standard methods in HCI. As a colleague of ours put it: "You always want to work with the elderly end-users, but sometimes you just can't".

Based on our experiences from involving care personnel in different ways in the design of new technology targeted towards elderly, a number of lessons learned can be drawn. These insights are related to aspects such as the perception of the personnel regarding technology experience of elderly users as well as the involvement and engagement of elderly in trials and evaluation sessions. Other important aspects are when in the design process the care professionals contribute and how their cooperation with the elderly users takes place.

A dilemma arises when you want to keep a participatory and cooperative design approach but cannot fully involve the end-users in the process: how to keep the needs of the elderly still in focus and not accidently placed aside? And how to assess that this is actually done? In order to cope with the loss of real end-users involved in the design, we made an effort to develop a method for using care personnel juxtaposed the elderly in the process. The method targeted "elderly care personnel as proxies for elderly" and was applied in a larger welfare technology development project and subsequently evaluated in the context where it took place [5]. Insights from previous studies formed the basis for aspects to take into consideration when care professionals are used as proxies for elderly end-users.

The purpose with the study described in this paper was to further explore those aspects together with municipality care personnel in order to start building a methodological framework containing important issues that will contribute to a set of recommendations for working with proxies in the welfare technology design process. The goal, of which this is a step, is to improve the use of proxies by creating a framework of methods with concrete easy-to-use recommendations.

2 Background

Human-computer interaction (HCI) research has come a long way in understanding the importance of involving users in the process of developing new technology. This work is conducted within the framework of action research projects that adhere to Participatory Design (PD) [6, 7], as one of the HCI theories that regards system development with user participation and that considers designing a social process.

2.1 Proxy Usage

Previous studies have been conducted using care personnel or relatives as mediators for elderly, here called proxies. For example, with respect to judging functional state and medical history of the elderly person [8]. When evaluating, in several aspects the judgements of the proxy was quite in line with the answers of the elderly person. However, the perceptions of a proxy could also point in the opposite direction. In a care-giving situation the perceptions of the proxy was shown to be related to perceived care burden; the heavier care burden the proxy felt, the larger was the risk that the proxy overestimated disability or loss of functionality [8]. Another aspect also related to judgement of health conditions of elderly by proxy persons was the relationship between the elderly person and the proxy. The closer relationship is the better concordance between the answers of the elderly person and the proxy [9].

As described above, some studies that use proxies as mediators of the needs of the elderly were conducted in the area of judging health conditions. A larger area of research is using proxies in understanding the needs or the situation around people with disabilities. These results also show that the closer the relationship, the better concordance between the answers. For example, responses of spouses are more accurate than other proxies, and professionals and caregivers provide more accurate information than lay proxies [10].

With respect to using proxies in the design of technology and services, Boyd-Graber et al. [4] conducted work regarding using people close to the intended user in the design process. In their study care professionals that worked close to users with aphasia were involved in the design process. This study showed that overall it worked well since supporting staff was very familiar with the needs and demands of the user groups. However, some difficulties were found regarding the testing of prototypes since it was impossible to imagine another person's usage context all the way and in all details [4].

In our first study [5] inspired by Boyd-Graber et al. [4] we investigated the use of care personnel as mediators for elderly using an information and communication technology system for sharing information and for keeping in touch with friends and family.

In this work care personnel and elderly living at a nursing home participated in workshops around the technology and some of the elderly tested the technology in their own apartments. The personnel managed the work and they were also involved in work regarding creating personas representing different categories of elderly living at the nursing home. One lesson learnt from this work was the importance of having a dialogue with the personnel about needs and relevant target groups. Initially the care personnel involved elderly users that had access to a computer and were, as they thought, experienced with technology. That was a mistake since this group already had access to services for interacting with others. However, after this misunderstanding with respect to need of technology among the elderly the care personnel changed their view and suggested new ways of using the technology. First they provided the technology to elderly that had no other technology (besides a telephone) for communication with others. When this was done the usage of the system increased to some extent, however in this situation we realised that many of the elderly had too small social networks to benefit from this kind of technology. This insight led to a suggestion by the personnel to place the devices in dining areas as something to gather around, e.g. to show each other pictures of friends and family. This turned out to be a

success and finally the system became used, although in another way than what was initially the intention. We believe that increased usage was achieved thanks to the increasing understanding of the personnel that regarded the need of technology and its potential benefit among the elderly during the entire project [5].

Results from this project indicating that the care personnel initially overestimated the importance of having computer experience and also that they underestimated the elderly's general technology literacy is in line with other studies. Other studies have shown that proxies over-report disabilities for people aged 65 or older, but under-report disabilities for persons under 65 [11]. Unfortunately, these results reveal a general view of elderly as weak and less capable, both with respect to use of technology and in other situations.

In another study, also conducted by us, the use of proxies as mediators of elderly users was further elaborated. Within this project a Kinect™ sensor tool for stroke rehabilitation at home was developed [12] and the study aimed at exploring whether or not usage could be broadened to other user groups than stroke patients. The system was installed at three activity centres for elderly and there the aging users tested a Kinect sensor for conducting exercises, although the technology was designed for home usage. Each centre had responsible care personnel doing observations during tests. After the session both aging users and staff filled in a questionnaire about usage of the system and the exercises. Aging users answered from their perspective and the staff based their answers on the support given to the users when using the system. Even though it was a prototype containing flaws, the aging users managed to test it and contributed with suggestions for improvements. When evaluating the questionnaires, there were no direct contradictions between the answers given by aging users and care professionals. However, the care professionals provided a deeper insight since they had a more holistic perspective on the situation. They provided valuable information about how and why features and interaction should be changed. The shared experience between care professionals and aging users contributed to a similar view of the situation and of the usage of the technology [13].

Finally, in line with the results of Boyd-Graber [4] our first study also showed that proxies report what they see or what they can observe. Initially the care personnel that worked in the project only saw the elderly as care taking elderly without experience of technology. After working with the elderly in the project they gradually realised that many of the elderly previously in life had been working with technology and that they were not that alienated from technology as the personnel had thought.

2.2 Aspects Affecting the Use of Proxies

Assumptions and increased understanding of the elderly: Assumptions of the personnel about the technology experiences of elderly users could be very misleading. The important aspect is to which extent a potential user would benefit from the technology - not if he/she is experienced in other technologies.

It was evident that although the personnel were acquainted with the persons living at the nursing home, they were not familiar enough with their previous lives or connections to the life outside the nursing home. The fact that care personnel often sees a patient through his/her condition or diagnoses rather than the individual has been recognized since long and many now strive to keep a salutogenic approach [14]. We note that this was relevant also

here, not only in terms of frail elderly, but also as the elderly were seen as technology illiterates rather than curious of which benefit the device could give them.

Engagement from the personnel: When the personnel became engaged in their role as proxies a positive outcome was that they started to think about how and where this technology or device could meet the needs and be beneficial to its potential users. This could increase the possibility to find new and meaningful areas of usage and also find aspects and functionalities that make the technology better suited for the target group at hand. With respect to this and from a methodological point of view, the challenge is to find ways to engage the personnel/proxies to the extent that they start to think about usage in new ways. In terms of proxy usage, the relationship between the elderly and the personnel is also important, the closer relationship the better the elderly's needs will be conveyed [10].

Sharing the experience: In two of our studies we found positive effects of personnel and elderly sharing the experience of trying new technology. In this situation it becomes something that you do together and it makes it easier for the personnel to actually observe the needs of the elderly. In this situation it reveals itself both which services that are perceived as meaningful and how the interaction can be improved [5]. A further advantage is that they share the experience but will have the possibility to give feedback on the usage from different perspectives. The elderly user can describe what is easy and what is difficult, and the observing personnel can provide insights about why something does not work and also provide alternative solutions [13]. When testing the technology together, there is also less difference between the feedback given by the personnel and the elderly user.

Participating personnel: Another important aspects is to choose and involve care personnel that are interested and also provide them with the possibility to engage in this work. There has to be time to engage in the role as proxy along with the ordinary work tasks. This part has to be considered in a way that does not affect the other personnel in terms of a heavier workload. In the long run they will get involved and if their first encounter is a heavier workload, it may be a bad start.

Development - challenges and opportunities: One added value that the proxy approach can give are insights that only reveal themselves in the meeting of different groups of people. For example, in the dialogue between the elderly testing the technology and the personnel helping/observing. When also bringing in the developers into this context they will get the possibility to observe and gaining knowledge that are not possible to gain from a second source. In this context and also together with researchers and designers, the possibility to draw attention to new insights from the personnel (and or the developers) increases.

3 Method and Materials

Qualitative and quantitative methods were chosen to investigate the empirical field in order to illuminate socio-technical and socio-cultural aspects affecting the use of proxies, using the participants' experiences. The aim was to develop knowledge that can contribute to a broader understanding of human actions and experiences in a socio-technical and -cultural context with regard to working with proxies in the welfare technology design process.

Data collection was performed during a conference entitled Meeting Point Welfare Technology and E-health, 24 of January 2017 in Stockholm, Sweden. During a 45 min

plenary session given by the authors, the audience was asked to take part in a *survey*, using an online questionnaire tool [https://www.mentimeter.com] containing 12 questions. The material was stored online (see section of Materials).

A workshop was short thereafter organized as part of the conference programme, where the same topics were discussed in a focus group to gain more depth to each aspect. During the focus group discussion the results from the survey were shown as a catalyst for the discussion. The five aspects illustrated above were explored in the workshop group during 90 min, using pre-defined open questions. The focus group discussion was documented verbatim by one of the authors, whereas the other acted as chair.

Data analysis of the two data collecting sessions followed the procedure of systematic text condensation [15] which is a descriptive and explorative method for thematic cross-case analysis of different types of data. The procedure is rather pragmatic, and consists of the following steps: (i) reading the material to obtain an overall impression, bracketing previous preconceptions; (ii) identifying units of meaning, representing different aspects of the participants' experiences and coding for these; (iii) condensing and abstracting the meaning within each of the coded groups; and (iv) summarizing the contents of each code group to generalized descriptions and concepts reflecting the most important challenges reported by the participants [15, 16] to merge data from the survey with the qualitative data, developing categories from empirical data, rather than using a preconceived theoretical framework.

3.1 Materials: Participants and Tools

The audience during the plenary session consisted of over 120 delegates of the conference, interested in/experts of the needs and contexts around elderly. They were asked to participate in the survey during the talk, and 113 persons choose to provide their opinions and experiences regarding the proxy approach in elderly care (Table 1). Nine persons participated in the focus group discussion during the workshop (plus two of the authors); some of them had attended our plenary session before.

Table 1. Roles at work of the respondents and the participants in the workshop

Role in organisation	Number of respondents in the survey (N = 113)	Number of participants in the workshop (N = 11)
Registered nurses	1	
Nurses	12	
Administration (incl. mgm, econ etc)	42	2
IT	19	1
Physiotherapist	1	
Occupational therapist	3	
Researcher	3	2
Other[a]	42	6

[a]As the question asking about the roles of the audience also was used as the first question to try out the system, there may be erroneous answers, or the alternatives given here did not match the roles the respondents actually have.

The workshop participants (N = 9) also carried out the questionnaire, providing their experience of working with development of IT in elderly care on a scale ranging from 1 (not at all) to 5 (to a great extent). Four graded their experience [2]; two answered medium experience [3], whereas three stated [4]. Five of the nine graded their experience of developing technology together with elderly to [1: none at all], whereas three participants graded their experience [2] and one graded medium on the scale [3].

The online survey tool used was Mentimeter.com. It provides to the audience the questions on their own smart mobile phones, if they entered a unique code before the start of the presentation of the questions. The statements and questions (presented below) were created on beforehand and launched stepwise during the presentation. When answering the questionnaire, the voting results of the audience was immediately shown on the projector screen. The results of the survey were saved online and are presented in the results section.

Mentimeter Questionnaire. All questions were of a multiple answer format, where it was possible to select only one option. Many of them were similar to a Likert scale. The first question was a test, to try out the system. Questions 2–4 regard the experience of the respondent. In question 4 the answers are based on the "citizen participation ladder" developed by Arnstein [17] and recently modified by Östlund [18] to suit older people

Table 2. The 12 questions posed to the audience via the interactive online tool

1. What is your role in your organization? [Reg. nurse; Nurse; Admin (Manager/economy/similar); IT; Physiotherapist; Occupational therapist; Physician; Researcher; Other]
2. What experience do you have of working with development of IT in elderly care? 1–5: [None at all - Very much experience]
3. What experience do you have of developing technology together with the elderly? 1–5: [None at all - Very much experience]
4. What are the roles older users mostly carry in the projects you are involved in? [No control - controlled by the decisions of others; Get information about things that happen; Contribute with their views; Participate as experts; Drive the development and change]
5. Are you currently working in a similar manner what we have described (e.g. the staff can influence the design of welfare technology for the elderly) 1–5: [Not at all - to a great extent]
6. Does your organization wish to increase the knowledge about design and technology development among the staff? (e.g. ambassadors/motivators are encouraged) 1–5: [Not at all - to a great extent]
7. Is it feasible to apply this approach in your organisation? 1–5: [Not at all - to a great extent]
8. Are you interested in working according to this approach? 1–5: [Not at all - to a great extent]
9. To which extent is it important that the staff understands the technology experience of the elderly users? 1–5: [Not at all - to a great extent]
10. To which extent is it important that the staff is skilled in using welfare technology themselves? 1–5: [Not at all - to a great extent]
11. To which extent is it important that the entire group of personnel somehow is involved in implementation of welfare technology? 1–5: [Not at all - to a great extent]
12. To which extent is it important that the elderly and the staff try out the welfare technology together? 1–5: [Not at all - to a great extent]

in the innovation and design process. The assumption here is that older users may "climb" the steps if the environment becomes more aware and knowledgeable of how to deal with elderly in the design process.

Questions 5–8 regard how work is conducted today, 9–12 regard whether the respondent finds it important to adhere to the aspects discussed (Table 2).

Themes Discussed During the Workshop. The objective of the workshop was to gather participants from the municipalities to get feedback on the aspects that were derived from previous studies [5, 13] and to learn about their ideas of the feasibility of adopting such approach in elderly care. The discussion was equally interesting for the participants as for the authors, as the questions regarded how to deal with the challenges following the willingness to innovate elderly care using welfare technology.

Table 3. Themes with survey questions (Qn) to the left and sub-questions to discuss to the right.

Assumptions and increased understanding of the elderly	
Q2: Experience of development of IT in elderly care Q3: Experience of developing technology together with elderly Q4: Roles older users mostly carry Q9: Important that staff understands the technology experience of elderly users?	– Do you have suggestions on how to work for a more nuanced picture of the elderly and their technology skills. – How to avoid stereotypes in the design of new technologies? – On what premises are participants selected in these contexts? – How were the elderly chosen in the contexts you know of?
Engagement of the personnel	
Q10: Important that staff is skilled in using welfare technology themselves	– What is required for the staff to get involved at a level so that they can see where new technologies could be of use?
Sharing the experience	
Q12: Important that elderly and personnel try out welfare technology together	– How can you achieve a favourable test environment for both staff and the elderly?
Participating personnel	
Q11: Important that entire group of personnel somehow is involved in implementation of welfare technology	– How to select staff who will be involved? How to manage involvement/ lack of involvement of "others"? – What are the conditions for this in your organizations?
Development – challenges and opportunities	
Q5: Personnel affects the development of welfare technology Q6: Organization's wish to increase knowledge about design and development among staff Q7: Feasibility of this approach in your organisation Q8: Important that staff understands the technology experience of elderly users?	– Why can you (not) to use this kind of method in your organization? – What is required in your organization to start using this approach? – What would you do if you want to pursue this type of development in your organization?

The focus group discussion was based on five themes, coinciding with the aspects derived from previous studies. They were handled both during the plenary session and in the survey. Some sub-questions were added during the workshop to support the group discussion (Table 3).

4 Results and Analyses

Below, the results are presented around identified themes related to the use of care personnel in understanding user needs when designing technology together with elderly.

4.1 Assumptions and Increased Understanding of the Elderly

Experience: The experience, of development of IT within elderly care, among the audience was quite high considering the large number of administrative personnel in the audience. However, not many had previous experience of developing technology together with elderly users (Table 4).

Table 4. Experience of developing technology together with elderly

Survey questions	1	2	3	4	5	m	N
2. Experience of development of IT in elderly care	19	22	38	22	12	2,88	113
3. Experience of developing technology together with elderly	65	28	8	5	1	1,59	107

Participation: According to Arnstein [17] the amount of participation in society, or as in this case in design, could be described in a participation ladder. The lowest step on the ladder is "No control - controlled by the decisions of others"; continuing with higher steps in terms of "Get information about things that happen", "Contribute with their views" and "Participate as experts". At the final step the person has taken control and "Drive the development and change".

Opposite to the actual situation, shown by the questionnaire, where most of the respondents reported that the elderly participated on the lower steps of the ladder (Fig. 1) the discussions in the workshop placed a focus on the importance of showing the elderly meaning and benefits with the technology. They pointed out that this is a demanding group of users that needs strong incentives if they should be engaged and interested in using the technology.

Treating everyone in an equal way: In the questionnaire the participants rated it to be important that the personnel understood the elderly users' actual technology experience (Table 5), and not based their judgements on assumptions about elderly having no or little experience of technology. Further the participants in the workshop placed a focus on the importance of treating all the elderly in an equal way and invite all that were interested to participate; instead of selecting the ones they thought were best suited.

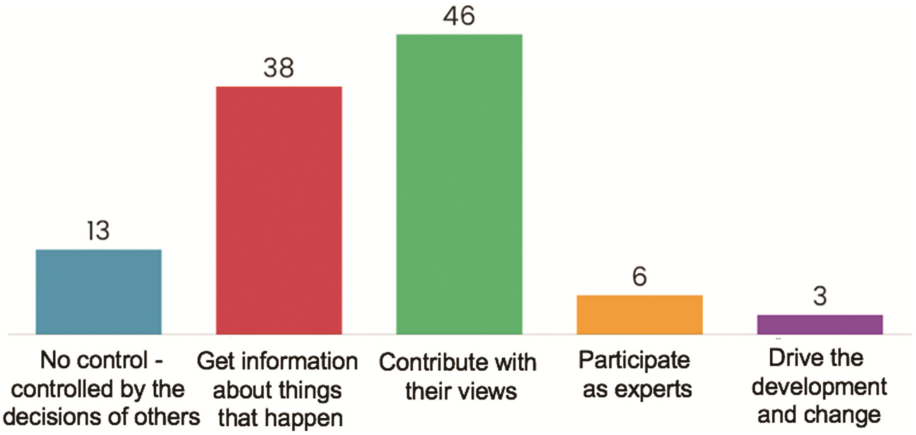

Fig. 1. Survey question 4: What are the roles older users mostly carry in the projects you are involved in?

Table 5. Understanding the needs of the elderly

Survey question	1	2	3	4	5	m	N
9. Extent to which it is important that the personnel understand the technology experience of elderly users	0	2	7	22	78	4,61	109

Attitudes: Another important issue that was mentioned in the discussions was attitude towards elderly technology users. There is both a risk of treating the person in a superior way as if he/she is a child, and also in a too enthusiastic way describing them as "cool" or "cute". On the other hand it is a difficult balance between these approaches and the care taking role the personnel has. However, this might be more pronounced in cultures where old age is associated with weakness rather than wisdom and knowledge; and also with an old fashioned view of elderly and their interests and knowledge.

Vocabulary: In the discussion the participants mentioned the importance of selecting the right words when introducing technology to older people. Technology and services should be named and described with the usage and benefits in focus. Words like "robot reader" for example should be avoided.

4.2 Engagement of the Personnel

Benefits and perceived meaning: In the discussions the participants mentioned the importance of showing the personnel the meaning and the usefulness of the technology. It has to be perceived as meaningful to both the elderly and to the personnel, and it cannot make the work more difficult for the personnel. One solution to make the threshold lower is to introduce the technology stepwise, this will demand less resources initially. The respondents to the questionnaire also reported high importance in having personnel

skilled with the technology and that time has to be spent on introducing and learning the technology to the personnel (Table 6).

Table 6. Importance of personnel skilled in using technology

Survey question	1	2	3	4	5	m	N
10. Extent to which it is important that the personnel are skilled in using welfare technology themselves	0	2	10	29	65	4,48	106

Attention and appreciation: Another important aspect to achieve engaged personnel is to increase their feeling of being valued and appreciated for their work. Time should be set aside so that the personnel can work with elderly and technology without a feeling of high pressure.

4.3 Sharing the Experience

Focusing on the need of elderly persons: In previously conducted work we mainly discussed sharing experiences in terms of testing the technology together. In this workshop participants discussed this matter in relationship to address needs by different technical solutions. The needs should be discovered and discussed in person-centred individual meetings. The needs of elderly persons should be in focus in discussions about finding the right solution and adjust it to the specific needs of the user. It is important to show the benefits of the technology to users, but in a realistic way without giving the users too high expectations.

Testing the technology together: In the survey respondents reported that they thought it was important that elderly and personnel tested the technology together (Table 7). In many situations this could be a quite equal context since many of the younger elderly are skilled and experienced in using technology and ICT services; and there is increasing technology literacy among the personnel. This will provide new possibilities to gather around new technology and provide input to design and development. The increased experience and awareness of existing technology will also reduce difficulties in imagining new services and areas of usage. However, in this context there might be a risk that elderly gets to enthusiastic and are not critical enough towards new technical solutions.

Table 7. Importance of trying the technology together

Survey question	1	2	3	4	5	m	N
12. Extent to which it is important that the elderly and the personnel tries out welfare technology together	1	0	9	32	63	4,49	105

4.4 Participating Personnel

Increasing the opportunities for the personnel: In the survey the respondents reported it important that the entire group of personnel is involved in implementation of welfare technology (Table 8). To achieve this, time and resources need to be put aside. This could be a challenge with current practice; high workload and little time to introduce new ways of working. The awareness of this risk needs to be included and handled accordingly throughout the process.

Table 8. Involvement of the entire group of personnel

Survey question	1	2	3	4	5	m	N
11. Extent to which it is important that the entire group of personnel somehow is involved in implementation of welfare technology	0	0	18	28	60	4,40	106

Further, it was considered important to involve the entire group of personnel to avoid a feeling of a small group being selected to work with the technology. In general, avoiding the feeling of being left outside is important with respect to all involved and the success of the implementation of the technology. Both elderly and personnel needs to be involved and engaged in an open way where everyone are welcome to participate.

The attitude of the managers: As mentioned, the managers could have an important role in engaging and inspiring the co-workers but they could also hinder the involvement by transmitting a negative attitude and making tasks more complicated than they should be.

4.5 Development – Challenges and Opportunities

In the survey 102/111 respondents showed a clear interest (value 4 and 5 to involve personnel in design of new technology. However, they rated the actual feasibility a bit lower, 63/109 answered value 4 and 5 (Table 9).

Table 9. Organisational aspects.

Survey question	1	2	3	4	5	m	N
5. To which extent the personnel currently affect the development of welfare technology in the organisation	39	32	19	13	4	2,17	107
6. Wish of organisation to increase knowledge about design and development among the staff	4	14	32	24	36	3,67	110
7. Feasibility of this approach in your organisation	3	9	34	38	25	2,75	109
8. Interest of working according to this approach	1	1	7	31	71	4,53	111

With respect to design of new services a great challenge was to get the involved elderly (and the personnel) to envision future solutions and services that not yet exist. There could be needs that we are unaware of until the service is created to support and fulfil these unknown needs. One way of better understanding existing needs could be by using own stories and narratives to create concrete situations where different needs could be addressed by new technology. Another approach could be to gather information from follow-up systems since they contain much data about activities that had been conducted to meet the needs of the elderly.

5 Discussion

With respect to user involvement, the result from this work showed a difference between the real life situation and the ideal situation. The participants responding the survey thought it was important that elderly were involved in the development and that they perceived the technology as meaningful. However, when thinking of many real life situations the participants estimated the elderly to be on a level of the participation ladder [17] where they just receive information or contribute with their views. The results also supported previous insights about the importance of the personnel's broad understanding of the technology experience of the elderly participants; and that the personnel should not exclude participants based on the assumption of the staff [5]. Instead all the elderly should be treated equally and invited to participate. The result from this work added knowledge to the first theme regarding understanding of the elderly in terms of placing attention to the fact where personnel should use a vocabulary that did not exclude possible elderly participants.

With respect to engagement of the personnel it was pointed out that it was important that the technology was perceived as meaningful. The personnel should have the possibility to learn about the technology, time should be set aside for this specific purpose and finally needs appreciation for the effort they put in this work.

The initial themes included one aspect regarding sharing experiences of trying and using technology. The workshop discussion focused on earlier phases in the design process, and pointed out the importance of individual meetings and an approach that was centred on needs of the individuals. This was in line with previous research showing that "the closer relationship between proxy and elderly, the better the needs of the elderly will be conveyed" [10]. It was also pointed out that in many situations, both elderly and personnel are actually already skilled in using technology, as opposed to what many believe. This is important to take advantage of in testing and refining existing technology.

With respect to personnel that participates in designing technology together with elderly it is important that time is set aside, that the manager is positive, supporting and appreciate their work. The participators reported 'to a great extent' their own interest to work with methods involving personnel. At the same time they were thoughtful about the extent to which it was feasible within own organizations.

Finally, the original theme focused around the added value from meetings where all different stakeholders participated. The results from this work broadened to include previously gained knowledge such as information from follow-up systems.

6 Conclusions

Through this work, one step further is taken in the development of a method for using care professionals in the development of welfare technology. Although the best source of information is the actual user, we cannot give up the thought of using others in situations where the users cannot speak for themselves. We recommend using care professionals as proxy where it is suited as through the engagement that the professionals spread, users could start reaching higher steps on the participation ladder [17]. Among participants there was an interest and willingness to work according to this method. It could contribute to technology being perceived as more meaningful, both to elderly and personnel.

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