Care to Share?

Social innovation through low-budget, high impact welfare technologies.

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Abstract—**The Western welfare model is under pressure and finding new ways of providing care is a key issue to maintain a reasonable service level for elderly people spending their last years at a nursing home. Personal care at nursing homes tends to (quite reasonably) have high priority at the expense of social activities, thus creating situations where a number of elderly people experience loneliness. This paper presents ongoing work that focuses on developing Information and Communication Technology (ICT) for nursing homes that brings together professional care activities and family initiated care. We discuss challenges and opportunities for welfare or assistive technology design to support articulation work in a care setting, where both care professionals and family members (of the elderly inhabitants) co-exists. Furthermore, the care sector at hand suffers from economical limitations that challenge a successful implementation of more costly technologies. We present a concept named *Care to Share?* that seeks to bring together professional and family initiated care and that assists in the articulation work of social activities in a nursing home.**

Keywords-component; Care, welfare technology; nursing home; DECT; web; volunteer: social activities

I. INTRODUCTION

Denmark, as many western countries faces a number of challenges that call for a number of creative solutions. A Danish NGO, the DaneAge Association estimates that in 2050 the people aged 65+ will constitute 25,3 % of the population [1]. The general population ageing and the decrease of able-bodied employees who can perform care work have inspired both politicians and researchers to put special emphasis on welfare innovation and welfare technologies. Envisioned solutions range from better utilization of volunteers to robotized nursing homes. The recent economical regression makes the matter even more urgent where massive savings in public expenditure have made especially elderly care a hot topic in for example a Danish context [2]. Furthermore, a challenge both today and (very likely) in the future is the fact that there will be more elderly people, less personnel to provide care work combined with a political focus on cost reductions. This prevailing trend has even affected our current project as it was temporarily put on hold due to budget cutbacks within the municipality. It is within this framing where on the one hand there is a recognized need, motivation and desire to explore new approaches and on the other hand, severe organizational and economical obstacles challenging the realization of ideas that our research takes place.

One characteristic of the ethnographic aspect of the user-centered design approach is its ability to expose and present the inconveniences of silo thinking. Successful ICT systems commonly aim to minimize *users'* experience of such silos through for example a shared infrastructure connecting a range of otherwise separate silos in order to provide a seamless, smooth and synergetic experience. A holistic and people centered approach to ICT systems design may indeed challenge silo thinking and show how activities are interlinked [3]. Moreover an ethnographic approach can reveal how current practice, whether it be institutionalized care for elderly people or health care collaboration among public partners, often tend to take place in well-defined and within fixed entities with a clear division of responsibilities. Thus, individuals and institutions know exactly what their roles and responsibilities are and what expectations they meet. However, articulation work [4] when including new, potential non-professional care providers such as next-of-kin challenge this clear division of work and responsibilities.

The concept *Care to Share?* invites the relatives of nursing home residents to create shared activities to increase the quality of life for the elderly inhabitants. With *Care to Share?* we simplify and promote the inclusion of relatives in social care activities through a web and DECT based system [5] supporting relevant actors' such as next of kin, the elderly people and care personnel.

II. CASE: BJERGGAADEN

Bjerggaarden is a public nursing home located in the city of Aarhus, Denmark. The premises consist of two connected buildings with two and three floors. The nursing home was put into use in 1959 and modernized in 1995. It has 28 separate apartments and a number of dining areas and other shared spaces. Each apartment consists of a living room, a bedroom and a bathroom and is equipped with a balcony or a porch. The residents' conditions vary; about one third of the residents are rather fit and need limited help while the rest suffers from

e.g. dementia and requires more care. The current situation with a relatively high number of resourceful elderly people (i.e. one third) is according to the manager extraordinary.

The nursing home is kept in light colors, the atmosphere seems friendly and many walls are decorated with a variety of art. The elderly inhabitants individually points out that Bjerggaarden has a good reputation and that the surroundings are above standard.

Figure 1. Exercise at Bjerggaarden. One of the week's high points.

The residents of Bjerggaarden represents a rather heterogeneous group, and not only because of their mental or physical condition. For example, some residents have lived most of their lives in this particular part of the city and may even have children and grand-children living close by while others may have fewer relatives and acquaintances. A 2009 study conducted by DaneAge showed that 40% of elderly people living in nursing homes felt lonely [6]. At the same time 70% agreed that they often see family and friends. This survey corresponds well with the interviews we have done at Bjerggaarden. Moreover, it is a matter of personalities; some people find it easier than others to make new acquaintances or even friends. One of the residents is very clear about the difference: "One only gets acquaintances. Friends are what you get when you're young" – Sonia, 84 years old. Barbara, another resident explains how she, one of the first days at Bjerggaarden had met her neighbor Ulla and how they had gone for a walk with their walkers. Since then, Barbara have considered Ulla a 'good friend'.

Daily life at Bjerggaarden has a certain rhythm. In the morning the residents choose to either prepare their own breakfast or eat together in one of the dining rooms. Afterwards they spend time alone or together in their apartments and are served fresh fruit. At 11.30 they eat a hot meal for lunch in the dining areas. Some residents require help for eating while others manage by themselves and group around one table to chat. After lunch most residents take a nap and in the afternoon they participate in shared activities such as exercises or (when available) volunteer based events, spend time in their apartments or have visits before dinner and coffee at around 17.30, which takes around one hour.

We have until now conducted five interviews with residents and four interviews with personnel. We have participated in two afternoon activities and had a few workshop meetings with the personnel.

What the three fit residents we have interviewed all individually highlight as a major and essential source to a meaningful and inspiring life at the nursing home are the shared activities such as small trips in the bus to churches, theatre visits or the afternoon exercise. They also like the activities initiated by the activity personnel such as baking Christmas cookies a Sunday afternoon before the holidays. However such activities are limited to the scarce working hours available to the activity personnel. Furthermore, the general tendency on a national level is that such activities are vulnerable during budget cutbacks. Thus the current challenge that the nursing home and its employees face is how to maintain or develop shared activities which is essential to the quality of life for the residents without an expenditure increase or a degradation of other care activities. This is indeed the core of the welfare dilemma.

III.   RELATED WORK - WELFARE TECHNOLOGY

Welfare technology strives to support users to (continue) live an independent lifestyle. Welfare technology or assistive technologies exists as both research projects and commercial products. They range from software running on a smart phone or simple systems solving a specific task to advanced care robots. Welfare technology can also be less electronic, such as wooden legs put on a normal chair or table to raise its height.

The design is partly driven by the economical constrains described above. Hence, our project to a large extent utilizes existing technologies at the nursing home. Indeed, a range of assistive or welfare technologies do exist within both private and institutional care settings. Some of these technologies will now be briefly discussed and put in relation to our project.

Mynatt et al. have developed a picture frame to allow next of kin to follow the everyday life of an elderly relative [7]. This is an example of welfare technology as it provides adult children with an insight of their elderly relatives and allows them to monitor wellbeing and other parameters. However, the frame is developed within a research context and does not, as many other research 'products', exist on the market as an off-the-shelf product.

DECT is a telephone standard for cordless telephones that exists in both private and institutional settings. However, as a care technology, the institutional, or office version, allows integration of personal safety alarms etc through protocols such as IP and serial communication by a server alongside its voice capabilities.

Different personal safety alarms ranging from simple push-buttons to alarms able to automatically detect falls and activity levels of the user are commercial product used to a great extend today in both institutional and private care.

Robots are often perceived to have a profound impact on future care scenarios. Robots such as Paro [8] are used in

therapy and care of elderly people, often (but not only) in institutional care. Roomba is one example of a robot vacuum cleaner [9], that can ease the task of cleaning in both institutions and private homes. Ri-man is a more advanced, 'full-body' robot that can help with care related tasks of moving a person or detecting urine through smell sensors [10].

DukaPc [11] is a computer developed for seniors. It has a simplified interface enabling easy access to email, the web and other 'core' services.

The above examples illustrate the wide range of technology, product maturity and price existing in welfare technology. Even if DECT (for institutions) is a rather expensive infrastructure, it is a more common technology in many nursing homes in comparison to robots or state of the art touch-screen devices.

IV. CONCEPT

The idea of the project is to assist volunteers such as next of kin to provide social aspects of care to elderly people living in a nursing home. The solution aims to be cost-effective by utilizing, to a large extent, technology already existing at the nursing home and require a minimum of effort from the nursing staff. Built on DECT and web technology, the system offers a web-based calendar where potential users such as next of kin can fix a date and time for arranging social activities at the nursing home. Examples of such activities can be singing, storytelling or bringing a group of elderly people out for a tour on the country side. Through the web based activity calendar, a non-resident can see what times the nursing home would like to have social arrangements (not all times during a day is suited, for example during meals or too late in the evening and there should be personnel ready to help out if needed). The volunteer schedules an activity such as a music arrangement through the web based calendar. Through DECT technology, the residents get notified of the new activity through a text message from the system to their personal phones. The text message includes the activity description, time and place. At this stage, each resident can decide to accept the invitation or decline. If accepted, a reminder will be sent out as a new text message on the day of
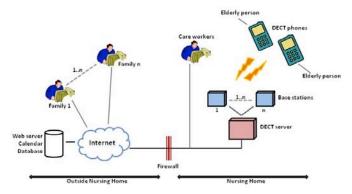

Figure 2. *CareToShare?* system architecture - overview

the activity. The staff members can immediately see the minimum number of people attending an activity and hence prepare coffee and make other preparations such as bringing

people in need of assistance to the activity. They can also include people not capable of handling or understanding the DECT telephone. The arranger gets notified of how many people have signed up for the activity and can hence make his/her own preparations. An overview of the system architecture can be seen in Figure 2.

A. The concept and the learning from Bjerggaarden.

While resources are scarce, the main challenge is how to motivate relatives to be more engaged in shared activities in order to increase the quality of life for the residents. Our perspective is that there is more to welfare technology then 'mere' technological artifacts such as robots, digital picture frames or video chat devices.

Based upon fieldwork, it is obvious that at Bjergaarden the social aspects of the shared activities are essential to the residents' well-being. The concept prototype we have developed should be seen as an enabler of new ways of organizing the everyday life at Bjerggaarden. The concept *Care to Share?* highlights the importance of interpersonal and social care rather than the assumption that technology in itself may increase the quality of life for elderly people. The type of social innovation embodied in *Care to Share?* heavily relies on the functionality of the service and its interface's ability to enable a hassle-free and easy-to-use interaction for all user groups including personnel, relatives and the residents. As such there are at the current state no built-in limitations to what kind of activities that may occur. An important concept feature is the democratic, responsible and empathic participation from the relatives. These values are reflected especially in the web interface design as we seek to encourage the relatives' sense of responsibility for their own family members and other inhabitants at Bjerggaarden. The new way of organizing activities with the help of relatives is intended to a) ensure a more diverse type of activities and thus resemble the diversity of the residents and b) to increase the number and frequency of activities. Indeed, the system aim at promoting a more active and engaging daily life at the nursing home with the purpose of strengthening the relations between residents and the participation from relatives.

The *Care to Share?* concept seeks to minimize the silo thinking between a) the institution and the residents' relatives and b) between relatives from different families by providing a tool that makes it easy to care and share at the same time by involving not just one's own elderly but a group of residents. Indeed, bridging institutionalized and family care activities through the inclusion of the residents' relatives can prove to be a cost-effective yet resourceful approach to enhance the quality of life for the residents (and hopefully the involved relatives).

V. DISCUSSION

The concept *Care to Share?* invites the relatives of nursing home residents to assist in creating and carry out activities to increase the quality of life for the residents, including also those with no relatives of their own and others with a limited social network. It should be pointed out, that the study from the DaneAge association discussed earlier in this paper [6] shows

that even if 70% of the elderly people often see family and friends, 40% experience loneliness. *Care to Share?* invites the relatives to come and visit, not only in the privacy of the apartment of their elderly relatives, but rather meet in bigger groups in one of the common areas such as the big hall of Bjerggaarden. So rather than a one-to-one visit or few-to-one the nursing home encourages one or few-to-many interactions thereby making room for new types of visits at the nursing home. Currently most social activities are planned by the nursing home staff. They need to fit these activities in-between care and nursing activities such as personal care, feeding and cleaning. *Care to Share?* propose a way for how to involve relatives in creating meaningful activities for all. Whether the concept will be successful or not depends naturally on the ease-of-use and the functionality of the concept, but maybe more importantly on how the new organization of activities are perceived by all involved stakeholders.

During the following three months we will seek to understand and test the assumptions that; 1) the relatives are capable of being in charge of shared social activities and whether they feel responsible for social activities. 2) if the healthcare personnel will embrace such non-institutionalized family care work as a valuable and relevant way of organizing activities. The balance for what the public sector can offer and what individuals or volunteer groups may be responsible for will change in the coming years. The question is how such changes may be introduced. There is a fine balance between introducing a concept such as Care to Share? without addressing political or ethical implications such as volunteers' or relatives' role in the welfare model or whether relatives are at all capable of being in charge of activities for a large diverse group of elderly or if such care work is for professionals only in terms of relevance, safety and other issues. We will address such matters in our work from an explorative and pragmatic starting point while being sensitive to the dilemmas we may come across in this attempt to interlink technology use and social innovation. Thus our research addresses the fundamental question in the welfare technology debate concerning whether it is a question of prioritizing and manage existing resources (including technology) better or if challenges can be tackled by re-inventing the underlying organization of such activities by rethinking roles and responsibilities by current and potential new actors. Surely it is a matter of both, but the maturity and price of a wide range of welfare technologies may hinder the speed of this development.

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