

Socio-Technical Assisted Neighborhoods

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1 ABSTRACT

In a joint project, engineers and sociologists develop a technical and social assistance system providing functions in the domains of comfort, safety, health and communication to enable older adults to live independently as long as possible in their familiar domicile. In the course of the project, apartments of older tenants in an existing housing stock are equipped with an Ambient Assisted Living (AAL) system. Next to technology, social integration plays an important part in the project. First results show that after a few months already the socio-technical system may encourage the involvement of the elderly into the residential district and help to avoid loneliness. Further research has to show to which extent the system also contributes to the domains of safety and security, as well as health.

2 INTRODUCTION

In aging societies, most elderly people wish to stay in their self-chosen-environment as long as possible, even if they experience a growing loss in quality of life and health problems. At the same time, the traditional system of care for older adults ceases and the costs for professional care constantly grow.

There are various approaches to reach the goal of living an independent daily life in the familiar domicile despite these conditions. Some of these approaches include technical solutions, such as wheel chair lifts, remote controlled shutters, in-house emergency call stations or door cameras. Others embrace alterations to the home, such as enlarging doors or mounting hand rails in the bathroom. Some of the mentioned solutions are already widely spread and may help an elderly person to move more easily within the home or enhance the feeling of safety and security. However, they are often limited to the home and only cover certain aspects of aging, e.g. constrained movement, which does not apply to every elderly person by far. Other aspects such as loneliness or the need of low-threshold assistance for housework or grocery shopping are left aside. As a consequence, new concepts, including social and technical solutions, have to be developed.

The mobilization of social communities in neighborhoods currently receives significant attention from policy and decision makers in the field of social planning and in the housing industry. Vibrant neighborhoods are expected to enhance the quality of life of senior citizens as well as their ability to live an independent daily life. For an active neighborhood it is often necessary for it to be supported and guided—for example by active individuals, community centers of municipalities or nonprofit clubs or by a community facility of the landlord.

Since August 2010, engineers and sociologists at the University of Kaiserslautern, Germany work together with different partners in the field of social service, technicians, and a cooperative building society in a joint project¹ (“Technisch-soziales Assistenzsystem für Komfort, Sicherheit, Gesundheit und Kommunikation im innerstädtischen Quartier-TSA”) on the development of an assistance system for independent living for senior citizens living in an urban area.

3 THE TSA PROJECT

The purpose of the TSA-system is to assist senior citizens in daily life by providing functions in the domains of comfort, safety, health and communication and by promoting their social integration with the help of an active neighborhood community and involvement into the residential district. The project comprises a technical and a social part, which intertwine [Schelisch 2011].

¹ The project is funded by the German Federal Ministry of Education and Research (BMBF) as part of the initiative “Altersgerechte Assistenzsysteme für ein gesundes und unabhängiges Leben – AAL” and takes place between August 2010 and July 2013.

3.1 The Technical Concept

One aim of the project is to equip several apartments of elderly tenants in existing housing stocks with an Ambient Assisted Living (AAL) system. In this case, ambient means a technological environment which is intelligent, but not necessarily noticeable, and adapts to the daily lives of users. AAL systems may include networks of various switches, sensors, and actuators, and also special equipment such as video cameras, emergency assistance systems, and central control terminals. AAL is seen as a promising contribution in helping to live independently and safely in the familiar domicile. But until now it is not clear which technological concepts and which single devices are of use for elderly people and are accepted at the same time. Apart from pilot projects AAL-technology is not prevalent in senior households. Therefore, one objective of the practical project is to directly involve the target group into the development process of an Ambient Assisted Living system.

The ambient technology in the TSA project consists of different wireless home automation components, such as motion detectors, door and window reed contacts, remote controlled lights, a door camera, and other home automation devices. The core integration element of the technical system is a touch screen computer based unit named “PAUL” (Personal Assistive Unit for Living), developed by the University of Kaiserslautern and CIBEK technology + trading GmbH [Schelisch/Spellerberg 2009]. PAUL enables the user to control the home automation equipment, use different features in the fields of media and entertainment (e.g. news, radio, internet access to certain webpages, photo album, calendar of events, alarm clock) and communication (e.g. video telephony, virtual bill-board) and also comprises an ambient emergency detection system [Floeck/Litz 2009; Rodner et al. 2011].

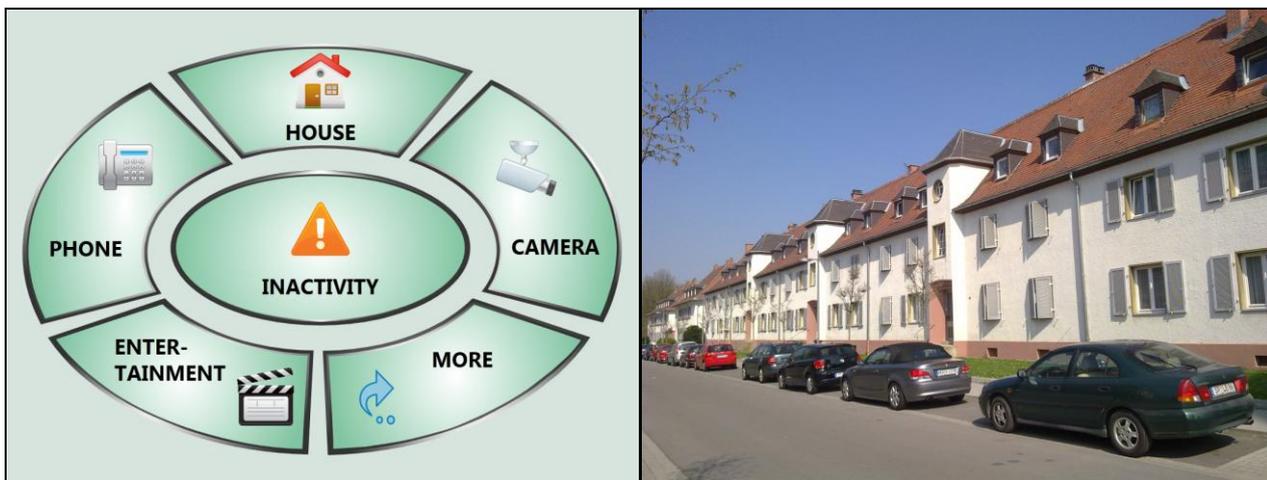


Fig. 1: Entrance Screen of PAUL. Fig. 2: Housing Stock of the GBS in Speyer, Germany.

In a previous project, most technical features and their usability for the elderly were tested over a period of three years in a newly constructed building [Spellerberg 2010]. In contrast, the apartments in the TSA project are equipped with wireless components for the most part, which allow an installation without constructional changes.

Between summer 2011 and spring 2012 ten out of 20 targeted apartments in the German cities of Speyer (Gemeinnützige Baugenossenschaft Speyer, GBS) and Kaiserslautern (Deutsches Rotes Kreuz, Kreisverband Kaiserslautern) were equipped with a PAUL each. All apartments are situated in different buildings, which were built in the 1920s and 1960s for the most part. As the development of the TSA system is an iterative process and the direct involvement of the target group into the development process of the technology is relevant in this project, not all functions were installed right from the start. At first, all home automation devices (besides the door camera) and in the fields of entertainment and media were installed, functions in the field of communication were added about four months later. A first testing phase of the ambient emergency detection system will be started soon. Other functions will follow within the year 2012. Although remote controlled shutters are not part of the initial technical concept, the participating households in Speyer have the possibility to upgrade their apartment with electric shutters for a low monthly fee (six Euros per shutter) and operate them via PAUL. Four out of eight participating households have already made use of this possibility.

3.2 The Social Concept

The social part of the assistance system consists of establishing and maintaining social contacts in the neighborhood and the integration of general and special services from facilities nearby. At this point, the local neighborhood club plays an important connecting role. The neighborhood club was founded in 1999 and is managed by a social worker. The club offers coffee parties, seasonal events, readings, cooking sessions, as well as promotion of neighborly help, assisted grocery shopping, and so on. Especially elderly people make use of consultation. The club also acts as a multiplier for tenants interested in participating in the project.

One aim of the TSA-project is to enable the participants to order domestic support services and other additional services from their district with the help of PAUL. These services may include services of the landlord (repairs), the local neighborhood club (promotion of neighborly help, assisted grocery shopping), a nearby nursing home (warm meals, laundry service, and procurement of other services), the German Red Cross (ambulatory care, social services, housekeeping service), doctors, hairdressers and other facilities nearby. The requests for these services are to be posted by the participants directly via PAUL's touch screen (development by CIBEK) or by a video telephone connection to a concierge. In the TSA project the concierge is situated at the nearby nursing home (Speyer) and the German Red Cross (Kaiserslautern), respectively. The concierge will then forward the request to a service provider, which preferably is located close to the participants dwelling. This service will presumably be launched in summer 2012.

3.3 Sociological Research

In order to evaluate the requirements, experiences and acceptance of the assistance system and determine the perspective of the users, the project is supervised by sociological research. To gather feedback, the participants were interviewed ahead of participation and will be questioned several times during the project duration. At regular meetings in the facilities of the local neighborhood club, organized by the sociologists, the participants of the TSA project exchange experiences and discuss how the concept may be developed further. The information about which functions work and are regularly used and which cause problems or are less used are directly taken into account for the ongoing development of PAUL and the TSA system.

In addition, a written survey of tenants of the GBS aged 60 and older (n = 171) was conducted to find out more about the general acceptance of AAL technology, the willingness to pay for the installation of certain devices in the field of home automation and health technology and to assess the needs of service offers requested via PAUL [Schelisch/Spellerberg 2012].

3.4 The Participants

Suited for participating in the TSA project are all tenants of the two participating landlords aged 60 and up (exceptions are possible). Because PAUL is designed to be self-explanatory, the participants do not need to have any special skills. Tenants with little or no technological competence so far are also welcome. The participation, including the use of all technical devices and a 24-hour home emergency call service, is free of charge.

Currently, ten tenants in Speyer (eight households) and two tenants in Kaiserslautern (two households) participate in the project. The eight female and four male participants are aged between 52 and 86 years. The average age is 72. Only four of them, including the three youngest, have ever used a computer, only two have internet access at home. Three (female) participants can be considered as technophile. The state of health was quantified by their personal rating: except for a younger man, all participants have medical issues, including one woman having multiple sclerosis and two who fell down several times already and are not able to leave their apartments alone. Five of the twelve participants show a confident interest in participating; six others seem to participate mostly because family members (children or partners) wish them to do so. Yet another person shows an interest in participating, but only because of the health functions of PAUL.

3.5 Results so far

The results of the quantitative study show a relatively high level of acceptance to use AAL-technology at home from the perspective of potential users, especially in the fields of safety and health. However, a market potential for the tested techniques may not necessarily derive from the statements on the acceptance of use. Seniors are often very reluctant in the use of technology, even if they have very positive attitudes [Meyer et

al. 2001]. They often mean the need of the devices for “others”, while they would not use them in their own home. This was also attested in the acquisition of new participants. In the beginning, the acquisition of new participating households was very difficult. Often people were generally interested in participating, but rejected for various reasons, e.g. if the partner (mostly husbands) had no interest or if they felt not to be “old enough”, although their age fit well to the project. However, after several months, the project has spread. As many of the participants willingly provide information to family members, neighbors, and friends about the functions PAUL has to offer, current prospects are for the most part acquaintances of persons already participating. Other interested tenants are recruited by the local neighborhood club. Without the local neighborhood club and its support as a local first port of call, the acquisition of new participants would not work.

In spring of 2011 oral interviews were conducted with the first seven participating households ² of the TSA project in the framework of the sociological research. The participants were asked to comment on 24 different service offers (e.g. delivery of groceries, hairdresser service at home, repair services and home cleaning) and to indicate whether they use these services at present or would like to use one or more of them. Overall, it is found that the interviewees have a positive attitude towards the proposed service offerings, and would make use of professional help, but only in case the support cannot be covered by family members or other acquaintances. Most interviewees emphasized that they would only make use of the services if there is an urgent need. Furthermore, financial reasons also play a crucial role in the actual acceptance of support services. The interviewees want to keep living independently as long as possible, even though it becomes cumbersome for them. Furthermore, they turn down outside help in order to stay “busy” or feel “fit”. The projected possibility to order these services via PAUL was valued positively by a total of six of the eight interviewees.

Although a comprehensive survey about the use of the different functions of PAUL is only scheduled for summer 2012, one can already get an idea about the use of PAUL by the participants. Talks and discussions with the participants show different levels of acquisition. While some use PAUL on a daily basis and try out new functions by themselves, others only look at PAUL from time to time and wait for the ambient emergency detection system to be launched and for the door camera to be installed. For the latter persons, only functions in the field of health and security are important. ³ Participants, who use PAUL very often, also mention more suggestions for improvement. Desired improvements mentioned by the participants in the TSA project include a better navigation of the internet access, a desired possibility to exchange written messages and pictures to other PAUL users, as well as individual changes of saved radio frequencies and websites. All mentioned suggestions for PAUL belong to the fields of entertainment and communication.

Even though PAUL is designed to be used without instruction also by people with no or little computer literacy, earlier results in a similar project in Kaiserslautern indicate that PAUL might not be suitable for people suffering from dementia. Even a previously self-evident use of PAUL can be “unlearned”.

It is aspired that the TSA system enables the elderly to become connected to other people in the neighborhood and thus enforce face-to-face contacts. For two months now, the participants can contact other users, a contact person at the local neighborhood club, technical support and relatives via PAUL using video telephony (Skype). However, only few participants use this function on a regular basis so far. They use their common telephones instead. Nevertheless, one can already state that PAUL has a connecting effect, despite the fact, that the practical part of the project has started just recently: The participants enjoy the regular project meetings to which they bring home made cake. They sometimes also meet additionally without the sociologists and developers to exchange their experiences with PAUL and show functions others have not tried yet. Some offer mutual assistance, e.g. accompany to the supermarket, chauffeur to various places, and check if everything is in order. Also, some of the participants became more active in the neighborhood club. Already, new friendships were formed.

² The survey was conducted using semi-structured interviews and an additional short standardized questionnaire. Six tenants of the GBS and two tenants of the German Red Cross (DRK Kreisverband Kaiserslautern) were interviewed at that time. The five women and three men were between 60 and 86 years old, there was one couple.

³ One aspect of the survey will be whether and to which extent the voluntariness to participate in the project has an impact on the use of PAUL.

4 SUMMARY AND PERSPECTIVE

The integration of organizations, services and companies in the urban neighborhood form a central aspect of care in old age. Neighborhoods are revitalized and the local economy is strengthened. However, AAL concepts which include a comprehensive range of services have to be considered critically in regard to the acceptance in practice. Our surveys have shown that ordering services with the help of AAL technology might not play a role (yet), because the elderly prefer support from family members rather than professional help and would only accept these services in urgent need and require a bond of trust. Whether and to what extent this can be proved or disproved in the longer term, we hope to show with further research as part of the TSA project.

Although the project is only mid-way through, and not all projected functions have been implemented yet, one can already state that PAUL does his job well as a high tech housemate. Those who do not show fear of contact, enjoy using PAUL. Potential users emphasize its functions in the fields of safety and health; once used, functions in the field of comfort, entertainment and communication are yet as important. As soon as the door camera and the ambient emergency detection system will be installed, further research has to show to which extent the system also contributes to the domains of safety, security and health. First results show that the project design may help to foster neighborly friendships and thus avoid loneliness of senior citizens. Here, talking about PAUL is as important as talking via PAUL.

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