

PIA – Personal IADL Assistant

Results of the Focus Groups

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PIA aims to improve the everyday competencies of older people (with and without cognitive impairment). It provides video instructions to help with operating everyday tasks or handling technologies in the household. The instructions are made by relatives or carers and are provided to the users on a tablet. Focus groups with potential users and carers showed that most of them like the idea of providing video instructions. Furthermore important hardware aspects were evaluated, obstacles were mentioned and suggestions for improvements were made.

Keywords—older people, memory difficulties, video instructions

I. Introduction

The number of older people with cognitive impairments in Europe will increase in the next years. In Germany 1.4 Million people suffer from dementia. According to Alzheimer Disease International (ADI) there will be 15 million people with dementia in 2050 in Europe. It can be assumed that a majority of them will have the wish to stay at home as long as possible [1].

Technical assistants emerged as a promising opportunity to support not only affected people but also those who take care of them [2]. Technical assistants serve as memory aid, offer support in orientation, help managing daily activities, increase safety and exonerate caring people [3, 4, 5].

Developing assistive technologies especially for people with disabilities has the need to follow a user centered approach. The PIA project involves primary (older people, people with dementia) as well as secondary users (formal and family carers) from the very beginning of the developmental process.

II. What is PIA about

PIA will be developed within the AAL Joint Programme (Call 5) in cooperation with the United Kingdom, Norway, Spain and Germany.

Purpose and Target Group

The overall aim of PIA is to enhance an independent lifestyle of the elderly by supporting them in doing daily activities. It focusses on assisting Instrumental Activities of Daily Living. The IADL concept can be seen as an extension of the Activities of Daily Living (ADL) approach after Barthel [6]. ADL are specific competencies which are indispensable for managing daily life. They include aspects of mobility (e.g. climbing stairs or walking), personal hygiene (e.g. toilet use or washing) and ingestion [6]. In contrast, IADL additionally cover more complex activities. They exceed basic competencies; nevertheless they influence quality of life. Referring to Lawton and Brody [7] IADL include technology usage, household tasks (cooking, do the shopping, do one's laundry, cleanliness), the usage of means of transport, cash management and medication use. Especially complex activities are affected by memory problems (e.g. Mild Cognitive Impairment). The higher the level of impairment the more difficult it is to manage these activities [8].

PIA aims to address this problem by providing short video instructions on a tablet. Tablets are known as easy to use devices from which older people (with and without dementia) can benefit [9]. The idea is to provide easily understandable instructions serving as a thread to bridge memory lapses in order to maintain the independence in doing Instrumental Activities of Daily Life. A wide range of activities can be supported by instructions e.g. using the TV or the washing machine, making coffee or simple dishes. PIA does not only address older people with dementia or memory problems but also people who struggle with technology in general or with common manuals. It seems that clear instructions are thus more important than a good usability or a self-explanatory usage [10]. According to Göbel and Yoo [11] 97% of the 55 years old and older people use instruction manuals but only 60% of them consider them as helpful.

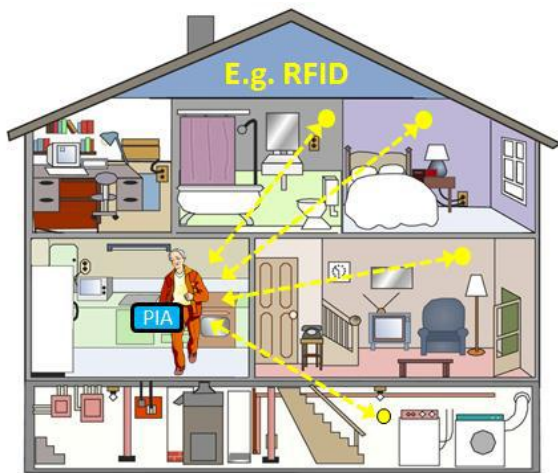
PIA aims also to support reference persons (formal and informal cares, partners, friends, relatives) as they are first contact persons whenever problems occur.

Technical Bases

The playback of the instructions occurs with the help of a tablet. NFC (Near Field Communication) tags will be placed within the home and serve as triggers for the referring videos (e.g. a video which explains how to do the laundry should be placed next to or on the washing machine, picture 1).

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Picture 1 Possible tag infrastructure

NFC tags provide a number of advantages compared to other data exchanging technologies (e.g. Bluetooth, QR-Codes). They are characterized by a very short range. Therefore several tags can be placed close to each other without interference. Triggering the video is very easy as long as NFC tag and NFC transmitter are close enough. However the referring end device has to support NFC technology (e.g. Google Nexus 7, Sony Xperia Tablet Z). Linking the NFC tag with the referring information is simple since PIA will provide a one click solution. The desired video has to be chosen on the tablet and linked to the NFC tag by holding it close to the NFC transmitter.

The benefit of it is being a flexible system and adaptable to individual needs. The PIA project also includes developing a website, which serves as a kind of library: reference people can upload videos and by that make them available for primary users. It will also offer the opportunity to share tips and advices. Additionally, adaptations regarding the tablet interface will be manageable via this website.

Approach of the project

This project makes use of several user centered research methods. As a first step personas and scenarios were developed. A second step included the recording of videos by the project partners and a critical assessment afterwards. The aim was to analyze crucial steps of this process in order to provide a handbook on how to make helpful video instructions. Thirdly interviews were conducted. Participants were 35 people with memory difficulties, formal and informal carers. As a last step focus groups were conducted in the United Kingdom, Norway and Germany. The referring results are presented below.

III. Method

The aim of the focus groups was to ascertain people's views on mock-ups of the PIA system and its planned functionality, check out current design assumptions and obtain further

information about potential users. Participants were 16 older people (eight female, eight male, 50+ years old) and 30 formal and informal carers (15 female, 15 male, between 30 and 70 years old). Participants were recruited within different organizations such as helpdesks for dementia and caring relatives. Questions were asked in an interactive group setting where attendees were free to interact and discuss with other participants. Furthermore short questionnaires were completed by all participants in order to gain some standardized information.



Picture 2 Mock-up of the PIA interface

Focus groups lasted between one and two hours. At the beginning, consent to participate was reestablished by all attendees and confidentiality and data protection issues were discussed. As a first step mock-ups of the PIA system were demonstrated (picture 2). A short video instruction was shown in order to help the participants to get an impression what the PIA idea is about. Tablets were used to display information and screen shots to the groups to aid discussions and the gathering of feedback. After that the general understanding of PIA and suggestions for improvement were discussed and existing features and design aspects were assessed. Finally, questionnaires were completed to collect standardized information

IV. Results

Results of the focus groups indicate that carers and older people understand the overall aim of PIA. They can imagine that many people might benefit from it. They see singles, widowed people and people who struggle with common manuals as potential users. Nevertheless, they emphasize that only people with mild dementia will be able to use PIA adequately. Participants can imagine that PIA might be useful for all areas around the home, devices which are not used regularly and tasks one has never done before (e.g. widower-situation). They suggest rehabilitation teams and guests in holiday flats as additional target groups. Most of them think that PIA could be helpful for people experiencing difficulties

in carrying out activities around the home. They see it as a good alternative to common manuals, as a help to understand (modern) technology (TV, micro wave, dish washer, DVD player, smartphones etc.), as a “cognitive encouragement” to keep their brain fit and as a chance to increase self-confidence and independence.

Despite the fact that most of the participants see advantages in using PIA, opinions regarding wanting PIA for themselves or someone else differ. Some say it would depend on the price or the living situation. Some are not sure if it would help them with their caring situation. Still, the majority thinks that if PIA is easy to use, it could take away a lot of stress from carers. They also agree that PIA might have a positive influence on users’ lives. They can imagine that it increases motivation and stimulation, improves health, fitness and medication and enhances coping and self-management strategies.

Older people and carers evaluated aspects regarding hardware, software and price as follows: Participants described the quality of pictures and colors as good. Some would prefer an enlarged font size and better contrasts, as several screens were too dark. Most of the participants agree that they would prefer a screen size of 10”. Carers and older people mentioned that they experienced hearing difficulties as the sound was not loud enough. They share the opinion that it needs to be a lot louder. Older people found tags simple enough. Some suggested they need to be in a bright colour so they would stand out and be more visible for a person to identify around the home. The opinions regarding a reasonable price vary highly. They depend on what needs to be bought (tablet or app), which services are included (updates, access to video library) and whether the person already owns a tablet or not.

Participants were asked if they see obstacles and problems which could make it difficult to benefit from PIA. Some of them doubt that people with severe dementia might be able to use PIA. Some were wondering who would provide the video in case there are no carers or relatives who express their willingness to record them. Others mentioned that the quality of the videos has to be ensured. Some see problems in overcoming technical barriers especially for people who never had the chance to get used to modern technology. Some stated that users might forget where tags are and what they are for. Carers see problems in watching, understanding and implementing the instruction simultaneously.

Carers and older people do not only see obstacles but also mentioned a lot of suggestions which might help to make PIA more helpful: Easily accessible and well organized videos, providing an overview of available videos, changing the screen color according to the manual-topics, videos in simple language and not just showing hands, but the whole (preferable familiar) person and a reliable communication between the tag and tablet. Some additional features were mentioned as well: Search button/engine for videos, emergency button and a home-button and an easy way to call technical support. Some suggested that videos should be stoppable between each step and searchable via voice control. Most carers like the idea of having a PIA online group for sharing hints and tips on how to support people with dementia.

v. Summary and Conclusions

Results indicate that older people with and without memory problems might benefit from PIA. Potential target groups might also be singles, widowed people and people who struggle with common manuals. Nevertheless most of the participants don’t see people with severe dementia as potential users. PIA is seen as a chance to increase independence as it might be useful for a lot activities of daily life. On the other hand a few obstacles were mentioned which could make it difficult to benefit from PIA. It has to be ensured that someone provides videos which are of good quality as well as technical barriers have to be overcome. Besides potential obstacles, helpful suggestions were made and additional features were proposed (e.g. easily accessible videos and search engine). All in all PIA is seen as a chance to increase and maintain independence of older people, people with slight memory problems or an early stage of dementia. To make PIA as helpful as possible it has to be straightforward to use, work reliably and provide well organized and understandable videos. It should create a feeling of security by implementing help-buttons and the chance of immediate technical support.

vi. Further steps

Further steps will be several labor and field usability tests with the developed prototype. First of all a general testing will be conducted by all project partners in order to identify essential sources of errors and usability problems. A next step will be a labor test. The functionality, usability of video playback, registration of tags and linking them to videos, the usage of the PIA website as well as uploading and sharing videos will be tested. These tests are followed by field tests in participants’ homes which will last five weeks. Experiences with PIA will be gathered by using quantitative (questionnaires) and qualitative (interviews) methods. Further development will be based on these results. The revised system will be tested again within a second field trial.

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