D2.1 Report on user requirements and needs

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List of abbreviations (alphabetically)

Abbreviation	Full name
A24	Assistenz24
AAL	Active Assisted Living
AT	Assistive Technology
FFG	Österreichische Forschungsförderungsgesellschaft mbH
GPS	Global Positioning System
ICP	Informal Care Partners
ICT	Information and Communication Technologies
KPI	Key Performance indicator
PwD	People with Dementia
raltec	research group for assisted livingtechnologies
TDD	test-driven development
UCD	User Centerd Design
WP	Work Package

Executive summary

The aim of the eSticky project is to help people with memory problems to stay independent for a longer period. eSticky is an innovative Active Assisted Living (AAL) product, that helps to achieve such independency. This report, as part of the eSticky research, focuses on general dementia research, studies of existing AAL tools, and personal experiences, that help to found the scientific basis on which the eSticky product will be constructed. This research, together with the the D 2.2. Report on user centered design methodology by the consortium partners HARPO, will be a valuable base for the implementation of various tools and confirming their success.

The contextual background of the project provided here is the recognition of the importance of a new approach of an AAL system. The report provides brief descriptions of the main already existing AAL systems, as well as how the consortium will approach the eSticky project, especially involving the target audience of this project.

Therefore, the most important aspect is the user involvement throughout the research and development of the eSticky system. The report therefore also provides an overview of the end-users and their involvement in the process of the development of this AAL system. For the evaluations that will be conducted, a total of 40 older adults (20 from Austria and 20 from Poland) are planned to participate. Here, singular steps are listed, as well as insight in the specific questions the end-user partners (Assistenz24 and Harpo) will ask the involved users. By publishing the questionnaires and procedure of involvement of the different types of end-users, the consortium partners want to be as transparent as possible about what specific tasks the end-users have to fulfil and what information the end-user partners need for the consortium, to develop a useful device. Working with people with dementia bears many moral ethical challenges, which will be addressed in this paper.

1 Introduction

Introduction of AAL Tools

The rate of people with dementia and Alzheimer is increasing annually. Due to our aging societies, dementia has become a 21st-century global public health concern, placing considerable burden on not only the individual and their family but also current and future service provision. Worldwide prevalence is around 46 million, a figure predicted to treble to 131.5 million by 2050, with current care costs recently estimated at US $818 billion. Among all chronic diseases, dementia is one of the most important contributors to dependence, disability and care home placement. Despite a global policy push toward more timely diagnosis and earlier intervention, considerable geographical inequalities in the provision of post-diagnostic care and support services exist. One aspect of post-diagnostic support, which may enable persons with dementia to remain independent for a longer time and thus potentially leading to cost savings by delaying entry into care and nursing homes, is assistive technology. Assistive technology (AT) for persons with dementia can be defined as “Any item, piece of equipment, product or system driven by electronics, whether acquired commercially, off-the-shelf, modified or customized, that is used to help persons with dementia in dealing with the consequences of dementia” (see also Marshall). The technology does not necessarily need to be “purposely designed” for persons with dementia, as many mainstream technologies can be adapted to their changing needs. Important need areas in dementia are memory support, information, company, reducing psychological distress, and engaging in daytime activities. Various technologies have been developed to address these needs, such as electronic calendars, Web-based information systems, video-calling, and electronic activity support systems (see Meiland F, Innes A, Mountain G, et al. 2017).

In recent years, various technologies have been developed under the name "Active and Assisted Living" (AAL) to make it easier for older people to live independently in their own home. Speech control and voice assistance systems are already available on the market, but are hardly adapted to the needs of older people in need of care.

There are various AAL application areas:

- tools for cognitive support
- therapy support
- health and activity monitoring

- emergency detection
- emotional wellbeing.

In case of eSticky the idea is to set up an AAL application, that supports in some range all of these areas but in particular: The need of old people to have the possibility to stay in their home and well known environment as long as possible. “You cannot shift an old tree without it dying!”. Through eSticky, people with dementia or Alzheimer’s disease have the opportunity to stay at home, well known that they are supported in cognitive matters, health matters, and emergency cases and for their emotional wellbeing.

2. General experience of AAL Tools

2.1. Analysis of demand for AAL devices

Evaluation studies described by Meiland F, Innes A, Mountain G, et al. 2017, have found that persons with dementia are positive about using electronic devices to facilitate their independence and reduce family stress. Furthermore, small-scale studies have found that assistive technologies improve independence, behavioural symptoms in persons with dementia, and quality of life, and stress level in carers.

Despite the promising benefits of technological support systems, several issues remain before they will really make a difference in the field of dementia care. For example, the predominant use of technological solutions for safety and security and carer reassurance rather than for lifestyle in general; the slow uptake and implementation of assistive technologies; the lack of high-quality scientific research into the effectiveness and cost-effectiveness of assistive technologies in dementia care; the lack of successful commercialization of prototype technologies; and the limited attention to aesthetics, which can make many technological support systems feel stigmatizing. Furthermore, professionals and society also seem to lack an applied understanding of the potential of assistive technology in dementia because it is not being integrated into mainstream dementia care practice (see Meiland F, Innes A, Mountain G, et al. 2017). As it will be argued in the D2.2 Report on user-centered design methodology by the partner HARPO, there is also a lack of making the technology age-appropriate friendly. Meaning, people which are not part of the generation “digital natives”, have it more difficult, to grasp the concept of a too advanced AAL system.

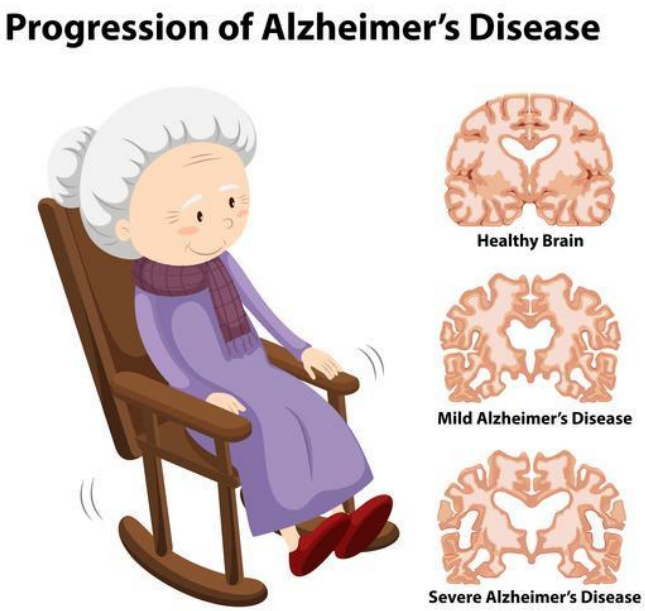
The term “assistive technology” includes a wide range of aids, appliances, and whole-system applications. Consequently, discussions were focused on technologies that address the following 3 areas of global need:

1. Devices intended to help persons living with dementia to manage their everyday life across the disease journey, such as electronic calendars and reminders for activities, medication reminders, aids to perform activities of daily life, robots, and navigation systems.

2. Technologies to help people engage in meaningful and pleasurable activities such as cognitive stimulation and physical activities, as well as technologies to improve social participation, contact, and support.

3. Health care technologies that aim to support professional organizations and systems within dementia health and social care, such as behavior monitoring, shared decision making, and Global Positioning System (GPS) tracking systems.

The surveys conducted as part of the AAL vision have shown that assistance and everyday aids as well as monitoring and emergency call systems are most important. These are followed by Information and Communication Technologies (ICT) applications for support and solutions for human-computer interaction. In the middle field there are different applications such as solutions for medical care or mobility and navigation aids. Applications for entertainment and social interaction, sensors (in the survey “sensors in and on the body”) and robotics were clearly classified as not truly relevant.



These research results show that the consortium partners are on the right track at this point. Various environmental factors have also caused the group of young dementias (such as vascular dementia) to increase extremely in recent years.

Vascular dementia develops as a result of circulatory disorders in the brain. It is the second most common form of dementia after Alzheimer's disease. The two forms of dementia are often confused with each other. There are also mixed forms of both dementias. Like Alzheimer's, vascular dementia is not curable. Nevertheless, it is important to start therapy. The first step is to reduce the risk factors. ... To do this, the doctor does not only prescribe medications that influence the risk factors and are intended to prevent further strokes.

This study also points out that many technologies and solutions are developed that are too complex for the users - on the other hand, simple things such as key systems or emergency lighting are often used. This creates a discrepancy between complex development and simple needs. With regard to the impact of the technologies on AAL, Mobile Care and Telecare, speech recognition and sensors in particular were considered to be of great importance. Solution and service providers must ensure that the systems work. It is therefore important that it is easy to use and very usable. The consortium and the end user partners in this project have this premise in mind at all our developer meetings.

2.2. Analysis of past AAL projects (2014-2018)

For the development of eSticky, the consourtium partners have been looking at many AAL supported tools that have been founded during the last period, to not only see what the market already offers, but to learn from best practices and mistakes. The analysis is fundamental in a first impression of an already vast and established market regarding AT systems.

The end user partners have looked at a wide variety of different tools, noticing similarities and differences between them and the eSticky project. Here is a short overview of recent successful tools developed during the AAL projects (2014-2018).

LOK 8 U

It is a system that is intended for Alzheimer's or dementia, to move sick people within a defined radius and to be checked by relatives.
eSticky is not intended to be a portable system to help people outside their homes.

Personal Digital Assistance

These help to remember daily tasks such as taking medication, appointments, etc.
eSticky is not meant to be an electronic calendar, but a reminder system. It helps to remember important appointments, which have been set by carers or relatives and, in some cases, the primary users themselves.

ALZNAV Mobile GPS App

This app helps users to find their way home.
Since eSticky will not me a mobile system, this project also could not give us any answers to our research question.

SENSE CAM
A wearable camera automatically takes pictures throughout the day, which users with Alzheimer's or dementia can use as reminders of their activities.

CARE o BOT
Helps with the autonomous execution of collection and delivery services in the household.
eSticky will not help people do their household, eSticky can only remind the people to do so.

Paro
A cuddly seal that acknowledges pats with purrs and friendly eyes.
eSticky is not meant to be an advanced therapy robot.

In the D2.2, the project partner HARPO describes in a further analysis, on existing systems and tools, that are quite similar in the use and outcome of the eSticky project. They describe different categories in which AT can be put, as well as Apps and technologies developed to help people with dementia (PwD) and people with memory problems.

Research about AAL and AT in Austria

Looking at Austria, there are several initiatives there are already working on the topic that we looked at and could consider collaboration in sharing experiences about AAL and feedback for the eSticky project.

One of these projects is the ZentrAAL-research centre and its outcomes: The aim of the "ZentrAAL" research project is to determine the effects of intelligent living environments ("Smart Homes") and supporting technologies for on the go ("Smart Services") for older people. For example: In the federal state of Salzburg, 60 households of elderly people between the ages of 60 and 79 in assisted and supportable residential facilities were equipped with assistive technologies. The test subjects received a stationary and a mobile tablet, a smartwatch that had been converted into a fitness / emergency call watch, a stove monitoring system, window / door contacts and a digital peephole.

As part of the ZentrAAL project, also knowledge was gained about the acceptance of individual AAL components, the use of the system ("meinZentrAAL") and its effectiveness. The Research Institute for Age Economics at WU Vienna coordinated

the multidisciplinary evaluation of the project and took over the impact analyses with a focus on everyday life and quality of life[1]

This project gave some interesting ideas for the eSticky project because the acceptance of tablets have been a big topic in the project so far, as well as an amplified integration into peoples homes of such technology. Their experience can help to understand early on flaws and strengths of such systems.

Furhermore, other trend-setting projects mentioned in raltec (**r**esearch group for **a**ssisted **l**iving**tec**hnologies), were used for comparison on the subject of "AAL, technology and aging":

- PotenziAAL - Potential and limits of current robotics for use in the area of Ambient Assisted Living (2014-2015)
- CongeniAAL - Integration of complementary AAL developments into a modular, interoperative and multifunctional AAL system (2013-2015)
- MISTRAAL - Mobile instrumented stroke rehabilitation in Ambient Assisted Living to support long-term success and independent living (2013-2014)
- eSHOE - new name is Reha Buddy – it's a digitizing physical rehabilitation smart phone APP(2006-2014)
- PhysicAAL - Evaluation of social assistive robotics to support physical training in everyday life for older people (2012-2013)
- ISU-DEP - Intelligent Sanitary Unit for Disabled and Elderly People (2010-2013)
- KSERA - Knowledgeable Service Robots for Aging (2010-2013)
- Demo apartment - Demo apartment for seniors (2009-2013)
- Long Lasting Memories (LLM) - Long Lasting Memories (LLM) is an EU project aiming at an integrated ICT platform which combines

[1] (see: http://www.aal.at/pilotregionen-3/zentraal/).

state-of-the-art cognitive exercises with physical activity in the framework of an advanced ambient assisted living environment. (2009-2012)

- myTablet - Tablets for seniors (2010-2011)
- vitaliSHOE - ICT-supported smart textile-based system for increasing activity and preventing falls (2009-2011)
- SSP - Social Senior Platform - The Social Senior Platform (SSP) project aimed to use social networking applications to help reduce the social isolation and loneliness of seniors and to encourage their participation in today's increasingly virtual society.
- (2009-2010)
- e-HOME - Context-Aware and Distributed Embedded System for Assistive Home Technology (2008-2010)
- IAB - Interactive Photo Frame (2007-2009)
- WUI - Living with supportive intelligence (2006-2007).

Our conclusions from all of these projects are- that one has to focus on user-led-innovation and user-centerd design in the first place. For the setting of assisted living is not only the resident, but also the carers and other employees of the social organizations or communities essential. The development of affordable AAL systems is at least as important for the realization of smart assisted living. The affordability should be both for the residents themselves (business client, B2C models) and for the social organizations (business-to-business.)

AAL Vision 2025 for Austria including relevant stakeholders and international trends

The FFG (Österreichische Forschungsförderungsgesellschaft mbH) published 2018 a paper on the topic of the goals of Austrian AAL, while analyzing literature and relevant national and international projects centres on AAL systems[2].

[2] (see:https://www.ffg.at/sites/default/files/allgemeine_downloads/thematische%20programme/IKT/AAL%20Vision%202025.pdf).

In the paper, the goal is specified: AAL Vision 2025 for Austria - In 2025, simple, cost-effective and customizable technologies to ensure high quality of life into old age will be available to people in Austria. Self-determined life, social participation, dignified ageing and modern care concepts are supported. Older people are accompanied by appropriate treatments on the move and at home. These are developed in close cooperation between research, companies and user groups, interested parties can try them out and test the application. This is done under consideration of ethical aspects and in the sense of an open innovation approach. Optimal framework conditions, created by politics, administration and representatives of interests, promote the sustainable dissemination of affordable solutions to institutions and citizens while expanding existing ecosystems and creating new one.

2.3. Methods of co-design processed AAL systems

Co-design is an approach to design that seeks to actively involve all stakeholders (*e.g.* employees, partners, customers, citizens, end users) in the design process to help ensure that the designed outcome meets their needs and is valuable and usable. Co-design is an approach that focuses on the processes and procedures of a design project and is used across a variety of fields including software design, architecture, product design, planning, and health and well-being as a way of creating products, services, systems, and environments that are more appropriate to their users' cultural, emotional, spiritual and practical needs. Indeed, recent research suggests that designers create more innovative concepts and ideas when employing co-design tools and methods with others than they do when creating ideas on their own (Mitchell *et al*., 2015).

In recent years, the make up of co-design participants has evolved to ensure that those who will be affected by the design have a say in the process, rather than being just final users (Ehn, 2008; Tunstall, 2013). Today, participants are able to bring valuable local knowledge, ideas and competences to the process (Manzini and Rizzo, 2011).

Given these trends, a co-designing approach seems to be the best solution to find an optimal solution for the end-users. The end-users are not only the PwD, but also their caregivers.

Although many studies have suggested the importance of also considering Informal Care Partners (ICP) in AAL research and development, the field has yet to address how these technologies might coexist with ICPs in the care of PwDs, as opposed to replacing the care they provide. In a qualitative study with ICPs, which followed on earlier longitudinal work together with PwDs, Rosenberg *et al.* found that ICPs showed overall readiness to use everyday technology to support their caring roles. In another study using home visits and interviews with PwDs and their ICPs, Wherton and Monk

identified dressing, medications, personal hygiene, food preparation, and social communication as potential areas for prompting and sensing technologies. Another quantitative study with ICPs concluded that these stakeholders lacked knowledge of the capabilities of intelligent technologies and recommended future user-centred design approaches to address this knowledge gap in the research process. This previous work recognizes ICPs as an important stakeholder group in AAL research whose needs should be considered in the design of holistic AAL solutions to meet the needs of multiple key stakeholders.

Guided by the philosophy that AAL systems supporting PwDs should be designed, not to replace but rather to *complement and collaborate* with ICPs and other tertiary users of ALL devices.

The consortium partners decided therefore to involve both, PwD and their caregivers in the process of designing the system, for eSticky to have the best possible outcome and usefulness to the final users, being it the people with memory problems, as well as all levels of users. More details on the user involvement is also mentioned in the paper related to D2.2 of the consortium partner HARPO, as well as in a detailed decription on „Investigative methods, techniques and tools for user-centered design“.

2.4. Trends in business models of these systems

This study explores the availability of promising approaches to AAL business models and how such models are designed to meet the requirements of senior citizens. According to the core aim of the study, three basic business model types were developed, one of which was further elaborated to additionally provide a strategic direction and a tentative financial concept. Business models are expected to represent architectures of added value, both financial and non-financial. While it may be easy to describe a successful company’s business model it appears significantly more challenging to construct models for enterprises expected to succeed in the market within 2-5 years, in particular models for healthcare products and services that are not yet marketable.

There is obviously a market for AAL products and services. The potential sales volume for Germany is estimated to amount to 5-87 billion euros – depending on the scope of the field of application. The potential sales volume for example in in Austria is estimated to add up to 840 million euros, and a conservative estimate of the demand volume may be as high as approximately 350 million euros. However, marketing of AAL applications is still in its infancy in Austria. There is an open debate about how and by whom AAL is to be funded and what exactly users may or ought to receive in return for a maximum amount of 40 euros which is considered as the threshold value

of customer acceptance. As any available management tool, the creation of business models clearly underlies certain management trends.

This affects the theoretical significance of model development and hence the basis on which potential financial partners make their investment decisions. Between 1970 and 1990 most business models comprised explicit sales and marketing plans. Since then the focus has shifted to the creation of non-financial values. For instance, the most often cited work by Osterwalder and Pigneur (2010) explicitly refers to „value propositions“ as a key aspect of business models. Not surprisingly, by far more value-based than cost-based business models have been created recently, also because one may construct such models easily without possessing sound management knowledge. This study offers three basic types of business models one of which was expanded by financial data.

In order to assure marketability, an AAL solution was selected that could be made readily available in adequate quantity at short notice. Model 1 is based on a close cooperation of a small enterprise with a healthcare provider. In addition to public funding of the AAL start package (domotics, emergency switch, telehealth applications, videophone for telecare and social interaction) amounting to 2800 euros the service package yields 40 euros per month as a flat charge which is either publicly funded or paid by the private consumer. Model 2 comprises the same technical AAL solution which is however distributed by a larger company itself and fully funded by the private consumer. Model 3 focuses on health promotion, or prevention, and comfort. Again, the product and service package is fully funded by the consumer.[3] i

Independent financial experts who had not participated in the business model creation process assessed the three models and concluded that model 1 was elaborate enough to be subjected to a thorough financial analysis. Based on the assessment it appears possible to largely exploit the Austrian AAL market amounting to 350 million euros. Another promising result of the study is that a time period of 3-5 years appears realistic to achieve full marketability. The next required step in the process is to persuade and involve large stakeholders, public authorities. Also, implementation of the business model requires that AAL solutions be integrated into the healthcare providers‘ processes.

This will eventually make AAL be taken for granted as is already the case for the ABS brake in the car. Regardless of the potential and obstacles discussed here, business models only represent attempts to describe marketing strategies for specific products. However, successful fundraising will be likely only if business models are both sound

[3] Osterwalder and Pigneur (2010) explicitly refers to „value propositions“

and realistic. This allows us to hope that the vision of elderly people remaining in their homes for longer might eventually become true.

3. Personal experience in the usage of AAL

The most widespread in Europe are emergency wristbands that are worn on the wrist. In second place are sensory monitoring systems that are connected to medication boxes, for example.
Both systems do not seem to be particularly suitable for people with dementia. The problem is that both of them also need to be networked to a fixed telephone device, which means that mobility is not guaranteed.

Most trust is still in people. This means that when new devices or systems are introduced, trust in the relatives or caregivers must be very high in order to be willing to accept new systems at all.
This means that the relationship to the social system is instrumental in the success of introducing technical support systems.

What are the main concerns? For example: The idea of doing something wrong when using technical equipment scares the elderly. You are afraid of being overwhelmed. Or are afraid of doing something wrong or triggering something that they can no longer stop.

The positive connection to the supervising company and the reliability of this must be given in order to successfully integrate AAL into everyday life.

The intention to use or generally referred to in the technology acceptance models as Intention to Use (ITU) describes the intention to continue to use a technology
use and will, according to the technology acceptance model, in the technology usage inventory (cf.
Kothgassner / Felnhofer et al. 2012) influenced by all the influencing factors presented so far

4. Process and policy for user involvement for the eSticky project

An online study (questionnaire) was carried out between November 2015 and March 2016 in order to investigate the use of various methods in the project phases and their subjective usefulness as well as the involvement of various stakeholders in AAL projects. It was ascertained which methods are known as well as used for the assessment of needs, the communication of needs between different stakeholders and the evaluation.

In addition, the participants were asked to evaluate the methods used and their usefulness in a specific context using a specific project example. The selection of questions about the methods was based on well-known methods of empirical social science, such as interview, workshop or questionnaire.
In addition, methods from the area of user-centered design (UCD), such as mock-up tests in the questionnaires, were included (see also DIS, I. 2009).

The consortium partners have been taking a serious look at mock tests too.
Mock objects are dummy objects or pseudo-objects that pretend certain functionalities in the unit testing and test-driven development (TDD) of the program code to be tested, but generally do not actually implement them. They serve as a replacement for real objects during testing.

User test design

After studying this and similar studies, the consortium partners came to the conclusion that they will choose the following design for the user tests:

Primary users are asked mainly verbally after a guideline because it can be assumed that the writing capacity is already reduced. This option also allows queries and support as well as motivational discussions, according to the UCD methodology.

The secondary and tertiary users may receive online questionnaires (link on an Questionär- APP such as surveymonkey) at regular intervals in order to be able to achieve the best possible comparability across the test room. This method may be especially useful in the situation of COVID-19 crisis and no access to physical meetings with users.

The acquisition of physical measurement data such as blood pressure is excluded from the test phase. Eye tracking and similar test procedures are also not used in the eSticky project. However, interaction tracking (mouse clicks, touch) is very well considered in order to collect statistical values.

AAL can therefore support existential security needs. In the context of security, ethics is also relevant in order not to cross the surveillance limit.

With respect to ICT, the dominant problem can be seen in the lack of diffusion. While great efforts are undertaken to design and develop innovative products and services, most of them never enter the market and “how to overcome the enormous and undeniable deploymentgap in all three areas, most notably concerning ICT-based solutions – be it in telemedicine or AAL. Of course, there is no single answer to this question, but a plethora of possible approaches exist. As shown, a central challenge can be seen in the transfer of scientific knowledge. Much effort is put on R&D, but only a fraction of the results is successfully implemented and diffused. Therefore this implies to focus more on the introduction to the market[4].

4
(https://www.ffg.at/sites/default/files/allgemeine_downloads/thematische%20programme/IKT/AAL%20Vision%202025.pdf, p.41; Der Innovation Prospect Report des Projekts (Hilbert et al. 2014)

5. Definition of users

5.1 Types of end users (primary, secondary, tertiary)

Generally, the consortium partners defined three main groups of users in the eSticky project. Table 1 introduces in the terms of primary, secondary and tertiary user.

Table 1. Groups of users in eSticky project

Primary user	Primary users are a group of individuals who use AAL solutions due to the need for support and with the aim of an improved quality of life, which can be users with immediate or anticipatory needs.
Secondary user	Secondary users are a group of individuals that are in direct contact with primary users as informal carers. This group includes family members and their representatives.
Tertiary user	Tertiary stakeholders are a group of public or private organizations that are in direct contact with the primary users. This includes institutions in the public sector (especially in the field of health and social affairs).

These 3 types of users are planned to be involved in the project as follows:

a**) Primary User**: This is the test person him/ herself, who is willing to try the device for several weeks at his or her home. The person is fitted with several active and passive displays in the apartment. The test person receives a home visit several times and Assistance24 / HARPO asks verbally about the process and the condition of the device.

b**) Secondary user**: These are the groups of people who support the test subjects. They support them by entering the reminder functions in the calendar. One repeats the device explanation for his/her loved one. They are involved in the process right from the start. They are the first contact person for the test person in his familiar

environment for questions about settings and changes. These users receive e.g. a questionnaire with a request to fill it out.

c) **Tertiary user**: These are, for example, institutions such as retirement homes or home help organizations. These can also fill the calendar for their customer or send spontaneous messages. They supervise one or more eSticky testers, but keep up their services as they did before eSticky (home visits, interviews). They may also receive an online link to a questionnaire with the request to fill it out online.

5.1.1 Number of users

The eSticky system will be tested with at least 40 users in 2 countries (Austria and Poland). The users will have opportunity to test and use the system in every-day life. It is important to the end user partners that they also have sufficient resources to accompany the test persons well and to visit them regularly.

5.2 Recruiting process of the users

From the beginning of the project and then as soon as the completion of the prototype is in sight, HAPRO and Assistent24 will start promoting eSticky via social media channels (Facebook, YouTube) and over the project website, both in the national languages and in English.

Since Assistanz24 already looks after a number of people with dementia, information will also be sent directly to their caregivers.

HAPRO and Assistent 24 have considered the following procedure for recruiting the test persons concrete: They would like to invite the local cooperation organisations (national associations, centers and Non-Governmental Organisations) to information meetings about the project. Appointments are made in retirement homes and using own resources, and personal contacts. A prototype is presented and interested listeners are given the opportunity to ask questions and test the initial solutions.

The users receive detailed information about the project and participants, as well as a template of informed consent form in the national language.

Both the primary user and the secondary and/or tertiary user should be present together with the person with dementia (if the health condition of the primary user

requires it). At best, the meeting will already take place in the test person's apartment to determine the local conditions and their suitability on site.

When the prototypes are ready for testing, after receiving the declaration of consent, an appointment for the installation is made. At best, the relatives or caregivers are also there so that one can be given the access data for the server to change the electronical memories.

5.3 Data protection regulation and privacy design

The General Data Protection Regulation (EU)2016/679(GDPR) is a regulation in EU law on data protection and privacy in the European Union (EU) and the European Economic Area (EEA).

AAL affects many areas of life. The technologies and services are mostly only developed with a view to a specific question. The involvement of users is essential here, but also raises a number of ethical aspects. These are to be systematically collected and evaluated. The ethical dimensions embedded in new technologies and their implementation should be made visible.

The GDPR sees a privileged position of scientific and historical research, statistics and archives in the public interest in the processing of personal data as objectively justified. The data protection law i.d.F. of the Data Protection Adjustment Act 2018 therefore makes special provisions for the admissibility of such data processing easier, but these only apply if no special legal regulations (such as the Federal Statistics Act or the Research Organization Act) apply.
2. Special regulations apply to all cases not covered by point 1. E.g. This mainly includes scientific studies with personal results (e.g. publications of - contemporary - historical research). [5]

[5] https://www.wko.at/service/wirtschaftsrecht-gewerberecht/eu-dsgvo-datenverarbeitung-wisschenschaft-statistik.html#:~:text=Die%20DSGVO%20sieht%20eine%20privilegierte,Daten%20als%20sachlich%20gerechtfertigt%20an.

5.3.1 Ethical issues

Without human research, there would be no medical progress. Is research in humans ethically justifiable only if the person being researched can benefit from the participation himself? And can research be carried out on people who are unable to give consent, for example because they have advanced Alzheimer's disease?
This is an important point for us to care for- only people with starting dementia can participate. It is important that they understand what is going on and agree on participation.

Ethical confirmations from end-user partners
According to the national law, the end users partners asked their local bioethics committees for ethical approvals to start the research in the project.

Haspro has received a confirmation from the local bioethics committee.

Assistenz24 called their bioethical committee and received the information that no concerns were raised against this research project and no forther steps are recommended..

Like previous experiments, show that people with dementia are in the early stages the disease is able to provide information about its subjective to give every day experiences, life situations and needs. Excluding a group of people from the research process means reinforcing negative stereotypes about dementia and the perspective of marginalizing people with dementia.

The focus is not on the deficits of those affected, but the interactions between individual competencies and the environmental conditions are reflected. The structural conditions that hinder people with dementia in the center. And that is the optimal entry point for eSticky.

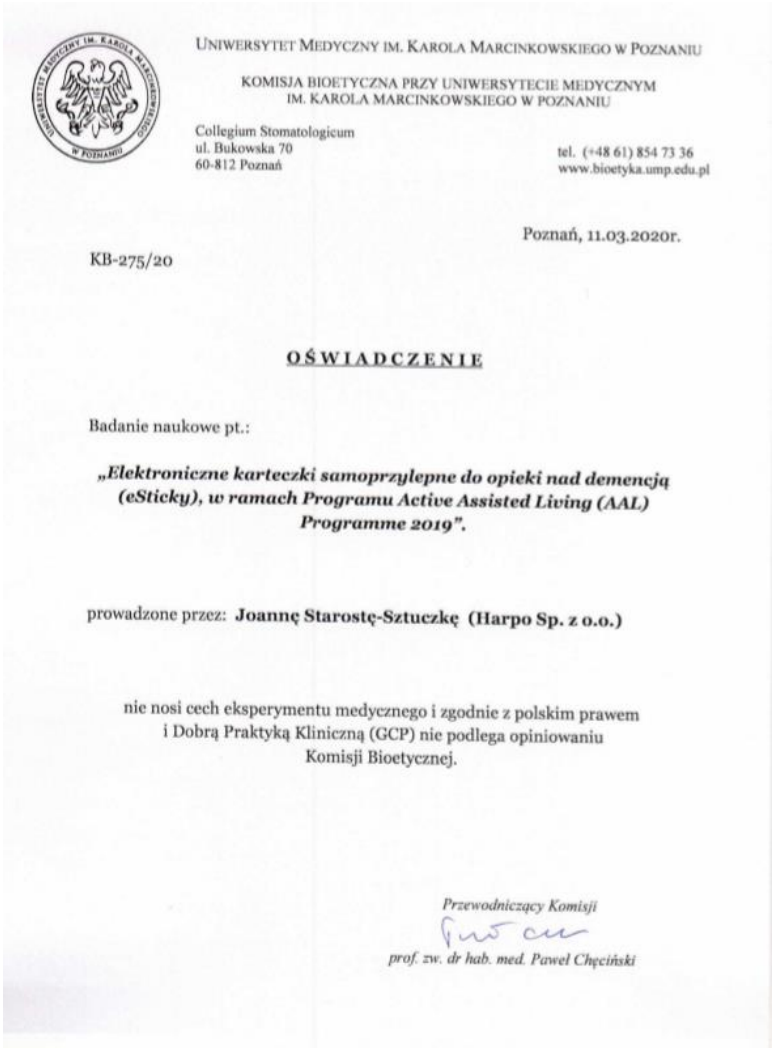
In order to be well prepared for the empirical surveys (narrative conversations, participatory usability tests), corresponding communication skills of the interviewer are required. The validation method developed by Naomi Feil is essential. This teaches that one should "walk in the shoes of the other". Ms. Clarke from A24 is a trained validation user and brings this expertise to bear in the research process.

Prerequisite for the participation of people with dementia in the study is voluntary and informed consent. Therefore there must be enough time for taking the decision to participate, also for seeking advice in the family or with the care system, because these

too should be included in the evaluation of eSticky. The potential interviewees of the survey have the right to withdraw their consent at any time, also after the beginning of the survey. That is why empathetic and person-centered communication is essential for the success of the research.

The location and time for the first meeting with the interviewer can be chosen by the person concerned. In this way, security in a familiar environment and at the appropriate times according to the biorhythm can facilitate a good start, because even an emotionally positive start can have a lasting impact on the research process.

Approval for the research participation is considered throughout the research process as a continuous organised process (see DEWING 2002, 2008), since it is not enough to record willingness to participate in the study only at the beginning.
Information is given verbally and in writing to both relatives and those affected. At the first direct contact the people with dementia are informed and consent is obtained verbally and in writing. This is repeated at every further contact.



UNIWERSYTET MEDYCZNY IM. KAROLA MARCINKOWSKIEGO W POZNANIU

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Poznań, 11.03.2020r.

KB-275/20

OŚWIADCZENIE

Badanie naukowe pt.:

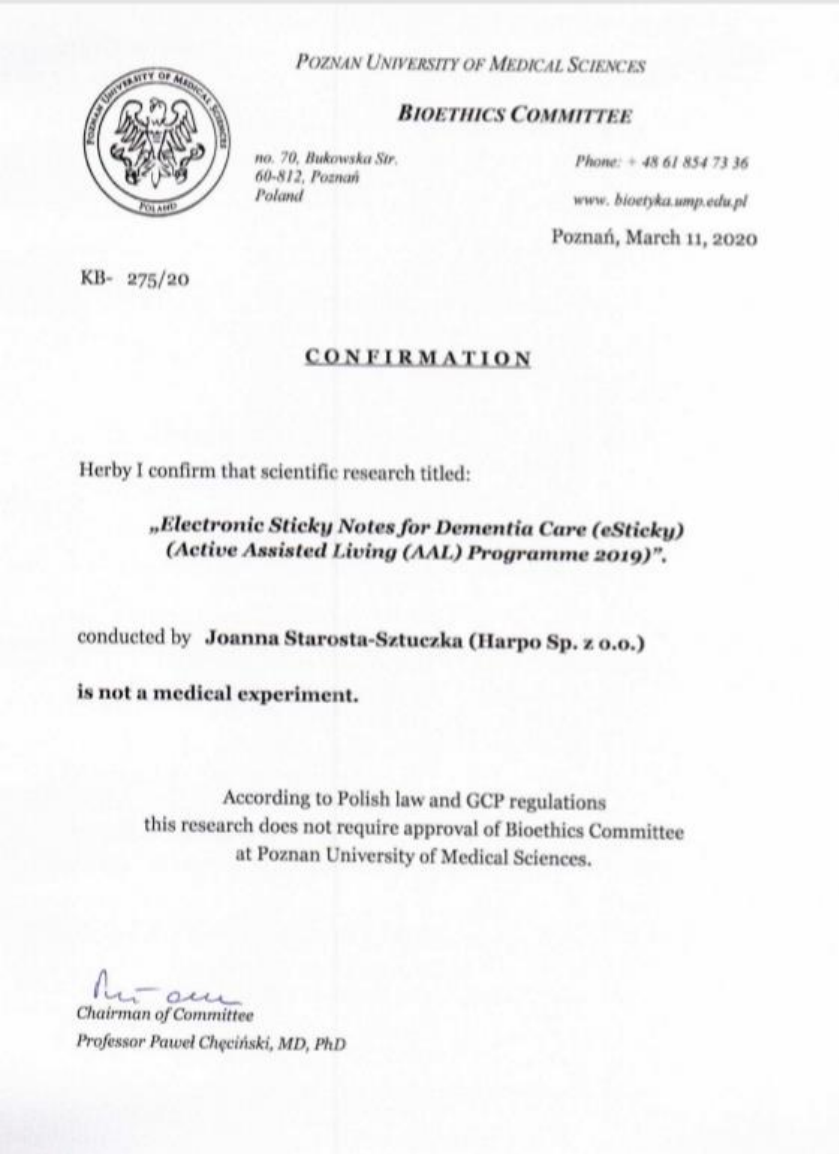
„Elektroniczne karteczki samoprzylepne do opieki nad demencją (eSticky), w ramach Programu Active Assisted Living (AAL) Programme 2019".

prowadzone przez: **Joannę Starostę-Sztuczkę (Harpo Sp. z o.o.)**

nie nosi cech eksperymentu medycznego i zgodnie z polskim prawem i Dobrą Praktyką Kliniczną (GCP) nie podlega opiniowaniu Komisji Bioetycznej.

Przewodniczący Komisji

prof. zw. dr hab. med. Paweł Chęciński



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Poznań, March 11, 2020

KB- 275/20

CONFIRMATION

Herby I confirm that scientific research titled:

„Electronic Sticky Notes for Dementia Care (eSticky) (Active Assisted Living (AAL) Programme 2019)".

conducted by **Joanna Starosta-Sztuczka (Harpo Sp. z o.o.)**

is not a medical experiment.

According to Polish law and GCP regulations
this research does not require approval of Bioethics Committee
at Poznan University of Medical Sciences.

Chairman of Committee
Professor Paweł Chęciński, MD, PhD

5.3.2 Formulation of Ethical Board

In the consortium of the eSticky project there will be 7members that form an Ethical Board. The ethical committee will take a closer look at the following topics:

Ethical challenges are shown both in the theoretical foundation and in preparation and execution of the investigation. The board discusses the principle of informed consent as process-oriented consent against the background of requirements of institutionalized review procedures by ethics committees. The decision to open "dementia" in conversation with affected people to address, in the area of tension between transparent information, to hurt the risk and the chance of being empowering.

The social stigmatization of dementia leads to the fact that affected persons are often denied social participation, including in the empirical research. On the one hand, they will make a meaningful contribution within the framework are not trusted to carry out a scientific investigation. People with dementia, especially in an advanced phase, the cognitive skills restricted in such a way that they meet certain expectations does not correspond to a research participation.

With regard to this, it will be an important discussion how affected persons can participate and at the same time not be overwhelmed.

5.4 Inclusion and exclusion criteria of users

Inclusion Criteria

a) Adult test subjects aged 50 and over
b) Good eyesight and hearing
c) At most phase 1 of a dementia diagnosis
d) Diagnosis not older than 1 year
e) Own household
f) Signed consent
g) Relatives / helpers system

Exclusion criteria

a) Dementia disease for more than 1 year
c) Deafness
d) Blindness
e) Large daily fluctuations in dementia
f) Dementia stage more than 1
g) No voluntariness
h) No consent of the adult representative
i) No consent to entering the apartment.

5.5 Technical Questions

In Order to store the data propaly the test people receive numbers. Only Assistanz24 and HAPRO know the testingpersons behind the number. The number makes the data for the consortium anonymous. As soon as the user has registered, their data will be saved and evaluated anonymously on the server of the Johann Kepler University at KI-I. The registration server (https://reg.esticky.com) is secured.
The technical data is encrypted and transferred to the KI-I server over the Internet and stored there. Only KI-I consortium partners have access to this.
There the data will be saved by eSticky during the project.
After completing the project, the data will be deleted from the KI-I server.We have a special focus on not including sensitive data. The software only transmits sent reminders and the set interaction of the test person.
The test person is insured through the liability insurance of Assistance24 and HAPRO.

6: KPIs

6.1. Declaration of consent to participate in a study – eSticky

Einverständnis-Erklärung (Leichte Sprache)

Name Teilnehmer / Name Teilnehmerin:

Frau / Herr……(Vorname und Nachname der verantwortlichen Person) hat mit mir über das Forschungs-Projekt eSticky gesprochen:

Wir haben gesprochen über:

- Worum geht es bei dem Forschungs-Projekt?
- Was wird bei dem Projekt gemacht?
- Wer ist mein Ansprechpartner?
- Was wird während dem Projekt geprüft?
- Was wird dokumentiert?
- Was passiert nach dem Projekt?
- Was nach dem Projekt passiert?

Das Informations-Material habe ich gelesen und ich verstehe alles was darinsteht.

Ich habe die Fragen verstanden, die mir gestellt wurden.
Wenn etwas unklar war, konnte ich Fragen stellen.
Die Antworten auf meine Fragen habe ich verstanden.
Zu dem aktuellen Zeitpunkt habe ich keine Fragen mehr.

Wenn ich an dem Forschungsprojekt teilnehme, kenne ich

- die möglichen Vorteile und
- die möglichen Risiken.

Die Teilnahme an dem Forschungsprojekt ist freiwillig.
Ich hatte genug Zeit darüber nachzudenken und zu entscheiden, ob ich mitmachen möchte.
Ich weiß, dass ich jederzeit aufhören kann mitzumachen.

Den Grund warum ich aufhöre muss ich niemandem sagen.
Wenn ich früher aufhöre, hat das keine Nachteile für mich
Während dem Forschungsprojekt wird mein Tun am eSticky Gerät aufgezeichnet und gespeichert.

Diese Informationen werden anonym gespeichert.
Das heißt, dass sie ohne Namen gespeichert werden.

Eine Betreuunsperson kommt regelmässig vorbei und stellt mir Fragen.
Auch diese Antworten werden anonym gespeichert.
Diese Informationen und Daten werden nur für die Wissenschaft und Forschung verwendet.
Folgende Unterlagen habe ich bekommen:

- 1 Kopie der schriftlichen Informationsmaterialen
- 1 Kopie der Einverständnis-Erklärung

Mit meiner Unterschrift mache ich freiwillig bei dem Forschungs-Projekt mit.

Folgende Person war bei diesem Gespräch noch dabei:

Declaration of Consent (Easy Language)

Name of participant:

Ms. / Mr. ……. (First name and last name of the responsible person) spoke to me about the research project eSticky:

We talked about:

• What is the research project about?

• What is the project doing?

• Who is my contact person?

• What will be checked during the project?

• What is documented?

• What happens after the project?

• What happens after the project?

I have read the information material and I understand everything in it.

I understood the questions I was asked.

If anything was unclear, I could ask questions.

I understood the answers to my questions.

At the moment I have no more questions.

If I take part in the research project, I know

• the possible advantages and

• the possible risks.

Participation in the research project is voluntary.

I had enough time to think about it and decide

whether I want to participate

I know that I can stop participating at any time.

I don't have to tell anyone the reason why I'm quitting.

If I stop earlier, it has no disadvantages for me

During the research project, my actions are recorded and saved on the eSticky device.

This information is saved anonymously.

This means that they are saved without a name.

A supervisor comes by regularly and asks me questions.

These answers are also saved anonymously.

This information and data is used only for science and research.

I have received the following documents:

• 1 copy of the written information material

• 1 copy of the declaration of consent

With my signature, I voluntarily participate in the research project.

The following person was still involved in this conversation:

6.2 Informed Consent

Informed consent consists of two sections: information paper and consent certificate. In order to give informed consent, a person must have the ability to fully understand the research objectives or treatment through the information provided, and have the power of free choice that allows to consent or decline voluntarily.

Getting informed consent from people with dementia depends on their mental capacity. Dementia symptoms like difficulties with concentration and understanding, problems in short term memory, makes their ability to give informed consent questionable. These symptoms become more of a problem as the disease progresses. It would be appropriate to involve relatives if a person with dementia does not have the capacity to consent. However, it is necessary to understand that having dementia does not mean undoubtedly a person lacks the capacity to consent. Therefore, it is important to conduct a mental capacity assessment for people with dementia.

Therefore the end user partners will also use an informed consent sheet in easy language as shown before, which will still not completely take away the ethical concern and debate about consent given by PwD.

6.2.1 Our Mock Informed Consent

Declaration of consent (please read the description first)

Name of participant (block letters): ……

Date of birth (optional): ……

I was fully informed by a responsible person of this research project eSticky (…….. …… .. insert first and last name) about the nature, meaning and scope of the research project. I have read and understood the information material. I had the opportunity to ask questions, understood the answers and currently have no further questions. I am informed about the possible benefits and risks of this research project.

I have had enough time to choose to participate in this research project and know that participation is voluntary. I know that I can withdraw this consent at any time and without giving reasons, without this decision having an adverse effect on me.

I agree that data will be recorded by me in this research project. I am aware that my data is stored anonymously and used only for scientific purposes.

I have received a copy of the written information material and the declaration of consent. I hereby declare my voluntary participation in this research project.

_____ _____

Date Signature of participant

_____ _____

Date signature of relatives

_____ _____

Date Signature of adult representa project description:

Thank you for participating in our project called eSticky.

esticky is a product that is specifically designed for people with dementia. It should enable life, at home and in a familiar environment.

By participating in this study, you enable us to find out what your needs are, what works with existing systems and what needs to be improved to create an optimal product for you and your family so that you can live at home for a long time. This system should help you personally, and in the future also many people in similar situations.

What is eSticky?

eSticky is a set of small screens that are installed in your home. These work like a small electronic reminder. Depending on how large your living space is, there are one or more devices. If such screens are available in all rooms, you can (together with your family members or caregivers) define what you want the device to remind you of, how often, and when (based on your daily routines).

The reminder text, duration and frequency can easily be set online.

How can you help us?

Before such a product can be brought to market, we must first determine what you need and how this product is specifically tailored to the needs of the end user. Involving you in the development is an important factor in product development. Your opinion and experience are especially important to us, so that this product will be available and affordable for many people in the next few years.

Step 1 - We will inform you

First of all we invite you to a lecture / a personal conversation and present you the project “eSticky” in all details. Your relatives can also take part in it.

If you would like to be part of a research team and would like to use your experience to help us develop a great tool, please contact us.

Step 2 - you inform us

We ask you and your family or nursing staff about your experience with existing systems. Together we think about important reminder messages and see where these devices are best placed. We take the time to develop a good system for you.

Step 3 - You test the product

In the next 6 weeks you have time to test the product.

We visit you regularly every 1-2 weeks after making an appointment.

We discuss with you and your surroundings what experiences you have had. We can also make changes and save new memories, find a different place, etc. We can also provide technical assistance from a distance if necessary. We are available for you throughout these months.

What if I want to get out in the middle of the project?

You can exit the project at any time without giving a reason. Please call us (0720/303962) or send us a letter (1090 Vienna, Boltzmanngasse 24-26 / EG) or an e-mail v.clarke@assistent24.at, with the request that you want to get out of the project.

Step 4 - completion

We collect the data of your experience with the devices and pass them on to the development team, who can then incorporate your feedback. At the end of the test phase, we dismantle the electronic aids, unless you would like to keep them for a small final amount.

The data collected is passed on anonymously to the partner organizations, who use this as a basis to develop the eSticky product.

Important information

Duration of participation

The entire study is planned to last approximately 3 years. This is how long we keep your personal data anonymous from third parties.

Your participation is limited to 6 weeks.

Anonymization

We will not pass on your personal data to third parties. Your data will be passed on anonymously to the partner organizations that develop the product. In this project, Assistenz24's task is to collect information on which the partners can technically develop a user-friendly product.
If the project is in progress, your data will be retained in the Assistance24 for the administration of the collected data and to guarantee you access to your data at any time. After completion of the project, all personal data will be destroyed.

All personal data (i.e. data that can be used to identify you) will be destroyed immediately after project completion. The anonymised research results will be kept as a valuable resource for further development of the eSticky system and for further scientific usage. However, this data can no longer be associated with you personally.

6.3 Financial expenses

- Participation free of charge is agreed. There is no redemption for invested time.
- All questionnaires are offered in the respective national language.
- The questionnaires for the primary users are queried orally and then entered the system.

7. General user involvement and KPIs

This part focuses on determining Key Performance Indicators (KPIs) that will be used as measurable values that demonstrate (or refute) how effectively the eSticky project is achieving its key objectives. More specifically, these KPIs will be those to measure the effectiveness of eSticky as well as the flaws of the development of the object. These KPIs will be an important source of information for partners developing and adapting the system.

Baseline

Assistenz24 and Haspro will study 20 test persons each. The groups will be split up in primary and secondary users mainly, as well as tertiary users

Key Performance could be:

KPI Title	Comparison
KPI Description	All 3 types of users in 2 countries compare eSticky to existing tools to assess what needs are still open
KPI Target	Define requirements for the further development of eSticky
Expected result	To have a set of lists of open requirements of already existing AAL tools that we can use to further develop eSticky
KPI calculation	Satisfaction level of the users
Data Source(s) and frequency	Questionnaire and interviews
Related need category	- Patient needs - Caregiver and family requirements

KPI Title	User satisfaction
KPI Description	All 3 types of users are happy to use the new device and can integrate it into their life
KPI Target	Make a product that has a high usability rate

Expected result	Have a good prototype in order to launch the market
KPI calculation	Satisfaction level of the users
Data Source(s) and frequency	Questionnaire and interviews and user observation
Related need category	User-involved design

KPI Title	Memorial aid
KPI Description	The memory aid becomes a real support in everyday life for people with dementia
KPI Target	Promote independence
Expected result	Instructions on how this aid must be designed so that it is integrated into the everyday reality of the people
KPI calculation	Definition of the design and its functions
Data Source(s) and frequency	Questionnaire and interviews and user observation, Data evaluation of the set interactions
Related need category	Technical support Trust / distrust in technology

KPI Title	Live Quality Improvement
KPI Description	With this reminder, the customer gains quality of life in pieces, because he can rely on the fact that he is assisted
KPI Target	Improve quality to the primary users, but also to the caregivers.
Expected result	Indicators for setting trust in technology
KPI calculation	Definition an live quality to users
Data Source(s) and frequency	Questioner and interviews
Related need category	Provide the right support for the beginning

7.1 Exit strategy

There can be three exit scenarios:

a) The test person no longer wants to participate for personal reasons or does not allow visits.

b) The person does not interact with eSticky.

c) During the test phase, the person has to struggle with health problems.

As for a) In this case, a final interview will be held with the test person and their supervisors and the reasons for the termination attempted to be determined. The device is then uninstalled and the server access deleted.

As for b) If we do not notice any use between the installation of eSticky and our first home visit via the server, this will be made a topic and documented during the first home visit. Then it is decided whether a further test phase makes sense or the device should be uninstalled.

As for c) If the dementia progresses rapidly within the test phase or the person gets other serious illnesses, an abortion is of course indicated. In this case there would be no final discussion, only the caregivers would be asked for feedback.

8. Data collection methods

8.1 Questionnaires for levels of users

The first, initial planning of user involvement is presented in Table 2. It is dependent on user recruitment process and situation in particular countries (e.g. concerning the epidemic situation of COVID-19).

8.1.1 Questionnaire for primary users

1) Can you tell me which new devices are in your apartment now

1.2) What does the device do?

2) Who is operating the device?

a) me / myself
b) My relatives
c) My care company
d) partner
e) friends
f) others

3) The device helps me to remember to take my medication

Yes

No

3.1 is this helpful?

Yes

No

4) The device helps me structure my everyday life

Yes

No

5) The device annoys me

Yes

No

5.1. If so, what annoys me about the device?

6) I did not notice the device in everyday life

Yes

No

7) It would be better if I could wear the device on my wrist

Yes

No

7.1 Where would I carry or set up the device if I could choose it?

8) I consider___ the language on the device friendly

Yes

No

9) The noise bothers me when the device has new messages for me

Yes

No

10) Images on the device help me / would help me

Yes

No

11) The device helps me to feel secure

Yes

No

12) It bothers me that I have to react to the device

Yes

No

13) The reminders___ are great, but I want to put it somewhere else

Yes

No

14) what else did I notice / what I want to say:

15) What would you improve on the device?

16) Would it be helpful if the device worked similarly to___ something I already know, like a cell phone or a remote control?

8.1.2 Questionnaire for secondary users

1) Your relative now has an eSticky system
What are your expectations as to that it will help to structure your family's everyday life better?

1 2 3 4 5 6 7 8 9 10

(10 is most)

2) do you fill the calendar yourself

Yes

No

3) if yes: how often do you check the calendar

Every day
every 2-3 days
every 4-6 days
1x a week

4) Have you discussed the reminders with your relatives?

Yes

No

5) Was filling the calendar technically intuitive or difficult?

light
medium
Heavy
I needed help myself

6) Did you consult the manual?

Yes

No

(YES: was it helpfull?)

7) Do you trust the technology, or do you still call your family member to see if everything is OK?

8a) is the device an issue during your visits / calls? How many times have you spoken to your loved one about it in the past week?

not at all
1-2x
3-4x
5-6x
Every day

9)How often has your loved one asked you to change the news?

not at all
1-2x / week
3-4 times a week
5-6x a week
Every day

10) How often have you actually changed the content of the news?

not at all
1-2x / week
3-4 times a week
5-6x a week
Every day

11) Did you sometimes send spontaneous messages this week?

12) Have you noticed that the device is helpful for your loved one?

13) Have you observed that the device irritates / disturbs your family member?

14) What hope do you have in the device?

should help my family to cope better in everyday life
So my family member has something to do during the day
So my relatives has more interaction
So he/she can live alone at home longer
That way I feel safer
Miscellaneous:

15) If your family member doesn't respond to the device, what do you do?

I call him
I stop by
Nothing
I send a message via eSticky
I set it up to remind him/her of the same thing more often

16) Do you think that your relative integrates the device into his everyday life?

Barely
a little
A lot
Intensive

17) From today's point of view, would you want to keep the device for your loved one?

18) From your observation: Would a different design make sense?

No
Yes
If so, which?

_____
_____
_____

19) Based on your observation: Would more displays or a different place make sense?

No
Yes more displays
yes other places
If so, where exactly?

20) From your observation: which function is missing? What else should the device be able to do?

_____
_____
_____
_____

8.1.3 Questionnaire for tertiary users

1) Your customer now has an eSticky display
What are your expectations as to that it will help to structure your customer's everyday life better?

1 2 3 4 5 6 7 8 9 10

(10 is most)

2) Do you fill the calendar yourself

Yes
No

3)If yes: how often do you fill the calendar

Every day
every 2-3 days
every 4-6 days
1x a week

4) Have you discussed the reminders with your customer beforehand?

Yes
No

5) Was filling the calendar technically intuitive or difficult?

light
medium
Heavy
I needed help myself

6) Did you read through the manual

Yes
No

7) Do you fill several calendars?

Yes
No

8) Do you trust the technology or do you still call your customer to make sure everything is OK ?

9) Have you noticed that the device is helping your customer?

10) Have you observed that the device is irritating / disturbing for your customer?

11) What hope do you have in the device?

should help my customer to cope better in everyday life
So my customer has something to do during the day
So my customer has more contact
So he can live alone at home longer
That way I feel safer
I have less work when I get back
Miscellaneous:

12) If your customer doesn't respond to the device, what do you do?

I call him
I stop by
Nothing

I send a message via eSticky
I set it up to remind him of the same thing more often

13a) is the device an issue during your visits / calls?

14) How many times have you spoken to your client__ about it in the past week?

not at all
1-2x
3-4x
5-6x
Every day

15) Do you think that your customer integrates the device into his everyday life?

barely
a little
A lot
Intensive

16) From today's point of view, would you want to keep the device for your customer?

17) From your observation: Would a different design make sense?

No
Yes

_____
_____
_____
_____

18) Based on your observation: Would more displays or a different place make sense?

No
Yes more displays

yes other places

19) From your observation: which function is missing? What else should the device be able to do?

_____
_____
_____
_____

20) I can imagine using the device with other customers

Yes, of course
Yes, but only suitable for a few
No

8.2. Feedback collection

The oral feedback from the primary test subjects is also transferred to an surveytool and then evaluated using this tool. Since all 40 primary test people are played together in this tool, cross-national statements can be made.

The same applies to secondary and third party users. It is thought that the survey is not limited to this group of people. If several relatives or caregivers are willing to provide their feedback online on regulary basis, this is possible.

9. Evaluation methods of collected data

The input factors are analyzed in the planning evaluation, i.e. whether they support the implementation phase as well as the subsequent phase. These factors can be measured according to Gerl (1983, p.59 ff.) to what extent there is agreement between the expectations and requirements of the participants and the planned process.[6]

This is particularly necessary after the first survey of the test persons or after the first response of the first questionnaires of the secondary and third party users.

Based on this feedback, the consortium partners reserve the right to re-sharpen the questionnaire or the procedure. After that, no changes are made. According to Gerl (1983, p. 32), this process evaluation should only be carried out sparingly.

An evaluation of results is the main focus in this project. From the wealth of collected feedback, attempts are made to make binding assumptions and derivations for the eSticky product. These results should help the partners to process the most important points for the market launch.

What is not being researched is the learning process that people with dementia have achieved during this time. The transfer evaluation would concentrate on this question.

[6] Quoted from: 2.6 Phases of Evaluation - fragebogen.de from http://www.fragebogen.de

It would be considered to what extent the learning behavior conveyed in the measure could be integrated from the learning field into the functional field.

Unfortunately, this would go beyond the scope of the research project. But it would certainly be interesting to see if there are people who would like to continue researching in this area.

10. Summary and conclusions

Through intensive user involvement, the consortium partners hope to develop a good technical solution that gives people with dementia the opportunity to live in their own four walls for as long as possible. Gentle household help is to be created in cooperation with those affected, relatives and their social environment. The cultural circumstances of the countries in the consortium and their technical possibilities must be taken into account.

One focus is on relieving the burden on caregiving relatives, who should be assured by the assistive technology that their relatives are reminded of important key points in the daily routine.

Accordingly, the end users partners hope for good cooperation with the test persons and important inputs to bring the eSticky product to market maturity, in order to be able to offer many people with dementia a certain level of security in everyday life.

This security is supposed to lower the stress level and increase the quality of life.

11 Literature

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[i] Programm benefit Geschäftsmodellentwicklung im AAL-Markt * benefit Projekt 835864 * (page 11)