e-inclusion in ageing Europe

Barriers and needs in ICT use of older people

A transnational iAge study

Inhoud

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About this publication

This publication presents the outcomes of a transnational study within the iAge project, aimed at determining the barriers and needs of older end-users regarding ICT. The publication provides an overview of the outcomes of eight iAge partners who performed pilots involving the development and implementation of ICT-tools for older people. The research questions for the transnational are as follows:

- 1. What are barriers for older people in the use of ICT?
- 2. Why do older people use or want to use ICT what are their needs?

After a case description of each partner's pilot, the methodology used to explore the perceived barriers and ICT needs of older people is described, followed by the results and concluding recommendations for future development and implementation of ICT-tools for this age group.

About iAge

An ageing population is one of the current and most pressing challenges facing Europe and indeed the world right now. At the same time, older people are healthier, more mobile and better qualified than any previous generation, whilst Information and Communication Technologies (ICT) for enabling and supporting good health and mobility are more readily



available than ever before.

Implementing strategies to increase the use of ICT among older adults is increasingly important in an endeavour to keep the growing number of elderly actively involved in social and work life. Subsequently these efforts allow for a greater contribution to economic development in regions facing population and economic decline. iAge acknowledges the importance of new technologies for economic activity and new ways of delivering services to an ageing society. This European cooperation project is therefore strongly focused on increasing ICT gains for older people and on the implementation of existing ICT best-practices or new technologies.

iAge has 12 partners from 10 regions in 6 countries around the North Sea (Belgium, Denmark, Germany,

Norway, Scotland, The Netherlands). All partners have one or more projects (pilots) within iAge. The consortium works together on new approaches to service delivery and stimulating economic development through ICT innovation. iAge promotes the use of ICT to combat social exclusion, improve employment opportunities, quality of life and community participation. The iAge project is co-funded by the Interreg IVB Programme for the North Sea Region and runs from 2012-2014. The Province of Drenthe (NL) is Lead Beneficiary.

Transnational study on barriers and needs

An important starting point for the iAge partners regarding all developmental and implementation activities was the incorporation of end-user needs. Accordingly, all partners explored the perceived barriers and requirements for ICT use among older people. The synthesis of the results from said explorations is the main aim of this transnational study. This study also provides recommendations for strategies to enhance the e-inclusion of older people.

The transnational study involved the following activities:

- 1. Develop a focus group discussion guide focusing on the organization and the content of the focus group.
- 2. Collect the outcomes of all iAge partners' explorations.
- 3. Assess the outcomes and distil the most important findings.
- 4. Formulate recommendations to enhance the e-inclusion of older people.

Terms used

ICT

The term ICT is used in this report to refer to applications on computers, tablets, smartphones and domotics: assistive and surveillance technology.

Older people

Most developed countries use the chronical age of 65 years as a definition of older person (WHO, 2014). It is often associated with the age at which one can begin to receive pension benefits. However, chronological time has little or no importance in the meaning of old age and in contrast to chronological milestones, old age in many developing countries is seen to begin at the point when active contribution is no longer possible. iAge does not have a clear age range it focuses on. The different pilots that were included in this transnational study could decide on the age range themselves.

Family carers

Relatives, friends or neighbours who provide care to older adults.

Current use of ICT by older adults

In Europe, figures show that just over half of older adults (65-74 years old) have never used a computer (Eurostat, 2014; see figure 1), although these figures vary widely across European countries. Of the consortium countries in iAge, Belgium (43%) and Germany (34%) have the highest proportion of older people reporting never to have used a computer. Conversely, in Denmark, Norway and the Netherlands, only about 15% have never used a computer. For older adults above the age of 75, figures show that the number of people never having used a computer is even higher, although data for this age group is missing for many countries, unfortunately. Trends are also changing among this age group: for instance, in Norway, the number of people above the age of 75 who had never used a computer has decreased from 36 to 25% in a one-year period (2012-2013; Eurostat, 2014).

Figure 1. Percentage of older adults that have never used a computer in iAge countries compared to the EU (Eurostat, 2014)



In addition to the computer, Internet usage among older people is an important indicator of ICT use. Figures show that on average, more than one third of all people aged 65-74 years old in Europe have used the Internet in the last three months (Eurostat, 2014; see figure 2). When the data is disaggregated by country, Denmark and the Netherlands have the highest percentage of older adults (65-74) who have used the Internet in the last three months, with about three fourths of the population falling under this category. Internet usage among adults over the age of 75 is lower; with the exception of Norway where, similar to computer usage, the number of older adults above 75 who have used the Internet has increased from 47% to 66%.

90 80 70 60 50 40 30 20 10 0 EU Belgium UK Netherlands Germany Norway Denmark 2012:65-74 years 2013:65-74 years 2012:75+ years 2013:75+ years

Figure 2. Percentage of older adults that have used the internet in the last three months in iAge countries compared to the EU (Eurostat, 2014)





The majority of Internet users in the age group 55-74 years old use Internet for e-mail (86%), searching for information about goods or services (82%), reading the news (56%) banking services (52%) and travel purposes (50%) (Eurostat, 2012) (Figure 3). Compared to adults between the ages of 25-54, the biggest difference in in Internet use is that the younger population use the Internet more often for social media, telephone or video calling, as well as listening to web radio, playing or downloading games, images, films and music and uploading self-created content to websites.

The importance of addressing ICT needs and barriers

Older adults form a part of the population that did not grow up with ICT, as it was not a routine part of their educational, work and/or personal lives (Amaro et al., 2011). Consequently, familiarity with using ICT is low compared to younger populations who have grown up with ICT as part of their daily lives. Acquiring ICT-related competencies has, therefore, not been a priority or a necessity for many in this age group. However, ICT might offer potential solutions for this group of end-users, particularly in combating and/or reducing frailty, disability, loneliness and disease. Despite the promise that ICT can aid the mitigation of the aforementioned health and/or psychological effects, previous research has found that older adults face a number of barriers and constraints regarding the use of technology. The European Commission (2007) has described that ICT solutions for older people should be accessible, available, relevant, demonstrate impact and be user-friendly. Demonstration of these concepts and successful implementation of ICT tools has proven difficult in practice for older adults. A systematic review focusing on critical implementation factors (Hage et al., 2013) showed that there are several important factors promoting and restraining implementation of ICT tools in relation to health (i.e. e-health). Two of these factors especially endorse the importance of focusing on the barriers and needs in ICT use of the end-user. These two factors are discussed below.

Firstly, the technology needs to have an appropriate design and should, among other things, be ergonomic, reliable and user-friendly (Hage et al, 2013) to improve usability and accessibility. Poor user-friendliness has been found to be an important factor affecting implementation. This has also been stressed in an international project, called Home Sweet Home (HSH) in which a set of ICT services aimed at extending the independent life of older persons in their home





environment was offered to older adults. It was stated that the services need to be tailored to the specific needs, expectations, lifestyle, preferences and routines of the individuals in order to avoid duplication and ensure that the offered services are used by the older adults (Georgantzi et al., 2014). Because of increasing physical and cognitive changes that may come with aging, tailoring is even more relevant (Hawthorn, 2000; Wagner, 2010).

To further improve usability and accessibility, one strategy put forth has been that seamless technologies or invisible computers (technologies which are not perceived as being 'computers') could be useful for older adults in particular since they did not grow up using ICT (Coleman, 2010; European Commission, 2007). It has been found that these kinds of technology are more easily accepted by the older age group opposed to visible computers (Coleman, 2010). One example of such an innovation is the addition of extra features on an older person's existing TV enabling them to talk screen-to-screen to their care professionals. Secondly, ICT solutions should be tailored to specific and agreed needs (Hage et al., 2013). Even when designers and developers use an appropriate design, allowing for the specific problems of a certain group of end users, and create purpose-built interfaces and devices, this does not mean that the technology is fulfilling a need or overcoming real issues that older adults experience in their lives. If the purpose-built ICT does not fulfil a demand, still technically disengaged older adults will not feel stimulated to use ICT (Coleman, 2010). As a consequence, it was stated that technically disengaged older adults should be involved at the very early stages of a design process to make sure that ICT solutions fulfil a demand. A user-push methodology could empower older adults to participate in developing their own solutions to overcome real issues experienced in their daily lives.

Therefore, this report illustrates the aims to obtain a better understanding of the needs and perspectives of older (potential) end-users and how technology can fit into their lives.

Pilot descriptions

To answer the research questions in this transnational pilot, we used data from eight projects (pilots) in different regions. Before going into more detail on the methods and findings, we provide a short description of these pilots below.

1. Grandma on the web – Knutepunkt Sørlandet, University of Agder, Norway

This pilot was carried out in two municipalities: Lillesand and Vennesla. They both conduct ICT courses for the older adults, using young students as teachers. The main aim of the pilot is to teach older people how to use important web-portals, increase their ICT competence, promote inclusion in society and enable independent control of personal web-portals. Furthermore, the pilot aimed to understand the motivations for wanting to use the Internet.

2. Mobile technology and e-inclusion – University of Abertay Dundee, Scotland

The University of Abertay Dundee aims to encourage dynamic and successful communication through increasing the accessibility of ICT and the mobility of the aging population. This is done through development of Persona templates of Scottish users to provide an accurate representation of end-users' needs for ICT designers. A user-centric design methodology (Co-design methodology) is adapted for older adults, to design and test prototypes.

3. Lifelong Living Online – Municipality Hardenberg, Hanze University Groningen, The Netherlands

The Lifelong Living Online project focuses on providing more opportunities for older adults to live independently for a longer period of time. The pilot project uses ICT tools to teach a preselected group of 75-plussers how to live independently for a longer duration of time, supported by emerging ICT solutions such as domotics.

4. iAge, housing and houses – Hanze University Groningen, NoorderRuimte, The Netherlands

This pilot focuses on the needs of 50-plussers in relation to independent living and how ICT solutions can facilitate this. It aims to find individual preferences in terms of solutions around the house that will stimulate older adults to live at home independently as long as possible. The basic assumption is that there is no 'one size fits all' solution. The goal is to match possible solutions to different target groups. The use of ICT in and around the house might not only help 'care', it might also enhance comfort and sustainability.

5. Longitudinal research @ll digital - Leiedal, Belgium

This pilot focuses on participants who followed a course to learn how to work with computers and the Internet (2004-2008). The pilot aimed to assess whether participants applied the training they received in practice, and whether post-training, participants still use their computers. The goal of the pilot was to identify how much impact the training has on participants as well as to map the barriers and facilitators for using ICT solutions among older adults. It was intended that the results from the pilot would provide insight into aspects of training that need to be adapted for future cohorts of participants.

6. The elderly creating active communities – University College of Lillebaelt, Denmark

The aim of this pilot is to develop a training model that equips older adults to create and implement a wide range of activities within the areas of entrepreneurship, informal caregiving and using social media. In the pilot older volunteers with good ICT skills were teaching less mobile or resourceful older people some ICT skills. The training included such basics as turning on and off the computer, using the mouse and keyboard, but also how to use essential public services such as NemID and borger.dk. The user group also learned how to send and receive emails. The course consists of ten home sessions (lasting one to two hours each) spread over two months.

7. Screen to screen care – Healthcare Innovation Forum, Oosterlengte CMO Groningen, The Netherlands

The pilot aims to create a remote care concept for older adults with health problems and their family carers in the form of a 'screen to screen' application. If the pilot results are successful, remote care will probably be included as a tool in a program to combat the anticipated future staffing problems in the region. Important aspects within this pilot are end-user involvement (clients, family carers and staff), cooperation with other regional partners (e.g. local authorities, hospitals) and the quality of the connection (reliability).

8. Sustainable Employability in Drenthe – Province of Drenthe, Municipality of Aa en Hunze, Stamm and Hanze University Groningen, The Netherlands

The pilot in Drenthe is focusing on finding ICT solutions in support of the family carers working in small and medium enterprises (SMEs). This increasing group of employees will be significantly important to the functioning of the labour market in the rural region of Drenthe. The older people living in rural areas are forced to be more and more self-reliant; they have a smaller social network and there is high pressure on healthcare. The pilot in Drenthe aims to discover what specific needs the working carer has with regard to the combination of work and care and ICT.



Overview of methods used

The Trimbos Institute developed a focus group protocol for the pilot sites (see Appendix 1) to explore the barriers and needs that older adults encounter regarding the use of ICT. The protocol focuses on exploring the current ICT use among participants and their needs to live independently. The Hardenberg pilot project used this method to collect data. The other iAge partners opted for different approaches, such as surveys and individual interviews. The inventories were not only conducted among older people, but also included the perspectives of others, such as healthcare professionals and family carers. The range of methods employed across the pilots are described (briefly) below:

Quantitative (online) survey or questionnaire

Four of the pilots used a survey or questionnaire to explore the barriers and needs of older adults regarding ICT (see Table 2). These pilots had different sample sizes, ranging from a small sample (8-14 respondents) to rather large sample sizes of 508 participants. In three pilots the target group were older adults and in one case family carers. The minimum age of the three pilots questioning older people differed: ranging from 50 years and above.

Qualitative Interviews

Different types of interviews were used. Some pilots used interviews to gather information in depth. The number of interviews also varied from two to 24. For example, 'Grandma on the Web' conducted three interviews to complement their quantitative questionnaire and gather more in depth information. 'iAge, housing and houses' conducted 24 interviews with older adults to explore whether or not there is even a desire for ICT solutions and if so, what kind of ICT solution would fit their needs. Furthermore, the target group also differed. Interviews were held with older adults, but also with their family carers, e.g. in 'Sustainable employability in Drenthe'.

Focus group discussions

Many pilots used the focus group method. Some of the pilots used the term 'representation group' or 'co-design group'. The latter two have a lot in common with focus groups and are therefore grouped together. During the focus groups a facilitator asked a group of people about their perception of, opinion about or attitudes towards a specific topic. The group size varied from three to twelve participants per group. The number of focus groups ranged from one to nine. In two pilots, 'Mobile technology and e-inclusion' and 'The healthcare innovation forum' a mixed group of people participated: e.g. older adults, healthcare professionals, family carers and computer scientists.

Table 1.Methods used

	Organization/ pilot	Self-report survey / Questi- onnaire	Interview	Focus group	Other
1	Norway: Grandma on the Web, University of Agder	178 older adults (65-96 years old)	2 older adults (65+) 1 course coordinator	7 groups with 24 older adults in total (65-86 years old) 1 group with adolescent ICT teachers	
2	Scotland: Mobile technology and e-inclusion, University of Abertay Dundee -			1 mixed group with 11 people (including professionals, family carers and older adults)	30 family carers in an online pool
3	The Netherlands: Lifelong Living Online, Municipality of Hardenberg			5 groups with 34 older adults in total (69-78 years old) 1 with 5 family carers	
4	The Netherlands: iAge, housing and houses, Hanze University of Applied Sciences	4	24 older adults (50-84 years old) 20 professional carers	4 - 6	
5	Belgium: Longitudinal research @ll digital, Leiedal	508 older adults (51-100 years old)	3 stakeholders of hard to reach target groups	7 groups with 49 older adults, other vulnerable and representa- tives in total	
6	Denmark: The Elderly creating active aging communities, University College of Lillebaelt	14 volunteers (65+)	15 with immobile older adults (65+)	(
7	The Netherlands: The healthcare Innovation Forum, ZIF (Zorg Innovatie Forum) -		69	6 mixed groups with 12 people each (including professionals, family carers and older adults)	
8	The Netherlands: Sustainable Employability in Drenthe, Municipality Drenthe	8 family carers	14 family carers; 14 older adults (60-70 years old)	Context march	

Methods used per iAge partner

1. Grandma on the web – Knutepunkt Sørlandet, University of Agder, Norway

- A survey (see Appendix 2) was developed consisting of 36 questions and filled in by older adults. The survey asked questions about computer and Internet use.
 A total of 178 older adults aged between 64 and 96 years filled out the survey.
- In addition, three focus group interviews (a total of 10 people, age range 65-86 years) were conducted to complement the quantitative questionnaire and gather more in depth information.
- Four focus groups (3 with older adults, 1 with adolescents as teachers) and three qualitative interviews (2 with older adults and one with a course coordinator) were conducted and aimed to evaluate the ICT needs of older people after they participated in a basic computer and Internet course. Fourteen old persons, four adolescents and one coordinator participated (age range: 65-85 years old).

2. Mobile technology and e-inclusion – University of Abertay Dundee, Scotland

- Focus groups (term used in pilot: co-design groups) were held to ascertain the real problems of the older generation with mobile devices. The participants are involved in the design of the applications themselves through the focus groups.
 A total of 11 people participated in the co-design groups. The groups consisted of three clients, a carer, a volunteer, a practitioner, an orthoptist (paramedic eye expert), a psychologist, a computer scientist and two computer app developers.
- Online polls were conducted amongst 30 family carers and people with dementia about a 'memory guide app' to gain insight into which areas of technology could help people with dementia and people with other age related memory loss.



• Furthermore, the pilot project used online forums to gauge usefulness and need for the memory guide application.

There were 30 family carers and older adults who provided information via online forums about the applications usability.

3. Lifelong Living Online – Municipality Hardenberg, Hanze University Groningen, The Netherlands

Focus groups were conducted with older adults and family carers using the framework that the Trimbos Institute developed. The focus groups addressed the following questions:

- 1. What is the current ICT usage of older people in Dedemsvaart?
- 2. To what extent do older people in Dedemsvaart have the ability to live independently?
- 3. How can ICT-tools support living independently as long as possible? and an additional question

4. How can we bring the subject ICT more to the attention of older people in Dedemsvaart? A total of six focus groups took place: five focus groups with a total of 34 older people aged between 69 and 87 years old and one group with five family carers.

4. iAge, housing and houses – Hanze University Groningen, NoorderRuimte, The Netherlands

Qualitative interviews were conducted with professional carers of older adults working in the homecare sector. The carers were questioned about which opportunities they see for using home automation to support independent living for older adults. The interviews with older adults focused on finding out about the ICT-needs of older people (50+) to support living independently in their home for longer.

A total of 24 older adults were interviewed (49 to 84 years old) as well as 20 professional carers working in home care (district nurses, nurses, home guides and care workers).

5. Longitudinal research @ll digital – Leiedal, Belgium

 Pilot with groups of older adults who had participated in the course four to eight years ago to test the feasibility of the method. During the two group meetings the participants were asked to fill out the survey developed by Agder University regarding their computer and Internet usage.

A total of nine older adults (age range: 55-84) participated in the focus groups.

• The survey developed by Agder University was sent out to 2,300 participants of the ICT course between 2004-2008.

This resulted in 508 returned surveys, most of which were filled in online. The age of the participants ranged from 51 to 100 years old.

• Focus groups were held with some rather inaccessible target groups, example e.g. vulnerable and isolated senior citizens.

Seven focus group sessions were held with a total of 49 older adults.

 Interviews were conducted with stakeholders and professionals working with these inaccessible target groups on a daily basis. Three interviews were conducted.

6. The elderly creating active communities – University College of Lillebaelt, Denmark

Qualitative interviews were held by telephone with the older adults who participated in the course. The older volunteers who provided the ICT training were sent a survey by e-mail. The interviews and survey focused on the benefits both groups perceived of giving or receiving ICT training. Thirteen of the 15 people that participated in the training were interviewed and 14 of 17 volunteers filled out a survey.

7. Screen to Screen care – Healthcare Innovation Forum, Oosterlengte CMO Groningen, The Netherlands

Focus groups (term used in pilot: representative groups) were conducted with a mix of care professionals, care receivers and regional partners, with the aim to provide input to implement Telecare. The implementation of Telecare offers a potential solution for the decreasing number of professional carers available.

The focus groups consisted of end users (older adults), care workers, nurses, managers and ICT professionals. A total of six sessions were held, with an average of twelve persons per session. In four of the focus groups there were nine homecare nurses, two team coordinators, one homecare manager, one ICT manager and one client council representative present. One of the focus group sessions was conducted with older adults only. The last focus group involved 10 older adults, 20 representatives of elderly organizations, client representatives, local government and welfare organizations.

8. Sustainable Employability in Drenthe – Province of Drenthe, Municipality of Aa en Hunze, Stamm en Hanze University Groningen, The Netherlands

- Drenthe conducted an online survey among employed family carers on their dual role as an employee and a family carer. Eight family carers filled out the online survey.
- Interviews with family carers were conducted regarding their ICT knowledge, use and perceived problems. Ten family carers were interviewed.
- Couples of care receivers (older adults) and family carers were interviewed about their experiences with using the do-book, an application which enables video calls, shared agendas and notes between the couples. Fourteen couples participated in the interviews. The care receivers were between 60 and 70 years old.

Findings

The findings are described per research question.

1. What are barriers for older people in the use of ICT?

Not feeling the need for using ICT

Older adults do not always feel the need to use ICT. They are not interested in new ICT developments and do not have a wish to learn more about ICT because other activities and hobbies are more important for them. They state that they have been coping well without ICT.

Some of the participants in the focus groups did not feel the need to start using a computer at all, as they would rather relax and enjoy nature.

Municipality of Hardenberg Pilot

However, it may be that part of the group of older adults who state they do not feel the need to use ICT actually have a latent need which can only become overt when they are aware of the possibilities ICT tools can offer them. The findings showed that for part of the group of older adults it is difficult to think about technical solutions that could be of help at the moment, or could solve or assist in future problems, because they are unaware of what solutions are available.

One theme which emerged from the focus groups was that participants did not have any idea how ICT could benefit them, particularly in the future when they face problems with living independently. That being said, participants were interested in knowing the potential that ICT tools could have for them now, to avoid a situation where they only find out about the existence of such tools after a problem has occurred.

Municipality of Hardenberg Pilot

Furthermore, some participants felt that ICT tools are useful for younger generations and more useful for that cohort.

People in the co-design groups articulated that 'technology is not for us' and felt 'too old for ICT'

University of Abertay Dundee Pilot

Given this feedback from participants, it seems that it is important to show the possibilities of ICT to older adults. After showing examples of tools and possibilities, some of the older adults were able to think about possible applications of ICT tools for themselves and became enthusiastic to start using them. Showing examples of tools improves their image of ICT tools and seems to lower thresholds.

After seeing examples of ICT tools, interest to use them increased. For example after demonstrating how an iPad works for a few minutes, some of the participants were enthusiastic to use one. They were especially interested in using online services such as ordering groceries online and video calls with family members or their General Practitioner.

One of the participants said after seeing Skype: 'It seems great to use Skype! It is as if you are visiting each other'.

Municipality of Hardenberg Pilot

Safety

Some participants included in the inventories expressed scepticism about ICT use. For example, some indicated that they were afraid of using social media, as they are not convinced about its safety and their privacy. They also stated that they were worried about viruses on their computer.

Most of the participants in the focus groups were not currently using social media. They stated that they do not feel the need to share everything about their lives online; the whole world need not know their business. Fear of using social media is illustrated by the following quote: 'If you want to keep trusting humanity, you should not use it'. And : 'Viruses... You never know where your information will end up'. They feel that the safety issues involved with social media should be improved before they would want to use it. Municipality of Hardenberg Pilot

The influence of ICT on social contact

While some older adults thought ICT could help manage their social contacts and improve their social network and communication in a positive way, others had the opinion that the increasing use of ICT in daily life has a negative impact on social connections in real life. They assumed that digital communication and social media tools would replace social contact in real life.

Uncertainty about how to use ICT and where to start

For older adults (both with and without disabilities), several systems are, or seem, too difficult to use.

'I'd expected that video calling could support visual explanation to my father, but he couldn't handle the technology properly.'

Province of Drenthe Pilot

Furthermore, some explain that they do not know how and where to start or are afraid to get started.

'I do not know how to install a computer.''I do not want to attend a computer training because I am afraid that I will not be able to work with it.'

Municipality of Leiedal Pilot

Some older adults have tried to use a computer, for example, but stopped using it because they thought it was too difficult. Other participants stated that they did not attempt to use any kind of ICT solution due to fear that they would not be able to learn the required skills for proper use without assistance. Furthermore, they commented that some technologies are too complex to use or functionality was not user-friendly for them (e.g. buttons were too small, or touch screen did not work for their fingers). This was mentioned in several pilot studies.

'Icons are too small, can't use them properly because of the tremors in my hands.'

Province of Drenthe Pilot



'I am afraid that I cannot keep up with the new technologies and the buttons of the ICT-tools will be too small for me.'

Hanze University of Applied Sciences Pilot

'It is much too complicated to purchase an internet connection.' Municipality of Leiedal Pilot

Sometimes a scenario arises even with older adults who have some ICT training, when a problem emerges that is too complex to solve. Trainers or others around the older adults also do not have the knowledge to solve the problem. This can result in giving up on such ICT solutions (in other words they stop using the computer). Furthermore, some are hesitant to ask help from others for their computer problems.

'I do not like to ask someone to come and help me with every problem I have with a computer.'

Municipality of Leiedal Pilot

Disabilities and colloquial language hinder ICT use

Another barrier to using ICT use among older adults is the presence of disabilities such as visual- and physical impairment.

During the focus group one participant stated: 'I have shaking fingers, so I cannot use equipment with small buttons'. Municipality of Hardenberg Pilot

Also, colloquial language (e.g. slang or different dialects) can be a problem in some regions. For instance, many people in rural areas speak a particular dialect and may not understand an ICT application which uses the standard language. This may discourage use of the application or cause confusion and frustration.

Colloquial language is a common problem across Europe to varying degrees, especially in countries where the older generation speak a local dialect and not the assumed standard language used on consumer devices.

University of Abertay Dundee Pilot

Perceived costs of using ICT

Some of the older adults felt that the costs of using ICT tools are too high. This is a reason for not buying a tablet for example, although they are enthusiastic about the use of it when they see one, as has been described earlier.

2. Why do older people use, or want to use ICT – what are their needs?

Independent living

One of the most frequently mentioned reasons in the inventories to use ICT is the need for older people to stay in control of their lives and remain independent. Often they wish to live independently for as long as possible in their own homes, and this is perceived as enhancing their quality of life. Participants indicated that they want to be less dependent on others. For example, in the Hanze University pilot respondents mentioned that they would like to use ICT tools to improve their mobility in and around the house, for finding their way, for cleaning and shopping.

One of the outcomes of the focus groups was that older people are using the computer to be less dependent on others. They want to make their life easier and they think that internet can affect their life in a positive way.

University of Agder Pilot

Part of the participants in the focus groups thought that technological solutions to help them find their way (in terms of orientation/navigation) would be very useful. They think this would be an added value in addition to a mobile phone: 'A GPS system would be very handy, I would certainly use it if needed!'.

Municipality of Hardenberg Pilot



Safety at home

Another reason mentioned by the interviewees to use ICT is the sense of and need for safety in and around the house. Increased safety also enables them to live independently. In the inventories from the Hardenberg and Drenthe pilots, a number of practical ICT solutions were mentioned by the participants: doorbells with cameras, automatic closing doors/ windows, light sensors in small alleys, alarms and video connections to family, neighbours or professionals in case of emergency, and technologies for fall prevention and -detection.

One of the participants stated: 'Falling is one of my biggest fears; a system that detects if I have fallen would be very helpful'. Other participants would like to know more about the opportunities and solutions ICT tools can offer because they feel more vulnerable living alone.

Municipality of Hardenberg Pilot

One participant mentioned that a videophone at her front door would be very useful so she can quickly see who is at her door and this would improve safety: 'It is a very helpful invention that should be more widespread in use.'

Municipality of Hardenberg Pilot

During one focus group, participants came up with the idea of a virtual checklist which could remind the user of things to be done around the house, such as locking doors and turning off the gas stove.

Municipality of Hardenberg Pilot



Enhance social contact

Most older people strongly value their social contacts and social life. The interviewees that were using ICT to contact their relatives and friends stated that it is an easy way to stay in touch with them. For this group of older adults, social contact was one of the main reasons for starting and continuing Internet use.

The questionnaire set out by the University of Agder showed that 10% of the participants felt social contact to be the main motivation for continuing to use internet today. Of those using the internet, 53% feel that using the internet affects their social life in a positive way. University of Agder Pilot

Information, administration and other activities on Internet

The results of the Agder survey, the Leiedal survey and the focus groups of Hardenberg show that older people are using Internet and other ICT technologies most of the time for Internet banking, writing and reading e-mails, sending pictures, searching for information through search engines (i.e. Google) online shopping, playing games, doing their financial administration and reading the newspaper.

The survey conducted in Leiedal shows that the main reasons for older adults to start using ICT are: Seeking factual information (55.6%); writing and reading e-mail (89.4%); contact with friends and acquaintances (51.2%); to perform tasks of daily life (57.2%) and information about public services (92.5%).

Municipality of Leidal Pilot

There are participants that frequently use the computer and the Internet: 'I use it for banking, then I do not have to leave my home. It is also very handy for e-mail, I can respond directly. Furthermore, I use it to play games and to have contact with the clubs I am part of. I have also learned how to use Excel. I think that you have to use the computer if you want to be part of social life. I started when I was in my sixties.

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Discussion and recommendations

In this iAge transnational pilot, eight of the ten participating regions collected data on the barriers and needs for ICT use among older adults. Barriers that were mentioned included not feeling a need to use ICT, concerns about personal data safety, social contact via the Internet disrupting real life contact., difficulties in ICT-use due to physical or cognitive limitations and the high cost of purchasing technology. On the other hand, older adults participating in the data collection also mentioned several potential benefits of ICT-use, especially applications which assist in the ability to stay independent, mobile and safe, keeping existing contacts and using the Internet for a broad range of activities varying from financial and administrative to playing games. These outcomes help the consortium to gather a more in-depth understanding of the barriers and needs of older adults regarding ICT-use. They show why and how we might improve ICT-use in later life, and not so much what to use, where and when. This is the result of the different methodologies used, ranging from focus groups and interviews to a structured survey, in projects with different ICT-aims.

Based on the findings of this report, a number of recommendations can be made that span the spectrum of ICT use, from development to implementation.



Recommendations on development

First, for the development of ICT-tools for older adults who have not been exposed to the value of ICT or equipped with the skills to use ICT, it is important to literally show its potential, because as holds for so many things: unknown is unloved. This is in line with earlier research showing that the most commonly stated reason for not using ICT, is a lack of interest and a perceived lack of usefulness, rather than affordability or difficulty (Coleman et al., 2010) and that some older users lack the intrinsic motivation to learn to use ICT (Goldhaber, 2012). This first recommendation on the development of ICT-tools can also be extended to implementation.

Second, provide a realistic picture of the ways to improve safety of ICT-tools and strategies for mitigating risks. Morris and colleagues (2007) have stated that it is important to change older people's misconceptions about computers, better informing them about what they are, what they can do and how they can be of use in their daily lives. However, as is the case with other new technology, the Internet comes out with potential hazards if careful use is not maintained, like virus infections, scam mails, email deception and crime, and mental health problems in case of excessive use. Realistic information on the pros and cons of ICT-tools is needed in order to increase the likelihood that ICT will show a benefit for its users.

Third, ICT-tools need to be adapted to the needs of older adults. Earlier findings of another international project: Home Sweet Home project (Georgantzi et al., 2014) confirm this recommendation, showing that the main motive to participate in, and use ICT-services, was not the need for ICT-support but factors such as the willingness to help others. The benefits of the new technology must be made clear and must fit with their needs and daily lives. This is important particularly since it is known that older adults are more present-oriented and are reluctant to spend their time in an unpleasant way (Melenhorst et al., 2001) and many older users do not see modern ICT as related to their interests or goals (Hawthorn, 2007).

A fourth recommendation is to involve older end-users in the development of ICT-tools through a process of co-creation. In this way, solutions will be brought to a higher level, by being tailor-made, fitting the needs and limitations of older people and their family carers. This needs dialogue between designers, older end-users and their family carers, next to common ground, enthusiasm, and focus on results among all parties involved. This might also reduce the persistent belief of developers that devoting time and effort to make ICT-tools more accessible for older end-users will only incur cost without a demonstrable return on investment (Isaacs et al., 2011). With this belief, developers keep designing with a young and able market in mind, which creates a vicious circle of exclusion (Isaacs et al., 2011).

Recommendations on implementation

First, although it is useful to keep developing new technologies, it is perhaps even more important to increase awareness of existing ICT-tools and their potential added value, so as not to reinvent the wheel. The iAge findings show that it is likely that older adults are more willing to accept new technologies if someone they know and trust introduces the technology. Therefore, it might be helpful to inform relatives and friends on the available ICT-tools for older adults, in addition to the target group itself, because they may play a

crucial role in the improvement of the implementation of ICT-tools among older end-users. They might not only introduce ICT-tools and show the possibilities, but also stimulate use.

Second, start with the need and not the device when informing older people about ICT. Use terms that relate to real issues and needs they experience in daily life. For example, when introducing GPS to help them find their way if lost, put the issue they perceive first. So, do not start the conversation with saying you have a new device that would be of use for them. But start with talking about the issue someone experiences.

Finally, increase their confidence in the use of ICT. To further stimulate the confidence in ICT, investment in ongoing training of older end-users seems worthwhile, as has also been stressed in the HSH project (Georgantzi et al., 2014). Earlier research indeed showed that older adults who receive adequate support for the technology they are using are encouraged to continue (Wagner et al., 2010). Furthermore, training has an additional value. It increases older adults' computer self-efficacy. Higher computer self-efficacy has on his turn been found to be related to more use of the computer (Wagner et al., 2010). Finally, training should emphasize the benefits of the computer or software trained to create motivation for use since it is known that older adults sometimes have a lack of motivation and do not perceive the benefits of ICT (Wagner et al., 2010).



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