Ageing and Technology

Report of a European Workshop
jointly held by AAL/COST/JPI MYBL in Brussels
on 9-10 February 2017

AAL, COST (European Cooperation in Science and Technology) and JPI MYBL are supported by the EU Framework Programme Horizon 2020

Executive Summary

The event

In February 2017, three European initiatives - **Active and Assisted Living** (AAL) **Programme,** the **Joint Programming Initiative on Demographic Change "More Years, Better Lives"** (JPI MYBL) and **COST - European Cooperation in Science and Technology** held a joint workshop[1].

The aim of the workshop was to provide a platform to the R&D communities active in the field of "ageing and technology" and explore ways how they can work together effectively around a shared interest: The role of information and communication technologies in the lives of older people, in the context of ageing societies, and rapid technological change.

The discussions were organised around three broad challenges which face people in the second half of the lifespan, related to the final years of paid employment and retirement; to life in active retirement; and to disability, frailty and dependency.

Priorities for research and/or development

It was generally recognised that older people do not become more alike as they age. Hence diversity is a key issue.

The following issues were identified as needing further research or development work (in no particular order):

- Making better use of what already exists – better use can be more important than new solutions.
- Understanding and supporting intermediaries – friends, relatives, carers all play a part in encouraging or discouraging older people from adopting ICT solutions.
- Understanding the economics of ICT use by older people – what should be free, and what paid for, by whom?
- Rethinking marketing – marketing to older people is a particular problem, because many older people resist being seen as old, and adopting solutions aimed at "older people".
- Making better use of data – in relation to later life, including better use of public data by older people themselves.
- Reviewing the use of ICT in social care – to consider how ICTs can, and cannot properly be used in the care of older people.
- Continuing to innovate – though much can be done by better use of what exists, there is still much potential for innovative solutions to old, new and emerging challenges.
- Sharing knowledge and expertise – a continuation of networking between the three communities at the workshop would be beneficial.
- Preparation for retirement - when "retirement" is becoming increasingly fluid – a process, not an event.
- Supporting carers – as the numbers of formal and informal carers grows, how can ICTs provide better support and information?
- Cognitive decline – what can ICTs contribute to the diagnosis, treatment and quality of life of those experiencing cognitive decline.

[1] The three initiatives are outlined in Annex 2.

- Institutional contexts – how ICTs can best be embedded in the life of residential and other institutions for older people.
- Intergenerational relationships – what role can ICTs play in encouraging better relationships between generations?
- Ethical issues: Whose needs are we meeting, with what implications for autonomy, privacy, and potential abuse of older people?
- Real life use of solutions: How and why older people currently do, or do not, use ICTs, including psychological aspects?
- The potential of online communities for older people.
- Further refinement of methods of Co-creation: Wherever possible solutions should be designed with, rather than for older people.
- Robustness and reliability of technical solutions.
- Personalisation: Balance the potential for personalisation with ease of use.

Next steps

All three initiatives agreed to cooperate further, and attention was drawn to a variety of opportunities, including calls for research and development by AAL and MYBL, and the potential of developing a COST proposal to build research networks by participants and others working in these fields.

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Ageing and Technology

Introduction: the context

The ageing of the European population is creating many new challenges and opportunities for individuals, organisations and governments. Many of these challenges are being addressed by information and communication technologies, which form an integral part of everyday life for everyone. Sometimes the technologies are targeted at particular needs or age groups, but often they are generic, addressing many issues and kinds of people. These new technologies create new opportunities and sometimes challenges.

Demographic change affects everybody, but the most dramatic change is the growth in numbers of older people, as people live longer and (generally) healthier lives. Our particular focus is therefore on "older people". However, any definition of "older" is open to challenge: people do not become more alike as they age, and individuals age at different rates and in different ways. The "older" population therefore includes many healthy, active people, in employment or not, as well as many people who are experiencing disability and health challenges, and with a range of care needs.

It is important to note that people's aspirations and interests change as they age, and that the technologies also evolve over time. Thus an individual's interest in, and use of, ICTs may differ as they age, while someone who was very familiar with state of the art technology at the age of 60, may already be struggling to keep up ten years later.

Our shared interests

In February 2017, three relevant European initiatives[2] - **Active and Assisted Living** (AAL) **Programme, Joint Programming Initiative on Demographic Change "More Years, Better Lives"** (JPI MYBL) and **COST - European Cooperation in Science and Technology** held a joint invitation workshop to provide a platform for the R&D communities active in the field of ageing and technology and explore ways how they can work together effectively.

The three initiatives have a shared ambition to:

- Enable older people to remain active and living at home, on their own terms, as long as they wish and to continue to contribute to society (on a paid or unpaid basis) as long as possible.
- Improve the design of the living environment for older people, including both homes and communities and the integration of Information and Communication Technologies (ICTs).
- Encourage older people to participate in learning (including learning with, from, and about technology).
- Encourage the integration of all services (including ICT-based ones) which can support older people.
- Understand the role which ICTs play, and can play, in achieving these.

Invitations were issued to a select group of experts actively involved in the three initiatives.

[2] The three initiatives are summarised in Annex 2 below.

Workshop aims

This workshop aimed to:

- Inform participants about the objectives and funding opportunities in JPI MYBL and AAL Programme, and the potential of support from the COST programme.
- Boost collaboration between the research community and developers of technology to provide better ICT-enriched living environments for older people and leading to technologies which are actually used by the target group.
- Identify gaps in current research and development work, and areas where issues are already being addressed.
- Encourage researchers and others involved in the AAL, MYBL and COST worlds/communities together to discuss possible collaboration and the creation of new networks.
- Encourage participating researchers to collaborate for the submission of proposals under the 2017 Calls of AAL and/or MYBL, and to consider bidding for a new network under the COST process.
- Encourage other forms of collaboration between the "communities" and/or individual researchers (e.g. the development of a roadmap of common research interests or future activities).

The workshop aimed to explore the contribution of technology to the management of demographic change, and especially the role of ICTs in the lives of those in the second half of life. Its central focus was therefore on the lives of older people rather than technologies per se. Our main focus was on ICTs rather than broader technologies (like self-driving cars, or the design of age friendly cities). ICTs play an ever increasing part in the lives of older people, and the potential benefits, in quality of life, and social and economic opportunity are great. However, there are also significant risks, and maximising the benefits requires careful management.

Our stated aim was to understand better what is already known, about these issues, what technologies and solutions already exist, and where the focus of research, innovation and development might best be focused. This was an ambitious agenda, and it is unrealistic to expect answers to everything. However, the event was a starting point to effectively establish common ground between three groups: those focused on policy and life course related research into ageing in the JPI "More Years, Better Lives"; the "Active & Assisted Living Programme", which aims to provide innovative Information and Communications Technologies (ICT) based solutions to enhance older adults' quality of life, to improve the long-term sustainability of the health and long-term care systems and to strengthen the industrial base in Europe; and researchers involved in COST Actions spanning a wide range of topics related to Ageing.

The workshop itself was organised around three parallel sessions, on Accessibility, Acceptance and Impact of technologies.

The changing nature of later life

The context of later life is changing rapidly. Most obvious is extending lifespan: most people are living longer, and often experiencing a longer period with physical and mental limitations than in the past. The boundaries between paid and unpaid work and other activities are blurring, and in some countries fixed retirement ages have already vanished. An increasing proportion of older people are living alone, remote from family support, and vulnerable to isolation and loneliness, which some technologies can

assist in overcoming. Institutional support for the oldest groups is also changing: in some countries a growing proportion of older people are living with care support in their own homes, rather than in residential institutions, but domiciliary services are coming under increasing pressures as the numbers of clients grows. In many countries housing design is not keeping pace with these changes, leaving older people in poorly adapted accommodation. And finally, digital technologies, including the use of smartphones, tablets, social media etc. are playing an increasing role in the lives of many older people.

There are a number of distinctive features of life after 50, which bring different opportunities and challenges for most people. However, it is unhelpful to link these to particular age groups, since the boundaries (like "retirement") are increasingly blurred, and different people experience transitions at different ages. The challenges can be grouped loosely into three kinds of issue:

- Related to the final years of paid work and preparing for retirement;
- Meaning, purpose and social role in active retirement;
- Related to disability, ill health and dependency.

Specific issues

In the workshop sessions, three issues were identified as being important for research and development work in the field of ageing and technology (in no particular order and not excluding other important issues):

- **Focus on strengths**. The first principle on which there was agreement was that our aim is inclusion and autonomy. We aim to ensure that all older people lead happy, meaningful and healthy lives, as active citizens, contributing to society and able to make the best possible use of the opportunities available, including those provided through new and existing technologies. We should do nothing to encourage stigmatisation of older people, to support deficiency models of ageing, or to promote intergenerational rivalries. The focus should be, as far as possible on using people's strengths, not classifying them by their limitations.
- **Recognise diversity**. We also recognised the diversity of "older people". Thinking in terms of generic "older people" will not help us respond to the challenges. People do not become more alike as they age, and individual capabilities and aspirations differ widely. Significant factors which affect different people in different ways include gender, ethnicity, physical and mental health, mobility, access to resources (including financial and technological), location (rural and urban), and more specific factors like migrant status. In the later stages of life, different individuals experience frailty, visual, auditory, and cognitive challenges in different ways and different speeds. We should also be sensitive to the needs and aspirations of people in minority and excluded groups. In all these cases, our aim should be equitable treatment, responding to the full range of circumstances, not equality through "one size fits all" solutions. Technologies offer the potential to respond to such variation with specifically designed solutions, with generic solutions and infrastructures that are open to domestication and adaptation to individual situations. We ought to recognise that, in relation to ICTs, different "generations" of older people may bring very different experiences: most of those now in their 50s and 60s will have had experience of computing, internet and mobile phones in the course of their working and private lives; but those now in their 80s and 90s are much less likely to have had this.
- **Consider ethics**. We need to be clear who is in control, whose needs we are meeting, and what rights individuals have to access, and to opt in or out of involvement in particular

technologies. It is especially important to be clear about the boundaries around privacy and autonomy when working with people with limited cognitive capacity. The distinction between monitoring for the safety of the client and unwarranted intrusion into privacy can be a difficult one. There are also issues about human rights in relation to providing and accessing information. These can be very sensitive when vulnerable older people are exposed to potential abuse, including by carers or relatives. A related issue is the control of technology. Who is providing, on what terms, and with what requirements for consent?

Design issues

We discussed a range of issues about the design of technological solutions to see that all older people have access to technologies which are well designed – technically effective and robust, affordable and accessible to all, including people in marginalised and socially excluded groups.

- **Co-creation**. There was general agreement about the importance of co-creation in design. Technologists do not always understand the life worlds of older people, while older people often do not know what is possible, or what technologies and solutions already exists. It follows that design of solutions should be with older people, not for them. It is far better to consider acceptance from the beginning, than to try to persuade people to use a tool after it has been created. Although there is considerable experience of techniques for co-creation and piloting, not all of those involved have access to this. The outcome should be solutions which older people love, not ones they tolerate or ignore.
- **Real life use**. We need better understanding and dissemination of experience on how older people actually use technologies. There is much anecdotal evidence of older people supplied with unused specialised ICT tools by well-intentioned carers and relatives. We need more systematic study of who does, or does not, have access, and who uses particular technologies, both everyday ICTs and specialised tools. Who is excluded, and what makes a solution acceptable or unacceptable?
- **Robustness** of solutions is critical. Because technology advances by trial and error, ICT solutions are prone to unexpected breakdowns. In this situation, young people, who tend to learn faster and more flexibly, are more likely than older people to tolerate delays, and to seek solutions. Older people in general are more likely to find the process of learning to use a new system slow and difficult, and are more likely to abandon the effort when faced with unfamiliar error messages, blank screens, or poorly labelled buttons.
- **Psychology**. We need better understanding of the psychology of ICT use by older people, and of what makes solutions acceptable, including the influence of peer groups and intermediaries. This links to the sense of self and identity, and of control of one's life and home, all of which may feel threatened as people become aware of declining powers.
- **Personalisation**. One of the strengths of ICT systems is the potential for personalisation of solutions in response to very individual needs. However, doing this can often be a complex and difficult process, requiring learning which will be used only once. Better ways of personalising could increase the likelihood of take up of solutions.

Areas for research and development

In the workshop sessions, areas were identified where future research and development could focus on. Focussing on these areas could provide significant benefits from further research or development.

- **Making better use of what already exists**. There are many technologies already available to, and used by, older people, both those designed specifically to support or empower them, and more general ones like smartphones, tablets, etc. If we are to ensure that the best possible use is being made of ICTs by older people the first priority is to explore issues of use and take up of existing digital devices, rather than the design of new solutions and products.
- **Understanding and supporting intermediaries**. Intermediaries can have a major influence on the extent to which older people take up and use technologies. They include: carers, relatives, friends, technology firms, and employers. All can be facilitators of use, but can also be blockers ("never mind, you are too old"). Where intermediaries are themselves unconfident users, they may be reluctant to pass on their knowledge, or be ineffective "teachers" or coaches. There are practical problems for paid care staff working under pressure to find the time and motivation to implement ICT solutions whose benefits may be longer term. There is work to be done on how to support intermediaries.
- **Understanding the economics** of ICT use. These include policy questions about entitlement and rights of access, financial issues about business models and how they include or exclude particular groups of users. Who should provide what, and on what terms? What should be the role of private payment, insurance systems, the state? For commercial organisations, what is the business case for funding development targeted particularly at older people?
- **Awareness raising and marketing** technologies aimed specifically at older people is a particular problem, particularly perhaps in the active retirement phase. It is difficult to market products to older people who don't want to see themselves as old, and are fearful of becoming so, and a focus on particular chronological age is likely to exclude many who don't see themselves as fitting a stereotype. Good models of information and support services are needed.
- **Making better use of data** in relation to later life, and especially to those receiving some form of care. The potential of big data to understand better the needs and wishes of older people is underdeveloped, but it is important to recognise the ethical issues about confidentiality and security. The ability of older people themselves to use data is under-explored.
- **The role of technology in social care** needs further study, and product development. What aspects of social care, and especially domiciliary care, can and should be delivered through ICT solutions, and what should not? To what extent might such solutions be substitutes for, rather than supplements to traditional human delivery? How might ICT solutions disrupt traditional models of service delivery?
- **Innovation**. Although better use of existing technologies is a priority, innovation in development and use remains important. It was noted that significant opportunities are provided by technologies which are not designed for older people and that there is an important place for radical and disruptive experimentation.
- **Sharing knowledge and expertise**. This workshop was an attempt to link developers of technologies with those working to understand needs and aspirations among older people. Strategies for encouraging more such interaction would be valuable, both face to face and online.

Areas currently underexplored

In addition, a number of specific needs which could also receive more attention were identified in the workshop sessions:

- **Preparation for retirement**. As people face much longer periods of retirement than their parents, they need the chance to explore life choices for an extended retirement in the final years of working life. Few receive any systematic education or information on issues like retirement options and rights (including part time and flexible working options), on preventive health and financial matters.
- **Carers**. The growing demand for social and health care in the later stages of life is leading to a growing workforce, including both paid workers and unpaid partners, relatives, friends and neighbours. In many cases the carers are themselves older people. For them caring can be a source of great fulfilment, particularly caring for grandchildren, but it can also be a burden if the demands are too great. Some carers have formal training for the role, but many do not. Improved technologies can provide better support to both paid and unpaid carers through sharing expertise and knowledge, training and mutual support, as well as with the administrative functions of monitoring clients and responding to their needs. We noted the Eurocarers platform as a good example of using ICTs to support carers, who may be poorly trained or prepared for the role, and may (particularly in the case of informal and family carers) working in isolation.
- **Cognitive decline**. One issue highlighted in all workshop sessions was the challenge of cognitive decline and dementias. Diagnosis, treatment and securing quality of life are still in an early stage of development, and the potential of ICTs to help here is an area for further exploration.
- **Institutional contexts**. A significant proportion of older people will spend some part of their later life in institutional care. The ways in which ICTs can support residents and carers in the institutional context needs further exploration.
- **Intergenerational relationships**. One group identified the potential of technologies to assist with the transfer of knowledge between generations. Older people have a store of tacit knowledge about working practices and systems, as well as about wider historical and local issues, which can be of real value to younger people, but few formal opportunities exist to share such knowledge, despite some pilot projects in particular firms.

Next steps from the three initiatives

AAL

The workshop has brought together exponents from different R&D communities who share the interest to provide viable ICT-enriched living environments for older people. Furthermore, it identified several priorities for development where gaps in current research and development work should be filled. With its yearly calls for project proposals for applied research and close-to-market development, the AAL programme (www.aal-europe.eu) provides an opportunity to address some of these R&D interests. The AAL working group responsible for preparing the calls is interested in new topics and priorities for R&D which have come of this workshop or may arise in newly created networks.
The **AAL Call 2017** (http://www.aal-europe.eu/get-involvedcall-challenge-2017/) is currently open (closing date: **24 May 2017**). Under the title "**AAL packages/Integrated solutions**", researchers can cooperate with industry and organisations representing the end-users of AAL solutions in transnational projects. Furthermore, the yearly AAL Forum brings together over 700 participants from the field of AAL, including researchers and developers, to share ideas about new AAL products and services and exchange experiences and ideas (www.aalforum.eu). Participants in this interdisciplinary event will explore the gaps that need to be bridged to deploy technological solutions to the ageing well in Europe. A call for workshops is currently open until 20 April 2017 (http://www.aalforum.eu/programme/call-sessions-workshops/). In 2017, the AAL Forum takes place from 2-4 October in Coimbra, Portugal.

JPI MYBL

The overarching aim of our JPI is to find ways to improve the health and wellbeing of older people, to enable less-active elderly to be more engaged in social life and more active contributors to wider society, and to do this in cost-effective ways. The workshop has identified several priorities for development and specific needs such as the growing demand on the cares that will need the attention of our JPI MYBL. As a result of the joint workshop the JPI MYBL Joint call 2017 on "Ageing and Place in a digitising world" received proposals from consortia including researchers from COST actions and the MYBL community. The report and its findings will be brought to the attention of the General Assembly of the JPI MYBL during their next meeting on 20-21 June 2017 in Montreal. The members will discuss which joint actions need to be taken.

COST

COST (European Cooperation in Science and Technology) is an intergovernmental organisation supporting S&T networking and fostering the collaboration among researchers, stakeholders, policy-makers, industry at pan-European level. It is fully bottom-up and not prescriptive as to the topics that can be proposed.

The COST Open Call (http://www.cost.eu/participate/open_call) provides great opportunities for researchers and stakeholders to join efforts and set up networks to explore any topic related to ageing and ICT and create an impact in the research community, with practitioners, as well as at policy-making level. The COST Open Call is permanently on-going, with Collection dates every 6 to 8 months. The next Collection date is set on 7 September 2017.

Researchers from the three communities who gathered at the event are encouraged to join and submit proposals for COST Actions exploring the unmet research needs identified.

Ageing and Technology – a European Workshop

Joint Workshop of AAL / COST / MYBL

9-10 February 2017

COST Association, Avenue Louise 149, 15th floor, 1050 Brussels, Belgium

Annex 1 - Agenda

9 February 2017	
11:40	Onsite registration
12:00	Networking lunch
13:00	**Opening – Plenary session** **Welcome by the COST Association** *Ronald de Bruin, COST Association* **Introduction** Purpose of the workshop *Daniel Egloff, AAL & MYBL* Introduction to the three initiatives – Purposes, current work and priorities *Rafael de Andres Medina, AAL* *Denice Moi Thuk Shung, MYBL* *Rossella Magli, COST*
13:35	**Setting the scene – Plenary session** **Introducing the concepts for the three session groups** **Sharing specific areas of interest of the initiatives** *Alexander Peine, Utrecht University, NL*
14:00	**Discussing technology in different contexts – Parallel sessions** **Opening statements by participants, followed by discussion** Parallel session 1: **Acceptance** *Moderator: Peter Saraga. Rapporteur: Gerda Geyer* Parallel session 2: **Accessibility** *Moderator: Alain Franco. Rapporteur: Karina Marcus* Parallel session 3: **Impact** *Moderator: Alexander Peine. Rapporteur: Denice Moi Thuk Shung*
16:00	Coffee break
16:30	**Feedback by session rapporteurs – Plenary session** *Moderator: Primož Pristovšek*
17:00	**Introducing the distinctive features of life in the three life phases** *Grant Gibson, University of Stirling, UK*

17:45	End of sessions
18:15	Group departure to the restaurant Au Palais des Indes, Avenue Louise 263, 1050 Brussels
19:00	**Networking drink and dinner**

10 February 2017	
9:00	Short welcome and intro
9:05	**The user's perspective** *Anne-Sophie Parent, AGE Platform Europe*
9:30	**Discussing technology in different life phases – Parallel sessions** **The session groups discuss their topic focusing on the different life phases** • People in the later stages of working life • People who have left full time paid work but are still healthy and active • People in the final phase of life, where they are to some degree dependent on others for the activities of daily life **Questions to guide the discussion:** • What are, and what might be in the future, the aspirations, needs and opportunities facing older people which might be addressed by ICTs? • Which are already being addressed? • Which could be addressed? • Are there any which should not be addressed in this way? • Would it be worthwhile to address specific issues in a project? Parallel session 1: **Acceptance** *Moderator: Stephen McNair. Rapporteur: Denice Moi Thuk Shung* Parallel session 2: **Accessibility** *Moderator: Daniel Egloff. Rapporteur: Karina Marcus* Parallel session 3: **Impact** *Moderator: Kerstin Zimmermann. Rapporteur: Annette Angermann*
11:30	Coffee break
11:45	**Feedback by session rapporteurs – Plenary session** *Moderator: Primož Pristovšek*
12:15	**Closing remarks – Plenary session** **Wrap up** and joint closing statements from the three initiatives *Daniel Egloff, AAL* *Edvard Beem, MYBL* *Rossella Magli, COST*
12:30	Networking lunch

Format of the Parallel Sessions

For each of the parallel sessions, participants will be divided into three groups of around 20 people with a mix of expertise:

- Acceptance
- Accessibility
- Impact

Each session will be facilitated by a moderator and rapporteurs will be in charge of reporting later at the plenary sessions.

Day 1

Each participant will make a 1-minute statement related to the issues for exploration of the topic.

After this, the group will discuss the distinctive issues regarding Acceptance, Accessibility or Impact.

Rapporteurs will report later at the plenary session.

At the end of the day, a speaker will give a keynote introducing the different life phases. This will serve as input for the life phases to be taken into account the next day.

Day 2

Parallel session groups will consider the life phases and discuss the distinctive features in relation to Acceptance, Accessibility or Impact.

Rapporteurs will be asked to present brief summaries of the discussed issues, reached conclusions and any recommendations for action for any of the three initiatives.

Overall moderation of both days: Daniel Egloff, AAL and Annette Angermann, MYBL.

Annex 2 - The three initiatives

AAL

The AAL Programme (www.aal-europe.eu) is the funding activity that aims to create better conditions of life for the older adults and to strengthen the industrial opportunities in Europe through the use of information and communication technology (ICT). It carries out its mandate through the funding of cross-national projects (at least three countries involved) that involve small and medium enterprises (SME), research bodies and user's organisations (representing the older adults).

JPI MYBL

The Joint Programming Initiative "More Years, Better Lives – The Potential and Challenges of Demographic Change" (www.jp-demographic.eu) seeks to enhance coordination and collaboration between European and National Research Programmes related to demographic change. It follows a transnational multi-disciplinary approach bringing together different research programmes and researchers from various disciplines in order to make use of the potential of societal change in Europe and provide solutions for the upcoming challenges. JPI MYBL is supported by the European project J-AGE II, which also carries out calls to fund transnational projects.

COST

European Cooperation in Science and Technology – COST (www.cost.eu) is a pan-European intergovernmental framework. Its mission is to enable breakthrough scientific and technological developments leading to new concepts and products and thereby contribute to strengthening Europe's research and innovation capacities.

It allows researchers, engineers and scholars to jointly develop their own ideas and take new initiatives across all fields of science and technology, while promoting multi- and interdisciplinary approaches. COST aims at fostering a better integration of less research-intensive countries to the knowledge hubs of the European Research Area. The COST Association, an International not-for profit Association under Belgian Law, integrates all management, governing and administrative functions necessary for the operation of the framework. The COST Association has currently 36 Member Countries.

Annex 3 – Notes of the Parallel Workshop Session: Acceptance

The moderator introduced the discussion by emphasising that our common interest is to find ways of using technologies to enable older people to remain active, and living at home, on their own term. He stressed that acceptance is about the negotiation of how people get to solutions. This includes learning, the question of how technology can actually help people, and the integration of services.

Important underlying questions are: What kind of lives do people want to live? What are the themes that we already know the answers to? What do we think are the most un-researched themes? Answers to those questions matter to AAL, MYBL, and COST.

Statements given in the following very lively discussion can be grouped under four major headlines:

Moving from acceptance to enthusiasm

Some participants felt that acceptance is not the right term to be used since it sounds more like you would just like to sell something that is already there and you need make people accept it. Enthusiasm is more important than acceptance. How can we build solutions that people actually love, instead of just accepting them? Also, the perceived personal benefit should be the driver for acceptance.

End-users

We tend to simplify what we understand as end-users. In fact, they are a very diverse group and people even get more not alike when they grow older. Conformity decreases with age. We have to understand that more. It was also mentioned that there is no sharp cut between people who are working and those who are retired. Instead, when people retire this is a blurring phase. In the future, people should be more gradually retiring, and not just stop working.

Needs and wishes

Very specific target groups wish and want very different solutions. There was much support to the opinion that the specific target groups should be in the driving seat when designing solutions. ICT is seen as an enabler. However, a complicating factor can be that people do not know what they can ask for if they cannot imagine what is possible. Therefore, it can be helpful for the process of co-creation if end-users know what is possible and what is out there already.

The quality of the dialogue between end-users and companies is essential: very concrete cases are necessary to then build on them. The difficult thing is to really understand want people wish and need to have solved by technology. If projects do not adopt a technological approach but a non-technological approach the outcome has to be open. This means that the result of a dialogue could also be that a certain wish or need cannot be best answered by a technical solution.

Solutions

People expect ICT to provide meaningful solutions and enhance social inclusion of older adults and help them doing things, they also want to contribute and learn. So in fact, we are talking about very different domains.

Besides the primary end-users, other target groups to be addressed are the care professionals and the intermediaries since they have to accept the solutions, too. The quality of accepting dignity and timeliness are essential. When a solution is provided people expect it to deliver benefit immediately.

It is also important that people can trust the solution. Trust was mentioned to be related to seeing a benefit in the solution. The more invisible things are, the more difficult it is to trust them. Important issues

Participants identified the following issues:

- How to shift socio-psychological barriers to uptake of useful technologies (i.e. attitudes – as predictor of use)
- Acceptance, benefit, trust
- Support structure to know what is out there and to start using
- To address users' self-determination in the technology/products full awareness so that they can really know the useful potentialities for themselves
- Understanding the true diversity of end-users
- What do we need/not know? How to integrate multiple indices of health (…) when subjective mental health indicators support holistic wellbeing across changing stages of later life
- Acceptance of solutions based on technologies already available in the lives of people vs. Acceptance of solutions based on completely new technologies
- Heterogeneous group: target people not on their age, but on health, dependency level, mobility, education, digital skills, etc.
- How to increase acceptance (best practices)?
- Perspective of acceptance?
- Factors and features affecting acceptance?
- What types/categories of products/services are already having high acceptance?
- How to match user needs with technology opportunities if people can't imagine what's technologically possible? Are researchers allowed to come up with potential answers that are worthwhile to develop and test? Or should it be purely user-driven?
- Dichotomies: needs of the person, needs of the care-providing organisation, needs of the relative. Ethical dilemmas! Who's needs?
- ICT-based solutions might be acceptable to recipients, but not to professionals who might try to block their introduction.
- Possibilities for the adaption of technical systems to the context (user, task, …), for example functionality (more is not better) → approach e.g. construction kit
- Technology which people really want and not technology which are searching problems
- There is a need of educational support for training interdisciplinary teams to raise the interest for ICT solutions for elderly users
- Reframing the notion of "acceptance" with something more positive
- Find trade-off between support an substitution
- Technological solutions ambassadors – what is their role? Family, local community, professional carers, age group
- Anytime Anywhere – on IOTs. Smart human like agents/soft computing no learning curve! Semantics (human like), natural interfaces (human to human)
- Design intelligent solutions according to the medical, social, educational profile of the end-user.

Moderator: **Stephen McNair,** Chair, Scientific Advisory Board, JPI "More Years, Better Lives", stephen.mcnair2@btinternet.com

Rapporteur: **Gerda Geyer**. Austrian Research Promotion Agency (FFG) AAL Content Working Group, Gerda.Geyer@ffg.at

Annex 4 – Notes of the Parallel Workshop Session: Accessibility

Accessibility Day 1

What is ACCESSIBILITY for the WHO?
http://www.who.int/gender-equity-rights/understanding/accessibility-definition/en/

Physical accessibility

"is understood as the availability of good health services within reasonable reach of those who need them and of opening hours, appointment systems and other aspects of service organization and delivery that allow people to obtain the services when they need them". Universal health coverage and universal access, Bulletin of the World Health Organization 2013; 91:546–546A. As defined in the human rights context, "health facilities, goods and services must be within safe physical reach for all sections of the population, especially vulnerable or marginalized groups, such as ethnic minorities and indigenous populations, women, children, adolescents, older persons, persons with disabilities and persons with HIV/AIDS, including in rural areas". (WHO, 25 Questions and Answers on Human Rights).

Economic accessibility, or affordability

"is a measure of people's ability to pay for services without financial hardship. It takes into account not only the price of the health services but also indirect and opportunity costs (e.g. the costs of transportation to and from facilities and of taking time away from work)." Affordability is influenced by the wider health financing system and by household income. (Universal Health Coverage and Universal Access, Bulletin of the World Health Organization 2013; 91:546-546A).

Information accessibility

"includes the right to seek, receive and impart information and ideas concerning health issues". This access to information, however, "should not impair the right to have personal health data treated with confidentiality". (WHO, 25 Questions and Answers on Health and Human Rights).

Accessibility to care workers

- Availability – the sufficient supply and appropriate stock of health workers, with the competencies and skill-mix to match the health needs of the population;
- *Accessibility* – the equitable distribution of these health workers taking into account the demographic composition, rural-urban mix and under-served areas or populations;
- Acceptance – health workforce characteristics and ability (e.g. sex, language, culture, age, etc.)to treat all patients with dignity, create trust and promote demand for services;
- Quality – health workforce competencies, skills, knowledge and behaviour, as assessed according to professional norms and as perceived by users.

(http://www.who.int/workforcealliance/media/qa/04/en/)

Accessibility issues examples

- PHYSICAL HANDICAP ACCESSIBILITY ISSUES: Automobile and driving: drive assistance, parking; Trains, aircrafts: adaptation; Shopping: labelling; General public information.
- VISUAL DEFICIENCY ACCESSIBILITY ISSUES: Urban mobility, guide dog; Mobility within the home.

- (CHILDREN IN HANDICAP SITUATION ACCESSIBILITY ISSUES): School
- INFORMATION ACCESSIBILITY ISSUES: Reduced mobility; Blind: reading machine, library, éticode; Low vision: tele-amplifiers; Hearing impaired: videoconferencing via platform, sign language.
- ACCESSIBILITY TO A COMPUTER: Screen reading software: NVDA (Non Video Access Desktop); Orca, GNU/Linuxintégrant; KMouth, vocalisation of a written text; Dyslexia: Helvetica, Courrier, Arial, Verdana polices; Epilepsia photosensibility
- COGNITIVE IMPAIRMENT, DEMENTIA ACCESSIBILITY ISSUES: Cognitive assistance; Robotics; Mobility assistance; Geolocation.

Accessibility: issues to explore by the group 2

- How can we ensure that technologies are accessible to all those who might benefit?
- How can developers and policymaker's best secure sustainability as technologies change, and as people change across life course?
- What is the role of:
    - Cost/affordability, and who pays?
    - Distribution channels?
    - The regulatory framework governing its use?
    - The degree of interoperability with other systems?
    - Ethics and liabilities?

PARTICIPANTS EXPERIENCE AND OPINIONS

Pernilla Hilleras, Nurse (SE)

Accessibility at nursing homes.

Shift from nursing homes to staying at home, many people living alone.

Not much support at home, from family members or family doctor.

Elderly care centres, with a doctor with more time (1hour per person) and better linkage nurse and doctor.

Late help for dementia people and but problems with acknowledgement of the illness.

Computers all over Stockholm.

Instead of home care, why not robots? It could be more reliable.

Some informal carers are older people who are themselves affected by challenging conditions such as cognitive impairments etc.

Daniel Lopez Gomez (ES), Social Sciences

All people should be involved in the accessibility issues.

Problems: isolation of older persons living alone at home, with no relatives around.

Bottom up solutions (older persons looking at their problems).

Right to get access to care -> puts the uses in the centre.

Access to what and what should be mandatory?

Economic barriers for mobility issues.

Cristina Raluca Stanica (RO), Innovation Project Manager, IC&T large enterprises

Importance of pilots in the projects, to focus on the real needs, not on technologies.

Importance to use of technologies which are mature and are accepted by older persons.

Support for the usage of an application/product should be provided for a long enough period of time (after an older person has been introduced to it).

Paula Gomes da Silva, (IE) Computer Scientist

Focus on designing tech for older people.

Ethics in relation to rights.

Equity and equality.

Artur Serrano (NO), university

Emotions and motivations -> requirements, instead of looking only at needs.

Volunteer work.

Caregivers and caretakers – same people.

Concept of home -> feeling of home instead of a fixed place that cannot change.

Dementia – not real solution at the moment, no "fix" solution.

Taking care of demented people, not rewarding or attractive for the caregivers.

Bart Van Ruimste (BE), engineer

Working with care organisations.

Topics of work: Fall detection, Reliance, Food uptake.

Accessibility through smartphones (already a lot of pre-installed sensors) + free apps (coaches).

Grant Gibson (Scotland), research on dementia

Technology and dementia care.

What do people really want from technology? Specifically for demented people?

How do social care mainstream assistive technology? Uptake is still relatively low.

What service models would work more effectively for the uptake of the services?

Nuno Garcia (PT) researcher

Focus on what matters – our own problems now and in the future.

Building doors – find the right doors and the right walls.

Several issues linked to accessibility, based on the diversity of people (many individual issues), even the service/business model.

General Discussion

The group raised the following issues**:**

- Late help for dementia people and problems with acknowledgement of the illness (information).
- Access to what and what should be mandatory? (legal aspect X economic aspect)
- Technology should not be the focus, but the real needs of end-users -> importance of pilots.
- How to improve and make the most of the economic opportunities?
- Insurances and public money to fund the accessibility.
- Looking at equity (relative dimension), not equality.
- Current approach looking at the negative aspects (disabilities) and not at the possibilities.
- Respect of ethics X rights.
- Emotions and motivations -> requirements, instead of looking only at needs.
- Dementia -> recognition, awareness and helping the caregivers.

- Accessibility through smartphones (already a lot of pre-installed sensors) + free apps (coaches).
- Data is the asset for policy makers, researchers, insurance companies (access to aggregate data) X ethical issues.
- Data also as an asset for the individual (old person) and caregivers.
- Tool for empowerment of the individual.
- What do people really want from technology? Specifically for demented people?
- How do social care mainstream assistive technology? Uptake is still relatively low.
- What service models would work more effectively for the uptake of the services?
- Who is providing this technology in general? Public X private providers.
- Ethical questions.
- Several issues linked to accessibility, based on the diversity of people (many individual issues), even the service/business model.
- Hard to discuss accessibility without discussing acceptance and the expected impact.
- Difficult also for the younger generation to realise that they may need assistance (and save money for it) later.

Top three accessibility issues

After these presentations, the group defines a **top 3 Accessibility Issues** and Blind Spots:

1 DEMENTIA

- Improve the conditions of caregivers of people with dementia ;
- Improve the participation of people with dementia in the society, with the help of technology;
- Approach based on rights and not on needs;

2 DATA

- Accessibility of data (big or small): who should/could benefit? And how to use it ethically?
- Data also as an asset for the individual (old person) and caregivers.
- Tool for empowerment of the individual.

3 EDUCATION

- Empowering people via education for solution/service awareness.
- How to bring the solutions close to the potential users or to help exchanging the information about the solutions already being used?
- Need to empower the person, the caregiver and the society, mainly in the context of isolation and loneliness.

Accessibility Day 2

Main topics of the group's debate were:

Design

- Accessibility is very close to universal design: design in such a way that as many possible people can use it.
- Technology is not used enough to provide customization, adaptation for the users.

Deployment/Market

- Market for older adults is not a market, the market is not exactly there -> it would be even more difficult to address the market by categories of age.
- Problem of stigmatisation (e.g. telco package for 65+) and/or ageism -> linked also to the culture.
- Benefits for one or other generation can provoke conflicts.
- It would be better by needs and desires than by age.

Age as the current criterion

- Age by age as a statistical approach, does not consider specific age -> this would be ageism (even if in the medical domain it is still happening).
- Phase of life linked to availability of resources (working or not…) and the different type of support that would be needed (degree of disability) and how technology could be used to help.

Profiles X Age

- Indicator of age is not so useful nowadays – it is sure the easiest way to categorise a population; but a multi-dimensional profile would be more appropriate (including age);
- In the case of prevention, a "grouped" multi-dimensional profile could/should be used for helping advising people;
- Not necessarily easy to cope with by the current processes and policy;
- Fixed retirement age is not fair nowadays: some could work later, some should stop earlier;
- Some multi-factors (multi-dimensional) profiles, for which new indicators are needed; E.g. frailty and dependency: Physical; Mental; Social.
- Profiles could be based on an of population's multi-dimensional big data analysis.
- Tendency to use a "deficit model" instead of a positive functioning model.

Continued social inclusion

- Continued (re-)Inclusion of every person and prevention of exclusion are the main objective, independent of the age of the person.
- Based on rights.
- Interface between seniors to the public sector needed.
- Services based on technology can help, but can also hinder.
- Technology should not replace people, but empower them.

Empowerment

- How to use an ability scale - based on goals and desires?
- Coaches
- Education
- Well-being, health (and beyond…) conversation (subjective) to be included in the multi-dimension profile.

Conclusion

Many questions emerge about accessibility. They encourage the organizing programs of this symposium to introduce them in the calls for projects. Among these many questions, the group wished to highlight three areas where accessibility is problematic, dementia, data, education, and the needs of carers.

Moderators: **Alain Franco**, Université & CHU de Nice (FR), AAL Advisory Board, alain.franco@orange.fr (09.02.2017).

Daniel Egloff, Federal Department of Economic Affairs, Education and Research EAER / State Secretariat for Education, Research and Innovation – SERI (CH), AAL EB Vice-President, MYBL GA Member, daniel.egloff@sbfi.admin.ch

Rapporteur: **Karina Marcus**, AAL Association, AAL Programme CMU Director, karina.marcus@aal-europe.eu

Annex 5 – Notes of the Parallel Workshop Session: Impact

Impact Day 1

After a short tour de table which confirmed that the participants to the Impact session came from very diverse disciplines the moderator explained that the session would focus around two questions:

1. What makes technologies pervasive and sustainable?
2. What is the impact of changing technologies?

The participants identified the following issues:

- The impact technology can have on the health care system, across different areas. The relation to exclusion and the connection with the environment,
- Supporting the integrity of older people (fits into their lives), safer health care by applying the human factor, co creation through multi stakeholder platforms to deal with the impact of technology on changing societies
- The impact of connected health and how do you structure it.
- Agree on design rules that include impact.
- How do you make the impact you wish? Also attention for the different kinds of impact.
- Input needed for a game developed to promote better social contact, health & wellbeing.
- How social impact (social determinants of health) links to economic impact
- Impact of product on use stops at payment.
- The impact of technology on the provision of caregiving and care taking/ care providers
- How do older people negotiate between print and technology?
- The impact of technology on social engagement; How ICT influences the person but also its social environment,
- The impact of technology on working longer: how older workers experience technology,,
- Health system innovation (challenge: scale up and spread???)

Conclusion:

Impact can be on the level of health, cost, opportunity. The level/ success of impact depends on user involvement (co-creation) and whether the technology reflects the needs and wants of the users.(life world vs technology/ construction process of ICT)

1. What makes technologies pervasive and sustainable?

- Co-creation (dialogue from the beginning involving entrepreneurs, administration, researchers and end-users), human centred, personalized solutions/ person centred design/care
- Information (e.g. about use; increase digital literacy, access)/informing technology, access to training in technology (age barriers?) Information points where people can find out about the range of technologies available→ libraries/ knowledge impact
- Let's start with the things that are in use (no need to develop new technology)
- Diverse technology generations
- Market (creation, barriers, sustainability vs acute care)
- Existing digital infrastructure
- Adaptive: Make DIY use-innovation possible

- Diffusion of innovation
- Nudging
- It has to be simple
- Users are in control of technology & technology in the control of users
- Technologies have to be trustworthy

2. What is the impact of changing technologies?

- Impact is also related to the act of choosing. Empowerment, resilience, autonomy (informed choices and agency)
- It has to do with the personal value system(the divide between objective and subjective)
- There has to be a triple aim: Cost – Function - experience (do people like what they use?)
- May increase inequality
- Also take into account the short vs long term impact and the intended and unintended impact
- Use of technology
- Penetration of particular technology in society/population

Impact Day 2

The key question was: What makes technology pervasive and sustainable and what is the impact of changing technologies on? The following framework was used to respond to these questions:

	Working Individual	Retired Economy	Dependency Health & social system
Aspiration, needs & opportunities			
Being addressed (references, existing projects)			
Could be addressed (not yet)			
Specific in projects (project ideas)			

Working individual

Needs & opportunities:

- Define age 50+, over 65
- Different Occupations
- Age-discrimination
- Design principles

- Nutrition, exercise, mentoring

5 MYBL projects: Extended Working Life (Call 2015)

WORKLONG, FACTAGE, LONGLIVES, EXTEND, THRIVE

Being / have to be addressed:

- Training & skills
- Mental health & stress
- Risk detection
- Gender differences / issues
- Flexible working arrangement
- Involve employers and trade unions

Specific / to be taken into account:

- Gender
- Cross national
- Migrants

Retired economy

Needs & opportunities:

- Managing the transition
- Agency
- Consumerism
- Growth
- Meaning
- Inequality
- Sandwich generation, family solidarity

Being addressed:

- Social inclusion / isolation
- Communication services
- Social network / relations
- Participation, Volunteer
- Lifestyle occupation
- Manage health condition
- Access to new technologies
- Financial issues, also more spending
- Time to explore new technology

Specific / to be taken into account:

- Places
- Community

Dependency

Issues:

- Know, don't know
- Who is in control: payers, individual
- Cooperation of actors
- Innovations – solutions looking for problems

Methods / approach:

- Current state, context – data
- Top down policy
- Bottom up
- Democratization
- Scale up spread - go to market
- Learning system

Impact:

- Cost saving / efficiency
- Health improvement – well being
- Methods of care (informal)
- Reduce stress

Moderators: **Alexander Peine**, Utrecht University (NL), JPI MYBL / Societal Advisory Board, A.Peine@uu.nl (09.02.2017) and

Kerstin Zimmermann, BMVIT (AT), AAL Executive Board kerstin.zimmermann@bmvit.gv.at

Rapporteurs: **Denice Moi Thuk Shung**, ZonMw - The Netherlands Organisation for Health Research and Development (NL), JPI MYBL Secretariat /Coordinator of J-AGE II, jpimybl@zonmw.nl (09.02.2017)

Annette Angermann, VDI/VDE Innovation+Technik GmbH (DE) Berlin, J-AGE II – Work Package Alignment, annette.angermann@vdivde-it.de

Ageing and Technology – a European Workshop

Joint Workshop of AAL / COST / MYBL
9-10 February 2017
COST Association, Avenue Louise 149, 15th floor, 1050 Brussels, Belgium

Workshop Organisers

AAL: Daniel Egloff, daniel.egloff@sbfi.admin.ch
COST: Rossella Magli, Rossella.Magli@cost.eu
JPI MYBL: Denice Moi Thuk Shung, jpimybl@zonmw.nl &
Annette Angermann, annette.angermann@vdivde-it.de

We would like to thank the content groups of the three initiatives for preparing and supporting the Joint Workshop as well as providing this report – special thanks go to Stephen McNair and Alexander Peine (for MYBL), Gerda Geyer and Alain Franco and Karina Marcus (for AAL) as well as Rossella Magli and María Victoria Serrano Blázquez (for COST).

Also a big thank you to Grant Gibson from the University of Stirling, UK for introducing the distinctive features of life in the three life phases and to Anne-Sophie Parent from AGE Platform Europe for highlighting the user's perspective.

Participants List

Firstname	Last name	Affiliation and country	Email
Annette	Angermann	VDI/VDE Innovation + Technik GmbH (DE)	Annette.Angermann@vdivde-it.de
Liat	Ayalon	Bar Ilan University (IL)	liatayalon0@gmail.com
Edvard	Beem	The Netherlands Organisation for Health Research and Development (NL)	beem@zonmw.nl
Luigi	Biocca	Consiglio Nazionale delle Ricerche CNR (IT)	luigi.biocca@itabc.cnr.it
Andreas	Bischof	Chemnitz University of Technology (DE)	andreas.bischof@phil.tu-chemnitz.de
Filippo	Cavallo	Scuola Superiore Sant'Anna (IT)	filippo.cavallo@santannapisa.it
Ioanna	Chouvarda	Lab of Medical Informatics Medical School Aristotle University (GR)	ioanna@med.auth.gr
Lenka	Christiaens	Johanniter International (BE)	lenka.christiaens@johanniter.org
Paolo	Ciampolini	University of Parma (IT)	paolo.ciampolini@gmail.com
Leela	Damodaran	Loughborough University (UK)	l.damodaran@lboro.ac.uk
Rafael	de Andrés Medina	Instituto de Salud Carlos III (ES)	rdandres@isciii.es
Ronald	de Bruin	COST Association	Ronald.deBruin@cost.eu
Blanca	Deusdad Ayala	Rovira i Virgili University, Law Faculty (ES)	blanca.deusdad@urv.cat

Firstname	Last name	Affiliation and country	Email
Dina	Di Giacomo	Università dell'Aquila (IT)	dina.digiacomo@cc.univaq.it
Daniel	Egloff	Federal Department of Economic Affairs, Education and Research EAER (CH) - State Secretariat for Education, Research and Innovation SERI (CH)	daniel.egloff@sbfi.admin.ch
Frederic	Ehrler	University hospitals of Geneva (CH)	Frederic.Ehrler@hcuge.ch
Agneta Malmgren	Fänge	Lund university (SE)	Agneta.malmgren_fange@med.lu.se
Monica	Florea	SIVECO Romania (RO)	Monica.Florea@siveco.ro
Alain	Franco	Université & CHU de Nice (FR)	alain.franco@orange.fr
Nuno M.	Garcia	Instituto de Telecomunicacoes, Universidade da Beira (PT)	ngarcia@di.ubi.pt
Gerda	Geyer	Austrian Research Promotion Agency - FFG (AT)	Gerda.Geyer@ffg.at
Paula Alexandra	Gomes Da Silva	Maynooth University (IE)	paula.alexandra@nuim.ie
Gil	Gonçalves	TSBank Portugal (PT)	gil.goncalves@itime.pt
Mary	Hamilton	Lancaster University (UK)	m.hamilton@lancaster.ac.uk
Pernilla	Hilleras	Sophiahemmet University (SE)	pernilla.hilleras@shh.se
Kendall	Ho	University of British Columbia, Faculty of Medicine (CA)	Kendall.Ho@ubc.ca
Caroline	Holland	The Open University (UK)	caroline.holland@open.ac.uk
Michał	Kosiedowski	Poznań Supercomputing and Networking Center (PL)	kat@man.poznan.pl
Horst	Krämer	European Commission, DG CONNECT	horst.kraemer@ec.europa.eu
Willy	Lahaye	Université de Mons, Departement d'études et d'actions sociales (BE)	Willy.Lahaye@umons.ac.be
Giovanni	Lamura	Faculty of Sciences, University of Genova (IT)	g.lamura@inrca.it
Yiannis	Laouris	Cyprus Neuroscience & Technology Institute (CY)	laouris@cnti.org.cy
Peter	Leitner	SYNYO GmbH (AT)	peter.leitner@synyo.com
Daniela	Loi	University of Cagliari (IT)	daniela.loi@diee.unica.it
Daniel	López Gómez	Universitat Oberta de Catalunya (ES)	dlopezgo@uoc.edu
Minna-Liisa	Luoma	National Institute for Health and Welfare (FI)	minna-liisa.luoma@thl.fi
Rossella	Magli	COST Association	rossella.magli@cost.eu
Karina	Marcus	AAL Association	karina.marcus@aal-europe.eu
Rytis	Maskeliunas	Kaunas University of Technology (LT)	rytis.maskeliunas@gmail.com
Stephen	McNair	National Institute for Career Education and Counselling - NICEC (UK)	stephen.mcnair2@btinternet.com
Luule	Mizera	COST Association	luule.mizera@cost.eu
Denice	Moi Thuk Shung	ZonMw - The Netherlands Organisation for Health Research and Development (NL)	jpimybl@zonmw.nl
Aine	Ni Leime	Irish Centre for Social Gerontology, National University of Ireland, Galway (IE)	aine.nileime@nuigalway.ie
Anne Sophie	Parent	AGE Platform Europe	annesophie.parent@age-platform.eu
Alexander	Peine	Utrecht University (NL)	A.Peine@uu.nl
Jim	Playfoot	White Loop Limited (UK)	jim@whiteloop.com
Gerdienke	Prange-Lasonder	Roessingh Research and Development (NL)	G.Prange@rrd.nl
Primoz	Pristovsek	COST Association	Primoz.Pristovsek@cost.eu
Sophie	Psihoda	ÖPIA – Austrian Interdisciplinary Platform on Ageing (AT)	haeusler@oepia.at
Stanica Cristina	Raluca	Teamnet International (RO)	Cristina.Stanica@teamnet.ro

Firstname	Last name	Affiliation and country	Email
Arend	Roos	Solidarity University (NL)	arend@solidarityuniversity.org
Peter	Saraga	Philips (UK)	peter.saraga@btconnect.com
Artur	Serrano	Norwegian University of Science and Technology (NO)	artur.serrano@ntnu.no
Luiza	Spiru	TSBank Romania (RO)	lsaslan@brainaging.ro
Mervyn	Suffield	KG&S (UK)	mervyn@karisgroup.com
Fleur	Thomese	Afdeling Sociologie FSW, Vrije Universiteit (NL)	fleur.thomese@vu.nl
Giulio	Toccafondi	GRC - Patient safety research lab - Tuscany Region (IT)	toccafondig@aou-careggi.toscana.it
Nina	van der Vaart	National Foundation for the Elderly (NL)	n.vandervaart@ouderenfonds.nl
Bart	Van Rumste	KU Leuven (BE)	bart.vanrumste@kuleuven.be
Martijn	Vastenburg	ConnectedCare b.v. (NL)	m.h.vastenburg@connectedcare.nl
Kieran	Walsh	Irish Centre for Social Gerontology, National University of Ireland, Galway (IE)	kieran.walsh@nuigalway.ie
Robert	Weidner	Helmut Schmidt University / University of the Federal Armed Hamburg (DE)	Robert.Weidner@hsu-hh.de
Stefan	Weiers	European Commission, DG RTD	Stefan.Weiers@ec.europa.eu
Alishia	Williams	Utrecht University (NL)	a.d.williams@uu.nl
Kerstin	Zimmermann	BMVIT (AT)	Kerstin.Zimmermann@bmvit.gv.at