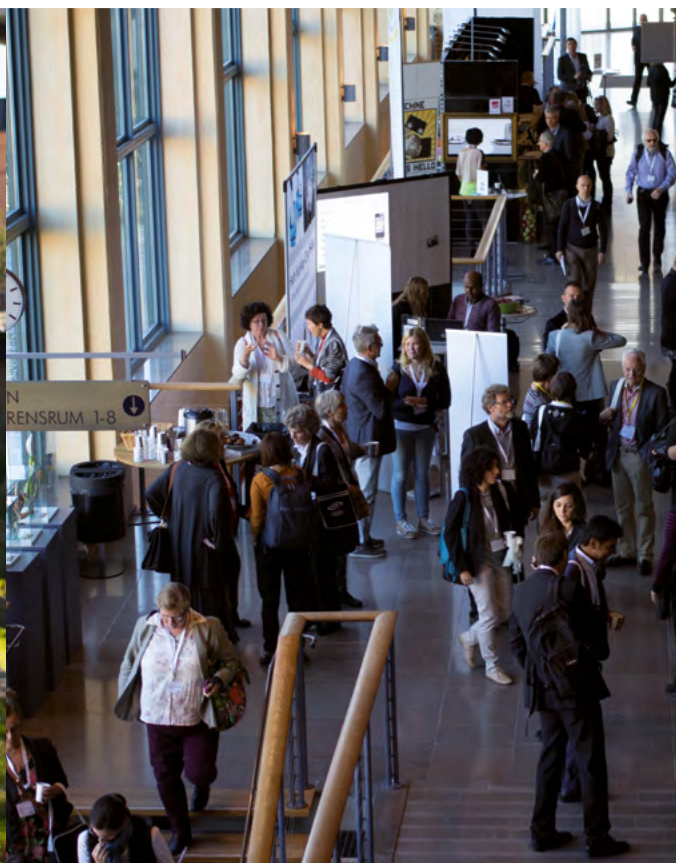
AAL
AMBIENT ASSISTED LIVING

IMPACTING INDIVIDUALS, SOCIETY AND ECONOMIC GROWTH

PROCEEDINGS OF THE
5TH AAL FORUM
NORRKÖPING, SWEDEN
24 – 26 SEPTEMBER 2013



Impacting Individuals, Society and Economic Growth

Proceedings of the 5th AAL Forum
Norrköping, Sweden
24 – 26 September 2013

Erika Pohjanen (editor)

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On the cover: *Photo from AAL Forum 2013*

Cover design: Martina Andersson
Print: Norrköpings Tryckerier

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New Tools for Health

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ISBN: 978-91-637-6407-3

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FOREWORD

As the chairman of the AAL Forum 2013 Programme Committee I am proud to present the proceedings with high quality papers and – where applicable – session summaries.

The primary keyword chosen for AAL Forum 2013 was **"Impact"** – How to make real impact with new solutions and learn from those who had experience from applications in real environments. It is now a widespread perception in the AAL Community that the main obstacles are related to market adoption and scaling up. Impact may mean *increased autonomy* for older adults, which was the theme of the forum Track A, or *benefits for the society*, the theme of Track B. On the other side it may also mean a *boost for the economy*, as covered by Track C.

However, nothing coordinated will be achieved without policies – policies for research and innovation as well as for business stimulation and societal adoption of good solutions, all covered in Track D.

Hereby, I would like to thank all the participants in Norrköping in September 2013 and a special thanks to all paper and presentation contributors.

Welcome back to Norrköping and East Sweden anytime – for business or pleasure!

Anders Carlsson

Chairman of the AAL Forum 2013 Programme Committee
Project manager, New Tools for Health, Sweden

WELCOME NOTES

MIKE BIDDLE

President of the AAL Association

Europe is changing – amidst the financial instability and quest for economic growth – the demographic shift to an older population has already begun. The facts about the ageing of Europe's population are well known and show an imminent and significant change in society and the economy for which the EU is not yet fully prepared. All is not lost though because research, development and innovation can turn these changes into an opportunity and generate economic growth.

Our vision is one where business innovation and the application of technology will enable people to live their lives to the fullest, where and how they want to. We see people first and not just the medical conditions or chronological age or disability or need. We see a society in which the application of technology and the brilliance of innovative new services and systems will create a level playing field for all of us.

The ideal future scenario is one where we all have more independence. Information and Communication Technology (ICT) and other technology developments can help to support this but they are only part of a solution that needs to work in line with the way we live our everyday lives. Technology is already pervasive and we need to recognise that technology in itself is not a solution. Instead, we need to consider new ways to innovate to make ageing more delightful. We want Active and Healthy Ageing to be widespread across Europe by 2020. This will take time and it will require co-ordinated effort which is why I'm so pleased that the political process is now underway to define and develop a follow-up to our Joint Programme. This Forum is an ideal opportunity for us to think about how we can continue to work together and reach out to new people, so that independent living can truly be the first choice for everyone.

On behalf of the AAL Joint Programme and the Forum organisers - we look forward to hearing the discussions and debate and your thoughts about how we make life better for us as individuals, as a society and to generate economic growth.

EVA NILSSON BÅGENHOLM

National Coordinator for Elderly Care
Ministry of Health and Social Affairs, Sweden

PHOTO: PAWEL FLATO

As the national coordinator for elderly care in Sweden, I'm looking forward to participate in the AAL forum in Norrköping this year. The demographic development over the last century is amazing in many ways. The proportion of people above 65 years of age has more than doubled.

Ageing is a natural part of life and it is important for everyone to experience a sense of context and meaning through life. Every human being should be allowed to continue to live their lives according to their own desires - have the opportunity to maintain their habits and to engage in things they enjoy and to feel comfort. This must apply even when the need for support and assistance enters. The view of the ageing process needs to change.

Society needs innovations and welfare technology as tools to reform health and social care, to increase security and independence and postpone extensive care needs. Welfare technology can support better use of resources. Technology can support the staff to focus on things that really require human contact.

To make it possible for residents to be healthy, active and independent as they age risks must be identified and dealt with. Caregivers must provide individuals with electronic access to their health information and thus facilitate to engage in their own health and health development. Working in elderly care must be an attractive option for young people, the use of welfare technology and opportunities for innovations can be part of the solution.

I hope the AAL forum will contribute to new ideas and new cooperations that our senior citizens can benefit from.

ANN-MARI FINEMAN

Head of the IT Applications and Services Department, VINNOVA, Sweden's Innovation Agency
Executive Board Member, AAL Association

The good news is we live longer. In 150 years, the average life expectancy in Sweden has risen from just under 50 years to around 80, and older adults represent an increasingly larger share of the population. In 2020, it is estimated that 21% of the Swedish population will be 65 years of age or older.

While an ageing population presents challenges for both individuals, society and economies, it also offers opportunities. Rising incomes mean that the elderly today have the means to be able to pursue an active lifestyle. As a group, the elderly is a rapidly growing segment of discerning consumers, and capturing the needs, wants, ambitions, drive and competence and of older people can help in the discovery and development of innovative solutions. This in turn generates new business, creates value and stimulates sustainable growth.

In this space, ICT is an enabler that can improve wellbeing and increase quality of life, contributing to more enjoyment and more independence. ICT can also relieve some of the strain on the welfare system and create opportunities for innovation in the public sector. It enables care providers to improve the quality of the care they provide, while at the same time making efficient use of scarce resources.

Sweden has a long tradition as a strong ICT nation, both as a supplier of ICT solutions and as enthusiastic ICT users. However, to reap the full benefits of the opportunities in the "Silver Market", a multidisciplinary approach is necessary, as is an international outlook.

As Sweden's Innovation agency, VINNOVA is thus very pleased to participate in and to support the AAL program, and we are delighted that Sweden has been chosen to host the AAL Forum 2013.

I hope you find inspiration at the forum and that the experience captures your imagination stimulates your creativity and motivates you to further support and develop the "Silver Economy" in its various forms, for the benefit of both people and society. Enjoy!

ELISABETH NILSSON

County Governor of Östergötland, Sweden

PHOTO: GÖRAN BILLESSON

The county of Östergötland is located in the south-eastern part of Sweden and is with 431 000 inhabitants the fourth largest county in the country. Östergötland has a strategic location in Sweden, with an excellent infrastructure. Most people live in the cities of Linköping and Norrköping, two of the six largest Swedish cities, situated 40 kilometres apart.

Östergötland is a region characterized by strong growth. The county is home to world-class research and product development in areas such as aviation engineering, telecommunications and soft-ware productions. Investments in research and education at one of Sweden's biggest universities provide a good foundation for developing environmental technology and advanced logistic solutions.

Östergötland's cultural heritage includes some of Sweden's most outstanding architecture from medieval time and later. There are historic monuments such as parish churches, castles and manor houses.

Östergötland has a wide variety of outstanding nature values. More than a thousand lakes are an important part of the landscape. In the west part of Östergötland is Vättern, the fifth largest lake in Europe, and the well-known tourist attraction Lake Tåkern, northern Europe's largest bird lake. In the east part one finds the Östergötland archipelago, one of the widest and most fine-cut archipelagos in the Baltic.

You are very welcome to AAL Forum, the city of Norrköping and the beautiful county of Östergötland!

MONA OLSSON

Municipal Commissioner
Chair of the Community Care Committee
Norrköping, Sweden

It is a great honour for me to welcome you to Norrköping and the East Sweden region. During AAL Forum, we learn more about the elderly research conducted here, and the various projects the region is working on, in close collaboration with stakeholders from across the community.

The theme of AAL Forum 2013 is "Impacting individuals, society and economic growth", which in a few words mirrors the fact that each link in a chain is equally important and the need for us to understand how the different links affect each other. We live longer thanks to improved medical care and research about our ageing, but also because more and more people are choosing a healthier way of life. The private life is in focus and therefore we need tools that enable us to live as independent individuals in a community with others.

Loneliness is currently a major problem among older adults. Research shows, strangely enough, that you experience more loneliness in an ordinary retirement home than if you live alone at your own home. We need to find technical solutions that enable everyday life at home, including contact with health services and authorities. Above all, you should be able to feel safe at your own home.

In the region of Östergötland, we work together through the organisation New Tools for Health. The aim is to create new products and services that lead to increased independence for the older community and more efficient and effective care based at home. My own municipality Norrköping, has received government support to carry out tests of new solutions and research in an entire neighbourhood (Testbed Norrköping), where we will interact with organisations, the private sector and representatives of various health care providers.

Much is going on in the field. But a good thing can still get better. Therefore, it is important that we gather for this annual forum; to learn from each other, get inspired and develop new methods together.

ANDERS CARLSSON

Project Manager New Tools for Health, Sweden
Chairman of the AAL Forum 2013 AAL Forum Programme Committee

PHOTO: NEW TOOLS FOR HEALTH

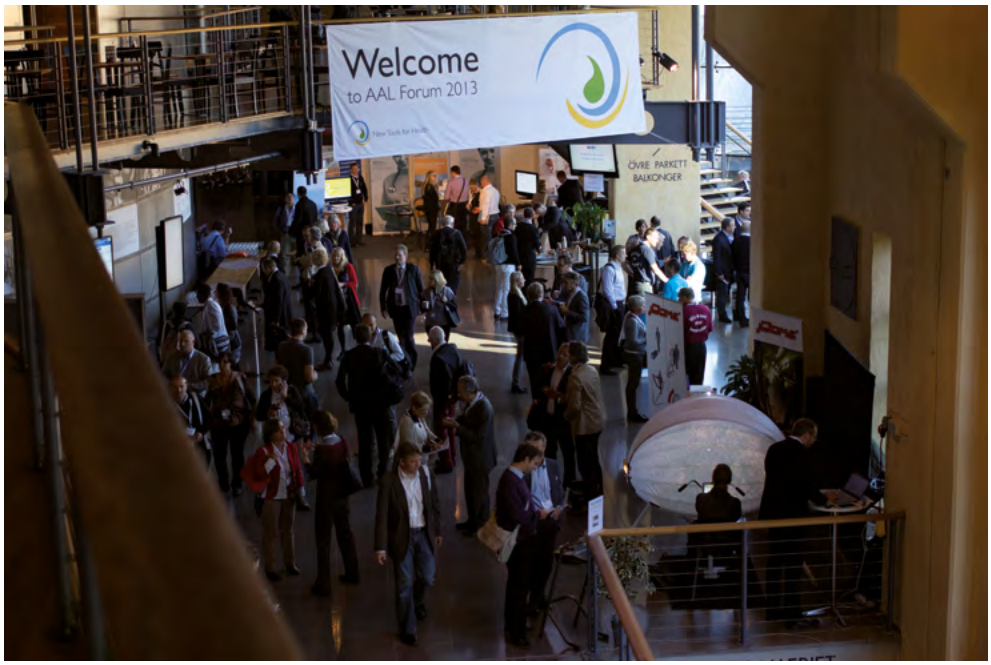
As the chairman of the AAL Forum 2013 Programme Committee I am proud to present a programme with very high quality contents and speakers – and on very relevant issues for this fifth forum in the AAL Joint Programme history. The primary keyword chosen for AAL Forum 2013 is "Impact". We feel that we have good reasons for that choice. The time is now due to really expose and interact on what really has been achieved so far within the AAL domain, not only in terms of new products and services, but also the real effects as increased independence and well-being for individual older adults (Track A: Autonomy Choice and Control), benefits for the society (Track B: The Ageing Society) as well as how the related business may be boosted in order to create economic growth (Track C: AAL and the economy).

On top of that we have to deal with the policy issues (Track D: Programmes and policies in Europe). How may AAL innovation be stimulated all over Europe in a co-ordinated and optimal way? What measures have most impact and how do we evaluate? What are the future challenges?

All issues are equally important and they need to be dealt with as integral parts of a holistic approach to AAL. But, one very important cornerstone is how the market will develop and what obstacles to eliminate or avoid. Without a real market there will be no assistive solutions available – and most of the enterprises active in the area are still small. That is why the theme of the main plenary session in the morning of the 25th is "AAL market supporting growth for Europe".

Welcome to Norrköping and East Sweden. Enjoy your stay!

FORUM IMPRESSIONS


Welcome
to AAL Forum 2013
ÖVRE PARKETT
BALKONGER


AAL
AAL FORUM 2013


LOUIS DE GEER


västerås
We want your innovation!


FLYGELN
KONFERENSRUM 1-8


We help innovators
to implement their products
together with care givers
and future clients.
early stage

TRACKS

TRACK A

TRACK A

Autonomy, choice and control

This track was intended to reflect the (potential) impact of AAL solutions on individuals in terms of autonomy and of choice how to spend their days and live their lives. Important issues were social inclusion, both in terms of prevention of loneliness and participation in the e-service society, as well as physical mobility. Attention was also given to the autonomy aspects when living with one or several chronic conditions. A specific session was devoted to the impact of ICT based solutions on informal carers, such as partners (often seniors themselves) and family.

Session A1

Neurodegenerative diseases & dementia – AAL & JPND: Partnering to meet the needs

Chair: Rafael Anders de Medina

In this session we presented information about the JPND, gave an overview of relevant AAL solutions, showcased some projects and discussed their potential impact as well as the way forward.

Session A2

The impact of ICT based social interaction on the quality of life of older adults

Chair: Maja Arnestad

In this session we presented examples and experiences of older adults with ICT based social interaction and discussed the impact that e-contact has on their quality of life.

Session A3

Participation in the e-service society

Chair: Teresa Chavarria

This session focused on the potential impact that innovative ICT based solutions have on the improvement of older adults' access to, acceptance, trust and use of e-services, taking into account the user interfaces and usability of devices and solutions, as well as the customization to their needs and wishes.

Session A4

Living with Chronic Conditions

Chair: Estefanía Olmos

This session presented the potential impact that innovative ICT based solutions have on enhancing the quality of life and the empowerment of older adults with chronic conditions by allowing them to play an active role in their health care.

Session A5

ICT for independence & wellbeing of informal carers

Chair: Hannelore Döhner

In this session research results and ICT based solutions was presented and discussed from the perspective of (potential) impact on the independence and wellbeing of informal carers.

Session A6

Supporting mobility of older adults by ICT

Chair: Axel Sigmund

The aim of this session was to present in which way ICT-based solutions can significantly foster and improve indoor and outdoor mobility of older persons, including those psychological aspects associated to its sustainability.

TRACK B

TRACK B

The ageing society

In this track, older adults was reflected as a collective and integrated part of the society with space for outcomes of end-user studies, aspects of how new solutions may aid and impact work at high age and may help overcome language barriers. Furthermore, living labs and future smart housing was reflected as integrated parts of the society, in order to create sustainable solutions with great impact on the society.

Session B1

Results of the support action "End User Study"

Chair: Martin Jaekel

In this session the results of the study on end user integration was presented, and complemented with experiences from practice by AAL-project members.

Session B2

Life-long learning – the EU Grundtvig Programme

Chair: Karina Marcus

A representative responsible for Grundtvig will explained the programme objectives and gave some facts and figures and participants of Grundtvig projects presented their experiences. A discussion about synergies and possible cooperation between AAL JP and Grundtvig projects followed.

Session B3

Emigration and language barriers

Chair: Els-Marie Anbäcken

The session had the intention to show examples of impact of proven AAL solutions which facilitate integration in the society and/or facilitate the dialogue with care providers.

Session B4

Living labs

Chair: Jerome Boudy

Living labs are becoming more prominent innovation-instruments for addressing the societal challenges: improve the quality of life (of elderly and their family), optimize the quality and productivity of care giving and strengthen the industrial base throughout Europe.

Session B5

Future smart housing

Chair: Ad van Berlo

The fact that most of the housing stock of Europe is less than efficient in managing energy is likely to be a trigger for mass retrofit. This is likely to be an opportunity to ensure most of our housing stock across Europe is made “Ambient Assisted Living Ready”.

Session B6

Age-friendly cities

Chair: Liz Mesthenos

The aim of this session was to discuss with policymakers ways to integrate existing ICT solutions in their urban spatial planning policies and to offer a platform for developers of AAL technologies to reflect on how their products can respond to the urban planning needs of our ageing societies.

TRACK C

TRACK C

AAL and the economy

The AAL Joint Programme has been initiated by the EU and 23 European countries 7 years ago and has financed so far 131 R&D&I projects with a supporting sum of approximately Euro 250 Mio. At the time when the AAL JP was launched the AAL market was hardly recognizable in Europe. Has this changed since then? Has the AAL JP made a measureable impact on the European market and if what factors promoted this? These and other questions lead the track "AAL and the economy".

Session C1

What does the AAL market offer today – an issue for SMEs

Chair: Urs Guggenbuehl

The AAL JP wants to involve as many European SMEs as possible in its programme. Is there a European AAL Market for SMEs? Could an AAL market emerge in Europe without an AAL JP programme? All these questions and more were discussed during this session.

Session C2

Chair: Martin Jaekel

Successful AAL businesses

The session offered a new and inspiring perspective for AAL projects, businesses and application oriented researchers and enabled them to conquer this immature but growing market.

Session C3

Financing AAL solutions – sources and success stories

Chair: Urs Guggenbuehl

The AAL JP finances 141 R&D projects so far. Have SMEs which are partners in the consortia the financial power to establish an AAL solution on the market? Are there private and/or public funds available to support the industrialisation? These questions and more were discussed in this session.

Session C4

AAL2Business

Chair: Martin Jaekel

In this session, the AAL JP presented the scope of the 2013- 2016 AAL2Business support action and the opportunities and services available to AAL JP projects. Participants learned about the AAL2Business consortium and support available to AAL JP projects.

Session C5

AAL Robotics Forum

Chair: Atta Badii

The forum addressed issues of Ambient Assistive Robotics mainstreaming and integration and particularly how the European Community could best motivate support for such mainstreaming and the establishment of a thriving Assistive Robotics sector through Innovation Management policies.

Session C6

Large-scale roll-out

Chair: Reiner Wichert

This session was organised as an AAL Large scale pilot forum by exchanging experience on running a large scale pilot. The main goal was to discuss the obstacles and problems and to generalize the needs large scale pilots have at the moment.

TRACK D

TRACK D

AAL related programmes and policies in Europe

This track was devoted to AAL policy on the European level, both in terms of implementation policy and strategy – with the European Innovation Partnership on Active Healthy Ageing as a core activity – and future funding possibilities and call themes. Specific attention was put on Europe in a global context, but also on national programmes reflecting European policy and the regional approach of European cohesion policy.

Session D1

EIP on Active and Healthy Ageing - Supporting Integrated Services and Independent Living at Scale

Chair: Christine McClusky

Services and Independent Living at Scale Scaling up integrated and person centred care - this session gave all delegates an opportunity to share their experiences of successful strategies to drive demand and supply in the AAL community.

Session D2

AAL National Programmes

Chair: Pascal Fabing

In this session we showed some of the national funding activities highlighting different national approaches and expertises, including facts and figures.

Session D3

Scaling up AAL solutions – The integration of individual AAL approaches to larger testing projects

Chair: Gerda Geyer

In this session the focus was put on larger projects funded at regional, national or European level that aim at proving the impact of integrated AAL solutions. These projects involve longer-term evaluations over a period of several.

Session D4

How to achieve market breakthrough: AAL Applications & Services

Chair: Claus Burci Nielsen

The AAL Market is a diverse market with no "killer app", with use cases stretching from normal consumer products to health related services and applications. Participants were welcome to join the discussion and give their input to the theme.

Session D5

Evidence, indicators and measurement

Chair: Daniel Egloff

To formulate appropriate policies addressing the issue of demographic change, quantitative information and data as well as indicators are needed. Here we presented developments in the field and discussed how to best use them for on-going and future activities.

Session D6

Chair: Karina Marcus

Future challenges for the next AAL JP Call

In view of the possible continuation of the AAL JP, the community was invited to contribute with comments about future calls for proposals. The ideas were discussed in a world-cafe style where four sub-groups discussed the candidates' challenges.

PLENARY SESSIONS

The plenary sessions gave us all a chance to come together to discuss, learn more and find new perspectives.

The plenary sessions included the official opening of AAL Forum 2013, a session about the AAL market and European growth and the AAL Award 2013. The plenary sessions stood by themselves and were not in time conflict with other sessions. In this way, they could gather all the forum participants to discuss, debate and find new solutions and ideas together.

GRAND OPENING

By Insight Publishers

The official opening of the forum; reflections on the demographic challenge, entertainment and walking dinner in the exhibition.

Moderator: Catarina Rolfsdotter-Jansson

The forum was kicked off on the first night with a few words from outgoing AALA president Mike Biddle, who along with Swedish TV journalist and host for the night INSERT NAME, wished everyone a warm welcome to the forum. Stressing the importance of the multinational aspect of the event, he called on the delegates from throughout Europe to cooperate with each other, end users and businesses to make independent living at home possible. The inevitable demographic change towards an older population is similar to climate change in that we are all in it together, he said, and thus it is up to all of us to work out how to make the ideas from AAL work. Elisabeth Nilsson, governor of Östergötland, expressed great pleasure on behalf of the province at being the hosts for the forum, and regaled the crowd with some interesting local facts. A member of New Tools for Health's Board, local co-organisers of the forum, she explained that keeping people happy and preventing loneliness should be the subject of everyone's focus.

Mona Olsson, municipal commissioner and chairman of the health and social care committee of Norrköping, described the city's transformation from an early industrial centre into an area of learning, with the highly-rated Linköping University the crown jewel. What were once paper mills and textile factories have now become concert halls and conference rooms, and Olsson told the delegates how events like this are helping to create jobs not only locally but all across Europe.

The audience was then treated to a visual presentation of demographic statistics regarding the ageing population by Linköping University spin-off company Infviz. Shown clearly was the growing dependency ratio; between 2015 and 2060, the number of people capable of looking after each person over 65 years of age will be cut by half. However, it was concluded that although these projections signal a need for change, they also represent a healthy ageing population that can provide plentiful opportunities. Following the video was a panel discussion, which began with Eva Nilsson Bågenholm, national coordinator for elderly care at the Swedish ministry of health and social affairs. She pointed out that the whole welfare system, from childcare to parental leave, would need to change due to shifting demographics. Having started her working life as a nurse, she recounted how as a young adult it had taken her a while to grasp the importance of helping the elderly. Making people realise that this is an issue which will affect all of us eventually will provide it with a crucial push up the political agenda, she said, and it is something that every professional working in healthcare should be thinking about.

Mona Olsson pressed the need to consult older people about what they want. She suggested that in the future, new houses should be built with integrated solutions that facilitate independent liv-

ing, and also that technology should be used to try and solve the problem of loneliness that so many elderly people report. Next was the turn of Peter Wintlev-Jensen, deputy head of unit at DG Connect, who was keen to note that the demographic change we are seeing should actually be seen as a great achievement for healthcare. The consequences of this change have to be accepted, however, and we should be doing as much as we can to help people do as much as they can for as long as possible. Technical, financial and policy innovation are all needed to make this work, he said, and collaboration between European countries is needed to help break down some of the barriers that have held back AAL in the past.

Marie Morell, chairman of the county council of Östergötland, offered a refreshing new angle, extolling the benefits of Wi-Fi, the Microsoft Kinect and the Nintendo Wii in helping people to stay active as well as maintaining social connections. She gave the example of her own grandmother, a self-confessed technophobe who was given an iPad as a gift. With the help of her grandchildren and great grandchildren she was able to grasp the technology quite quickly, and loved receiving pictures of her family at parties and on beaches from all around the world. When she became ill and was denied the use of her iPad, she became quite dejected and felt disconnected from family and friends, and Morrell rightly used this to illustrate why cultural change within healthcare is needed to help these technical solutions become more broadly instigated.

Ann-Mari Fineman of VINNOVA, Sweden's innovation agency, explained how AAL provides benefits to Sweden at a national level. Its ability to promote and encourage interest in and capacity for innovation in the public sector as well as its support of numerous national policies were cited, and she also praised its value chain and business analysis and the close to market approach. A video presentation by European Commissioner for Digital Agenda Neelie Kroes followed, in which she highlighted some success stories from around Europe. For example, Andalusia in Spain has saved €3m just from cutting out printing, and the same amount again through the introduction of better data management. Many of the technological innovations needed to implement independent living for the elderly are already out there, she continued, and so the challenge now is to make them work in practice and to bring them closer to market. The forum is all about sharing experiences, and she urged the delegates to reach out to each other and share knowledge with each other in order to succeed in reaching common goals.
Anders Carlsson, chairman of the AAL Forum, told us a little more about New Tools for Health. A joint regional initiative focused on growth and innovation in the area of independence for older adults, it has benefited not only from local research in areas such as biosensors and mobile ICT, but also from a recently established test bed in Norrköping, consisting of a residential area of around 800 people above the age of 80 and a demography that closely matches the projected demography of Europe in 2060.

Finally, Asta Wellejus, creative director at Medea, introduced the Young Researchers Workshop, which gave some of the most brilliant young minds in Europe the chance to develop their concepts with some expert help from Malmö University. She also kicked off the beginning of a 36 hour "hackathon", in which a team of young hackers were given a limited amount of time to try and develop new ideas that could help assist independent living for older adults.

AAL MARKET SUPPORTING GROWTH FOR EUROPE

By Insight Publishers

The session addressed the theme of links between the development of ambient living technologies and European Economic growth.

Chair: Peter Saraga

Peter Saraga introduced the morning session which aimed to explore the links between the development of AAL technologies and economic growth. The rate of innovation in this field is remarkable, he said, and it is hard to imagine that the iPad, one of the key technologies in the AAL market, was only released in Europe three years ago. One can only wonder what the next five years will bring, but it remains to be seen whether Europe can seize the opportunity for development.

Angelo de Rosa of Medtronic began by talking about the success of medical technology in Europe, describing the combination as the "perfect innovation ecosystem". Millions of lives have been transformed by innovation in this field, and he predicted that the convergence of ICT and medical technology in the form of remote care has the potential to bring about a revolution for AAL. However, he also suggested that growth is not happening as fast as it should be. People need to start taking ownership of their products, not just by supplying them but by creating successful marketing strategies and carrying them out as early as possible. The potential for AAL is big, he said, but to bring it to the next level a push from all directions is needed, for example in making sure that all the systems developed can work and connect with each other. Governments and providers need to think hard about what simple measures can be implemented that will catalyse change.

A huge focus of life insurance in recent years has been the change in demographics and who should be offered products, according to Dr John Schonbee of Swiss Re, who envisages some potential collaboration in the future between his industry and AAL. The fact that people are going to be living longer, coupled with a decline in the number of people who can care for them will be an inevitable driving force for people buying themselves life insurance as they get older. Looking after the growing numbers of people in care homes will be unsustainable, he said, so a system where a high end AAL device could be offered to someone when they reach a threshold of disability or age could provide an alternative. If someone is being monitored or is encouraged to still remain active in the community by an AAL service or product, they are a better risk for insurance companies, who could then offer discounts.

Eva Nilsson Bågenholm from the Swedish Ministry of Health and Social Affairs spoke of Sweden's new initiative to improve care and welfare for the most fragile elderly. She identified five different areas in which the elderly need help: palliative care, dementia care, prevention (of illness, falls, malnutrition etc), high quality medication and finally coordinated and integrated care. She also highlighted the need for ICT-based administrations systems for those working in care, as well as the importance of creating technology solutions that complement human care rather than replace it.
More policy innovation is needed since the financial crisis, said Peter Wintlev-Jensen, but this

should be seen as an opportunity to spend public money in smarter ways. With the 85m over-65s of Europe owning more than 3000bn of wealth, the 15% ICT use across the same demographic highlights the potential for huge growth in the AAL market. The old should not just be thought of as frail and needy, he said, but rather should be looked at from a consumer perspective. The European Innovation Partnership on Active and Healthy Ageing, which brings together thousands of regions and municipalities, will help to create collaboration and assets out of the wealth of diversity on offer. Without such activities, access to care in Europe could suffer. Policy innovation is essential just to keep the levels of care that we are used to now.

AAL AWARD 2013

By Insight Publishers

The AAL Award is intended to recognize the most promising project of the Ambient Assisted Living Joint Programme; a project that demonstrates great promise in terms of innovation, human-centric approaches to development and market potential.

Moderator: Catarina Rolfsdotter-Jansson

The third and final plenary session presented the AAL Award 2013 finalists in the form of a 'dragons den', with three of the most promising AAL projects being asked to present their case, followed by an intensive question and answer session from panel and audience. The AAL Award recognises the most promising project of the AAL programme in terms of three criteria: innovation, human centric approaches to market development, and market potential. The winner is awarded free entry to the ICT 2013 conference in Vilnius and also to the AAL Forum 2014.

First up was Robert Smit of Connected Vitality, who started off talking about the need to raise the social capital of communities and carers. After an investigation involving numerous experts, they realised that the capacity to communicate and take part in activities over distance was paramount, and that is what led to the creation of their device, a tablet computer which supports video communication that includes the whole upper body in the field of view. This allows for body language to be seen as well as facial expressions, and during testing they received excellent feedback from users. The audience was shown a couple of videos showing how easily the users found the functionality of the device, as well as a grandmother singing a song with actions along with her grandchild. The social presence that the device provides was undoubtedly appealing, and you could see the users genuinely enjoying the experience.

Next to the stage was Stefan Kindberg of iWalkActive. The rollator is now a common sight in Europe, with approximately 240 000 users in Sweden alone. However, the rollator suffers when being used on uneven ground, an experience which Stefan likened to walking with a faulty shopping trolley. The project was thus set up to increase the functionality of rollators outdoors, to improve the possibilities of living an active lifestyle, and also to offer modern and appealing designs while at the same time being connected to the world of information. This was achieved with a patented climbing wheel for overcoming obstacles, motorised wheels and a Smartphone or tablet attached to the frame for navigation. The simplicity and undoubted practicality of this project was impressive, and one could easily see the benefits that it might provide.

The last project to be presented was Mobile Sage, the first intelligent help-on-demand service designed specifically for seniors using proximity technology such as NFC and QR codes. The service offers relevant, accessible, and usable content upon request, in the form of multimodal and personalized instruction and guidance. Accessed using a Smartphone, the service is made up from a mixture of professional and user-generated content.

PAPERS & SUMMARIES

TRACK A

Aonomy, choice and control

Autonomy, choice and control – AAL solutions impact on individuals – autonomy and ability to choose how to spend their days and live their lives.

SESSION A1

Neurodegenerative diseases & dementia – AAL & JPND: Partnering to meet the needs

Summary

Michael Peolsson, New Tools for Health, Sweden

Neurodegenerative diseases & dementia – AAL & JPND: Partnering to meet the needs

Speaker: Cornelia Schneider, Salzburg

The main goals for sustainability of elderlies' independence for people with dementia are to provide tools safeguarding assistance services. It could be tools for remaining mobile and active as long as possible despite dementia, for supporting outdoor activities e.g. get safely from one point to the other, to provide tools for connecting personal help with assistive technologies and to integrate and expand the existing social network of the elderly. Further services that support emergency situations and or assistance, navigation, daily routines etc are examples of practical support. Austria, Romania and Switzerland are part of the project. In order to develop tools based on need driven demands end-users are involved in the project. Workshops with informal carers, professional caregivers, and people with dementia are all included. User stories and scenarios are described. The next step is to develop a system design followed by implementation and field trials. According to field trials Austria and Romania are base for Rural and urban area each covering 25 people with dementia for 6 weeks (2x) and another study carried out in Switzerland: One area with 26 people with dementia for 6 weeks (2x). Expected added value of confidence is that people with dementia remain mobile and active and that they can live independently as long as possible, knowing there is a safety net based on informal carers as well as professional caregivers. Other added values are a sense of security e.g. when they are not at home, relief because many things can still be done by the elderly themselves, knowing that they will be informed in case of an incident.

Active Living For Alzheimer-patients, ALFA Woonzorg Unie Veluwe EU coordinator

Speaker: Eric Schlangen

This project is about keeping people with dementia in charge of their own life by stimulating daily activities and cognitive functions. Tools that will be developed concern movement monitoring (early detection, safety) and to stay in control of daily activities (interactive agenda). Different tools will be developed. The basic idea in the project is that "seeing behaviour makes people replicate behaviour". In order to sustain behaviour videos of different activities will be shown to people with dementia in order to replicate it. GAIT analysis will be used to monitor walking both according to quality and detect deviations from a normal situation by way of degree of stabilization. This tool will be used to detect early indications of falls. As for daily activities a day planner will be used to control daily activities. It is combined with an interactive agenda – Choose and plan activities – Monitor if they attend activities – Remind them if they don't: offer choice – Alert carer if they don't respond to reminder –.

M3W Maintaining and Measuring Mental Wellness

Speaker: Gábor Csukly, Semmelweis University, Budapest

The objective was to develop cognitive games in order to measure cognitive functions in elderly – maintain mental wellness – prevent dementia, - entertain – and build a community. Games will be both new developments and implementations of existing games, available for a broad range of users. Partnering to meet needs in the area of neurodegenerative diseases/dementia where it is argued to support early detection but also preventive if used on routine basis in everyday life.

The targeted end users are mainly elderly and still mentally healthy people in order (a) to delay the onset of dementias or preserve healthy mental status and (b) to give some kind of early warning about mental changes. The final product should be hand over to content provider companies which supply services and information around life style, healthcare, spare time, home amusement, etc.

Business model: Fee for this serious game services by registration, - support from national or private health insurance companies/societies - support from large companies which offer some care for their employees, e.g. company pension, health insurance payment or other social support.

Conclusions and Future directions • Games developed in the framework of the M3W project can measure cognitive abilities and have the potential to detect early signs of Mild Cognitive Impairment and Alzheimer Disease. • A cognitive training program has just been launched in order to prove that the same games can be used as cognitive enhancers.

Agnes: improving quality of life for elderly people living alone : state detection : ambient interaction : social networking :

Speaker: John Waterworth, Umeå University, Sweden

Objectives: to improve changes in cognitive function, memory and cross-modal priming by way of making use of the strong relationship between cognitive functioning and psychological wellbeing, social integration and mental stimulation. The project also aims strengthening elderlies' independency by way of user-sensitive technology for social interaction, designed to tap retained skills of most elderly, and to support adaptive care. Central to AGNES is the combination and integration of home-based devices and a social network, connecting the elderly person living at home with their families, friends and carers.

The system structure consists of smartwatch/phone, web cam etc where data is gathered in a personal computer to be transferred to a social network server. Services are developed by end-users based on trials, interviews and focus groups.

Results and developments from AGNES: Improvements in cognitive performance, wellbeing, social activity –Mini Mental Scale Examination and Social Production Functions IL test: status dimension (independence, self-realization and achievement) – Vibrant AGNES social network – Surge in elderly interest in internet technology in Skellefteå and beyond.

Products from commercial partners – Modern families, Evolution of MF service "Peace of Mind" for carers – Face and emotion recognition in difficult contexts, cognitive and brain imaging studies. Many new funding applications – e.g. ELF@Home

The possible benefits and challenges of ICT developments for people with dementia and their carers

Speaker: Dianne Gove, Alzheimer Europe

Alzheimer Europe is a non-governmental organisation aimed at raising awareness of all forms of dementia by creating a common European platform through co-ordination and co-operation between Alzheimer organisations throughout Europe. People suffering from Alzheimer's disease is a very heterogeneous group. Different socio-cultural, gender identity ethnic perspectives are to be approached, as well as needs, interests. ICT solutions, as a consequence, have to be personalized if supporting individual needs. It is also emphasized different perceptions of dementia, covering a wide range from stigmatization to the heterogeneity of symptoms but also functional shortcomings. ICT solutions are highlighted in the context of autonomy, human contact and safety but also as a potential tool of sustained self-esteem and tool for carers.On the other hand, consideration about difficulties with informed consent, the feeling of being controlled, and confidentiality and privacy aspects have to be focused. People suffering from Alzheimer's disease have to be included when developing systems and when individualizing solutions including a bio-psycho-social perspective.

Joint Programming in Neurodegenerative Disease Research (JPND) - Coordinating approaches to research across Europe.

Speaker: Enda Connolly, Member of JPND Executive Board

Joint Programming in Neurodegenerative Disease Research brings together researchers national funding bodies, national research strategies and investments. JPND works in the ambition it is not possible to tackle neurodegenerative diseases by acting as single countries instead an increasing coordination of national research programmes is demanded in order to improve impact and effectiveness. The strategy of JNPD is to increase coordinated investment in neurological disease research aimed at finding causes of disease, developing cures, and identifying appropriate ways to care for those with neurodegenerative diseases. The goals of JPND are: to add value to national investments through coordinated action, to encourage the development of national research strategies in ND, to engage in partnership to reach the full potential of JPND. Some 27 members make the organisation taking actions for transnational calls, alignment actions, national plans in order to provide outcomes in the fields of new treatments and preventive strategies, improved health and social care approaches but also de-stigmatize actions of ND and to alleviate economic and social burden. 25% of current projects are developing ICT-based solutions for support and care of older adults with cognitive impairments; monitoring and surveillance, orientation, localisation, and guidance by (informal) carers.

WISHES AND DESIRES OF END USERS REGARDING A MOBILITY SAFEGUARDING ASSISTANCE SERVICE FOR PEOPLE WITH DEMENTIA

Willner V.[1], Schneider C.[1], Kistler R.[2], Feichtenschlager M.[3], Spiru L.[4], Turcu I.[4], Meyer T.[5], Eichenberger R.[6]

Abstract

People with dementia are a heterogeneous user group; therefore it is a challenging task to develop systems according to both their requirements and preferences. In the project "Confidence" several methods according to the user centered design approach are used to meet the needs of people with mild to moderate dementia. An advantage of this approach is that the end-users are directly involved through the whole project. A three stage process was introduced at the beginning of the project to gather the user requirements. After the analysis of these requirements five main features were extracted and developed within a first prototype. Group representative users evaluated the system twice within the interface design process. First, the user interface had to be effectively adapted, secondly the features had to be improved in detail to our end-users preferences. This paper describes the progress of the end-user involvement within Confidence and the results which have been directly incorporated.

1. Introduction

The demographic shift towards an aging population leads to a growing number of people suffering from dementia. In 2006, it was estimated that around 7.3 million people with dementia lived in Europe; predictions indicate this figure will double by 2040 (Ferri et al. 2006). Dementia is one of the major challenges affecting the quality of life for elderly people. Memory, speech, thought, per-

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ception and reasoning impairments come along with the disease. According to Hughes (Hughes et al. 1982) three stages of dementia can be distinguished: mild, moderate and severe. In the first stages people suffer from mild to moderate memory loss; difficulties with time-space relationships and disorientation. As the disease proceeds from mild to severe, the patients become more and more dependent on their social environment (Gleichweit et al. 2009).

The aim of the project Confidence is to provide mobility and safeguarding assistance services to users which enable longer periods of independence. A novel mobile service which combines "assistive technologies" with "personal help" is going to be developed. The primary users of the project (Confidence primary end-users) are people suffering from mild to moderate dementia. The challenging aim is to develop a system which addresses the real needs and preferences of this target group. In this paper different methods are applied in the project to gather user requirements, to implement them within a first prototype and to test them in order to achieve optimum usability and user satisfaction.

2. Methods

Confidence is developed according to the user centered design (UCD) approach. A characteristic of this approach is the involvement of the end users during all phases of a project (ISO 2010). UCD methodologies have been developed in relation to homogenous user groups (Gregor et al. 2001); however people with dementia can have very diverse characteristics. For example they can differ in age, gender, occurrence of the impairments and development of the disease. In response to this an innovative approach has to be applied to focus on the end users in each project phase.

2.1. Gathering user requirements

The user requirements were collected in three different countries – Austria, Romania and Switzerland. In addition to our heterogonous user group country-specific and cultural differences had to be considered as well. A common approach which can be adapted to the country-specific needs was proposed. It is an iterative process consisting of three stages and two iterations. The three stages – collection, specification and evaluation – involve our primary end-users as well as secondary end-users (e.g. nurses, physicians, psychologists, social workers, family members) (Schneider et al. 2013).

2.2. Usability

As stated above Confidence aims at providing a mobile service which supports patients (primary end-users) at home as well as outdoors while at the same time taking away some of the burden of their informal carers (secondary end-users). The goal is to give both of these user groups more confidence in the current situation they are in. Consequentially to the evaluated needs of the primary and secondary end-users, and to enable a mobile service, Android smart phones were cho-

sen as the user interface platform for the service. Thus an appropriate interface for this platform had to be developed. When designing user interfaces the most important aspect to consider is the users view even though designers tend to focus on the impairments that characterise dementia rather than the patients view when developing interfaces for them (Lindsay 2012). In order to design technologies which are usable for people with dementia it is essential to involve them in the design process.

In Confidence we adopt a four stage process for a usable design. In order to reach optimum usability primary and secondary end-users were involved within two so-called acceptance tests. Both tests followed a focus group structure, meaning that groups of people test and evaluate things in an open discussion (Kurniawan 2006). Each focus group consists of at least one primary end-user, one secondary end-user, one test leader and one test reporter. Due to the heterogeneity of the primary end-user group it was seen as a demanding task to find and recruit representative users. The recruitment was carried out by the end-user organisations which are involved in the project. The following conditions had to be considered: the primary end-user group should consist of men and women who differ in age (at least one person younger than 70 and at least one person older than 90), dementia stage (at least one person with MCI [1], at least one person with mild dementia, at least one person with mild to moderate dementia), home country (Austria, Switzerland, Romania) and the willingness to participate on both acceptance tests.

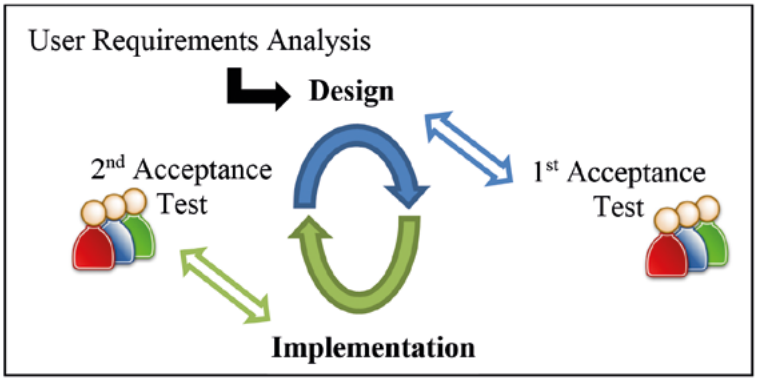

Figure 1: *Usability Design Process*

The Confidence Usability Design Process was initiated with an analysis of the user requirements from the user's perspective. Based on that, the design phase started with the development of paper prototypes. As abstract thinking could be a challenge for people with dementia (Lindsay 2012) we tried to reduce this by transferring design ideas from paper to smartphones. The implementation phase started alongside the design phase. Initially, background services which were not directly related to the end-users were developed. The *1st Acceptance Test* was focused on

[1] MCI = mild cognitive impairment

the evaluation of the design ideas. Features were presented in different design variants. The user interface was evaluated from the focus groups and in the beginning of the evaluation the group leader showed the different designs. Primary and secondary end-users had to decide intuitively which one they prefer. The result was taken to continue the test. A test script was used to lead further discussions. Reported feedback of the end-users was analyzed and summarized as results of the 1st Acceptance Test. The outcome of the test was a user interface design which combines the advantages of the different prototypes as well as other feedback from the end-users. Accordingly the implementation of the mobile service started, a functional prototype including several features was then developed.

The *2nd Acceptance Test* focused on evaluating the functions of the mobile service. The test setting was similar to the first test where focus groups tested different functions and gave feedback within discussions. One focus group was not supported by one explicit test leader which was a difference from the others. The test leaders presented one explicit feature and the end-users changed from one test leader to the other to test the features. This approach was used to further clarify the difference between the features. The end-users feedback was again analysed and summarised to further improve implementations. Further the design was influenced by feature changes.

3. Results

After analysing the user requirements five essential mobile features where deduced in order to fulfil the needs and wishes of our primary end-users.

3.1. Features of the mobile service

Emergency – The user has to be able to easily trigger an alert in case of emergency.
Need Assistance – The user has to be able to easily establish contact with a known person via voice or video call
Calendar / Reminder – The user has to be able to easily manage his/her appointments. The user should be automatically reminded by the system of these appointments or other important tasks e.g. taking medicine.
Find Way – The user has to be able to find his/her way home easily.
Environment – The user has to be able to easily access information about current environmental conditions e.g. weather.

3.2. User Interface Design

The goal was to develop a simple clear user interface. Due to the variety of needs and wide diversity of our primary end-users three alternative designs were designed. The five main functions were represented using buttons which differ in shape, colour and alignment. Two designs used colour one was represented in black and white. Two designs added symbols one did not.

Figure 2: *User Interface Prototypes*

3.3. Results of the 1st Acceptance Test

The user interface was evaluated within 10 focus groups including 10 primary and 10 secondary end-users. The tests took place in Switzerland and Austria. Samsung XCover 2 devices were used to present the designs. Most important issues concerning the usability follow:

General – the selection of the designs was balanced and when asked why they had chosen the design most people answered that it seemed simpler for them. Haptic feedback and sound turned out as very important for the user group. An interesting request was that the application should open when the device is started and that there should be a possibility to get back to the home screen immediately.

Colours – people who chose one of the coloured designs did so for preference of the coloured format, but the contrast was too weak especially outside. One person added that the black and white design would be better for people with visual impairments.

Buttons – font type and size were evaluated as good. The term "Help" was confusing for the users. Symbols were well accepted and even people who had chosen the design without symbols added that they would like to have some. The round buttons were evaluated as being more intuitive than the other shapes.

According to the user feedback the user interface was adapted.

Figure 3: *Adapted User Interface*

3.4. Results of the 2nd Acceptance Test

The features of the mobile service as well as the hardware were evaluated within 12 focus groups including 18 primary and 14 secondary end-users. The tests took place in Switzerland, Austria and Romania. Two Smartphones models – Google Nexus 5, Samsung XCover 2 – were used to present the functions. Most important issues concerning the usability follow:

Emergency – the concept was understood. Many testers said that there should be a possibility to avoid unintended alerts.

Need Assistance – in general the video function was very well accepted but the sound and image quality had to be improved.

Calendar / Reminder – it was remarked that it is difficult to add new calendar entries especially for people with cognitive impairments. Therefore, mostly secondary end-users would do so. The reminder signal had to be loud. A larger proportion of different symbols should have been used for different reminders e.g. a glass for a drinking reminder. Spoken reminders would have been useful for people with visual impairments.

Find Way – the function was difficult for people who were not used to work with maps. Many primary end-users slid the map unintentionally and were confused.

Environment – many testers said that they would like to have more information than just the actual weather conditions.

Hardware – both devices have some special advantages for the primary end-users. People who prefer the XCover2 especially liked its shape and robustness. On the contrary the Nexus5 was preferred because of its light weight and the possibility of inductive charging.

4. Conclusions

In Confidence different methods are used to develop a mobile service which satisfies the demands of people with mild to moderate dementia. In the beginning of the project a three stage approach was used to gather the user requirements. The involvement of several users in different countries resulted in a list of wishes which could be summarised by five main features. It was advantageous to directly involve our end-users from the beginning since this helped shape the development process and provide insight with regards to the diversity of the needs of dementia sufferers. Therefore, we decided to continue working closely together with the end-users through the design phase. Altogether 18 primary end-users participated at two acceptance tests to evaluate usability and functionality. As a result the user interface was then adapted for the mobile service according to the different needs of the primary end-users. It was concluded that the general colours and symbols were beneficial therefore both design elements were encompassed. The second acceptance test showed that the five developed features are well accepted. Due to users feedback they were refined in detail. It is now possible to cancel an emergency alert, the sound and image quality of the video call had been improved, secondary end-users are able to make calendar entries for the primary end-users on a web portal, the map always shows the map detail with the current position and clothing hints are shown according to the current weather conditions.

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VISUAL STIMULATION OF MIRROR NEURONS TO IMPROVE MASTICATION IN PATIENTS WITH DEMENTIA

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Abstract

As people get older, there are changes in their masticatory functioning (chewing) (Weijenberg et al., 2011). However, not only is chewing an important daily function, it is also found to be related with cognitive functioning (Weijenberg et al., 2011). This relationship might be of particular interest for older adults with dementia, because it is well known that cognitive decline is typical of dementia (Kester & Scheltens, 2009). Because of the relationship between masticatory functioning and cognition, we aim at finding a way to improve masticatory functioning in older adults with dementia. A possible way hereto could be the observation of other people chewing. Observing an action activates the same brain network as performing this action (Cattaneo & Rizzolatti, 2009). We suggest that activation of this brain network, the mirror neuron system, may stimulate older adults with dementia to perform the observed action (chewing) better themselves. Therefore, in this project we show videos of people chewing. These videos are shown on tablets during lunchtime. We examine the effects of this 3-month intervention on masticatory function, food intake, cognition, and quality of life.

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INTRODUCTION: M3W – MAINTAINING AND MEASURING OF MENTAL WELLNESS

Pal Breuer Et Al.[1]

Change of mental abilities is normal. People over 65 and especially over 80 are typically affected. To recognize if normal deterioration turns into mental disorder is not easy for specialists even less for relatives or friends.

Playing games and solving puzzles are popular tools for maintaining the mind. There are many websites with on-line games, but only a few of them is designed for the elderly as far as content, ergonomics, psychology, abilities, etc. are concerned. Then, an increasing number of websites are available for the 50+, 60+ and older but they rarely offer on-line games. Finally, some websites address mental hygiene, freshness and disorders but they rarely offer computerized games or build multicultural communities.

A striking difference between traditional and computerized games is that the latter are able to collect behavioural data enabling to measure mental (and to some extent: motoric) abilities and especially their changes over time. However, "measuring is knowing": if we can measure states and especially state changes in a scientifically sound way and a strictly controlled environment then we can provide better and timelier help for the elderly and their families than without.
The goal of project M3W is to measure and visualize mental tendencies in an entertaining way, and give warnings or in certain cases alarms that it is advisable to visit a physician. Our ambition is to compare one's mental wellness to his or her own past mental wellness conditions. Our objectives are the following:

- An entertaining mental wellness toolset (MWT) for self-usage to provide maintenance as well as measurement facilities for elderly persons' mental and motoric condition in order to detect changes and tendencies.
- A scientifically sound methodology, suitable to clinical validation, for the above measurement and the evaluation of measurement data.
- A multinational / multicultural mental wellness community, backed with a multilingual website, offering the MWT, consultancy services, forums, etc.

[1] *Budapest University of Technology and Economics, EMT*

SESSION A2

The impact of ICT based social interaction on the quality of life of older adults

Summary

Sandra Olt, New Tools for Health

Welcome and Introduction

Speaker: Maja Arnestad, self employed, Norway

Maja welcomes everybody and presents the sessions programme. She says that social interaction brings quality of life and asks if ICT is in the way or the way for increased social interaction. Older adults are divided into several groups with different needs such as memory problems, mobility problems and of course, elderly in general. Maja presented statistics for the internet using in Europe in the 21th century. More and more elderly are using and learning about internet but much can still be done. The surveys do not ask people over the age of 75, unfortunately, Maja points out. She also says that research shows that the use of videogames improves cognitive functions with elderly. Some user feedbacks on a tablet testing project are displayed.

NACODEAL – Social interaction evaluation during the testing of AAL solutions

Speaker: Luca Bordoni, COOSS MARCHE ONLUS Soc. Coop. p.a., Italy

The NACODEAL project is coordinated from Spain and the NACODEAL device aims to stimulate and make daily life easier for elderly. The NACODEAL uses two different devices, software on a Galaxy tablet and a DCPAR module, augmented reality.
The project has been testing the social interaction tablet with 6 elderly people, 2 with mild dementia. Parameters considered before tests are daily life, level of dementia and special needs.
The NACODEAL consists of a calendar with social events, a network and also entertainments and social media. The added value of NACODEAL is a social support and possibility to interact with family and friends. Expected impact is an active and socialising life, autonomy, self confidence etc. The elderly can call friends, look at pictures (both own and from the web), sing karaoke, look at TV-shows, maintain a calendar, create a YouTube playlist, read the newspaper, look at private movies and see local maps The NACODEAL is also a portal for social activities.
Testing shows that they would like to personalize the content. The NACODEAL gives them a sense of wellbeing by both taking part of entertainment or to be suggested stimulating activities. The users can also be integrated in a call centre support.

PaeLife – Mediate social interactions: A personal assistant to enhance the social life of seniors.

Speaker: Karine Lan Hing Ting, Université de Technologie de Troyes, France

The solution is a personal life assistant, an app that allows social connection, both fixed and mobile. The projects approach has been user centered and iterative. User participation has been important at all stages and the project has been coherent with values, habits and social practices of the elders. Of course ethical issues such as anonymity of data and written content have been considered.

The added value to elderlies' quality of life has been to prevent social isolation and support social interaction. The platform had to be easy-to-use, useful, and coherent with values, habits and social practices. It works with a natural user interface in which you can both use speech, gesture and touch to interact. It also had to be adaptable to activities and situations in the home.
Considering market the project has a business to consumer approach where the core target group is 60+. The business to business approach has private and public institutions as target groups, for example retirement homes or social clubs. The business model is a monthly fee during a one year engagement period with ensured support.
User tests satisfied with the more natural interaction
Two video examples were shown. The first video is with a man who is sending an email and gives feedback to the viewer. He says that the touch screen keyboard is better than physical keyboard and also more practical as a lefthander. In the second movie a woman is testing the agenda, she tries to use the voice command but fails and switches to use the keyboard instead. They were both very satisfied with the solution Karine points out.
The iterative approach makes the users problems in testing a possibility for development for the software. The general users' feedback is that it is easy to use, you can keep in touch and it was easy to learn.
According to the speaker, e-contact is enriching the social lives of older adults.

Co-living – Successfully increasing socialisation among elderly

Speaker: Cindy Wings, Orbis Medisch en Zorgconcern, The Netherlands

Co-living is an end-user driven, ICT based solution. It is a virtual, collaborative, social living community for elderly people aiming to stimulate and prolong independent and active living.
Co-living is a system for staff at elderly communities to invite and monitor social events and activities. The system allows the users to invite friends, accept invitations and send out invitations. The user gets a reminder before the events starts and a suggestion what to bring to this specific event. The system is connected to whether forecasts and can suggest bringing an umbrella is the forecast says rain. The system also tells relatives what social events the elderly attends.
The two test beds are located in Trondheim, Norway and Orbis Hoogstaete, the Netherlands.
In Norway the older adults live independently and in an open environment, in the Netherlands in a community, a controlled environment. The system is functional both on tablets and smartphones but the elderly tend to think that the touch screen on a smartphone is too small for them to operate. Focus has been on end-users needs in the development, and a function for the user to make own social activities in the platform was added after end-user feedback.
To measure the added value a questionnaire was sent out and focus groups were used. During this session two users from Norway share their personal experiences on stage from the testing of the platform. The users say that the Co-living improves their quality of life and that they are being more socially active than before. Focus groups show that it fosters social relationship through reminders of planned activities and also encourages them to initiate new activities.
Other lessons learned are that pens were more often used instead of finger and that the initial instruction session was social in itself. Other apps such as Skype and Mind feud to be socially active are used as well. They felt proud to keep in touch with modern technology and contact with relatives is generally improved especially with grandchildren.

Added value for professionals is that the tool saves time for the staff; care support is organized more efficiently. The Co-living increase quality of work and services provided and also the quality of care was improved. Added value from relatives is under construction since the information has just been gathered.
The Co-living solutions potential customers are retirement homes, hospitals, day-care institutions, rehabilitation centres or individual people etc.

Connected Vitality Network – fostering closeness and connectedness over distance

Speaker: Katja Neureiter, ICT&S center, University of Salzburg, Austria

How can ICT create value for older adults – social connectedness? Social connectedness is the sense of belongingness that is based on having sufficient close contacts. Not necessarily the amount or size of network but the satisfaction with the quality of social network.
The focus has been on the user perspective and emotions and experiences have been taken in consideration during user testing.

Connected vitality project is a video-mediated communication system to support social presence, allow easily communicating with family and friends and thus allowing feeling connected to others.

The project has been developed for three different formats:
- Meet – a video conversation with two screens and a camera
- Club – one screen with game activities and the other with multiple video conversation
- Classroom – a teaching format with one big frame of teacher and other screens for class participants.

There has been user involvement throughout the whole development process where workshops were held with users in the beginning and also heuristic evaluation as well as user studies in the lab.
The final step in the project was a six week field study in the Netherlands, Sweden and Spain.
8 older adults participated in Sweden, age between 63 and 81 years old, all with basic computer skills. At first they were asked about their present social network; contact with family, friends and neighbours and in which way they communicated (face-to-face, email etc). 3 of the users wished to have more contact.

The interpersonal value for the target group consists of three factors:
- Social presence
- Social connectedness
- Reciprocity

Interviews were held at the beginning and the end of the field trial and the participants wrote diaries about their experiences.
The users thought it was a nice way of meeting people instead of real life, they said it felt like being in the same room with the extended screen to show off non verbal communication (body language). The application is named YoooM and everyone could imagine using it and almost

everyone felt integrated in the testing group. One user especially enjoyed the classrooms activities were the feeling of being a part of a group was strong. Participants experienced social presence and felt socially integrated via the YoooM.
A YooM tablet also exists with a special camera that is showing off a bigger picture of the person to better see facial expression and body language.
The presentation ended with a short video of user experiences from relatives and users.

Reflection and discussion

Do the users encounter problems with arms etc during the tests with tablets? Some older adults might have physical challenges. Luca Bordoni answers that this will be in the next step to evaluate in the NACODEAL project and that it is an important factor to considerate.
Did the Trondheim test persons want some kind of ICT solution for the co-living? They answer that they have met new friends and gotten new interests and participate in things he didn´t before. He could share his own interests with his new friends. As an older adult, friends disappear; you could feel like you are the last tree in the woods. We learn from each other he says.

So what was the biggest surprise during the projects?

- Karine Lan Hing Ting for PaeLife: A welcoming page in the application which always popped up was believed to become boring after a few times, but it was not.
- Katja Neureiter, YoooM: During testing an 83-year-old woman with no experience of technology managed the tablet within 2 minutes and had fun.
- Luca Bordoni, NACODEAL: Users were excited about the touch screen and the in real time contact and the possibility to upload favourite things.
- Cindy Wings, Co-living: It was very easy for the elderly to use new technology. They are not afraid to learn it, and it was easy. When they learn it they get confident and privacy is not an issue.

Conclusion

The session and projects, with their user testing results, have indeed shown that ICT solutions can enhance the quality of life of older adults and increase social interaction.
Older people may need to learn something about ICT but they can also learn something to us.

INTRODUCTION TO ICT BASED INTERACTION AND QUALITY OF LIFE

Maja Arnestad[1]

Using ICT to promote social interaction is an important element in many AAL-projects, especially under Call 2: Advancement of Social Interaction of Elderly People. The solutions developed here aim to maintain, facilitate and advance social interaction using ICT in one form or another - for three main user groups:

- Older adults in general, since Europeans over 65 are less familiar with technology than younger people.
- Persons with memory problems, including mild dementia
- Persons with mobility or other problems which reduce their ability to engage in social interaction that requires leaving their home.

Research in the US and Europe has shown that people who are extrovert and open to new experiences are more likely to use social media – across gender. Moreover, use of video games leads to improvement of cognitive functions, self-concept and quality of life. The results also suggest that the higher the self-concept, the better the cognitive effects achieved. There appears to be a mutually reinforcing relationship between a positive attitude to life and other people - and interest and use of ICT-solutions that facilitate and support social interaction, learning new skills and being physically active - in whatever way and form possible.

The AAL projects presented in this session testify to this close relationship between a person's use of ICT-solutions and his or her attitude and interest for learning new things and meeting people, both maintaining old and forging new relationships. This applies also to people with mild dementia: End-users in the project "MyLife" are reported to take an active interest and greatly enjoying looking at family photos and communicating with relatives through the specially adapted tablet. Peace of mind is also a benefit - for all parties: "Makes father feel secure, facilitates our communication" and "Makes mother more independent, saves time for me".

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SUCCESSFULLY INCREASING SOCIALISATION AMONG ELDERLY

Cindy Wings[1], Anders Kofod-Petersen[2], Paul Koster[3], Roy Beumers[4], Eleni Christoloudou[5], Georges Samaras[6], Joao Quintas[7], Ana Leal[8], Ingvild Ødegård[9]

Abstract

The Co-Living project has developed a mobile collaborative solution supporting elderly in staying socially active. The system is implemented at two pilot sites: the Orbis Hoogstaete living village community for elderly in the Netherlands and elderly living at home in the municipality of Trondheim, Norway. The purpose of Co-Living is to facilitate socialisation through real-world activities made available to the end users. Activities are organised by the care organisations, such as the municipality and Orbis; or even by the end-users themselves. Personalised suggested activities are presented to the user based on their preferences, their historical behaviour or by invitation from other users. The system is based on the integration of the existing IST FP6 open source middleware solution MPower and the SoCo-net social community model. Activities available in the local community are presented to the end-user through a smart phone or tablet. Co-Living is being evaluated among 20 elderly living at the Orbis Hoogstaete living village and 30 elderly living at home in the municipality of Trondheim. This contribution presents results data acquired through questionnaires, pseudo-structured interviews, business case tool and co-living end-users participating at the AAL-forum. The evaluation is positive. End-users report an increase in attending activities, less loneliness and a more active social life.

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1. Introduction

In Europe, we experience a growth of elderly in our demographics. In order to meet the requirements of these people in an era with less young people at work and not being able to let the health care budgets grow in an eager way, other solutions should be found. The statement is that technology can be of great help for the independence of the elderly in the near future. Technology should answer to the user needs in order to be supportive.

In Co-Living project (Ambient Assisted Living Joint Programme, 2nd call), we develop an ICT (Information and Communication Technologies) based Virtual Collaborative Social Living Community for elderly people. The main goal of this project is to stimulate and prolong their independent and active living in an outward environment through an advancement in elderly people social interaction, contributing thus positively to their wellbeing. The Co-Living solution is assessed and validated regarding user acceptance and technical viability at two pilot sites: the Orbis Hoogstaete living village community for elderly in the Netherlands and elderly living at home in the municipality of Trondheim, Norway. The evaluation process during the pilot endured totally 6 months. The process started when the first prototype of the Co-Living system was ready for use. This first evaluation was done by a small group of first users, 5 Dutch elderly and 6 Norwegian elderly. Based on the outcomes the system was adjusted and new functionalities were added to a second version. This second version of Co-Living was used by an extended group of participants in both test beds (50 participants).

2. Methods

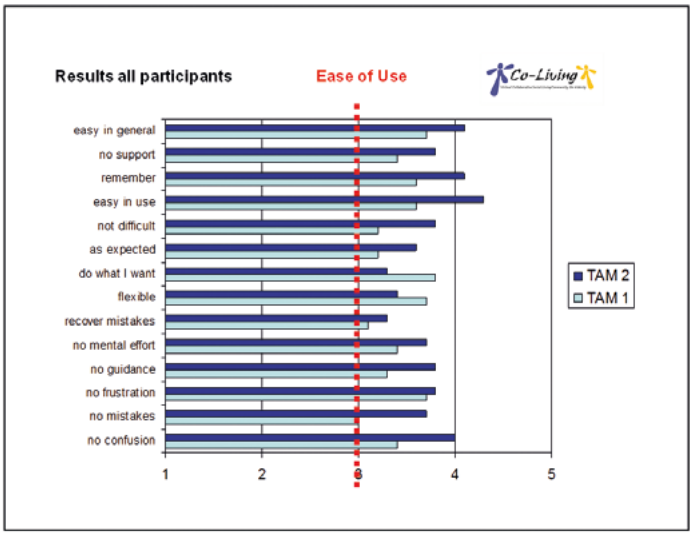
Different resources and tools for evaluation have been used. For the elderly, a zero measurement has been performed in order to find out similarities and differences in several characteristics between them. The zero measurement was about demographic, social and general information of their social activities and devices they use for social activities. The zero measurement was retrieved via a questionnaire. The TAM (Technical Acceptance Model) (Davis, F. (1989) has been used in order to find out what the elderly thought about two relevant issues about the Co-Living system, namely the (perceived) usefulness and the ease of use of the system. This instrument was originally developed to measure the acceptance of new ICT-systems, like email functionalities among professionals. The instrument was adjusted for evaluation of the Co-Living system by replacing the term 'email functionality' by 'the Co-Living system'. Elderly, using the Co-Living system were asked to fill in the TAM twice in order to find out whether the duration of the use of the Co-Living system would influence their opinion. The first time was 4-6 weeks after starting to use the system. The second TAM was filled in 3-6 months later. Herewith, comparisons could be made between their opinion at the beginning and at the moment they became more experienced users.
Both test beds used group interviews in order to find out what elderly thought about the system and how it showed effect on their independent daily life and social interaction. In the Netherlands, these group interviews took place in two groups (elderly home participants and apartment-members) at the moment the elderly were asked to fill in the TAM-questionnaire. This gave the opportunity to clarify the propositions in the TAM, which was needed due to their age and mental

state. Besides, these interviews made it possible to discuss other issues about their experiences with the Co-Living system and the tablet itself in order to adjust the system as much as possible to their needs and preferences. In Norway, every two weeks, there was a meeting with the elderly for instruction, support and stimulation of using the Co-Living system. Two of these regular meetings (month 3 and month 6) were specifically used for a group interview in order to find out further details about the experiences of elderly with the Co-Living system while discussing themes. Subjects being discussed in both the group interviews were social interaction, self efficacy/support, choosing new functionalities, handling the device and understanding off the system. The interviews took one hour, each and were held by members of the user organisations who are not involved in the daily care or contact with the participants. The user organisation Orbis has worked out the business case tool for long-term care innovations developed by TNO for specific variables of the project, namely time spent by carers, quality of life for elderly, quality of work and prevent or postpone care demands. For these aspects the initial situation has been pointed out, followed by the expected situation after the innovation. Eventually, after the project, a measurement of the new situation should be done in order to check whether the expectations have been achieved. The Co-Living system has been demonstrated in a short presentation, including a 5 minute-movie to a group of about 90 elderly (65-69 years old) during the AAL-Forum in September 2012 in Eindhoven, The audience exist of 73% male, 27% female); 80% of participants use a car-navigation device, while 20% of them use smart phones, 17% had a tablet and 23% had even both (smart phone and tablet). The audience used ICT-based commercial services frequently (100%) as well as social media (77%) in their daily life. On the other hand, no more than 5% of them sometimes uses an ICT-service regarding e-health of telecare. The audience gave its votes on several aspects: usefulness of the system for themselves or others, ease of use, which functions of the Co-Living system were most important, if they want to pay for the solution (buy or hire) and which price they like to pay.

3. Analysis of Results

As shown by the zero measurement the participants of the Co-Living system have different characteristics in both test beds, especially when compared to age and ICT skills. The Norwegian elderly are younger (ten year's average), more independent and more used to handle mobile devices compared to the Orbis clients. Both the ease of use and the perceived usefulness of the Co-Living system are evaluated positive by both the Trondheim and the Orbis clients. Except from the flexibility, all aspects are evaluated more positive after some months of using the system. This shows that the Co-Living system was well designed 'user driven' and was well adapted to the skills of target group. The advice is given to start using the Co-Living system around age of 65 and by this way stay in touch with others. After a while the smart phone might be replaced by a tablet with touch pen if the sight/hand-eye coordination requires bigger sizes. Using modern devices makes elderly feel proud, modern en part of the modern society. The caregivers found the system very useful. The easy to use differentiates. This is mainly caused by the fact that in the beginning the elderly needed a lot of training and guidance which became less after a few months. For the Orbis professionals, working with the Co-Living system, the system saves time, namely the time spent on inviting and stimulating elderly to join activities in the care centre.

Co-Living a useful solution for themselves (17%) or for someone they know (55%). The majority considered the system as easy to use; only 12% of them evaluated the system as too complicated. The stimulation-function for being more active was determined as the most important/wanted / needed service (43%) followed by the social community function (28%) or the possibilities for meeting friends (13%). Concerning costs, 70% of the audience considered to be available to rent or buy the Co-Living system when it would be on the market for a reasonable price (max 5 – 10 € a month).



4. Conclusions

Overall conclusion is the Co-Living system is easy to use and also useful for elderly in order to stay socially active on a (more) independent way.
The 'younger' group of elderly, also more ICT-trained, is more positive from the beginning. Others become enthusiastic after repeated training and guidance, for example by students, by each other or by (grand) children.

Using the Co-Living system leads to more social interaction, a) by the activities involved in the Co-Living system which elderly attend more but also b) by using the device for other applications related to social interaction. Social media apps are easily installed, once elderly feel confident of using a smart phone or a tablet. This leads to new contacts, social support and meeting others both virtual and live. The target group should best be found among elderly aged from 65-80 years old. They should start using the system while still living on their own but experience the first feelings of isolation or loneliness because of retirement or loss of their partner. Hence, the Co-Living

system can easily be the connection to active aging. Learning to work with the system at a higher age (+75 years old) asks more training and continuous training by others (e.g. students). Then the effect of more social interaction is seen but not totally independent. For the Orbis professionals, time savings are seen as an interesting result, but for this; a large number of residents of the elderly homes should participate and not just a few of them. Until now, both methods for inviting elderly had to be performed; which did not save that amount of time as it could be when the number of participants is much higher.

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FOSTERING CLOSENESS AND CONNECTEDNESS OVER DISTANCE

Katja Neureiter[1], Christiane Moser[1], Manfred Tscheligi[1], Robbert Smit[2]

Abstract

Video-mediated communication (VMC) technologies have become an integral part of everyday life for many people and offer an opportunity to be in touch with family and friends anytime and almost at any place. Thus, physical distance is no longer a barrier for taking part in social life. However, they often lack qualities being only available within Face to Face (FtF) communication, e.g., gestures or eye contact. In a field study we investigated to what extent a VMC system that provides a variety of different non-verbal cues, might foster communication and interaction among individuals and thus, support the feeling of being part of a community.

1. Introduction

The concept of community has been widely discussed for several decades (Obrist et al. 2009). Communities can be defined as social organizations that are characterized by a contiguous geographic area, wherein people have organized to meet their concerns and needs within their daily lives (Zusman and Knox 2009). This concept of communities is often referred to as 'local communities', where the physical location and birth determines the belonging to a community (Preece et al. 2004). This concept seems less useful, under the perspective of modern transportation, the development of new forms of telecommunication and ICTs in general.

Obrist et al. (2009) outline, that communities do not need to be geographically collocated, as both - weak and strong interpersonal ties - can exist over distance. This implies, that when talking about online communities, the cohesion is based on sharing similar interests (bonding) as well as attitudes and relationships (bridging) (Obrist et al. 2009, Preece 2007). Nevertheless, there is still a rather controversial discussion about the term 'online community', as many online communities still do have physical off-line components (Preece 2007).

Based on these conceptualizations of community and for the purpose of the present paper, we refer to Tönnies' definition (1957), where community is defined as a group of individuals that

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share common interests and are characterized by feelings of togetherness and mutual bonds. In social sciences, community is defined as a group of individuals, who share common interests and are characterized by feelings of togetherness and mutual bonds (Tönnies 1957). Communication fosters close, intimate relationships between people (Rotman 2009) and thus is seen as important prerequisite to enable social and emotional connectedness (Putnam 1995). Besides active participation, this experience of being connected to others is essential to feel part of a community (Cummings et al. 2002).

VMC technologies offer various ways to communicate and interact with each other at any time and almost any place and thus overcome the boundaries of FtF communities. These *online communities* are a growing source of informational and emotional support to overcome temporal or geographic boundaries (Welbourne et al. 2009). Nevertheless, VMC systems often lack qualities that are only available within FtF communication, e.g., eye contact. Thus, with respect to online communities, it is important to consider how to support the experience of being part of a community.

2. The Study

Within the Connected Vitality Network project[2], a VMC system was developed to enable older adults to easily get in contact with their family, friends and care givers. The system, called YoooM, consists of two screens that are arranged at a specific angle and two cameras that allow illustrating the communication partner in a holistic way. Three formats were developed that allow different opportunities for communication and interaction: the Meet, the Club and the Classroom format (Figure 1). The Meet format allows one-to-one video calls, displaying the communication partner almost life-sized (see Figure 1a). Going beyond just displaying a "talking head", the YoooM conveys a variety of non-verbal cues such as gestures or postures, which are important to gather feedback on one's communication partner's reactions, and thus contribute to mutual understanding (Mukawa et al. 2005). This in turn allows a realistic animation of behaviour, which might have a positive impact on Social Presence (Neureiter et al. 2013). The Club format (see Figure 1b) enables to communicate with at most four users. So far, it is possible to surf the Internet or to play different games, e.g., Ludo. Finally, the Classroom Format allows at most five users to interact with each other. In contrast to the Club format one person can take the part of the 'Teacher' and is displayed almost life-sized in the middle of the screen (Figure 1c). Thus, within this format users could illustrate something to others, e.g., pictures.

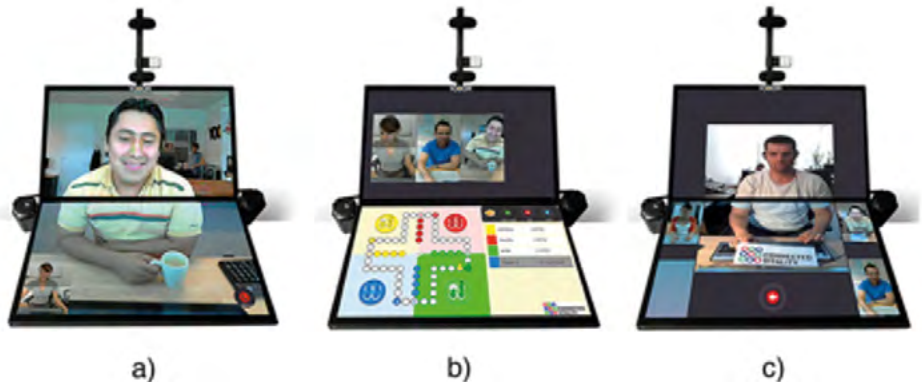

Figure 4: *Communication Formats*

In order to get a deeper understanding of the usage of the system in a 'natural setting', it was installed at potential end users' homes in Sweden. The major goal of the six week field trial was to investigate to what extend the YoooM, i.e., the Club and Classroom Format support participants' feeling of being part of a community. Participants were recruited via a home care service centre, but they did not know each other before and made first contact via the device. Overall eight participants took part in the study, aged between 63 and 81 years (M = 70, SD = 6.97) and they could try out the system over a period of six weeks. All were already retired and had at least basic computer skills. For data assessment both qualitative methods (structured interviews and a diary) as well as quantitative methods (questionnaires) were used during the field trial.

3. Supporting Community orientation via a VMC system

In order to describe the value of the VMC system to feel part of a community we relied on a theoretical model (Value in Action - ViA from Fuchsberger et al. 2012) that covers a wide range of user experience, acceptance and usability factors. The approach takes into account the user with its needs and allows figuring out whether the technology meets those needs. In the context of this study, we focused on two major factors that constitute the so-called *interactional value*, which addresses communication and interaction among individuals: *Social Presence* and *Social Connectedness.* Social Presence is defined as a feeling of being with a person in a mediated environment (Biocca et al. 2002) and supporting the feeling of togetherness. This experience can positively influence social interaction (Tu, McIsaak 2002). Social Connectedness is defined as a sense of belongingness, which is based on the experience of having sufficient close contacts, depending on the satisfaction with the size and quality of one's social network (Van Bel et al. 2008, Visser et al. 2010).

Our results with respect to Social Presence indicate that, especially, the opportunity of experiencing the person in a holistic and naturalistic way, contributed to the feeling of being integrated in a community. This was mainly supported within the Classroom format (see Figure

1c), where participants could see the 'Teacher' almost life-sized in the middle of the screen. Moreover, they had the opportunity to resize the pictures of all other people, taking part in the conversation. Almost all participants indicated that they got an impression of *personal contact* with people at the other end of the YoooM. A statement of one participant should illustrate this: *'I did not know any person in the group before, but I feel that the YoooM allows me to become friends with several of the group'.*

Another central finding is that the YoooM allowed participants to experience being actively engaged in a joint activity. Within the Classroom format, for example, they could not only see their conversation partner almost life-sized, but they had the opportunity to read, for example, books together, or to show pictures to the group. The Club format also allowed participants to play games, e.g., Ludo.
Participants were asked in week 3 and week 6 of the field trial to indicate whether they felt incorporated in a group. Whereas, after three weeks only half of the participants indicated that they felt incorporated at the end of the trial all of them except one stated to feel part of the community. In this context one participant pointed out: *'... that depends a lot on the fact that we created a feeling of being part of a group [...] we created a good community!'*

4. Summary and Conclusion

Within our field study we could show that the YoooM system supported participants' feeling of being integrated in a group. The realistic and holistic representation of the communication partner (mainly supported though the Classroom format) allowed them to experience Social Presence. Moreover, the possibility of engaging in joint activities, contributed to their feeling of being part of a group, an important aspect of Social Connectedness. Although participants did not know each other before, they felt at the end of the trial that they are part of a group. It has to be considered, that the results are not representative due to the small number of participants, who took part in the study, but they indicate that the YoooM has got high potential to deliver interactional value to its users.

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MEDIATED SOCIAL INTERACTIONS: A PERSONAL ASSISTANT TO ENHANCE THE SOCIAL LIFE OF THE SENIORS

Lan Hing Ting K[1]., Lewkowicz M[1].

Abstract

This paper presents the usability and usefulness evaluation of a Personal Assistant, named AALFred. This application aims at preventing the social isolation of European seniors, by facilitating and enhancing their mediated social interaction. The evaluation is part of an iterative and user-centred approach, which implies the participation of elder users at all stages, and combines various qualitative methods that are coherent with the level of progression in the design process. This paper describes the user tests and in situ interviews that were made to gather user feedback on the first version of the prototype, and discuss their helpfulness to inform the design of the final application. The main insight is that users are very satisfied with the multimodal interaction proposed by the application. Indeed, AALFred's added value is that, apart from providing a range of useful services, it proposes several "natural" modalities to interact with the device: touch, speech and gesture. The use tests of the first two modalities are described in this paper.

1. Introduction

Social isolation of elderly people impacts their well-being and general quality of life, and contributes to frailty and mortality. It therefore constitutes a serious problem of public health. One means for prevention is to keep elders socially integrated and active, in particular through the use of social-oriented technologies, which is precisely the objective of AAL's call 2 "Social Interactions". AALFred is one of these technologies. It is developed as part of the PaeLife[2] project, whose aim is to enhance the social life of European seniors, by equipping them with a virtual multimodal Personal Life Assistant. This social platform application allows the elderly to keep in touch with relatives and friends and to access useful web services in an easy and integrated way. Indeed, the added value of AALFred is the "Natural User Interface" it offers in order to facilitate interaction with the application.

Though very helpful, social-oriented technologies are not mandatory to maintain an independent

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[2] This paper sums up a paper presentation (Session A2 – Social Interaction) and a poster (A3 – Participation in the e-service society), where PaeLife was presented at the AAL Forum. The authors are very grateful to the PaeLife consortium: the general presentation of the project and solution is the result of their collective work.

living at home, and therefore need to be evaluated differently from assistive technologies. In order to ensure that these technologies are accepted, adopted and actually used by elderly people, three intertwined issues are at stake: usability, usefulness and acceptability. Usability being a common feature to all design projects, our concern is to guarantee the usefulness of the services, the acceptance of the device by the elderly in their homes and its integration with their style of living.
In this paper, after a short presentation of the solution, we will focus on the outcomes of the first user tests and the feedback they provided for the design of the device.

2. AALFred: services and multimodality

As a virtual "Personal Life Assistant", AALFred enables social activities, in a useful and easy-to-use way. It integrates a Unified multimodal communication system and several useful services: Unified messaging (Email, Twitter, Facebook); Audio and video calls integrated with Skype; Unified contact management; Calendar and Agenda; Secure media content sharing and management; Social activity status; Accessible and simple access to various sources of information, such as latest news and weather information. These services were implemented taking into account the specific problems usually found by the elderly.

AALFred provides natural user input and/or output modalities, including speech, touch and gesture, in addition to a mouse and a keyboard. To be able to train automatic speech recognizers adapted to the specifics of ageing voices, one needs large corpora of elderly speech. Therefore, a massive elderly speech data collection, transcription and annotation campaign is currently underway in the four member countries of the consortium (Hämäläinen et al., LREC 2014). The resulting corpora of elderly speech will be used to train elderly-specific speech recognizers for French, Hungarian, Polish and European Portuguese. In addition to collecting speech for ASR purposes, speech will be collected for creating several synthesized personalized voices, intended to be used as AALFred's voice.

The Graphical User Interface is also adapted to the specificities of ageing: the use of large icons and fonts addresses possible eyesight problems. Furthermore, the layout and navigation are kept simple. This makes the interface more useful for our target that are, for the most part, novice technology users. The devices will be both fixed and mobile, adapting to the different activities and situations in the home, thus ensuring both comfort and mobility.

3. Preliminary user tests with the first working prototype

Adopting a Living Lab approach (Alaoui & al., *forthcoming*), evaluation is organized in 3 successive phases, combining qualitative techniques adapted to the level of progression in the design process. The insights produced – from the perspective of the users – are used, in an iterative approach, to inform improvements. We started evaluation based on the first working prototype. The objective was to test the services available so far – Email, Agenda, Social Network and Call – considering 3 issues.

First, the users would provide feedback on the perceived utility of the services proposed. Second, the aim was to understand the users' existing practices concerning mediated communication and use of technological devices, so as to question how the services could support the elders' social interaction habits, and therefore integrate coherently into their way of life. The third issue was an imbricated utility/usability question (Siegel & Dray, 2005). The system offering mixed interaction modalities, our concern was to examine how the users would manage to operate between these different modes, and if this mixed modalities was perceived as useful or not.

The testing protocol was organized around predefined tasks for email and agenda, coupled to interview questions directly linked to their activity. Social network and Call took more the form of a demonstration-discussion. One of the authors was present to lead the tests, observe and record users' actions – through both note taking and video recordings – ask questions, and eventually assist the user. Coherent with the objectives, an important issue for us was to make the users at ease, where the tests took more the form of discovering the tool together and triggering discussion, than a formal test where performance would be measured. Following the recommendations for qualitative user tests (Nielsen, 1993), we had 3 users: 1 woman and 2 men, who have different knowledge of computers – computer literate but no significant use of technologies; technophile owning a smartphone and a tablet apart from his computer; limited use and knowledge of the computer.

3.1 Predefined tasks for testing email and agenda

The user tests lasted about 2 hours for each participant. They were held in a room of the living lab related to our university, which had been specially prepared and dedicated to this particular activity. Appointments had been set at precise hours, with one user at a time. First, the users were required to access the application. The list of basic tasks to achieve focused on the two most resulted services: email and agenda.

For the email tasks, they had to read the incoming messages, reply to an email, forward one to a contact, and more spontaneously typeset an email to a person whose address they remembered or had saved on their smartphone or agenda. The agenda tasks consisted of rescheduling an appointment (following an email asking for a report), reading through all the activities planned for the week, plan an activity with the grand-children, and look for specific information related to school holidays.

We were very concerned about the necessity for the tasks to fit – and to succeed in questioning – the practices and interests of the senior users. Also, since some of them were not familiar with touch and even more, speech interfaces, some tasks remained purposely vague. Indeed, "select the text zone in the way that seems most appropriate" could be achieved either by clicking the zone or by saying "Object" or "Message". Though these tasks may appear very basic, due to the novelty of certain interaction modalities for most users, they allowed interesting insights to emerge. We will describe two sequences of this activity:

1. The male user finishes writing his email, using the Virtual keyboard on the touch screen PC. Before sending, he gives useful feedback about his appreciation of the touch modality: "Easy", "Nice tool", "Better than physical keyboard". As a left-hander, he finds the virtual keyboard more

4. www.diet4elders.eu

practical than the physical one, especially since he does not use the computer much. However, he still has difficulty typing, because, whether physical / virtual, he is not used to keyboards. Also, we see how he is constrained by the positioning of the virtual keyboard and text zones. Having difficulties typing and finding buttons, he desperately tries some vocal commands, like "send".

2. When testing the agenda, the woman uses the speech commands. When speech does not work, she adapts to the contingencies very fluently and switches to touch, confirming the scenario hypothesis where different modalities would fit different situations in the home, depending on the activities the user is engaged in. Also, in her action, we see that the delay in obtaining feedback from the system leads to confusions about whether or not the action had been taken into account by the system. A more rapid feedback would prevent these miscomprehensions and a more efficient interaction with the device.

In these two cases, the relevance of multimodal interaction and the combination of different modalities appeared clearly.

4. Insights for design

The kind of interaction we have observed with AALFred confirms the interest and added value of proposing the integrated multimodal system. Though the 3 users had different degrees of competence in using technology, interestingly, the three of them were very satisfied with the more "natural" modes of interaction. Also, the difficulties met by the users allowed the identification of very important problems concerning the structure of information, positioning of buttons, mandatory character of certain fields and the lack of intuitiveness of certain paths.
In the iterative approach we adopt, the "problems" are identified early and improvement is continuous. The empirical details of 'what users actually do when using AALFred' are captured, analysed and translated into recommendations. Thus, the problems in this first prototype version are considered as opportunities to identify what can be improved very early in the process, thus adding value to design.

5. Conclusion

The next step in the evaluation process is to test the second version of the application and the gesture modality, increasing the focus on usability while still furthering usefulness and acceptability issues. The last step – and the specificity of our Living Lab approach – will be to test the final application at the elderly end-users' homes during one month. Based on mixed qualitative and quantitative techniques – mainly ethnography and log data analysis – the interest is to gather insights about real-life usage in the home context: how will the application actually support social interaction when the elderly is alone at home and what could hinder the adoption and use of the services.

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INTRODUCTION: SOCIAL INTERACTION EVALUATION DURING THE TESTING OF AAL SOLUTIONS: NACODEAL CASE STUDY

Luca Bordoni, Francesca Scocchera and Claudio Sdogati[1]

The Social Interaction analysis of devices and Advanced Technology solution (AT) for elderly is a further element that researchers have recently introduced in the testing phase. The AT solutions of NACODEAL AAL project pursue the objective to stimulate mnestic functions of the elderly who suffer with mild and temporary memory loss. The validation of an assistive device, based on modern technology, represents the ideal "locus" through which evaluates the AAL solution impact on elderly quality of life and ability to positively influence the end-users socialisation. NACODEAL is a device able to support elderly with cognitive problems in daily life activities, through interactive interfaces that stimulate the users' memory and keep them directly in contact with the external environment. The system is composed by two devices: 1) a tablet with services dedicated to social interaction, entertainment, memory stimulation and an intelligent system of reminders/warnings remotely programmable; 2) an Augmented Reality module (AR), synchronized with the tablet, able to project images, videos and information supporting the elderly in carrying out the daily activities.

The NACODEAL testing phase will start on June 2013 and during the AAL Forum 2013 the first test results will be presented, once collected through static analysis of data, interviews, questionnaires and focus groups with end-users and key actors. Furthermore a video-documentary of the "NACODEAL socialising experience" will be created, showing the system impact on the elderly socialisation in terms of "How much the device use improves the communication between elderly and their family?" and "Is the AR technology for the elderly an element promoting the interaction or an obstacle?".

In a future prospective NACODEAL might represent the tool able to promote the elderly independent living at home and their active involvement in the ICT society.

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SESSION A3

Participation in the e-service society

Summary

Mona Jonsson, New Tools for Health Sweden

Summary of the session

This session focused on the potential impact that innovative ICT based solutions have on the improvement of older adults' access to, acceptance, trust and use of e-services taking into account the user interfaces and usability of devices and solutions, as well as the customization to their needs and wishes. Suggestions for how we can make the e-service society more of a gift for older people than a risk were presented. The AGE platform Europe was presented. Companies and organizations should offer services that help the elderly enlarge their social life, rather than medical and care services. Trust is the key to success to make elderly start using internet and it is important to follow relevant design guidelines for home pages. New solutions within AAL will for example make it possible to alarm when elderly people eat unhealthy. It will be possible to order food online and to be sure that the elderly are ordering food that is healthy for their prescribed diet. We need more communication in the society as a whole. We must make sure that we develop services that are useful.

Keynote Speech - The e-service society – gift or risk for older people?

Speaker: Heidrun Mollenkopf/AGE Platform Europe, German National Association of Senior Citizens' Organisations, Germany

AGE platform Europe was presented. It is a European network of organisations of older people aged 50+. Among other things they contribute to the development of standards on accessibility and interoperability.
Some facts about older people were presented with focus on that older people not are an homogenous group but their basic fears and needs are similar.
Older persons are concerned with difficulties in various areas such as transportation and health & care aspects. Older persons as consumers are concerned with many difficulties - the example of shopping with prices and labels hard to read etc.

Is the eService society a gift or a risk was one of the subjects during this session? The conclusions were:

- Continue making products, systems and services accessible, affordable, reliable and interoperable.
- Consider the need of support and advice.
- Ascertain safe and secure areas – in the built environment and in the net.
- Ascertain security and privacy.
- Create standards to ensure data protection, confidentiality and autonomy.

- Continue making ICT developers aware of older persons' abilities and resources, their needs and fears.
- Consider the digital divide.
- Consider the need of technical support and services (installation, maintenance, training)
- Clarify responsibilities in case of failure of the technology and of damages caused
- Respect individual decisions.

The speaker sent a wish to the AAL projects: Could you bridge the gap that prevents older persons' access to the e-Service Society in order to make it a gift?

How to get off the roundabout – European Knowledge Tree group
Speaker: Margaret Ellis/London School of Economics/United Kingdom

The speaker meant that we all are in a roundabout. Margaret Ellis has set up the European Knowledge Tree Group because a lot of people didn't meet each other otherwise. In March they had a conference on how to get of the roundabout. The problem with AAL is that we think that this journey continue forever. Which roundabout are you in?
More resources are needed to to pay for long-term care because of the coming older population and falling birth rates. Only 29% of the population use apps. Today is unpaid care the biggest source of the care resources. We don't want more barriers to get off the roundabout. There is a European Knowledge Tree Group Conference March 23/4, 2014.

The Capability Approach as an Evaluation Framework for ICT for Older Adults
Speaker: Fanny Le Morellec/CEA Saclay Nano-INNOV, Institut CEA LIST, Laboratoire d'Interfaces, Sensorielles et Ambiantes/France

Design guidelines for Internet services, learning games and navigation systems adapted to the needs of older adults. Design guidelines based on the Capability Approach, research on Psychological Empowerment, User Engagement, Inclusive Design and Value-Based Design. That will give systems that are easy to use, useful, accessible, but also provide cognitive support and possibilities for cognitive development to older adults. In the project they went from normative claims to design principles and used bodily integrity as an example. The guidelines were transformed into a questionnaire with 161 questions. The major results were:

Understandability of the guidelines:
- Good understandability of the questions (on the average, only 2 % of the questions judged difficult to understand)
- Problematic guidelines: "sensory prominence", "accountability and productive independence"

Adaptation to the goal: On the average, 19% of the questions judged not applicable because:
- Not adapted to the evaluation of prototypes
- Not adapted to the evaluation of the limited content available in the prototypes

- Not adapted because no access to real users
- Not adapted to the type of device (e.g. no haptic devices evaluated)
- Conclusions and perspectives
- Capability approach is very useful as an evaluation framework for ICT for older adults.
- Divide the questionnaire into different parts according to:
- The type of device
- The maturity of the prototype
- The type of content
- The type of questions
- Add guidelines usable for immature prototypes
- Improve the vocabulary and wording if questions judged difficult to understand

HOST-project: Smart technologies for self service to seniors in social housing
Speaker: Gianfranco Borreli/eResult s.r.l/Italy

The HOST project was founded in AAL programme 2010. It is meant for elderly living in social housing flats. The project aims to develop a digital infrastructure of social housing and a gateway to services for elder inhabitants.
The project idea is to:
- Raise autonomy among older consumers.
- Improve the life of the elderly living in social housing.
- Provide them with a panel of ICT services and ease communication within their “circle of support”.

The project has many partners in Italy, France, Spain and United Kingdom.

Lessons learned: Offer services that help the elderly enlarge their social life, rather than medical and care services. Maintain the services ”alive”. Do not take for granted that older people can immediately take advantage of your system. Their learning curve (with some remarkable exceptions) bends less sharply than you think.

Trust is the key to success
Speaker: Malin Forne/Funka Nu AB/Sweden

The company Funka Nu started by the disability organisations. It is a private company since year 2000 with offices in Sweden, Norway and Spain. They offer commercial consulting, standardization and research.

Starting to use internet has to do with trust:
- My own capability to master the technology
- That the website or service can help me achieve something
- The good intentions of the website

Trust is also easily lost! It can´t be too much information on a web site and no pop-ups. Then you don´t know where to focus. In a project they compared the travelling website Apollo with Expedian. Apollo has a cleaner design compared to Expedia. It can be trouble with book return robots in libraries. You can feel a lot of insecurity when approaching the machine. The receive function was often out of order. Then trust was lost; if you don´t get a receipt you don't trust it. Feed back is important for trust.

How do we inspire trust?
- Clean design
- Comprehensible concept
- Good feedback
- Clear contact information

Online food ordering services for a healthier elderly community (AAL projects)
Speaker: Jesús Sánchez Garcia/ISOIN S.L/Spain

Diet4Elders is an AAL project with partners such as Tunstall and Culinaria. More than 15 % of the older population is affected by poor nutrition. There are non/few services that ease the self-feeding activities to the elderly.
The idea behind the project:

Do we have something to solve the situation?
- Information and communications technologies.
- Dietary and medical knowledge.
- Tools for representing and performing reasoning techniques on the knowledge.
- An emerging number of food services.

The end users in the project are 2.000 people spread over towns and rural areas in Galicia + 800 elderly people living in nursing homes. They have already food delivery services and a myriad of health problems. The solution as a result of this project will take care of this. The solution will alarm when someone eats unhealthy among other things.

The main project objectives are:
- assist older adults and their informal carers during daily self-feeding activities aiming at detecting and preventing the instauration of malnutrition.
- help the nutritionists/clinicians to establish the degree in which the older adults follow their prescribed diet and to dynamically adjust it.
- enable the dynamic selection, based on the prescribed diet, of suitable food service providers and potentially enabling automated shopping.

Summarising, the main project objectives are these above and in relation with the last one, the project members hope to contribute to foster the elderly participating in the e-service society with their project. They want the elderly to order healthy food for their prescribed diet online.

Discussion

- Are we taking in account what the older needs in the AAL projects?
- What is the difference between this service in Diet4Elders and Meals on Wheels. What is the value proposition? Try to deploy a set of services so the food project is just a part of it. If people have eaten bad food, the system and the monitoring system can detect it.
- How do I know as old person know what hardware that are available. Those who not are in the project where/how to buy these things? – both hardware and software? Will it only be for a limited group?

Conclusion

We need more communication in the society as a whole. We must make sure that we develop services that are useful. We must establish mechanisms that make it easy for older adults to get the products.

THE CAPABILITY APPROACH AS AN EVALUATION FRAMEWORK FOR ICT FOR OLDER ADULTS

Anastassova, M[1]., Panëels, S.[1], Fuchsberger, V.[2], Moser, C.2, Lozada, J.[1]

Abstract

Services are shifted to online platforms, but older adults are often less likely to use them. The ENTRANCE project is developing a home and a mobile platform supporting older adults in trip planning and indoor navigation. The platform comprises navigation software, a serious game for enhancing orientation skills and two haptic navigation devices. These technologies were evaluated at different stages of their development using a variety of HCI (Human-Computer Interaction) methods, including a set of specific HCI guidelines inspired by the Capabilities Approach (Sen, 1985). The paper focuses on a presentation of this approach and discusses its relevance for HCI. The Capability approach is a socioeconomic theoretical framework focusing on human development. It can be very useful for the design of technologies for users with specific needs because of its strong focus on ethics, dignity and support for enhancing cognitive, physical and sensory capacities.

1. Introduction

Information technologies create new spaces of action and experience for elderly users. However, they also raise many **ethical questions** such as the impact of indoor sensing and user loggining analysis on privacy, and the use of computer games and the potential risk of isolation. As suggested by Coeckelbergh (2011), one way of analysing and evaluating what information technologies do and might do to humans and society is using the **capability approach** as a normative-ethical framework. The core ideas of this approach will be very briefly presented below.

2. The capability approach to economics of welfare

The **capability approach** (also referred to as the **capabilities approach or the enabling environments framework**) was initially developed in the 1980s as an approach to welfare economics (Sen, 1985). This approach stems from a basic dissatisfaction with traditional theories that identify value with

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either subjective satisfactions ("utility") or with access to goods or resources (Johnstone, 2007). Utilitarian theories are criticized because of their failure to capture the full range of factors which determine the use of resources. Capabilities theorists emphasize that resources are not valued for their own sake, but always for some other reason, some type of activity or state that they enable to be achieved. Form a capability perspective, then, utility and access to resources matter but in an instrumental way, rather than constitutively (Johnstone, op.cit.). According to Sen (1985), it is crucial that people have the freedoms (capabilities) to lead the kind of lives they want to lead and be the person they want to be. Thus, the core focus of the capability approach is on what individuals are effectively able to do (i.e., or capable of doing). From this core focus, a number of core concepts can be derived. They will be briefly presented in the part below

3. Core concepts

The capability approach involves "concentration on freedoms to achieve in general and the capabilities to function in particular" (Sen, 1995). Thus, the core concepts of the capability approach are functionings and capabilities. According to Sen (1987), "a functioning is an achievement, whereas a capability is the ability to achieve."

Another core concept in the capability approach is the notion of commodities, i.e. goods and services. Commodities should not necessarily be thought of as exchangeable for income or money. They should rather be regarded as goods and services with certain characteristics making them interesting for people. These characteristics of a good enable a functioning. For example, older adults might not be interested in a new smartphone because it is trendy but rather because it makes the communication with their grandchildren easier and available everywhere and at any moment.

However, the relation between the good and the functionings to achieve certain beings and doings is influenced by conversion factors. There are the following three types of conversion factors:

- **Personal characteristics**: these are, for example, physical characteristics, sex, intelligence, literacy level, etc. Thus, taking the example from above, if an older adult suffers from severe hearing loss, the smart phone might be of limited support to enable the functioning of communication.
- **Social characteristics:** these are, for example, social norms, gender stereotypes, power relations. Again, taking the example from above, a social norm saying that using a smartphone in a restaurant is socially unacceptable might impede the achievement of the functioning "communication everywhere".
- **Environmental characteristics**: these are, for example, infrastructure, availability of public services, etc. In the example above, if the cellular network is not working in certain locations, it will impede the older person from achieving the functioning of communicating everywhere at any time.

Thus, one of the major strengths of the capability approach is that it can account for interpersonal diversity. We think that this focus can be a good start for an evaluation framework to be used for technologies for older adults (an extremely diverse population with varied needs and wishes). This aspect of the Capability approach is particularly visible in one of its interpretations presented by Nussbaum (2000).

4. Nussbaum's interpretation of Sen's capability approach

According to Nussbaum (2006) the concept of dignity can even be considered as a basis for capabilities. Dignity requires 'an appropriate threshold level' (Nussbaum, op. cit., p. 75) of the following 'central' human capabilities (as summarized in Coeckelbergh, 2011):

- **Life:** 'Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living'.
- **Bodily Health:** includes nourishment and shelter.
- **Bodily Integrity:** free movement, freedom from sexual assault.
- Being able to use your **senses, imagination,** and **thought;** experiencing and producing culture, freedom of expression and freedom of religion.
- **Emotions:** being able to have attachments to things and people.
- Practical Reason: being able to engage in a conception of the good and critical reflection about the planning of one's life.
- **Affiliation:** being able to live with and toward others, imagine the other, and respect the other.
- **Other species:** being able to live with concern to animals, plants and nature.
- **Play:** being able to laugh, to play, to enjoy recreational activities.
- **Control over one's environment:** political choice and participation, being able to hold property, being able to work as a human being in mutual recognition.

This list of capabilities shows that they can be understood **not only as minimal dignity and development requirements**, but rather as formulations of the ethical 'maximum', i.e. they can be interpreted as what **good life** or human flourishment requires. Nussbaum gives an example in this direction showing that after having identified a threshold, 'we seek a higher threshold, the level above which not just mere human life, but good life, and becomes possible' (Nussbaum, 2006, p. 181).

5. Relevance to HCI

If we transpose this to technology, we will move **from accessibility and usability requirements** (threshold 1) to **requirements oriented towards the enhancement of users' competences/capabilities** (threshold 2). This first and quite schematic transposition is explained by the fact that there is limited research on the use of the capability approach for technology design and evaluation. An interest to this topic in the field of ICT has only recently emerged (e.g. Coeckelbergh, 2011;

Johnstone, 2007; Oosterlaken & van den Hoven, 2011).
As mentioned by Coeckelbergh (op. cit.), the usual way of defining the relation between capabilities and technology is to think of technologies as means, instruments or resources to reach the aims (capabilities). However, there should also be "conversion factors", i.e. factors and elements which help users transform a resource into a "functioning", a useful characteristic. More concretely, the idea is that just having access to a PC or a mobile phone is not enough to provide, for instance, one's capability for affiliation. Instead, what matters is that **the person can actually and effectively use the technology** for that kind of activities.

Another idea inspired by Sen's and Nussbaum's works and important for the design of technologies for people with special needs is **human diversity,** a core theme within the capability approach (Toboso, 2011). Thus, Toboso (op. cit.) asserts that "a tradition of 'standard' design for users — anchored in some hypothetical parameters of "normality"— still prevails in product and services development. However, in order to expand the capabilities of all people in their full diversity, more attention should be paid to "universal design" and **user participation** in the design of ICT. To facilitate this change, Toboso proposes to replace the idea of disability, "with its negative connotations", with the more general concept of "functional diversity"— "describing the reality of persons who have the potential to access the same functionings as other people but in a different way". Such a vision can be very useful when designing technologies for people with special needs or older adults.

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DYNAMIC NUTRITION BEHAVIOUR AWARENESS SYSTEM FOR THE ELDERS

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Abstract

Studies have shown that the older adults consider autonomy as an essential part of their quality of life, and to stay at home for as long as possible is one of their main wishes. This calls for the need of providing ICT based tools for helping them to cope with their daily life activities such as self-feeding. DIET4Elders project aims to assist the elderly in their nutrition daily activities and helping them in maintain healthy feeding habits. To achieve this goal the project will use new types of sensors, reasoning techniques for assessing the feeding habits and will enable the dynamic selection, based on the prescribed diet, of suitable food service provider and potentially facilitate automated shopping.

1. Introduction

The DIET4Elders (Dynamic nutrItion bEhaviour awareness sysTem FOR the Elders) project[6] addresses the problem of older adults malnutrition caused by their unhealthy self-feeding habits. Studies (Sieber, 2010) have shown that in Europe more than 15% of the older population is affected by poor nutrition and malnutrition caused by the problems of ageing such as decrease in sensitivity, poor dental health, lack of transportation, physical difficulty, forgetfulness and other issues. The target groups of our project are represented by: (i) older adults living in care homes for which recent statistics say that are affected by malnutrition in more than 60% of cases and (ii) older adults living at home for which statistics says that more that 15% are affected by malnutrition. In this context the DIET4Elders project aims to develop an innovative ICT-based system to provide support services to: (i) assist older adults and their informal carers during daily self-feeding activities and is aimed at detecting and preventing the instauration of malnutrition, (ii) help the

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nutritionists to establish the degree in which the older adults follow their prescribed diet and to dynamically adjust it and (iii) enable the dynamic selection, based on the prescribed diet, of suitable food service provider and potentially enable automated shopping.
More specifically, the DIET4Elders system collects data regarding the older adult's self-feeding activities and the context in which these activities took place followed by data analysis with the goal of assessing the older adults' diet and of identifying behavioural patterns that are usually associated with unhealthy eating that may lead to malnutrition. The resulting knowledge, after data analysis, will be made available for end-users by especially developed support services to provide user-custom experience and user-adaptable assisting functionality. This knowledge is also used to select and combine the appropriate food ordering services that will provide the right combination of food that will match both the users' needs and wishes and their recommended diet. To address the project ambitious goals the consortium brings together partners with specific expertise in the following domains: information and computer technology, tele-care, nutrition and clinical informed diet for older adults.

2. DIET4Elders System Architecture

Figure 1 presents an overall view of the DIET4Elders system architectural layers: (i) Monitoring Layer which aims at collecting raw data about older adults' daily life activities along with the context in which these activities took place, (ii) Analysis and Assessment Layer which aims at determining information and inferring knowledge about the older adult diet and self-feeding behaviour and (iii) Support Services Layer which aims at using the obtained information and knowledge to assist the older adult, informal carer or nutritionist in improving the older adult self-feeding habits and the quality of life. DIET4Elders system is designed by combining techniques and technologies of context aware computing, bio-inspired computing, artificial intelligence and knowledge engineering. The heart of the system is a clinically and nutritionally-based knowledge (ontology) linked to older adults preferences that continually suggest suitable diet alternatives and plans.

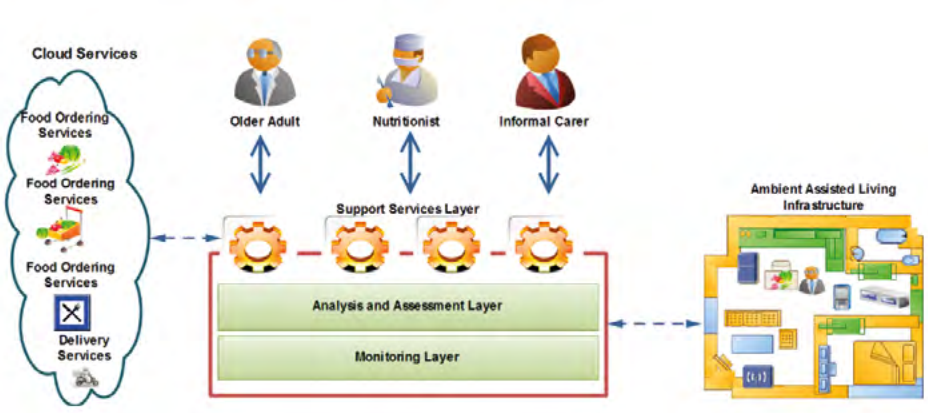

Figure 1 *DIET4Elders system layered architecture*

The **Monitoring Layer** includes the techniques and tools developed for data monitoring and programmatic representation. All data regarding the older adults' daily life activities and the context in which these activities took place are collected and stored in a database (Older Adults Daily Life Data) at fixed time stamps using a wireless sensor network based monitoring infrastructure composed of, smart containers, smart fridges, accelerometers, health monitoring devices, position sensors, RFID, smart phone, etc. As it can be noticed the data is collected using several physical or virtual sources and is usually represented in heterogeneous formats. Also, there is an evident need for providing an integrated, uniform and programmatic model for data representation so that it can be processed, evaluated, shared and understood by all the DIET4Elders system's components defined at each layer. We address these issues by designing and developing the Older Adults Daily Life Context Model (OADLC model) to uniformly and semantically represent all collected data by means of ontologies. Ontology is chosen because it allows sharing the same semantic interpretation or meaning of the data and inferring new information or knowledge by means of reasoning processes. To represent the current older adult's situation, the OADLC model is instantiated using the data collected at the current time stamp regarding the older adults' daily life activities and the context in which these activities take place.

The **Analysis and Assessment Layer** aims at: (i) identifying the daily life activity that the older adult is currently carrying out, (ii) constructing the older adult activity diagram representing his/her self-feeding behaviour and (iii) identifying the unhealthy self-feeding behaviours. On-line reasoning based techniques are used with the goals of identifying the older adult's current daily life activity and eventually identifying critical situations (e.g. food chocking, lack of food in the house, too much drugs are taken all at once, etc.) in which urgent alarming and intervention of informal carers is required. The identified older adult's self-feeding activities are chained in activities diagrams describing the overall older adult's self-feeding behaviour. Prediction techniques are employed on the constructed self-feeding activities diagram and used to proactively detect and identify unhealthy behavioural patterns (as defined by nutritionists).

The **Support Services Layer** will provide services to (see Figure 2): (i) assist older adults and their informal carers during daily self-feeding activities aiming at detecting and preventing the instauration of malnutrition, (ii) help the nutritionists to establish the degree in which the older adults follow their prescribed diet and to dynamically adjust it and (iii) enable the dynamic selection, based on the prescribed diet, of suitable food service provider and potentially enable automated shopping. The Diet Aware Food Ordering Service will aggregate the food delivery services of different providers and will guide the older adults and their informal carers to order the right food that complies to the nutritionists recommended diet. For this to work effectively, the system will create a virtual electronic marketplace which will define food services in a diet and nutritionally rich context and where food providers can register their services. All the food services registered and available in the market will comply with a service description specification based on semantic annotation.

The **Unhealthy Behaviour Notification** Service will send notifications to the older adults and their informal carers anytime an unhealthy behaviour is identified by the Analysis and Assessment Layer. The notification will provide information regarding the identified unhealthy behaviour and assistance for the older adult or informal carer on how the behaviour can be corrected.

The **Older Adults Remote Diet Monitoring** Service provides access for the nutritionists to all data/information/knowledge regarding the older adult self-feeding behaviour acquired/inferred/learned by the DIET4Elders system. Using this information the nutritionists will be able to assess the degree in which the older adults' follow their prescribed diet. The diet adjustment service allows the nutritionist to dynamically and seamlessly adjust the older adult's diet by accessing and updating the content a Dietary Knowledge Base.

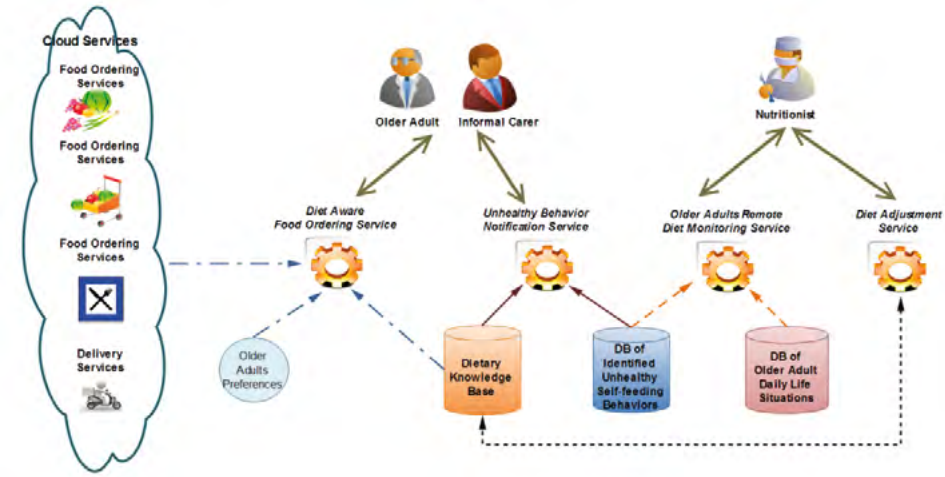

Figure 2. *Support Services Layer details*

3. Conclusions

This paper presents the innovative ICT-based system for providing support services to assist older adults and their informal carers during daily self-feeding activities. The use of the presented system will improve the older adult's quality of everyday life and will reduce the malnutrition and eventually their negative effects such as: exacerbation of chronic and acute diseases, speeding up the development of degenerative diseases, delaying recovering from illness and so forth. The project success will subsequently help reducing homecare, healthcare, and other associated costs, which in Europe are currently estimated around 170 billion euro per year.

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HOST: SMART TECHNOLOGIES FOR SELF-SERVICE TO SENIORS IN SOCIAL HOUSING

Paolo Casacci[1], Massimo Pistoia[2]

Abstract

In the modern digital society, people can access an increasing number of products, services, contents and information mainly on-demand, via the Internet. This new self-serve society is founded on the common use of ICT but also on the ability to successfully have at your disposal the right channels on a free choice basis.

Nowadays, the complex skills needed to benefit from the current technological framework, tend to exclude an increasing number of elderly people. They do not have a sufficient IT education to use the proposed technologies, so they remain anchored in their habits and in what they know well. Such constraints can prevent elderly people to make the most of technological opportunities to help them in their everyday life, having for potential consequence a critical and unacceptable digital exclusion.

The HOST project objective is to provide an ICT architecture based on a friendly and well known technology such as the television, tablet PC, smartphone enabling elderly independence and participation on a free choice basis to the self-serve society.

These tools provide customized and easy access to several e-Services for the elderly. The services are ensured by specialized and dedicated organizations such as social housing operators.

1. Project overview

The HOST project provides easy-to-use technologies and services in social housing flats to allow a better quality of communication and a better access to package services from the elders. By experimenting “connected flats” for elder people, characterized by specific equipment enabling easier relations with, family, service providers and housing operators, through enriched supports (images, text, voice, documents), the HOST project brings more comfort of living to the elders, re-

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inforces social inclusion (with friends, family, administrations, social operators…), allows a longer stay in their house, increases trust and acceptance of e-Services.
All the services are available to the final users through Interactive TV, smartphone or tablet PC, at the user's choice. The system provides an intuitive interface and every notice can be brought with a vocal message, so that partially sighted people may be able to interact properly too.
Considering the use of devices equipped with touch screen (smartphone and tablet PC), the application implements a user friendly interface designed for people that are not accustomed to using technological systems.

Figure 1 *Access to services*

All the client devices communicate with the central server through SOAP protocol (web services): the central server gives to the client devices the information concerning the services provided. So, operators can dynamically configure new services without any intervention on the user side device.

2. Implementation and services

The HOST project has involved several European countries (France, United Kingdom, Italy and Spain). The services have been implemented in France, UK, and Italy. The service implementation has been adapted to the differences between each country different reality, habits and technological infrastructure. In Italy the trial has involved 20 people in 5 locations: 4 in Borgaro, 11 in Orbassano, 3 in Cesena, 2 in Lizzanello and 3 in Rome. The implemented services are listed below.

House management (all sites). Easy access to information about the social residence: costs, maintenance and events calendar. Connectivity and organizational communications: Access new services and better organize the way of life in social housing.
Direct relations with the "circle of support" (all sites). Circle of support's communication: send and receive messages to and from the people included in their own circle of support (manager of social housing association, tutors, caregivers or family members). Video calls (Skype): elders have the opportunity to stay in touch with distant relatives without call charges and without having to learn a new interface.
Home maintenance (Cesena only). Maintenance and repair service: Users can ask for maintenance and 24h repair services. They can choose a trusted craftsman, setting the date and time of the service.
Health & Medical Assistance (Rome, Borgaro, Orbassano). Home drugs delivery: purchased drugs and medical equipment are delivered by the chemist in compliance with the national Privacy Protection Laws. Accompaniment for medical appointments: users can book accompaniment to public or private hospital. The user can choose the date, time and the site where to go for the examination.
e-Commerce services (Rome only). Home shopping delivery: users can buy food beverage, selecting them from a list of available items. Products are collected into different categories to help the user and to make the navigation faster and more effective.
Culture & entertainment (Rome only). Cinema/Theatre programme: users can view shows offered by the service providers.
Wellness & care (all sites). Companionship: users can choose the preferred date and time for the meeting. Whenever possible, the user can choose a specific person from a list of registered providers. Accompaniment by car: users can access services of accompaniment by car, choosing date and time of the service in accordance with provider's availability.

Services are provided in agreement with local providers and with *AUSER* association. *AUSER* is an NGO present through 1,412 local associations around Italy and has 260,000 members as well as 40,000 active volunteers organized on a national, regional and local level. The mission of *AUSER* is to promote the self-management of services and actions for solidarity, supporting the right of older people to continue to play an active role by making the most of their specific experiences, skills and abilities. The e-commerce service is provided with an agreement with *Coop Italia*, the most important Italian GDO distribution chain, which runs a network of about 1500 supermarkets and hypermarkets present all over the territory.

3. Service model

The platform provides a simple and effective way to interact with the elderly, and is designed specifically for professionals in social housing who wish to improve the way they communicate and provide services to their users, so that they become real customers. The manager of the housing service installs and manages the client-server architecture of the platform, this architecture can be configured as to adapt to the needs of the individual user. In addition, the service company can

offer new business opportunities to traders and service providers that may establish agreements with operators of social housing, allowing them to enter into business relationships with elderly users through the platform.
The main parties involved in the business proposed by the HOST project are residents, especially the elderly and frail people; the managers of the structures of social housing; operators for installation and maintenance of the ICT infrastructure; telephone operators; commercial operators; service providers. Residents pay an economically viable subscription on the basis of their income to the operators of the facilities (this may be integrated in the share of rent of accommodation). Managers of social housing provide with their own resources or public funds, to install and manage the platform or in the individual users' homes, as well as systems, and to install and maintain the platform relying on an ICT operator and ensure that the necessary infrastructure for interfacing with the telephone operator.

The cost of access to services will be covered in the form of monthly subscription which may be divided among the residents or their families, and telephone operators. In addition, the social housing cooperatives enter into agreements with a selected group of trusted services suppliers (maintenance, artisans, transportation companies, etc..) and traders (e-shopping, tourist agencies, etc..). On one hand, service providers and traders provide specific services to the users applying discounts, on the other hand the cooperatives ensure visibility and relationships with loyal customers to service providers and traders. In this way, users can have access to commercial offers targeted to their needs and tailor-made services provided by trusted operators having, at the same time, more favourable economic conditions. The adoption of the platform by operators of social housing is therefore a situation of win-win-win.

5. Conclusion

The HOST project enables new application scenarios of ICT to improve the quality of life of people with special needs such as the elderly and frail persons, extending from positions in the ICT market niche to the broader sector of ordinary housing. The work done so far has confirmed that the context of social housing is definitely a scope and impact of particular relevance where access to effective and reliable service packages selected directly by users and a better quality of communication adhering to the expectations and the ability of older people are able to give them greater autonomy and a stronger social inclusion, preventing improper forms of sanitation or institutionalization

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INTRODUCTION: TRUST IS THE KEY TO SUCCESS

Stefan Johansson and Jose Angel Martinez-Usero[1]

More and more commercial, non-government and public organisations expect end-users to interact via internet. Most face to face services in geographically remote areas are taken away. At the same time, the part of the population that does not regularly use the web is around 20% in ICT-strong countries and even higher in countries with lower rate of broadband etc.

A large part of the non-users are elderly. This is a target group that would benefit enormously from ICT-based solutions to everyday problems. Still very few take the step. What is needed to make services worth using for elderly that do not normally chose the internet as the means of communication? The technical solutions exist, now we have to focus on trust.

Funka Nu AB has investigated and tested pay-services, digital kiosks and web based services directed to elderly users. The overall goal is to make elderly more independent through ICT. But the level of usage is still very low and one of our conclusions as to why, is that the target group doesn't trust the services provided. We present the result from our research and user tests from several projects

[1] Funka Nu

SESSION A4

Living with Chronic Conditions

Summary

Michael Peolsson, New Tools for Health

A decubitus prevention system empowering care professionals and informal carers

Speaker: Schneider C

The decubitus prevention system combines unobtrusive sensor techniques with a mobile software solution which supports caregivers in assessing and monitoring a person's individual decubitus risk. The system consists of an unobtrusive, acceleration based movement detection system that can easily be mounted under the mattress of the person concerned and a mobile software system, which a) visualizes the amount of movements and identifies periods with reduced mobility, b) monitors other decubitus related risk factors, such as physical activities or nutrition, and c) supports professional care givers by providing a guideline based decubitus risk assessment tool. The detection system integrates data which visualizes sensor data and provides an interface for documenting nutrition, drinking behaviour and physical activities.

Acceptance and Usability of a Technical Support System for Ambulant Palliative Care

Speaker: Sebastian Müller

The aim of this project is to support self-determination and social integration of palliative patients in ambulant care, to support and maintain a healthy and independent lifestyle while the need for safety increases. Information and communication technology is used to collect and use information about patients in their living environment in order to improve medical care and support self-determined living. The tele-care system installed in a care patient's home has been applied to palliative care patients. The system monitors vital signs, integrates electronic health records and offers medical decision support and easy to use video communication. The system's usability and acceptance was evaluated in a trial phase in interviews with patients, relatives and professional care employees. All participants found the system to be beneficial for their situation. All patients agreed to an adoption of the system in their care network.

Usability and feasibility of an interactive mobile phone application including a health measure, self-care advices and alarms

Speaker: Samal Algilani

The objective of the pilot study was to evaluate the usability and feasibility of the application and the tablet. A Participatory Care Model was used to develop the platform patients' integration in its own care processes by way of enable elderly patients to report factors that influence their health and daily life. The elderly report health concerns and have access to self-care advice and the possibility to rapidly communicate with their carers. The elderly can also view their report history in

graphs. Nurses caring for the elderly view the reported data on a secure website. A total of eighteen elderly (65+) was included. The technical platform was either mobile phone or tablet, and the application was tested for four weeks. Subsequently, the elderly were interviewed individually about their experiences of using the application. Eight nurses, involved in the care of the elderly were also interviewed at the end of the study. The preliminary results showed that elderly have an interest in using the application, and find it useful, particularly the self-care advices have been evaluated as positive.

e-Senior - how to deal with chronic condition at home

Speaker: Veslemøy Ramsfjell

eSenior is an Interreg IV project with cross-border cooperation between Norway and Sweden. The aim of the project is to develop and test new solutions that can secure senior citizens a well-functioning life in their own home. User involvement is a main focus in eSenior, and the testing is done in real-life settings to make the solutions more durable and adapted to the user needs. Using focus groups, older adults with and without disabilities have been involved in the innovative process in the project. By asking them about what makes them feel safe, we tried to understand how they think and what is important to them.

Older adults with chronic conditions clearly stated that they want to feel safe at home with their disease. They know their chronic condition best, and would like to monitor different parameters at home. Simple medical measurements transferred to health professionals, will increase their quality of life. Also easy medicine handling would contribute to increased autonomy of elderly living at home. Based on dialogue with the older adults and suppliers, the project is now entering a new phase developing solutions for the elderly with chronic diseases such as COPD. Seniornett, a user organization for older adults, is involved in the process and contributes with their experience and knowledge. eSenior is a three-year project ending august 2014.

Meeting the needs of elderly people with chronic health issues – a user-driven innovation project

Speaker: Marie Dahl

This project is a user-driven development project with the aim to integrate citizens in the development process. The method used is focus groups where seniors have been involved from the start, emphasizing the focus seniors express, understanding their needs, applying technology and design of services, involving vendors and suppliers.

Focus groups were constellated by local organisation for COPD patients, senior interest organisations, local senior council, politicians from the city council, and employees in homecare services. Furthermore there was a dialogue with enterprises and suppliers.

The needs described by seniors in managing their health issues at home; COPD, diabetes, high blood pressure was concerned around issues of safety, mobility and activity, alarms.

As for the technology demands main issues concerned ”Make it easy to use” – ”I understand my illness best” and medication.
Seniors emphasize more freedom; ”I want to be more active, that’s good for my condition!” • corresponding services – ”I feel safer now when they are looking after me”

Important success criterias

INVOLVEMENT, INVOLVEMENT, INVOLVEMENT. Include end users, then informal caretakers and employees, GP’s and specialists. Keep dialogues on-going. Be demanding in dialogue with suppliers of technology. Management and storage of sensitive personal data has to be considered. Demand solutions that communicate with your professional documentation systems and can provide scalability (BYOD) need to be integrated and using standardization protocols.

Experiences so far

Seniors are excited about the project. Their inputs are priceless – listen to them. Informal caretakers – their main need is assurance. Employees – get them on board, they can have great ideas. Let the experiences you make design your services. Be willing to go ”back to the drawing board”

A DECUBITUS PREVENTION SYSTEM EMPOWERING CARE PROFESSIONALS AND INFORMAL CARERS

Schneider C[1]., Willner V.[1]., Falgenhauer M.[2], Gugerell M.[3] , Liebhart W.[4], Hayn D.[2]

Abstract

Decubitus is a skin disease that is common in many care settings and it is a burden not only for the affected persons, but also for professional and informal. There are many risk factors that are related to decubitus, but up to now there is no suitable solution available which is able to assist carers in assessing a person's individual decubitus risk, to monitor risk factors and to advice carers of hazardous situations. We describe a decubitus prevention system combining unobtrusive sensor techniques with a mobile software solution which supports caregivers in assessing and monitoring a person's individual decubitus risk. The system consists of a movement detection sensor system and a mobile software system, which visualizes sensor data and provides an interface for documenting nutrition, drinking behaviour and physical activities.

The system is used in an observational field study where professional care givers use our mobile application for guideline conform decubitus risk assessment.

1. Introduction

Decubitus is a skin disease that is common in many care settings and it is a burden not only for the affected persons, but also for professional and informal carers (Halfen et al., 2007). There are many risk factors that are related to decubitus (Braden et al., 1987). Decubitus prevention mainly focuses on avoiding these risk factors (WOCN, 2010), but up to now there is no suitable solution available which is able to assist carers in assessing a person's individual decubitus risk, to monitor risk factors and to advice carers of hazardous situations.

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2. Methods

We have developed a novel decubitus prevention system combining unobtrusive sensor techniques with a mobile software solution which supports caregivers in assessing and monitoring a person's individual decubitus risk. After intensive evaluation of several sensor solutions (Zaunmayr et al., 2012), we developed an accelerometer and sensor based system.
The system consists of an unobtrusive, acceleration based movement detection system that can easily be mounted under the mattress of the person concerned and a mobile software system, which a) visualizes the amount of movements and identifies period with reduced mobility, b) monitors other decubitus related risk factors, such as physical activities or nutrition, and c) supports professional care givers by providing a guideline based decubitus risk assessment tool. An overview over the sensor system is shown in Figure 1.

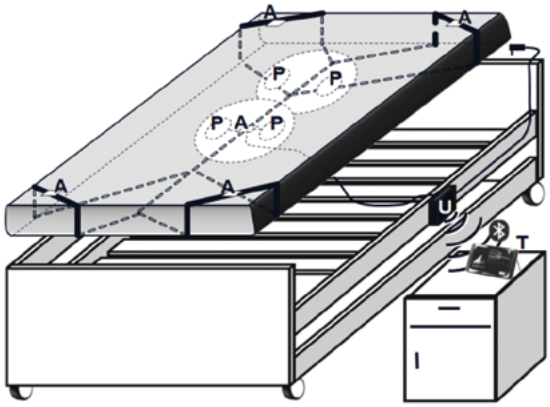

Figure 1 *Overview over the sensor system. Five accelerometers (A) and four pressure sensors (P) were mounted on the bed using a belt system. Data from the sensors were collected in a data collection and pre-processing unit (U) and transmitted to a Tablet (T) via Bluetooth.*

Sensor data were visualized on a tablet (Archos80G9 Turbo, Archos Inc., Igny, France) based home terminal. Using this tablet, the user could also enter data concerning his or her nutrition, drinking behaviour and physical activities. An illustration of the tablet visualizing the sensor data is shown in Figure 2.

Figure 2 *Visualization of sensor data on the tablet. The number of 15 min intervals with at least one re-positioning within 60 min is plotted over time.*

3. Results

The system is used in an observational field study where professional care givers use our mobile application for guideline conform decubitus risk assessment. In case of high decubitus risk, affected persons are equipped with the mobile decubitus prevention system. Either professional caregivers, informal carers or the persons themselves can then monitor the evolution of decubitus risk factors., Each day they get tips on how to avoid decubitus and a close interface to the professional care centre is provided. In this way, by providing essential information not only to professionals but also to affected persons and their informal carers, and by fostering communication in between these three stakeholders, the system can contribute to future care processes addressing those who are most affected by the many challenges that arise when a person becomes dependent on care.

Acknowledgments

The present work was partly funded by the Austrian Research Promotion Agency (FFG).

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ACCEPTANCE AND USABILITY OF A TECHNICAL SUPPORT SYSTEM FOR AMBULANT PALLIATIVE CARE

Sebastian Müller[1], Melina Frenken[2], Ralf Eckert[3], Hannah Baumgartner[4], Andreas Felscher[5], Andreas Hein[6]

Abstract

The rapid growth of the elderly population and the related increase of chronic medical conditions require finding new ways to support and maintain a healthy and independent lifestyle while the need for safety increases. The rising ubiquity and affordability of information and communication technology allows us to collect and use information about patients in their living environment in order to improve medical care and support self-determined living. This paper presents the final evaluation results of a tele-care system for palliative care patients. We developed a platform, to be installed in a care patient's home, which enables monitoring of vital signs, integrates electronic health records and offers medical decision support and easy to use video communication. The system's usability and acceptance was evaluated in a trial phase in interviews with patients, relatives and professional care employees. All participants found the system to be beneficial for their situation. All patients would agree to an adoption of the system in their care network.

1. Introduction

The increase of life expectancy, advances in health care and the general demographic change in the EU will cause an increased need for care patient support and medical attention. The number of people aged 85 years or above will double and more than 20 million people will be in their last year of life by 2030 [1].

One of the primary concerns of chronically and terminally ill patients is to live independently and in their familiar surroundings for as long as possible. However, several factors make independent

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living a challenging endeavour: Emergency situations such as exacerbations cause stress and fear in the patient. Even minor emergencies often lead to hospital stays because the care giver has little knowledge about the patients' current health status. Since most patients refuse external help, the spouse is often the only one that is contacted in case of emergency. To this end, we have developed a system which records and aggregates health related data in the home and allows sharing the information with trusted individuals. Information is collected by patients or relatives entering measurement values or completing medical questionnaires. By sharing the data with trusted individuals, it helps to determine a person's health state and enables family members and care personnel to better assess and react in an emergency situation. The system was developed to support palliative care patients with lung diseases (COPD (Chronic Obstructive Pulmonary Disease) and lung cancer) in particular, but can be easily used by patients with any chronic illnesses.

2. State of the Art

Most research in the areas of tele-care and e-Health are based on common characteristics such as long-term vital data recording or direct data linkage to healthcare professionals. The addressed applications vary widely from post-discharge care to chronic diseases.

Sarkar et al. [6] developed an interactive system for self-management to identify events among ambulatory diabetes patients. The patients used an automated telephony system in which they had to call weekly and the system tries to identify upcoming events caused by drugs or patient behaviour. Celler at al. [7] developed a system for home telecare for chronic diseases. The patients wear monitoring devices to collect specific data and which is automatically sent to professionals who analyze the data and adopt the therapy plan if needed. Cox et al. [8] developed a system for palliative care to monitor and assess patient symptoms following radiotherapy for lung cancer. They designed a hand-held solution where patients enter specific parameters manually.

Personal health records (PHRs) are used to collect and share information from involved professionals like physicians of diverse disciplines, hospitals, nursing services, etc. [4]. PHRs allow patients to grant permissions to specific people and groups to access their medical information. In doing so, information gaps in health care can be reduced [5]. In addition, personal health records support continuous data monitoring at home. In such scenarios the patients are equipped with heart rate monitors, ECGs and other sensors, which enable them to measure their own vital parameters. The data will be stored in the health record and can be reviewed by professionals. Personal health records focus on the collection of long-term data; they do not provide help or make any suggestions upon available data.

3. Approach

To improve home support of palliative care patients and inter-institutional communication in ambulant care, we have developed a tele-care setup consisting of a system at the patient's home and a front end for emergency call centres. Data will be synchronized between the two systems if the

patient allows sharing the data. While the home system collects vital signs (SpO2, temperature, etc.) and self-assessment values regarding pain, motivation and overall wellbeing, the backend processes these values into higher level information and trends of the patient's health status which are stored in a PHR [5] and shared with the care network (practitioners, care personnel, relatives, etc.) of the patient. By doing so, crises can be identified early and care givers and relatives will stay informed. Additionally, the system allows video-telephony between all registered parties. This allows a doctor to talk to the patient remotely, or for friends and relatives to get an impression of the patient's status. The approach to the system design is described by Gaefke et al. [9]. Its first evaluation was published by Baumgartner et al. [10].
Two front ends were developed in order to accommodate the needs of all user groups: one for the patient and visiting friends or relatives, and one for the home emergency call centre. The software runs on a set-top-box, allowing the use of an existing TV as output device. The patient's front end was optimized to be used comfortably with a TV and remote control. The front end for the home emergency call centre is shown on a workplace computer screen. The main requirement for the home emergency call centre view is to provide a quickly perceivable and understandable overview of the patients' data.
Since both interfaces were built for distinct purposes, separate evaluations were deemed necessary. In the following section both evaluation strategies are presented, followed by the results.

4. Evaluation

Usability and acceptance of user interfaces play a significant role in a system's design. Since most data input happens manually, it is important for the system not to discourage the users or add significant workload. Only when we know the patients' needs and afflictions we can design a system that is widely accepted and helps patients, their relatives, and professional caregivers on a broad scale.

To evaluate the usability of the system, we had participants fill out questionnaires and carry out tasks as would be performed in different scenarios. The tasks included entering data such as weight and blood oxygen levels, starting a video call with a doctor, checking the body weight trend and looking up medical safety instructions. For the questionnaire, an adapted version of the "Quick and Dirty Usability Scale" [13] was used. In this assessment, ten questions are to be answered by selecting one of six possible options ranging from "*I don't agree*" to "*I fully agree*". For the analysis, the answers were mapped to a scale between zero ("*poor*") and five ("*great*").
The evaluation was conducted in two groups: One group of patients and their relatives, and one group of professional care employees. After a common greeting and introduction, the evaluation with the patients focused on the usability aspects regarding use of a remote control to perform specific tasks with the system, while the evaluation with the health care providers paid closer attention to all aspects regarding interpretation and reaction of patients' data sets. Table 1 shows the overall procedure and differences of the two evaluation blocks.

11 patients (5 female, 6 male; 6 COPD patients, 5 lung cancer patients), 7 of their relatives (4 female, 3 male) and 8 care professionals (5 female, 3 male) participated in the evaluation.

4.1 Evaluation with patients and relatives

The evaluation with the patients took place at the *IDEAAL* home laboratory at the OFFIS Institute [12]. This laboratory is a fully furnished apartment of 48 square meters for evaluation of assisted living technologies. The flat is equipped with a camera system to allow unobtrusive evaluation and safety for the participants. During the evaluation procedure, the participants sat comfortably on a sofa or an armchair in the laboratory's living room.

4.2 Evaluation with Care Givers

The professional care employees were visited at their company and the home emergency call centre. Each evaluation round consisted of four different parts as shown in and lasted approximately two hours.

5. Results

5.1 Patients and Relatives

When asked to perform system tasks without instructions, most features were detected autonomously by the subjects or in teamwork with their relatives. People who are used to working with computers were able to understand the system's functionality without any help; others needed support on how to use the system. All 18 non-professional participants learned to use the system in a short time, except for one patient who denied using the system altogether.
The mean value of the adapted "Quick and Dirty Usability Scale" on the patient side is *3.1*. On the relatives' side the value is *3.4*. The best value for the patients is *4.1*, the lowest is *2.4*. The best value for the relatives is *4.5* and the lowest *2.4*. The results are summarized in Table 2.

Table 1: *Results of usability questionnaire (values between 0 (worst) and 5 (best)*

	Patients	Relatives	Professionals
Worst	2.4	2.4	3.5
Mean	3.1	3.4	3.8
Best	4.1	4.5	4.4

Furthermore, the patients had to answer questions about general acceptance of technical support systems. All patients reported they would like to use the system and know others who would benefit from it. *10 out of 11* believe it is possible to reduce the number of doctor's visits. *9 out of 11* think the system could be helpful in emergency situations. *9 out of 11* think that video telephony could improve care. *8 out of 11* missed immediate feedback to their inputs. *3 out of 10* feel observed in a negative sense.
The relatives had different questions to answer. These are the most concordant replies: *All (7 out*

of 7) relatives think it is important to be able to quickly contact a medical specialist. *All* relatives like the idea to have permanent access to all necessary information about a patient's health. *All* relatives like the idea of additional support from a technical support system in emergency situations. *5 out of 7* relatives prefer to meet an employee on the clinic side in person. *3 out of 7* persons felt that the system offers a feeling of safety.

5.2 Care Givers

All professional participants were used to using computers at work. Operating the system therefore did not cause any problems to them. While the subjects completed the tasks during the scenario tests, they gave feedback about the perceived meaning and intention of features or menu items: for example, the system contained a page where all recorded patient data is shown at a glance – many participants thought that such a page is a great benefit in assessing the patient's situation. In their daily work, the professionals are used to react to emergency situations only. The idea to intervene early in time, before an emergency situation has happened, was new to the employees.

The professionals rate the usability at an average of *3.8*. The best value for the professionals is *4.4* and the worst result is *3.5* (see Table 2). *All (7 out of 8)* professionals agree that the medical overview allows a good assessment of a patients' health state. *All* professionals agree that the patient's situation is well determined by the given information. *7 out of 8* professionals agree that the system supports decisions on adequate measures in the interest of the patient. *7 out of 8* professionals think the system offers good support in emergency situations and is well adapted to the individual needs of the patients. *7 out of 8* professionals think the system satisfies their expectations and gives a reasonable support in home care. Additionally, all employees of the emergency call centre a) agree that video telephony offers advantages in handling emergency cases compared to usual telephony, b) think that a video connection to the patient makes it easier to calm them down and to assess the situation, and c) are confident that the concept to preferably react early in time – before an emergency situation happens – might work, although it needs to be tested long-term in a real situation with patients.

6. Discussion

Patients, relatives and professionals accept the idea of a technical system that supports the treatment of palliative care patients. Although the patients were sceptical in the beginning, – they were unsure what kind of help a technical device could provide – after testing and understanding the system most of them would use the system in their homes.

Most participants found the system easy to use. Some subjects mentioned that they had too little time to become familiar with the system, and that they would need more time to get accustomed to it. Especially for reliable usability ratings, it would be necessary to collect impressions of the workflow over a longer period. In this aspect all groups agree.

The patients' system was designed for optimal readability, using black and white colours and large

icons and buttons. Some participants found that different colours would make the system more user-friendly. Some fonts were too small and some pictograms were unclear and mistakable.
In summary, we showed that it is worth to drive the development of ambulant care support systems to a state where it can be brought home to the patients. On both sides, patients and professionals, we identified the demand of such a system and will proceed to field tests next year. Currently, the system is being improved through additional features such as automatic transmission of health data from measurement devices (thermometer, blood pressure meter, scale, and pulse oximetry), integration with professional care documentation and processing software, and activity assessment through home automation and power consumption sensors.

7. Acknowledgements

This project was funded by the German Federal Ministry of Education and Research under research grant 16KT0950.

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INTRODUCTION: USABILITY AND FEASIBILITY OF AN INTERACTIVE MOBILE PHONE APPLICATION INCLUDING A HEALTH MEASURE, SELF-CARE ADVICES AND ALARMS

Samal Algilani, Ann Langius-Eklöf and Annica Kihlgren[1]

The Participatory Care Model, built on how patients can be integrated in the care serves as a theoretical foundation of the study. An interactive IT- based technique that will enable elderly patients to report factors that influence their health and daily life will be developed in collaboration with a Swedish Health management company (Health Navigator). With this application the elderly report health concerns and have access to self-care advice and the possibility to rapidly communicate with their carers. The elderly can also view their report history in graphs. Nurses caring for the elderly view the reported data on a secure website. The hypothesis is that by using an interactive application the communication between elderly and health care professionals can improve and facilitate the development towards a meaningful ageing.

The aim of this pilot-study was to evaluate the usability and feasibility of the interactive mobile phone in elderly in forehand of an experimental study. Method: After a literature review and analysis of interviews with elderly, health care professionals and experts in gerontology, evidence based health related questions and self care advices were implemented in the mobile phone/tablet as an application. The project was carried out in two settings, (Örebro) and (Halmstad). A total of eighteen elderly over the ages of 65, in own home having health care contact were included and tested the application in either mobile phones or tablets for four weeks. Subsequently, the elderly were interviewed individually about their experiences of using the application. Eight nurses, involved in the care of the elderly were also interviewed at the end of the study. Result: Preliminary results show that elderly have an interest in using the application, and find it useful, particularly the self-care advices have been evaluated as positive. Final results and suggestions for improvement will be presented at the conference.

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INTRODUCTION: eSENIOR – HOW TO DEAL WITH CHRONIC CONDITION AT HOME

Veslemøy Ramsfjell[1]

eSenior is an Interreg IV A project with cross-border cooperation between Norway and Sweden. The main partners are the four participating municipalities Gothenburg, Oslo, Sarpsborg and Fredrikstad, in addition to Borg Innovasjon which is the project manager.
The aim of the project is to develop and test new solutions that can secure senior citizens a well-functioning life in their own home. User involvement is a main focus in eSenior, and the testing is done in real-life settings to make the solutions more durable and adapted to the user needs.
Using focus groups, older adults with and without disabilities have been involved in the innovative process in the project. By asking them about what makes them feel safe, we tried to understand how they think and what is important to them.
Older adults with chronic conditions clearly stated that they want to feel safe at home with their disease. They know their chronic condition best, and would like to monitor different parameters at home. Simple medical measurements transferred to health professionals, will increase their quality of life. Also easy medicine handling would contribute to increased autonomy of elderly living at home.
Based on dialogue with the older adults and suppliers, Sarpsborg municipality now is in a phase of developing solutions for the elderly with chronic diseases such as COPD. And Seniornett, a user organization for older adults, is involved in the process and contributes with their experience and knowledge.

eSenior is a three-year project ending august 2014. In addition to the four municipalities, the project is financed by EU- and Norwegian interred grants, and Østfold county council.

[1] Borg Innovasjon

SESSION A5

ICT for independence & wellbeing of informal carers

Summary

Inga-Lill Felizia, Norrköping Municipality, Sweden

Chair: Hanneli Döhner, vice president of Eurocarers, Germany

Summary of the session

The question raised for the session was - can AAL projects find sufficient ICT support for the informal carers and their caretakers?

The presented projects all show that there is an interest between both carers and their relatives to find ICT support in the future. For the carers it´s more important to find solutions to their problems than to find different ICT systems. There is a high willingness to be care about relatives but there is also a high risk to be overburdened by the responsibility and the lack of support.

Many of the projects now operate with user involvement and with a broader spectrum of partners. The presentations make it clear that more than one is working on the same topic and on similar solutions, which is not cost sufficient and effective.

So the main question to the AAL forum is; how do the AAL work to make projects work together or combine results? This task for the ALL forum would need to be emphasised.

Introduction

Speaker: Hanneli Döhner, vice president of Eurocarers, Germany

The situation in Europe with the demographic challenges and the developments in the medical care make it more necessary with long term care. Informal carers, mainly women carry as much as 80 % of the long-term care.

The willingness to care is high, but there are negative aspects for the informal carer, such as having an overburdened situation, not being seen as a carer and becoming ill oneself.
The European association working for informal carers, Eurocarers, www.eurocarers.org make this definition:

- An informal carer is a person who provide unpaid care for someone with a chronic illness, disability or other long lasting health or care need outside a professional or formal framework.

The organisation work to advance the issue of informal care at both national and EU levels through raise awareness of the significant contribution made by carers to health and social care systems

and the economy as a whole, and of the need to safeguard this contribution and through ensure that EU and national policies take account of carers, i.e. promote social inclusion of carers, the development of support services for carers, enable them to remain active in paid employment and maintain a social life. Ten guidance principles have been defined, where recognition and social inclusion of the informal carer are the first. The challenges for the future is to find out if ICT solutions can support informal carers and if it can give support also to the care takers so they can have better opportunities to free time.

A short presentation was given of the CARICT PROJECT. Findings by using different methods were that ICT, such as alarms and GPS could give time for the carers, which means they didn´t need to be at home all the time. Information on websites makes it possible to be better informed and e-learning and help desks could give more knowledge and security. Video conferences and chat forum could make social contacts possible. Care coordination could make formal support more sufficient and in the right time. The report of the project can be found at http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=5899

InnovAge – a new multilingual web platform for informal carers in Europe

Speaker: Areti Efthymiou, Eurocarers

The InnovAge – social innovations promoting active and healthy ageing has nine partners from different European countries. The project has seven working platforms of which one focus on developing a multilingual web platform for all EU member states with both common contents and national specific contents.

The platform will support different groups needs; informal carers, care professionals and employers. Common contents were developed with the collaboration of disease-specific associations and carers' organizations. This common content will be implemented in all countries. Research assistants and carers' organizations in each country develop national contents. The content for care professionals and for the employers will be implemented in some of the countries.

The web platform will include two areas with different characteristics; a static website with the basic services, including all the information and multimedia uploaded in the platform. End users will read published contents.

The platform will also include a dynamic website with advanced services, including the interactive services like forum, social network, e learning, and video conferencing. End users will have an active role, e.g. writing posts, making audio or video communication, upload and publish materials to exchange with other users.

The dynamic website and related advanced services, there will be a back-office available in all 24 languages.

During 2014 the project will make test sites in Italy, Germany and Sweden.

Pilot tests with around 60 users in each country will be done.
A specific study protocol and impact assessment methodology is developed.

For more information:
www.innovage.group.shef.ac.uk
www.eurocarers.org/euactivities

Relaxed Care – unobtrusive connection in care situations

Speaker: Martin Morandell, Austrian institute of Technology AIT, Health and Environment department, Austria

The overall idea about the project is to develop better quality of communication between informal carers and the assisted persons by sufficiently connecting them with each other. It will give more security to the informal carer and give more social inclusion to the assisted person.

The project has a strong consortium with user organizations, designers and researchers. Through a user inspired innovation process the aim is to create nicely designed and accepted pervasive user interfaces.

Methods used are; assumptions personas, show and tell, questioner, cultural probes and design workshops.

The consortium is now in the middle of the project. Requirements analyses are coming to an end and they will start the specification of platform and services, behaviour pattern recognition layer and modules, pervasive user interfaces and start of implementation.

The first prototype will be presented in July 2014.
For more information visit www.relaxedcare.eu

My Guardian – a pervasive guardian for elderly with mild cognitive impairments

Speaker: Immacaluda Luengo, HI-Iberia Ingenieria y Protectos SL, Spain

The project aims to facilitate safe and secure mobility for seniors with mild cognitive impairments while preserving their autonomy and dignity, and thereby enable seniors to increase their mobility (while increasing their self-confidence) and consequently to take part in the self-serve society. At the same time, MyGuardian improves well being and efficiency of voluntary caregivers (e.g., family and friends) by ensuring their peace of mind and keeping them informed when the senior health state and risk situations, and improves efficiency of professional caregivers by providing them with up-to-date information and by supporting coordination of their care efforts. The platform consists of three different applications; My Guardian seniors (mobile),
My Guardian caregiver (web and mobile) and My Guardian call centre portal (web portal)
Questioner has been used to ask the carers how they can use the ICT. Care giving is often a full day

work and to be “free” from the duty the carers need to know that someone else has taken over or, they know that their relative is secure with the contact they can have through the mobile and web. For the ICT everything has to work so one can be safe and rely on the systems. Eventually could be prescribed or maybe better free.

The value that can be given by My Guardian by; dynamic distribution of responsibilities between informal caregiver and supporting professionals, back up communication with the call centre, coordination mechanisms for emergency situations and communication between the carers and the seniors.

For more information visit www.myguardianproject.eu

Care4Balance – balancing informal care through multi stakeholder´s service design

Speaker: Karen Willems, iMinds-IBCN, Belgium

The project will develop one single ICT system that offers care task coordination and communication within the care network. The system will use an intelligent dashboard, which can handle communication through different devices such as mobiles and even sensors.

The project tries to find out as much as possible about the informal carers and how to support and help them through technology. Multi-service stakeholder design means that seniors, informal carers and formal carers work together with designers, technicians and researchers in order to create efficient solutions. The goal is “end users in the driving seat”. Methods used are personas, literature studies, observations, workshops, interviews, diary and others.

Informal carers often have a small network. They don´t want to complain about the burden they have. More often informal carers also are responsible for children and maybe grandchildren. Informal carers really have a need of a system, which easily can be used indicating risks for over burden. The informal carers don´t look for technology, they search for solutions, so it´s very important with meaningful devices.

The use of sensors must be investigated more and the use must be as a complement to other functions. Another challenge for the project is to find forms of communication between formal and informal caregivers - demands for “on demands professional care”. For more information see; www.care4balance.eu

Discussion

All can agree on that there is a need to find ICT solutions to support the informal carers. The most important issues to solve is to have the possibility to own time, free time, where they can have their own life. There are several questions to be investigated more for instance how different age you have as a carer gives different needs. There is also an urgent situation where the understanding between the formal and informal carers has to be addressed. The informal carers' don´t always get credit for their work and the formal carers' doesn´t see them as co-workers. Big numbers of informal carers are "hiding" in helping formal caregivers in the care homes and hospitals. Of course there are differences between countries in Europe depending on the different social secure systems.
International Short Break Association, ISBA arrange in September 2014 a conference in Wolfenbüttel, Germany about breaks in the care giving. *For more information see:* www.isba.me

Can AAL projects find sufficient ICT support for the informal carers and their caretakers? The positive is that the user agenda is high now. Several of the projects work close with user demands. There are also some examples of coordinated work with professionals and carers. The problem might be to bring engineers and technicians together with social researchers. Technologists are more aware of the need of cooperation. There should also be architects in this cooperation, so building houses and streets and so on would be integrated. Most important let the programmers out to the users. In the end it´s also the business side of the task, this means how to get the devices out on the market. It does seem that the market for ICT solutions in the welfare systems not yet are very well accepted and searched for. It´s the professionals' responsibility to know about the need for developing solutions in ICT in the future.

What responsibility do AAL have in making contacts between projects and maybe start networks? This has been an issue over the years but it seems very difficult and the audience is asking - why is it so difficult? In other sessions and seminars there has been the same discussion. This task for the ALL would need to be emphasised.

Listening to all the projects presented in the session, it´s very clear that there are more than one project working on the same topic, trying to find solutions on the same or similar dilemmas. Someone else might already have what you search for. Together we can be more creative, effective, cost sufficient and we also want to have common platforms in Europe.

MYGUARDIAN: A PERVASIVE GUARDIAN FOR ELDERLY WITH MILD COGNITIVE IMPAIRMENTS

Inmaculada Luengo[1], Anna Mereu[1], Diego Fuentes[1], Katarzyna Wac[2], Dimitri Konstantas[2], Jérôme Marchanoff[2], , Maria João Machado[3], Serge Grisard[4], Martijn Vastenburg[5], Jérémy Bauchet,[6] Peter Hermans[7]

Abstract

MyGuardian is focused on facilitating safe and secure mobility of seniors with mild cognitive impairments while preserving their autonomy and dignity. MyGuardian intends to remove the barriers towards autonomous mobility, and hence, improves physical health, wellbeing, and social life of seniors. At the same time, MyGuardian fosters wellbeing and efficiency of voluntary caregivers (e.g., family and friends) by ensuring their peace of mind and keeping them informed when the senior is experiencing confusion states and risk situations when out and about, and improves efficiency of professional caregivers by providing them with up-to-date information and by supporting coordination of their care efforts.The resulting MyGuardian service will be tested in real-life user environments in pilots trials carried out in Spain, The Netherlands and France.

1. Introduction

The European MyGuardian project (2012-2015) aims at, on the one hand, facilitating safe and secure mobility of seniors with mild cognitive impairments while preserving their autonomy and dignity, and on the other hand, improving quality of life and efficiency of informal carers, providing an easy-to-use and rich communication between the mobile senior and the caregivers in order to calm down both caregivers and the senior thanks to messages with contextual data on

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senior's psychological state; a remote tracking and assistance in order to enable the monitoring of senior physiological state and behaviour, to detect risk situations and to carry out appropriate, personalized interventions depending on the assessed criticality of the situation; and a coordination between caregivers in order to improve awareness within the group of caregivers enabling them distribution and delegation of care tasks.
MyGuardian responds to the need of removing the barriers towards autonomous mobility, and hence, improves physical health, wellbeing, and social life of seniors. At the same time, MyGuardian also encourages wellbeing and efficiency of voluntary caregivers (e.g., family and friends) by ensuring their peace of mind and keeping them informed when the senior is experiencing confusion states and risk situations when out and about, and improves efficiency of professional caregivers by providing them with up-to-date information and by supporting coordination of their care efforts.

MyGuardian also brings several benefits to the society, as it positively affects the quality of life of seniors with mild cognitive impairments and their caregivers at different levels: it allows them to maintain autonomy and mobility, which is a crucial issue for enabling independent and healthy living, as it is proven than mobility and active lifestyle contributes to slowing down the development of the cognitive impairment; it also guarantees on demand assistance, which is essential for keeping peace of mind when safe moving around safely, especially in an unknown environment; it also enables independent living by allowing seniors to maintain a high degree of independence and autonomy while assuring that assistance can be provided, if required; and it helps seniors to participate into digital self-service society, while keeping their caregivers informed and calm about the context and state the senior is.

2. Methodology

The end users' involvement plays a crucial role throughout the MyGuardian project, given that MyGuardian service is being designed and implemented from and to the end-users. For this reason, it is important to underline that the perspective of the end-users is being constantly analyzed and studied during the whole process. So, it is described the perspective of end-users at three levels: by analyzing the effective involvement of primary end-users (elderly with mild cognitive impairments and his/her caregivers) during all the project stages; by summarizing the role the secondary end-users (elderly care organizations) plays along the project; by pointing out the involvement of tertiary end-users (public or private institutions) in the project.

First, a *User Requirements Phase* has been performed with the objective of collecting the requirements from the end-users about the service, the devices to be used, the type of information about the senior to be analyzed, the communication way between seniors and caregivers and so on. In order to guarantee a successful requirement collection, several different assessment methods for each stakeholder have been applied including general surveys, focus groups and personal semi-structured interviews in which both quantitative and qualitative approaches have been taken into account.

Such results have illustrated some significant real needs of end users. For instance, from the perspective of seniors, some of them have been the following ones: no need to press any buttons but simply voice control with auditory feedback, help to find the way back home, get linked to a call centre for taxis, big letters, and reminder for the pills and so on. From the perspective of the formal and informal caregivers, some of the requirements have been: smart assistant which indicates the localization of the senior, need to feel confident to close their houses when they leave home and so on.

Figure 1 *MyGuardian Focus Group in Badajoz (Spain)*

In parallel to this task, an *Ethical and Social Impact Study* has been also carried out with the objective of collecting the main directives and recommendations that should be considered in a project involving end users, as well as exit strategies and inform consent consideration to protect user's data and privacy.

During the *Development Phase,* secondary users are also providing the perspective of the end-users in order to be able to validate the project progress by means of their feedback. On its behalf, tertiary users are also being involved in the project thanks to the planning of dissemination activities.

After such *Development Phase,* the MyGuardian final service will be tested in real-life user environments in pilots trials carried out in Spain, The Netherlands and France in order to demonstrate the success criteria. It is expected to gather a total number of 150 end users among the three sites. In such pilot trials, elderly people and their caregivers will be able to test and validate the pilot application in all its functionalities, and hence, verifying the capability of MyGuardian service in helping them in their mobility concerns during their daily life activities, making them feel safe and re-assured.

3. MyGuardian Service

MyGuardian is a service platform that links seniors with mild cognitive impairments to a group of caregivers using multiple devices (web through PC or mobile devices). Different applications are considered in this platform, each of them focused on different target end users:

- **MyGuardian Senior**, which is a mobile application for seniors with mild cognitive impairments for communicating with the caregivers through voice and tagging messages. The application is being designed to be very easy-to-use, such that seniors who have limited skills can use it, and also includes an alarm button for emergency situations.
- **MyGuardian Caregiver,** which is a two-fold application for the professional and informal caregivers. The application enables dynamic and seamless distribution of care tasks and responsibilities between voluntary caregivers and supporting professional caregivers, coordination mechanisms for emergency situations, communication with the seniors, configurations parameters and access to the senior information in case of emergency or just for "guardian" purpose. It also includes a back-up communication with a professional call-centre. *MyGuardian Caregiver* consists of two applications:

1. **MyGuardian Caregiver Web,** which is a full-fledged web-based portal that can be used in web browsers with a sufficiently large display.
2. **MyGuardian Caregiver Mobile,** which is a simplified version of the web application and provides only those functions that are needed to communicate and react to requests and alarms when on the road.

- **MyGuardian Call-Centre Portal,** which is a web-based portal for a professional caregiver's call-centre and is used as back-up support for seniors and their informal caregivers.

Ultimately, the main added value of MyGuardian compared to the other solutions available in the market is that it constitutes a superior solution, intended to deliver more than a straight location-based service, but it also delivers behaviour-based alarms and contextual reporting, something that will make MyGuardian unique in the market.

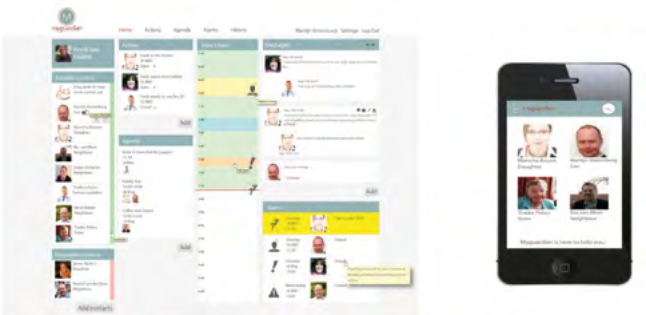

Figure 2 *From left to right: MyGuardian Caregiver Web Application (Home Page) and MyGuardian Senior (Home Page)*

Acknowledgements

MyGuardian is a project funded under the Ambient Assisted Living Joint Programme (AAL JP) on the forth call AAL-2011-4, with the collaboration of the European Commission, Ministerio de Industria Energía y Turismo of Spain (MINETUR), Federal Office for Professional Education and Technology (OPET) in Switzerland, The Netherlands Organisation for Health Research and Development (ZonMw) and the Agence Nationale de la Recherche in France.

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A MULTILINGUAL WEB PLATFORM SUPPORTING INFORMAL CARERS IN 27 EU MEMBER STATES

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Abstract

INNOVAGE is an ambitious project dedicated to developing and testing four new social innovations contributing to impact quality of life and well-being of older people. Among the social innovations to be tested, a new multilingual web platform for supporting informal carers will be developed and implemented in 27 EU Member States. The platform will provide national information on care and support services, legal and financial issues, information about most common impairments, coping strategies, work and family reconciliation. Additionally, a set of interactive services will be provided, including individual support via e-mail and audio/video-communication, and group support through internal social network, forum and video-conferencing tools. The core aims of the platform are to provide quality web services to informal carers, make them available in countries with few or total lack of targeted services, and promote an active network of carers organizations in Europe. The web platform under development will become publicly available in Spring 2015.

1. Introduction

In recent years, web-based support services have attracted the attention of researchers and health professionals working with family carers around the world (Schmidt et al, 2011; Powell et al, 2008; Schulz et al, 2002). Initiatives in this field in Europe are mainly small-scale projects with services

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available and accessible only to few people (Schmidt et al, 2011). Furthermore, in many European countries the role of carer is still underestimated at a social and cultural level.

To address these barriers, a new multilingual web platform supporting informal carers of older people is currently being developed and implemented in 27 EU Member States, as part of the INNOVAGE project[1], funded by FP7. Additionally, a limited number of web services will be developed for secondary target groups: care professionals and employers of carers in paid employment. The overall goal of the new web platform is to improve the quality of life of informal carers through the provision of web-based support services. This paper summarises the main steps and methodology used for the development phase, as well as concerning the pilot test and implementation of the platform, which should be publicly available in Spring 2015.

The Italian National Institute of Health and Science on Aging (INRCA)[2] and Eurocarers[3] are the partners involved to carry out these activities.

2. Solution Approach

The development of the web platform was based to a user-centred design approach. Carers' needs and types of support were defined through previous experience of relevant European research projects such as EUROFAMCARE, Carers@Work and CARICT (Lamura et al, 2008; Hoff & Hamblin, 2011; Barbabella & Lamura, 2011).

A review of good practices was then conducted by analyzing available web-based services for informal carers, care professionals and employers of working carers across Europe (Schmidt et al, 2011, Carretero et al, 2012). Furthermore, a consultation process with the INNOVAGE WP3 Advisory Board and other external experts, users and stakeholders was organized.

The second project phase involves the pilot study, to be carried out in the first half of 2014 for testing the quality of contents, usability and effectiveness of the web-based support services to an expected sample of 120 end-users. Services will be piloted in Italy, Germany and Sweden in a one-group pretest-posttest study for a period of 12 weeks. Questionnaires administered to carers aim to assess health status, quality of life, social support, and self-perception of carer's role, as well as usability, usefulness and appropriateness of the web services. Data monitoring of navigation patterns and usage of on-line services will be conducted periodically during the 3-month intervention. An expert meeting with experts will discuss and validate results from the pilot test at the end.

[1] The project INNOVAGE – Social Innovations Promoting Active and Healthy Ageing (www.innovage.group.shef.ac.uk/) aims at developing and testing, as well as surveying and cataloguing, social innovations that will have a solid impact on improving the quality of life and well-being of older people. In particular the project aims to contribute to the EU goal of extending healthy life years, through the development and implementation of four major social innovations in the fields of user-driven housing for older people (WP2), web-based platform for carers of older people (WP3), improving obesity-related outcomes in older age (WP4), and long-term care in motion (WP5).

[2] www.inrca.it

[3] www.eurocarers.org

After the evaluation of the pilot study, services will be implemented and disseminated in EU-27 and contents will be available in all related official languages. In each country, a carers or disease-specific organisation will undertake the tasks of implementing, updating, and disseminating the services among the target groups. In 2015, there will be the on-line publication of the web platform, becoming publicly accessible to users all over Europe.

3. Conclusion

The development and implementation of this new platform will constitute a first step for filling the gap that still occurs in many European contexts and for fostering recognition of carers at all levels. This last point, however, should be addressed through appropriate strategies aimed at increasing opportunities of self-empowering carers (making them aware of their role and ways to deal with it) and community building (creating strong user organisations with advocacy and lobbying purposes). The on-line services could be a good opportunity for contributing to overcome barriers concerning these factors, especially in countries where the debate and discourse on informal care is less advanced (like in the Mediterranean and Eastern European areas).

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RELAXEDCARE - UNOBTRUSIVE CONNECTION IN CARE SITUATIONS

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Abstract

"Is my mum doing fine just at this moment?" Answering this question, in a quick way without calling or visiting every time could relieve a lot of stress from informal caregivers (ICs). The "RelaxedCare system" aims to build a solution upon an existing AAL platform that uses a multi-level pattern recognition approach to detect the current state of an assisted person (AP) and communicates it in a pervasive and unobtrusive way to the IC.

1. Introduction

The current approach for ICs to find out how the AP is doing is to call or visit very regularly, causing stress due to the needed time and feeling uncomfortable when not being able to do so. Very often the quantity of contacts is increased over time, but the quality suffers enormously.

2. State of the Art

In Europe, there are hardly any products available that tells the IC the wellbeing state of the AP. Existing products are quite different with regards to availability, functionality and cost. Many of them - such as BeClose (Hanson et al., 2011), Live!y (Lively), eNeighbor (Roush, 2009), PERs+ (PERs+), Sonamba (Sonamba) and SimplyHome (SimplyHome) - are only available in the US. QuietCare (QuietCare) seems to be available internationally, but we were unable to determine geographical availability for WellAWARE (Doumas, 2011), GrandCare (GrandCare) and Rest Assured® (Rest Assured®).

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3. Objectives

APs living alone and in need of care do not really want to be under supervision. Thus, such a system has to be capable to react in a fast and clear manner while bringing as little intrusion as possible. Hence the system in development must be able to: a) allow unobtrusive and automatized monitoring of the conditions of the AP, without interfering with their individual lives and b) allow for unobtrusive living of the ICs, reducing the need of additional caregiver.

4. Service Model

RelaxedCare provides an IC information on the wellbing status of the AP, by monitoring her/his physical activities and social interaction To be able to gain information on the status, sensors have to be installed at the place of the AP. While a sensor can be turned off (or detached from its mount and stored away) to ensure self-determination of the AP, he/she must be aware that each deactivation dilutes the reliability of the automated data analysis. at the side of the IC, RelaxedCare integrates pervasively into the environment at home and at work. Nice designed objects reflect the status of the AP. When mobile, a smartphones app can be used. Examples for such objects could be lamps, changeing their color according to the AP´s state.

5. Planned Development Process and User Involvement

RelaxedCare follows the ISO 9241 (Ergonomics of human-system interaction) and its user-centered design process (UCD) in combination with the user-inspired innovation process (Dittenberger, 2012).

The “user inspired innovation process” combines process methodologies from the fields of creativity and perception (Csikszentmihaly, 2010), design thinking (Brown, 2009; Plattner et al., 2009), qualitative social research (Bortz & Döring, 2006; Creswell, 2009; Flick, 2009), design research methods (IDEO, 2003; Martin & Hanington, 2012) and innovation management including ecological, technological and economic issues (Gassmann & Friesike, 2012). This process enables the active involvement of knowledge and methods of different areas of academic research, design and industrial practice. With the combination of these various fields of expertise, the user-inspired innovation process aims at shifting the design process from design thinking to a holistic-thinking process methodology. It is applied for RelaxedCare as a guide for navigating through the complex process of holistic and innovative product development.

For the RelaxedCare project, the most important resources are the end-users. User involvement takes place in Austria and Switzerland. Pairs of end-users (AP and IC) are involved throughout the project and will test the prototypes. Detailed and appropriate information about the RelaxedCare project is provided to all end-users. The dissemination activities put an extra focus on informing end-users and ICs.

6. Applied methods of the User Involvement Process

During the first phase the method Assumption Personas (Adlin, 2011) was conducted with the goal to initiate an intensive discussion and to create material for reflection and guidance during the entire development process for all team members. The second phase included the methods Questionnaire (Bortz & Döring, 2006) and Show and Tell (Curdale, 2012). These methods were chosen to get structured impressions and insights into the everyday lives of people from both target groups and their preferences in product criteria. Phase three employed the methods Focus Group Discussion (Lamnek, 2010) and Cultural Probes (Gaver et al., 1999) with the aim to be able to discuss the findings from phase two. A Design Workshop initiated the fourth phase of the research process and was conducted in order to develop product criteria which are not only functional, but also to follow an emotional and haptic approach. The last phase scheduled Structured Interviews (Courage & Baxter, 2005) in combination with Contextual Inquiry (Kuniavsky, 2003) which were used to get structured and tightly focused information on technological items already in use in everyday life, addressing especially the technological devices and motivations of their usage in everyday routine within both user groups, as well as to get information about possible usage of technological devices for care situations. The current care situation was also interviewed.

7. Outcome of the User Involvement Process

Summarizing the entire outcomes of the user involvement process:
Elderly: Underestimate their health status, do not call when something happens and do not want to disturb their caregiver. They wish for solicitousness on behalf of the caregiver and do not like to adapt to new devices, but in general are not against technical support in everyday life.

Caregiver: Wish to have networks and share the burden of caring. Devices in use must be easily comprehensible. Caregivers wish for notifications for actions of older adults and connections to different family members

Both user-groups: For both user-groups wallet, keys or bunch of keys and talisman (personal bondage strengthened due to personal history) are the most important things which are carried along.

8. Conclusion and Future Work

Based on the requirements analysis, the consortium creates scenarios representing the needs of the stakeholders and benefits of RelaxedCare.

RelaxedCare will be based on HOMER (Fuxreiter et al., 2010), an existing AAL middleware platforms that will be adopted, and probably AALuis (Mayer et al., 2012) for generating user interfaces. A research focus is put on mathematical models for multi-level behaviour pattern recognition and the development of likely designed pervasive user interfaces.

A first functional prototype will be developed, including the basic technological infrastructure, well designed everyday objects used as pervasive I/O devices and a smart phone app to be used by the IC.

Acknowledgment

RelaxedCare is co-funded by the AAL Joint Programme and the following national authorities and R&D programs in Austria (bmvit, Programm benefit), Switzerland (OPET), Slovenia (MIZS) and Spain (National Institute of Health Carlos III, and Ministerio de Industria, Energía y Turismo (MINETUR)).

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INTRODUCTION: CARE4BALANCE: BALANCING INFORMAL CARE THROUGH MULTISTAKEHOLDER SERVICE DESIGN

Ann Ackaert, An Jacobs, Karen Willems, Saskia Robben, Marije Kanis, Martijn Vastenburg and Ziad Nehme[1]

The AAL5 project Care4Balance aims to bring balance in the workload between professional and informal caregivers. The project kicked off on the 1st of March 2013 with companies and research institutes from four different European countries (Switzerland, France, Belgium and the Netherlands). The outcome will be an on-demand and multi-stakeholder service design platform that is based on an intelligent dashboard system that represents the status and context of all the actors involved, namely elderly people, informal caregivers and formal caregivers.

The proposed intelligent dashboard is an always-on interactive device that aims to empower the elder user through its ease of use and by enabling control over their own health and care needs. This dashboard will be used to show status information and will enable communication and coordination towards professional and informal caregivers. The information that feeds the status board will be collected both through user-generated input and through automatically collected contextual sensor data. The back-end system will detect and analyze care demands and/or cumbersome situations.

To translate this ideal into an integrated prototype, mixed methodologies, such as tech-cards and asset-cards approaches are used to explore the different requirements and modules needed for the proposed technology. Furthermore, user-centered design techniques, such as iterative prototyping, focus group sessions and field studies are employed to evaluate the technology under development with the different stakeholders in real-world settings.

The first results obtained in the Care4Balance project include an assessment of the requirements and needs of the different stakeholders –namely, (in)formal caregivers in relation to the overall care needs of the elderly- on the one hand, and the use of technology for a better task coordination on the other hand. First scenarios of the future Care4Balance service, as proposed by the researchers involved, are being evaluated and reflected upon amongst informal and formal caregivers and the seniors themselves. In this way, guidelines and inspiration for iterations of the prototype to be tested in the field are discussed and compared between different stakeholders and in different countries.

[1] iMinds - IBCN/UGent, iMinds-SMIT/VUB, CREATE-IT / HvA, connectedcare and Pervaya

SESSION A6

Supporting mobility of older adults by ICT

ADAPTIVE GUIDANCE FOR THE MOBILE ELDERLY

L. Spiru[1], I. Solheim[2], I. Turcu1, J. Rovira Simon[3]

Abstract

The idea behind MobileSage (2011-2014) is to provide elderly with context-aware, personalized, and location-sensitive tools that allow them to carry out and solve everyday tasks and problems in the self-serve society when and where they occur, "just-in-time". Two innovative services are provided for the advancements of older people's independence and mobility in the daily life, including in particular transportation and travel. The means is instantiated by a personal agent on the smartphone, which provides a *help-on-demand service*. This service offers relevant, accessible, and usable content upon request, in the form of multimodal and personalized instruction and guidance, enabling people to help themselves.

1. Introduction

The rising ageing population all over the world demands novel solutions for new models of social- and healthcare services to support independent living and enhance quality of life. The need and also impact on society is on a global scale. Modern elderly [1] are increasingly looking for useful, user friendly, and personalized ICT services that add value to their active and mobile live styles and that can help them to stay active despite various impairments. Here MobileSage provides a timely approach and solution.

Two innovative services are provided for the advancements of the elderlies' independence and mobility in the daily lives, focusing in particular on transportation and travel solutions. The means is instantiated by a personal agent on the smartphone that provides a Help-on-Demand service. This service offers relevant, accessible, and usable content upon request, in the form of multimodal and personalized instruction and guidance, enabling people to help themselves.

Users in the three participating countries Norway, Romania, and Spain have been systematically involved in all stages of the innovation process: comprehensive studies of user needs, definitions of requirements, and evaluation of solutions. There are partners in all three countries dedicated to user involvement and piloting with users. A special attention was paid to the related ethical issues (informed consent, management of end-user withdrawal and exit strategy, personal data protection, ethical control instruments within the three national pilots of the MobileSage project [3].

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2. The MobileSage project – overview[1]

MobileSage stands for Situated Adaptive Guidance for the Mobile Elderly. Its aim is to give the modern elderly a smart agent that provides relevant, accessible, usable, and multimodal assistance for carrying out and solving everyday tasks and problems in the self-serve society, whenever and wherever they occur.

1. MobileSage ComponentsMobileSage consists of two components:the Help-on-Demand (HoD) mobile application and the Content ManagementService (CMS).Figure 1 shows the overall architecture.The Dialog Manager is in contact with the Reasoning Service from the Localization Service which has the responsibility to determine the user's location with highest possible accuracy, based on technologies like A-GPS,WLAN,GSM/GPRS,and NFC, and triangulation methods. See illustration 1 below.

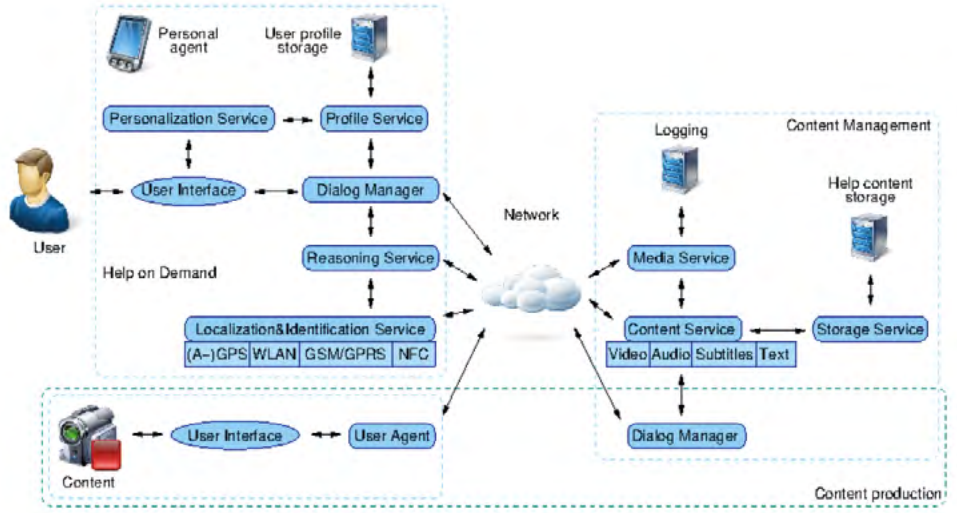

Fig. 1. *System architecture and major building blocks for HoD (left) and CMS (right)*

2. Content Management Service: The CMS is a cloud service running on a web server. Content producers interact with the service's Dialog Manager, which in turn controls the User Inter-

[1] Help-on-Demand Service: The HoD application is the personal agent, a thick-client application running on a smartphone. It is built up in a service-oriented manner, see Figure 1. The user interacts with the Dialog Manager through the User Interface. The Dialog Manager utilizes information from the Profile Service taking care of the user profile. The user profile stores personal preferences and usage patterns. User behaviour and User Interface events are logged and analyzed by the Personalization Service, upon which the user profile is readjusted.

face on a User Agent like a web browser. The logic for handling the multimodal content lies in the Content Manager, which has a modular design to be able to add additional modalities in a simple way. The prototype supports the modules Video (with or without captions), Image, Audio, Text, and Formatted Text (basically simplified HTML). The content is stored by the Content Service. It is also possible to refer to content located elsewhere (e.g., from other video services).

3. System Design

For the HoD service, a user profile lays the ground for personalization and adaption of the service. It contains the user's settings and preferences, such as font size, emergency number, accepted media types, and additional languages. Also other parameters are stored there, including usage log. This log is the basis for system adaptation. Screenshots of the HoD are shown in Figure 2. Both primary and tertiary users have requested that it should be possible to associate content with specific locations or points of interest. However, it should also be possible to link certain content to several locations (e.g., "how to buy a ticket" is valid for any ticket machine in the Oslo area). Moreover, there are situations where several pieces of content are relevant at a single location (e.g., how to validate a ticket, arrival time of the next bus, or choosing the correct platform for departure).

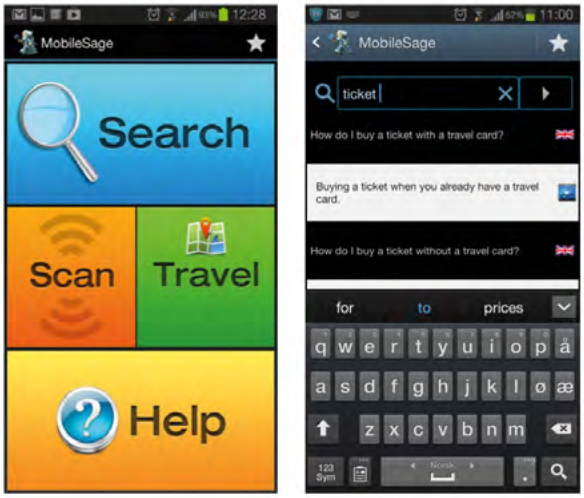

Fig.2, *Help-on-Demand main screen and ticket buying interface*

4. Conclusion and outlook

We have presented the MobileSage prototype, a service for delivery of context-aware, personalized help content in an on-demand manner. MobileSage incorporates the needs of primary, secondary, and tertiary users and has been evaluated by primary users in user tests.

The aspects of content provision include multimodality and internationalization to take care of user personalization, multiresolution

and multi-rate for device adaptivity, and location-aware media searches for relevance. It has been shown that the system can index both internal and external media databases.

The MobileSage project innovates in the area of supporting seniors to train, regain or compensate their indoor and outdoor mobility [4]. This support is equally important for old people carers [5]. In terms of acceptance, the general belief is that people become more reluctant to advanced technologies as they grow old. The field trials of this project revealed that including the several seniors with mild to moderate memory impairments from the group were interested in this kind of support, and that their reluctance is mainly due to stigma and the fear that they will be unable to learn how to use a smart device. The main requirements for a high acceptance are the user centered design, friendly interfaces, easy access to various functions of the application and a good initial training with a human assistant especially in case of people with cognitive dysfunctions.

Acknowledgements

This work is partly funded by the European Commission through the AAL Joint Programme, the Norwegian Research Council, and national bodies in Spain and Romania. The authors would like to thank the consortium members for their valuable contributions and all individuals involved in the user studies for their feedback.

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GETTING ROUTABLE DATA FOR INDOOR NAVIGATION USED BY ROLLATOR USERS

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Abstract

This article describes iWalkActive AAL-JP project research activities on obtaining indoor routable data for rollator users. The aim is to offer people a highly innovative, attractive walker platform that greatly improves the user's mobility in an enjoyable, motivating way, while at the same time enabling physical activities that are either impossible, or very difficult to perform with a traditional rollator.

First results of the requirements analysis and first outcomes of the specification concerning indoor-navigation are presented. The concept of the interaction of indoor-localisation and indoor-navigation is explained. Also the challenges in seamless navigation between indoor and outdoor are addressed. Indoor-navigation doesn't work without routable data for the indoor of buildings, so that the paths can be calculated. The requirements for the buildings data and the process of getting routable data are discussed.

The navigation shall guide the user on the shortest possible path, but with respect to navigable paths for a walking aid. In addition information about the conditions and properties of downward and ascending slopes of the paths are vital as well as exact information about the access to the next stairs, steps or elevators.

1. Introduction

Active living is a way of life that integrates physical activity into daily routines. This is particularly important for older people, as regular exercise can increase both mobility and the potential for independent living. However, a large proportion of the age group between 60 and 85 years old suffers from various kinds of physical disability that prevents them from living as actively as they would like to. Rollators have become very common mobility aids, as a means for walking support. In Sweden and Germany ~4% of the population uses a rollator.

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iWalkActive AAL-JP research project, coordinated by the iHomeLab Living Lab, creates an active walker for active people. It takes an innovative walker frame – the Veloped - extends it with an efficient, powerful e-drive and combines it with the possibilities of state of the art ICT technology acting as a mobile device dock connected to valuable assistance services.
The resulting activity platform offers outdoor as well as indoor navigation. While there are several data sources for outdoor navigation – e.g. the commercial Nokia data or the open source Open Street Map –there is no source for general available data indoors. Google just started to provide maps of buildings. Navigation not only needs maps as a graphic, where the position of the user can be shown. It primarily needs routable data, so that the navigation system can guide the user along a path to the destination. The above mentioned datasets contain such routable data for outdoor use.

The purpose of this paper is to show how routable data can be obtained and what other data is needed. The special needs for rollator users are considered.

2. End User Involvement

End users involvement is an important issue for iWalkActive. Therefore potential end users were asked about their needs for a walking aid.

2.1 Process of requirements gathering

In an early phase of the project the assumptions of the projects proposal had to be aligned with the requirements from end users. This was done using different techniques:

- 6 focus groups including end users, potential end users, family/relatives and healthcare professionals.
- Online survey completed by 254 respondents, of which the majority are end users.
- Delphi Study with 5 experts from the rollator and healthcare fields.
- Presentations/discussions with professionals involved in matters that especially address the living situation of elderly people.

The overall results of the focus groups, surveys, Delphi study and discussions are described in Morandell et. al. (2013). In the following the focus lies on the results of the end user involvement concerning indoor navigation.

The evaluation of the questionnaire (see Table 2) shows that for certain situations - particularly in public transport - there is a need for indoor navigation so that the correct gate or platform can be found easily.

The discussions in the focus groups resulted more obvious in a need for indoor navigation, but only if people have been confronted with a concrete situation like looking for an examination room in a hospital.

Table 2 *Number and percentage of respondents finding features concerning indoor navigation useful.*

Feature	useful [#]	not useful [#]	useful [%]
I can plan my bus or train trip and automatically get guided to the right platforms.	54	56	49%
I can quickly find the different rehabilitation departments in the local hospital.	28	51	35%
In a big supermarket, I get guided based on the location of the items I have noted in my shopping list.	28	52	35%
By entering the gate number in an airport, I get directions and the estimated time to walk there.	40	40	50%
I can quickly and easily find the way to my room in a big hotel.	27	49	35%

Overall, a significant amount of end users find indoor navigation to be a useful feature. Therefore, the iWalkActive consortium decided to implement indoor navigation.

2.2.2. User Stories

The development of services in iWalkActive is based on user stories. Concerning indoor navigation, the user stories provided in Table 3 have been extracted out of the end users enquiry.

Table 3 *User stories concerning indoor navigation.*

As user I don't want to switch between indoor and outdoor navigation, because during walking I can't operate the device.
As user in a large rehabilitation centre I wish to get information on the route to my room via my Smart Device / mobile.
As user I want to find my way back to my room in a big wellness resorts from anywhere at any time.
As user I want get a hint that there is a swimming pool in the hotel and to be led to it if I want.
As user I want to get guidance in different big holiday resorts / wellness resorts / cruisers, i.e. to find my room / different event areas.

As user at a rehabilitation centre I wish to get indications on the route and the length of the route to the next daily event / treatment.
As user I want to find the radiology inside of a big hospital to get to my appointment in time with iWalkActive.

Two types of user stories can be identified based on user's enquiry:

- Finding a location where the identification of it is known (finding an examination room in a hospital).
- Discovering an unknown building (in a big holiday resort).

3. Solution of iWalkActive

Through the use of a smart phone or tablet computer, that can easily be attached to / detached from the active walker, the user will enjoy a plenitude of assistive services. These iWalkActive services will include seamless indoor and outdoor navigation, which is a novelty in itself. The user can for example navigate to a chosen goal, walk along a predetermined route, determine the position at any given time, and get tour-specific data like distance, speed and time.

Indoor navigation – like outdoor navigation – is based on two elements: localisation and routing. First the user is localised so that the system knows where he is. Based on the actual location the user then is routed towards his destination.

3.1 Localisation

For outdoor localisation GPS is used because most smart devices include the receiver for GPS. Also GPS is a worldwide standardized system.
For indoor localisation no such standardized system exists yet. Targeted are rehabilitation centres, holiday resorts or hospitals and mostly they all are equipped with WLAN. Therefore the localisation system in iWalkActive is based on WLAN. To use WLAN as the indoor localisation system needs special preparation procedure: a so called site survey must be performed. The site survey measures the signal strengths of the access points of the WLAN installation and relates the measurements to a specific location in the building. Out of these data all other positions in the area of the WLAN can be calculated.

3.2 Routing

For routing, a navigation system needs maps. Maps are a representation of the reality that exists in many formats for outdoors. There are free available map data like OpenStreetMap; but also commercial available maps like the one from Nokia/Navteq.

A completely different picture we find concerning indoor maps. Google has just started collecting and publishing map data of buildings. But this data is not yet routable. Therefore, if a resort or hospital wants to offer indoor navigation, the routable maps for the buildings have first to be recorded. Routing the user to his destination is not only showing the most direct path but also respecting the capabilities of the user and logistical properties of environment. In outdoor navigation when driving a car the system may not route one along pedestrian paths or the wrong direction in one-way roads. In iWalkActive users of a rollator are targeted therefore the indoor navigation may not lead the user over staircases or through narrow doors. The navigation system has to know all the obstacles which can hinder a user reaching the destination.

Information on properties and quality of paths must be combined with the planned path. Only the knowledge of these additional data - e.g. staircases or gravel - makes it possible to guide the user as appropriate as possible to the destination. The needed data does partially exist for outdoors but is still unavailable for indoors.

Using the navigation of iWalkActive means also seamless navigation: for the user it makes no difference if he is in buildings or on a road. He even doesn't have to get active to switch between indoor and outdoor. The system does it automatically.

4. Further Work

As seen in chapter 3.2 navigation for people in need of a walking aid only works when appropriate data describing the paths is available. During the project iWalkActive it is not possible to collect data for large areas. Therefore two locations have been defined where detailed data on paths will be captured and made available to the navigation. After capturing the data user tests will be conducted in a next step.

5. Acknowledgement

The iWalkActive project is partly funded by Ambient Assisted Living Joint Program (AAL-JP) and its national partner funding agencies of Switzerland, Sweden and Austria.

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WAYFIS: PERSONALIZED WAY FINDING SERVICE FOR SENIORS

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Abstract

WayFiS is focused on encouraging the mobility of seniors, and hence, the quality of life and daily living, providing them a personalized route planning service according to their specific limitations and healthy habits, and taking into account both public transport and paths by foot. Thereby, WayFiS intends to enhance the low self-confidence that many seniors experience when planning, managing and executing outdoor activities, travels and transports by themselves, and besides, allows to maintain the mobility, to guarantee the orientation and to preserve maintain a high degree of independence and autonomy. The innovation of WayFiS is that it constitutes the first personalized route planning and recommendation service for elderly people. The resulting WayFiS service has been tested in real-life user environments in pilots trials carried out in Spain, and Hungary successfully.

1. Introduction

The European WayFiS project (2011-2013) aims at improving the mobility of seniors, and hence, the quality of life and daily living, providing them a personalized way finding service, considering both public transport and paths by foot and taking into account their specific limitations and healthy habits, and with the challenge of aggregating a huge amount of information from different sources and including them into one mobile service with an intuitive interface (voice-touch-write).

WayFiS responds to the need of improving the low self-confidence that many seniors experience when planning, managing and executing outdoor activities, travels and transports at their own discretion by solving the problems elderly people cope with when trying to move in unknown outdoor environments, thus enabling them to take part in the self-serve society. Therefore, WayFiS provides them a centralized service with all the necessary information, tailored to their needs and limitations, and that allows them to personalize and configure the trip planning at their

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convenience, as well as, once "on the way", helps them to execute it by providing actionable information.

WayFiS also brings several benefits to the society, as it affects the quality of life of elderly people at different levels. So, it allows them to maintain mobility, which is a crucial issue for enabling independent and healthy living; it also guarantees orientation, which is essential for safe moving around in an unknown environment; it also enables independent living by allowing elderly people to maintain a high degree of independence and autonomy; and it helps them to participate into digital self-service society.

The technical innovation of WayFiS relies on the provision of a set of seniors-oriented personalization and configuration services that make WayFiS totally oriented to users' needs. Thereby, the specific innovative features are the creation of an end-user profile that allows finding optimized routes to senior preferences in terms of Points of Interest, mobility limitations and so on; and seniors-oriented support along navigation with "wrong way" detection, "new route from here" calculation, support to jump in and off the transport means and voice guiding.

2. Methodology

A key component of WayFiS project has been the end users' involvement throughout the project, given that WayFiS service has been designed and implemented from and to the end-users.
First, a *User Requirements Phase* was performed with the objective of collecting the requirements from the end-users about the main characteristics, the main functionalities, the usability and the technology acceptance of WayFiS. In order to guarantee a successful requirement collection, several user assessment methods were applied including general surveys, focus groups and personal semi-structured interviews in which both quantitative and qualitative approaches were taken into account. The obtained results were fed directly into subsequent phases to ensure the strong user-centered focus of the project. Such results reflected some significant real needs of end users, as for example, health related needs like the necessity of a health monitoring system, safety related needs as the notification of easy paths along the way and the presence of alert systems for relatives in case of need, or transportation related needs like the necessity of some functionality for finding nearby public transportation stops and of easy to use route planner.

In parallel to this phase, the implementation of an *Ethical and Social Impact Study* was also carried out with the objective of covering the main directives and recommendations that should be considered in a project involving senior end users, as well as exit strategies and inform consent consideration to protect user's data and privacy.

After the *Development and Implementation Phases*, the WayFiS service was tested in real-life user environments in pilot trials carried out in Spain and Hungary, covering different ages, interests, needs and cultures and gathering a total number of 63 people (including caregivers, seniors and professionals).

Figure 1 *WayFiS Mobility Test in Badajoz, Spain*

The pilot trials were performed taking into account the uses cases defined during the project. So, two stages were considered: one first stage with a monitor following the elderly on their trip in order to understand their problems or doubts with the service, and a second stage for the elderly travelling independently where the tracking was done based in the mobile service's logs.

Finally, the obtained results show that users were generally happy about WayFiS although there were considerable differences in experience between novice and Smartphone-expert users. "Look and feel" was well perceived and comforted both the novice and expert users, to the point that sometimes it was observed that novice users tried to "click" the application icons without a fear; feeling like experts. That is a good feedback that the application encouraged the users to interact with it, instead of putting him/her in a role of a simple receiver of information and instructions. Also, the end users agreed that once the challenges with accuracy of the localization and positioning modules were corrected, there would be a high user potential for WayFiS, especially during longer trips, when roaming in unknown cities, even more if under time pressure to reach some particular destination at a given time, e.g., reach the hospital side for a scheduled appointment.

3. WayFiS Service

WayFiS is a twofold service for personalized route planning which enables seniors to create their personal profile through accessible and usable interfaces (PC and Android smart-phone), and allows them to plan routes according to his needs (limitation, points of interest, transport modes) and to have help through the navigation with features specifically tailored to users' needs like "wrong way" detection, support to recalculate routes and help to jump in and off the bus.

WayFiS service consists of a set of significant technological components as:

- **Web Portal** for creation of an end-user profile, route planning and easy access to "My Routes" and "My Places", which allows to set-up personalized route planning through the configuration of a set of parameters related to preferred transportation means and points of interests, as well as a set of features related to health limitations (both from the mobility and cognitive point of view).
- **Mobile application** for user profile edition and personalized route planning, which also provides navigation and senior-tailored support along the route as voice guiding and help through the steps of the itinerary, wrong way detection and help to jump in and off bus.
- **Seniors-based Route Recommendation Service**, which provides a list of points of interest for the users, according to what specified in the end user profile, based on the set-up of an intelligent senior profiling system applying semantic technologies
- **User localization and Positioning Service**, which provides reliable and accurate outdoor and indoor user positioning to support the end user along the travel.

Thereby, the WayFiS final service is constituted by the *Web Portal* and the *Mobile Application*.

Ultimately, the main added value of WayFiS compared to the other solutions available in the market is that it constitutes the first personalized route planning and recommendation service for elderly people. So, WayFiS service will be focused on the identification of routes using public transportation and pedestrian paths according to the senior needs in terms of mobility limitation like maximum walking path and maximum transfer times.

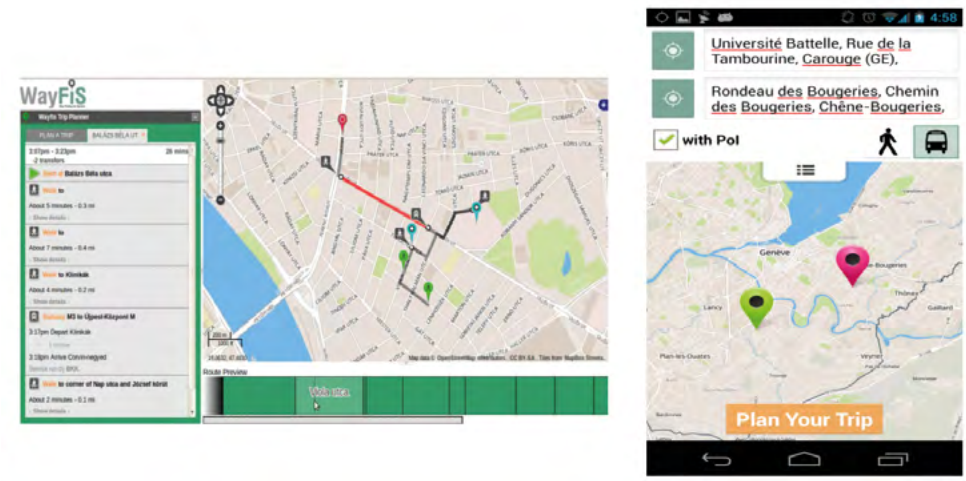

Figure 2 *From left to right: WayFiS Web Application: Personalized route and WayFiS Mobile Application: Itinerary creation*

Acknowledgements

WayFiS is a project funded under the Ambient Assisted Living Joint Programme (AAL JP) on the third call AAL-2010-3, with the collaboration of the European Commission, Ministerio de Industria, Energía y Turismo of Spain (MINETUR), Federal Office for Professional Education and Technology (OPET) in Switzerland and National Office for Research and Technology of Hungary (NIH).

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ICT AS A TOOL FOR MAINTAINING OLDER PEOPLE'S MOBILITY

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Abstract

This article presents an exploratory study on older adults' mobility and use of ICT. With advancing age, people are less mobile. This may cause a loss of quality of life and independence. The limited mobility may be due to personal characteristics and choices (age, education, place of residence etc.), age-related deficiencies (hearing, memory, attention etc.), changes in lifestyle, or a mismatch between the transportation offers and older adults' needs and desires. The objective of the paper is to identify why older adults' mobility decreases and whether ICT can provide a potential assistance for people aged 50 and more. For this, we have conducted an online questionnaire about the daily travel practices distributed to people aged 50 and more. Results show that ICT have a promising future to facilitate the mobility of older adults.

1. Introduction

A review of the literature shows that, with age, older adults display declining mobility. The decline in mobility functions is usually provoked by declines in cognitive functions (e.g. memorization difficulties, (Salthouse, 2004; Moffat, 2009) or declines in physical functions (e.g. walking speed, cardio respiratory functions), (Fisk, Rogers, Charness, Czaja, & Sharit, 2004). The current technology market offers a plethora of tools (i.e. GPS, mobile phones, interactive watches etc.). However, these are not fully accessible for the entire population because of a number of reasons (e.g. economic reasons and technology experience). In this sense, these tools may be regarded as potential tools for older adults. We suggest that access to resources plays a key role in the use of technologies. The issue of accessibility can be understood by analysing the older adults 'activity of mobility. Indeed, difficulties faced by older adults during their movement would be related 1) to the inaccessible environment, and/or 2) the personal difficulties. Thus, the aim of this study is to

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identify why older adults' mobility decreases and how ICT can provide a potential help for people aged 50 and more.
Thus, the questions behind this study are:

- What are the types of difficulty experienced by older adults when moving both outdoors and indoors?
    - Are these intrinsic (i.e. physical, cognitive, sensorial and physiological) or extrinsic difficulties (i.e. inaccessible stairs, lack of information)
    - How ICT can help older adults to cope with these difficulties?

2. Method

The study was based on an online questionnaire about the daily travel practices (public and personal transport) distributed to people aged 50 and more. The questionnaire included 20 questions. In this paper, we only focus on the data related to mobility difficulties and the navigation support used by older adults. There were 234 respondents including 140 people aged 50-64, 76 aged 65-74 years and people 18 people 75 years and over.

3. Results

First, the results of the questionnaire show the frequency of travel outside one's home according to the age group (Figure 1). Two phenomena seem to appear. The first one is that the frequency of travel decreases with advancing age. The second one is that the respondents aged 75 and more move more often than the respondents aged 65-74. We can suppose that even though they move more frequently, they cover shorter distances compared to the group aged 65-74 (Pons, Vimbert, & Giovanini, 2011). We can thus assume that the people aged 75 and more differ from other age groups in terms of mobility practices.

Then, the results of questionnaire presented on the second graphic show the main difficulties encountered by older adults in their mobility (Figure 2). Firstly, it is clear that with advancing age, the number of individuals experiencing difficulties increases. Thus, after 75 years, more than 40% of the respondents report difficulties when moving around. These difficulties are mainly due to physical problems (e.g. difficulty carrying heavy bags when walking) and to sensory and physiological limitations (e.g. cardiac, respiratory, visual, auditory problems). This may mean that the environment is not adapted to the mobility needs of older adults or that its physical characteristics provoke difficulties with their navigation and orientation. Physiological and sensory difficulties, though important, do not seem to be the main obstacle to the mobility of older adults.

Second, the results of the questionnaire show that with the advance in age, people tend to use more navigation aids (e.g. technologies, route descriptions, classic maps) (Figure 3). Moreover, with cohorts' effects we might imagine that the older people of tomorrow will use more technology. However, there is an exception in the group of seniors aged 75 or more, who tend to use technol-

ogy less often. This tendency may be explained by a generational effect or by the limited need of such technology if moving over short distances.

The most commonly used aids are GPS (in car) and internet, and then we can see in second place street map and paper map (Figure 4). Also, older adults use very little environmental information (e.g. billboards, traffic signs, audio information).

If people rely on aid other than environmental information, it may mean that this revealed use of these resources are not sufficient for older adults to find their way. This could also mean that the built environment is not affordance or missing resources are not directly accessible and / or usable.

The results shows that the older adults' mobility decreases because they have difficulties for walking, for carrying bags and because they stop active working life. Nevertheless, this reduction does not affect all elderly people. For example, over 50% of the respondents aged 75 and more say they move frequently (69% for the respondents aged 50-64). This phenomenon can be partly explained by the use of travel assistance (public transport, possession of a driving license, ICT etc.). Technologies can thus help older people compensate some difficulties. We think that with cohort effect the potential use (i.e. use that for now "sleeps") become a revealed use in 10 years.

4. Discussion

These results can be discussed to assess the value of technology as an aid to mobility, and therefore as a contributor to maintaining older adults' independence. We identify the current use of these technological tools and their potentiality to support mobility - that is to say, identify the potential technologies have for enhancing older adults' mobility tomorrow. In other words, we identify revealed accessibility which focuses on the actual use of ICT for mobility, and potential accessibility which focuses on the potential rather than the automatic use of ICT.
We think that the concepts of potential accessibility and revealed accessibility can help us understand the mobility of older adults. "By comparison with the revealed accessibility approach, the potential accessibility approach is more narrowly focused, the emphasis being on the opportunity or potential for a certain type of behaviour rather than on actual behaviour" (Moseley, 1979). In future work, we will suggest using this concept for the understanding of the evolution of ICT usage by older adults.

The results show that the environment is the least used resource by the older adults. ICT is a potential resource that could become a revealed resource. ICT can help people, in order to have new alternative itinerary (i.e. preparation and realization) and to obtain complementary information for navigation. Moreover, this study shows that the usage of ICT increases with aging, therefore older adults of tomorrow will be more familiar with ICT usage. So, ICT can help older adults to compensate age-related decline in mobility.
This study is a work-in-progress. We would like to enrich this study with a more detailed analysis of ICT resources and underlying mechanisms of their utilization.

Figures

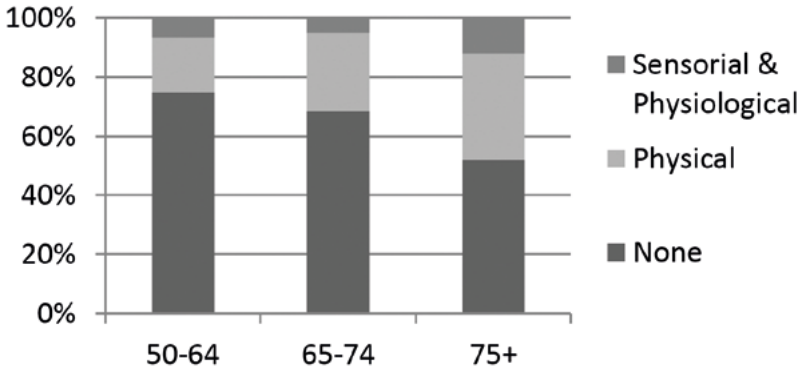

Figure 1 *Mobility difficulties of older adults*

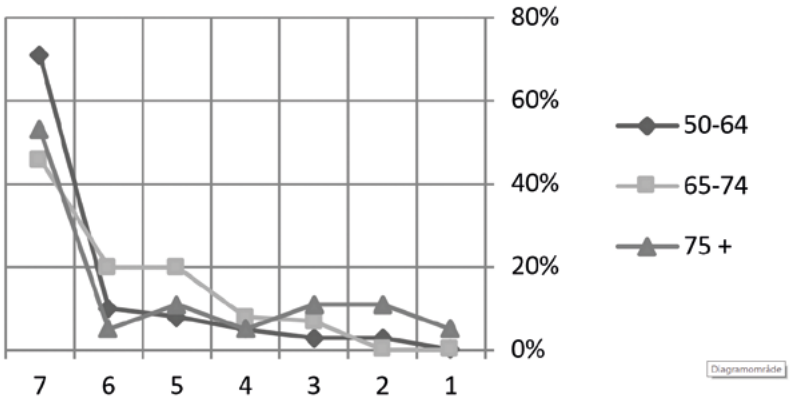

Figure 2 *Frequency travel of the week*

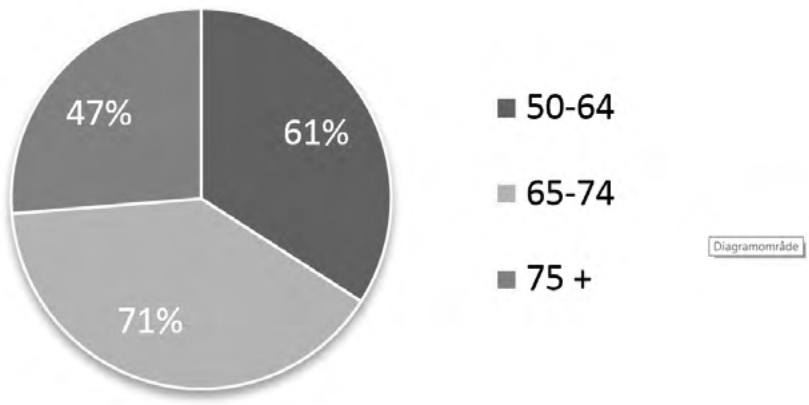

Figure 3 *Use of technologies and other navigation aids*

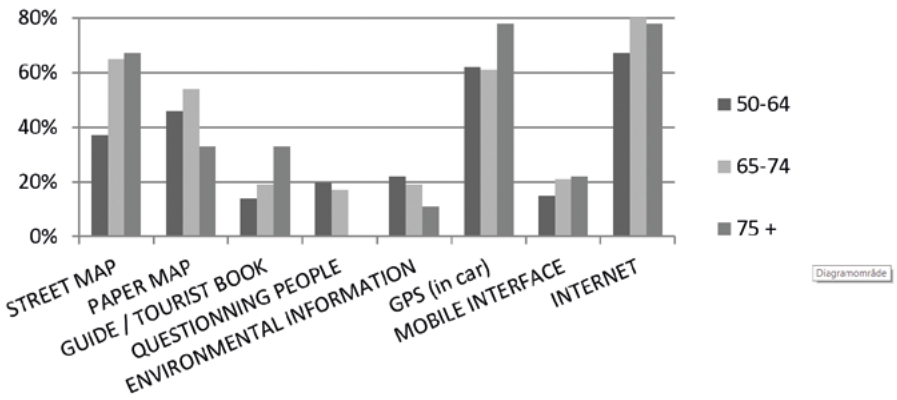

Figure 4 *Types of navigation aids*

Acknowledgements

This study has been partially funded by French Environment and Energy Management Agency (ADEME), by the French Atomic Commission (CEA, LIST) and by the AAL ENTRANCE project.

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ALICE - ASSISTANCE FOR BETTER MOBILITY AND IMPROVED COGNITION OF ELDERLY BLIND AND VISUALLY IMPAIRED

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Abstract

An ageing population faces challenges such as different health conditions, diseases, decline in certain physical abilities etc. Elderly people are also more likely to have some vision problems and thus have to deal with different vision-related barriers. This paper focuses on the presentation of the first stage of the Alice project (AAL-2011-4-099) which is focused to the development of wearable assistive device for a target group of visually impaired people aged 55-75 in order to improve their quality of life. In order to collect the needs of blind elderly people in relation to the use of an electronic navigational device a special research of end-users needs and requirements has been undertaken. For this purpose, the User Centred Design (UCD) methodology is being used with the main objective to develop device with permanent user involvement during the project.

1. Introduction

People that suffer a visual impairment face problems related to orientation and mobility. An overall contextual understanding of space semantics, interaction with surrounding objects and serious difficulties with planning, are just some of the aspects of these problems.

As the population ages glaucoma, macular degeneration and diabetic retinopathy will result in a continuous future growth of visually impaired people (Schwartz, 2000). Attention needs to be given to this group to provide them with appropriate devices to enhance their mobility and orientation.

The navigational assistant developed within the Alice project will offer visually impaired users an understanding of what is around them, based on a fusion of information gathered from several sensors within the device. ALICE will consist of a smartphone wirelessly connected to a remote processing unit. As well as the camera, ALICE will utilise sensors for position detection, orientation, movement and distance from obstacles. The position information will be cross-referenced and

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processed in combination with the visual information so as to provide the accurate information needed for navigation.
ALICE will use artificial intelligence to plan and anticipate by bringing together all the information from its sensors and combine it with previous knowledge. The system will deliver the information from the sensors as sounds and words via a synthetic voice. Users will be able to communicate with the system via voice input.
The project intends to review the most significant state-of-art in the area and compile information reflecting the mobility requirements of older adults. The ALICE project officially started in June 2012 and will last for 30 months. Furthermore, it will also present the expected social and economic impact of the project solution.

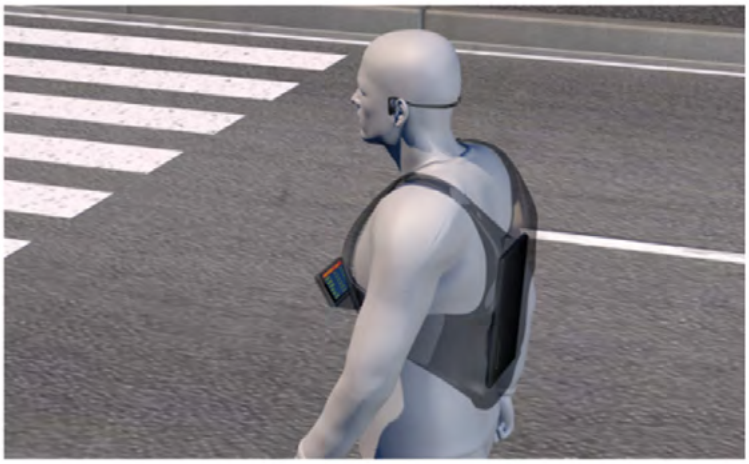

Figure 1 *Alice device consists of smartphone wirelessly connected to a remote processing unit.*

2. Problem Statement

In order to keep an ageing population active and healthy some essential services and support devices should be provided to them. Fully sighted people receive by sensory senses most of their information from the environment surrounding them. Unfortunately, people with a visual impairment cannot receive this percentage and usually have several problems to move around (La Grow et al, 2011). Without appropriate support visually impaired people won't have the mobility skills to enable them to travel safely and independently.

When discussing the orientation and mobility of blind people, the first term refers to an individual's understanding of the environment, to the relationship of the particular objects among them and the relationship between objects and themselves (Appel & Brilliant, 1999). Building good orientation skills requires understanding certain concepts, including the shape of the object, the object permanence and some positional concepts like on, under, in, beside, left/right, etc. Furthermore,

the awareness of the body's position and the ability to notice different sounds or different textures of surfaces are also important (Sauerburger & Bourquin, 2010).
The term 'mobility' refers to the techniques which a blind person uses to aid himself while he travels. These techniques include: white cane, guide dogs, human guide and electronic travel devices. The most common and widely used accessory for enhancing the mobility of visually impaired people is the white cane.

Furthermore, guide dogs enable blind users to experience a different kind of navigation. The guide dog leads the person by so-called safe routes and around barriers on his way, including overhead objects. However, the use of a guide dog requires some adequate orientation skills, which people who became blind later on in their lives, have to gain.

In addition, there are several electronic travel aids, trying to improve independent mobility (M. Havik et al, 2010). For example, there are some devices that provide a blind person some signal when an obstacle or landmark is detected. However, currently no device exists with a basic comprehension of the environment that is essential for guiding.

3. Alice Approach

The Alice device will be designed to offer the blind user a cognitive description and it will use artificial intelligence (based on a fusion of sensory inputs and previous knowledge) to plan and anticipate useful information for the user. The system will finally verbalize its perceptions through an intuitive audio system, a synthesised voice which will translate visual to verbal information in a comprehensive and user friendly manner. Moreover, the user will be able to communicate with the system through a voice interface.

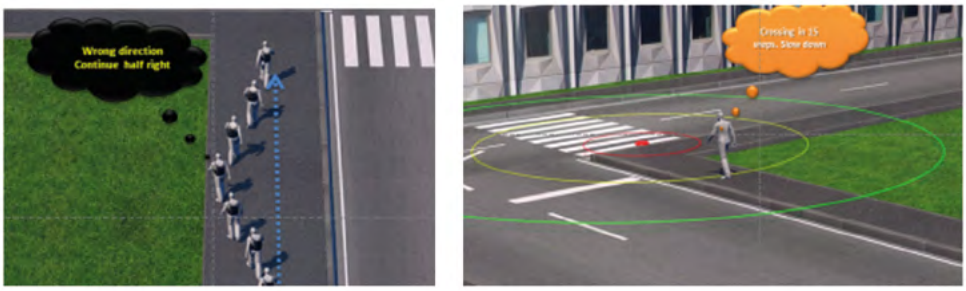

Figure 2 *Enhanced GPS navigation and crossing detection with Alice*

4. Concept and Terms

Although visually impaired people are all dealing with sight loss, potential Alice end-users have different needs and requirements dependent on their level of sight loss and lifestyle. Different circumstances have a significant impact on how individuals face sight loss and how they cope with their daily-living activities. As mentioned, a lack of mobility becomes a key barrier.

In order to collect the needs of blind elderly people in relation to the use of an electronic navigational assistive device a special research of end-users needs and requirements has been undertaken. For this purpose, the User Centred Design (Courage & Baxter, 2005) methodology is being used with the main objective being that the product will be developed with users during the project.

Firstly, several interviews have been conducted with blind and partially sighted individuals concerning their current needs and requirements relating to their indoor and outdoor navigation, travel habits and the problems they encounter when travelling in familiar and unfamiliar environment. This data, compiled by a special questionnaire, has been a basis for further analysis of user's needs, ideas and proposals. The analysis of this data has informed us that:

- End-users have various needs when navigating out-and-about. They have different levels of independence with some of them able to travel alone by using and assistive device or accessory. Others need a constant guide who will guide them wherever they go.
- Generally when inside a public building end-users find minor difficulties in orientating themselves in contrast to an outdoor environment. Even so they still face many obstacles such as rooms that are large, darkness in the corridors, glittering surfaces etc.
- When travelling, participants orientate themselves according to the traffic, other sounds in the environment (birds, people, etc.), the structure of the surroundings, by permanent obstacles and buildings. They wish to have information about their current location and the distance from it to their final destination together with directions on how to get to that destination.
- End-users desire the ALICE device as a small (mobile-sized) electronic device, which would safely bring the user from point A to B by providing the necessary information to avoid obstacles on the way.

5. Future Work

Future work will provide various technological solutions to provide the most serviceable device for the user as well as testing and evaluating the final product.

6. Conclusion

In this paper, the objectives of the EU AAL ALICE project were presented, which proposes an integrated navigation assistant for blind and visually impaired people. The first phases of the project, which among other things, involves enhancing mobility opportunities for the blind and partially sighted, have been described. Some information related to the end-user requirements, needs, wishes and desires of older visually impaired adults have also been provided.

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INTRODUCTION: T&TNET

Victor Sanchez and Fernando Benavides[1]

T&Tnet goal is to provide personalised context-based multimodal and multinational social journey planning with affective capabilities and an easy to follow adaptive real time guidance making use of artificial reasoning based on an information manager (filtering and combining). This solution will allow older people to carry out and solve mobility tasks and problems independently. T&Tnet also comprises secondary users (carers and family) and tertiary users (public transport and tourist organizations, and city councils).

To provide such services, T&Tnet comprises three essential modules:

1. T&Tnet multimodal infrastructure, which is responsible for collecting, geo-locating and routing the journeys by means of
   - *GTFS standard which is to be the reference urban mobility framework;*
   - *Open Street Maps to visualise the route between current location and destination and*
   - *An optimal path algorithm which takes into consideration emotional accessibility parameters.*

2. System Intelligence, which takes care of transparently tracking and monitoring preferences, behaviours and movements to warn users as they are on the trip; and
3. Journey Planner which feeds the maps (WMS) of the application, requests and transfers (WFS) information from the PostGIS databases to the front-ends applications while allowing the creation of a community that will upgrade city map information with geo-located accessibility items.

T&Tnet project is following a user-centred methodology. This has led the project to carry out a User Needs Analysis, which has revealed stark differences in the conclusions in terms of mobile technology, mobility, navigation technology, and user system interaction in Norway, France, Austria and Spain (49 participants, 65+ aged). Outcomes were translated into a set of personas. A paper mock-up of the project solutions has been also created and tested together with some storyboards that have set a clear vision of the real users' needs.

[1] ISOIN

Track B

The ageing society

Impact of AAL solutions on the society, how they facilitate the function of different parts of the society.

SESSION B1

Results of the support action "End User Study"

Summary

Mona Jonsson, New Tools for Health, Sweden

There was a big audience for this session on this interesting topic. Developing user friendly AAL-solutions is crucial for the economic success and for reaching the desired impact of AAL technologies. Integrating end users is often seen as the best way to reach that goal. The AAL JP commissioned a study to analyse end-user integration in AAL projects and provide recommendations for future AAL projects. Specifically, the study provided answers to questions like how many end users are integrated and which methods are best suited in different phases in a project. In this session the results of the study on end user integration was presented and complemented with experiences from practise by AAL-project members. The company YOUSE was engaged in this project. A user integration methods training will be held in November 14 2013 in London.

Introduction

Speaker: Martin Jaekel/AAL Central Management Unit

AAL JP wanted to study how end-users are involved in the AAL projects. The company YOUSE helps organizations to analyse how end-users can be involved in innovation. Many products today are not user friendly. Lack of usability often leads to errors, frustration and lack of use, especially among elderly. YOUSE put the user into the centre of innovation, for example they make user tests. YOUSE are engaged in this project.

End User Integration in AAL Projects – results of a support action "End User Study"

Speaker: Christoph Nedopil/YOUSE/Germany

Many participants from AAL Forum attended in this session. The aim of the session is to present the study. Four AAL projects presented how end-user integration worked in their projects. Christoph Nedopil raised the question why we should use end-user integration? We need to understand the needs. We should not build any barriers. The goal is to tear down the barriers.

Overview of End-user study

The goals for the end-user study:

- Survey of end-user organizations active in AAL projects
- Survey of user integration methods in AAL projects
- Guideline and toolbox for user integration methods
- Knowledge base
- Steps have been taken in all these areas

Outputs

The outputs in the project are a database of organizations involved in the end-user integration, documents that present user integration activities in the projects, guidelines and practical toolbox

and document with collected AAL-Knowledge. The toolbox will be finished by the end of this year.
Result of the end-user study
The result of the end-user study was presented. Among the results the study showed that innovation consultants and universities have a broad repertoire on user integration methodologies. Senior association have low expertise in user integration methodology. Universities have on average the highest expertise in user integration methodology. Senior associations have low expertise in user integration methodology.

User integration methods
The study resulted in a unified innovation process that worked for most of the AAL projects. Phase 1: Understanding the users and the market. Phase 2: Create ideas to find out what your concept is. Phase 3: Testing and iteration. It is important to test as early as possible, do not wait until the big solution is finished. You must always have the business model in mind from the beginning during all three phases. End users should also be integrated when creating a relevant business model.

Summary Results - Survey User Integration Methods
Stakeholders are integrated in all four phases by the majority of projects (most often professional care givers and relatives of seniors).
User tests of mock-ups and prototypes with several iterations are very common.
The number of integrated seniors as primary users is comparatively high (Mean 25-69; Median 20-35): the highest in the test phase, the lowest regarding business modelling).
The scope of used methods can be broader, especially in the first two phases.
The weight of technicians throughout the development process can be reduced in favour of tertiary stakeholders.
Idea creation and the definition of the concept ought to be performed with lead users regarding ICT technology.

End user integration in Theory and Practice
Areas of research in end-user integration are sociology, medical studies, psychology and design. There are a great number of methods to involve end users and different methods showed to be relevant in different phases in the innovation process. Examples of methods are: interviews, brainstorming personas and video analysis. You can read more about the methods in the available Method cards. The methods can be mixed. Depending on type of method the time and effort differ.

The guideline and toolbox for user integration methods have criterias for inclusion:
- Easy to use, also for non-professionals
- High impact methods
- Methods work with seniors
- Methods of all phases
- Mixing classical and new methods

Here follows presentation how different AAL projects use end-user integration in their innovation process depending on which phase they are in.

Self documentation – AALUIS – Phase 1 Understanding

Speaker: Jan Bobeth/CURE/Austria

The goals with end user involvement in phase 1 are:
To enable future users of AAL systems to use more services in their preferred way.
To satisfy the different needs of the very heterogeneous target group concerning the interaction with AAL systems AALuis aims to facilitate the connection of different services to different types of user interfaces

They used two groups – one group more oriented to lifestyle services and one group more oriented to care services. To assure to develop solutions that match the needs of target groups (end users, service providers, developers) they have a User-Centered Design Process. They made an Analysis of End User Requirements to understand service needs and to deduce requirements. The methods were iterative formative evaluation and summative evaluation with field trials. They did cultural probing study with diary, camera, and relation map to document their daily life. They used pre- and post interviews at home with both end user groups. 16 people participated during two weeks.

Takeaways from the case study AALuis:

- Trustworthiness is precondition (Involvement of caregivers, relatives, doctors, service providers)
- Appropriate method selection (Long-term studies, cultural probing, contextual inquiries, interviews, etc.)
- Support of existing habits (Integration in daily routine, involvement of existing technology)
- Visualisation of services (Illustrated scenarios, photo stories, play-acting)
- No over-interpretation of uttered wishes (Careful analysis of results, What was really meant?)
- Understanding target users is crucial for designing needed services.

Idea creation method: Wizard of OZ – MyGuardian – phase 2 Conceptualization

Speaker: Inmaculada Luengo/HI-Iberia/Spain

My Guardian is a service platform that links seniors with MCI to a group of care givers using multiple devices. Target group: informal carers.
They used different methodologies for each stakeholder – probes, semi-structured interviews and focus groups. A photo-story was prepared. They used invisible design approach and at last focus groups and use cases.
Conclusion: Difficult process when integrating end users. Different profiles are involved and you should adapt to them and use different methods.

Field tests – Elisa – phase 3 Testing

Speaker: Stephanie Erdt/Innovationsmanufaktur GmbH

The projects vision is: “We create a new economically, socially and culturally sustainable social interaction tool that enables elderly people to easily stay or get in touch with existing and new

people of interest and which helps to find and participate in accessible local activities, health and wellbeing offers."

Their product is called SI-Screen with the following content:
- Fostering social interaction, communication, information and inspiration of the elderly
- Attractive user-centered GUI
- Tablet based software solution
- Porsche Design Studio frame with stand
- Access to integrated services without the need to know how they work

Three sections:
- interests
- friends
- activities

The testing was planned as follows:
- Two weeks in Germany & Spain
- Ten test persons in each country
- Equipment: tablet & handbook
- Elisa mail and Skype account
- Integration of real contacts (family & friends)
- Test persons had to perform tasks

Benefits & Strong Points from the testing:
- Gathering an idea of how the product really performs in practical usage
- Same test persons over the whole project time
- Helpline with a known person, more or less always reachable (consultations hours + emails)
- Implementing real contacts of the test persons
- Interesting and new content daily
- Helpful handbook

Recommendations:
- Intensive continuous integration of users is the key of product development.
- Try to include the same test persons over the whole project time.
- Test persons should be interested in developing the product and not in getting money for the tests.
- Plan a lot of time for explaining the test and for the supporting during the test.
- Realize regular meetings with the test persons (regular's table etc.)

Developing/testing business model – Express2Connect

Speaker: Thomas Hammer-Jakobsen/Laurea University and Living Lab Copenhagen/ Denmark

The Express2Connect projects objective is:
To develop, test and deploy a web service, which stimulates and facilitates personal storytelling, and enable interest-based connections and communication among elderly people and thereby empower them and enrich their life. Finding solutions to the very challenging issues of preventing the internal experience of loneliness as this is strongly associated with dissatisfaction with life.

Business modelling is not the last thing you do. That process starts early in a project. Two main frameworks have been used as placeholders for the continuous learning in an innovation project*:*

- People value canvas (PVC)
- Business model canvas (BMC)

The PVC is a framework that supports the building of a value proposition targeted at well-defined user segments. The BMC helps in building a business model that ensure, that the value proposition is created and delivered in a way that allow for organizations contributing, to obtain enough value to make the value proposition sustainable.
In short the canvases helps the development process by pointing areas to be investigated:

- PVC: What will create value? How to explore? (focus on quality)
- BMC: How to make money? How to exploit? (focus on quantity)

People value canvas is just as important as Business model canvas. The speaker recommended a book called: Connect: design for an empathic society. In the project you continuously think about desired outcomes. If you get this outcome how much will you as a customer pay for it. The business model was changed in this project to focus on private market instead.

The chair presented a user integration methods training in November 14, 2013 I London for the AAL projects.

Discussion

It is important to include the ethical aspects when using these different methods, for example when using the Shadowing-method. Problems occur when mixing scientific methods with the more practical methods that YOUSE use in the projects. Science takes long time while YOUSE will perform the end-user studies much faster. The representative from YOUSE meant that they want to deliver a toolbox that presents different methods. The toolbox will enable connections between different actors in the project. Another person from the audience meant that the methods in the early stage of the project don't need scientific research but focus on results that you can sell to the market.

Conclusion from the discussion

The projects represented in this session are grateful about this possibility to support. It is important to work with relevant end-users in the projects. The “right” user can shift between the different phases in the project. All AAL projects will get the results from this end-user work from AAL.

MYGUARDIAN: A PERVASIVE GUARDIAN FOR ELDERLY WITH MILD COGNITIVE IMPAIRMENTS

Inmaculada Luengo[1], Anna Mereu[1], Diego Fuentes[1]

Abstract

MyGuardian is focused on facilitating safe and secure mobility of seniors with mild cognitive impairments while preserving their autonomy and dignity. At the same time, MyGuardian fosters wellbeing and efficiency of voluntary caregivers (e.g., family and friends) by ensuring their peace of mind and keeping them informed when the senior is experiencing confusion states and risk situations when out and about, and improves efficiency of professional caregivers by providing them with up-to-date information and by supporting coordination of their care efforts. In MyGuardian project, the end-users' involvement is a crucial role and for this reason, it is important to underline the end-user study throughout the whole project.

1. Introduction

The European MyGuardian project (2012-2015) aims at, on the one hand, facilitating safe and secure mobility of seniors with mild cognitive impairments while preserving their autonomy and dignity, and on the other hand, improving quality of life and efficiency of informal carers.

MyGuardian responds to the need of removing the barriers towards autonomous mobility, and hence, improves physical health, wellbeing, and social life of seniors. At the same time, MyGuardian also encourages wellbeing and efficiency of voluntary caregivers (e.g., family and friends) by ensuring their peace of mind and keeping them informed when the senior is experiencing confusion states and risk situations when out and about, and improves efficiency of professional caregivers by providing them with up-to-date information and by supporting coordination of their care efforts.

Thereby, MyGuardian is a service platform that links seniors with mild cognitive impairments to a group of caregivers using multiple devices (web through PC or mobile devices) Three applications are considered in this platform, each of them focused on different target end users:

- **MyGuardian Senior**, which is a mobile application for seniors.
- **MyGuardian Caregiver**, which is a two-fold application (web and mobile) for the professional and informal caregivers.
- **MyGuardian Call-Centre Portal,** which is a web-based portal for a professional caregivers' call-centre.

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2. End-user study

The end users' involvement plays a crucial role throughout the MyGuardian project, given that MyGuardian service is being designed and implemented from and to the end-users. For this reason, it is important to underline that the perspective of the end-users is being constantly analyzed and studied during the whole process. So, it is described the perspective of end-users at three levels: by analyzing the effective involvement of primary end-users (elderly with mild cognitive impairments and his/her caregivers) during all the project stages; by summarizing the role the secondary end-users (elderly care organizations) plays along the project; by pointing out the involvement of tertiary end-users (public or private institutions) in the project.

During User Requirements Phase, several different assessment methods for each stakeholder (since they have different capabilities) have been applied, including general surveys, focus groups and personal semi-structured interviews in order to bring out the needs and experiences about the seniors.

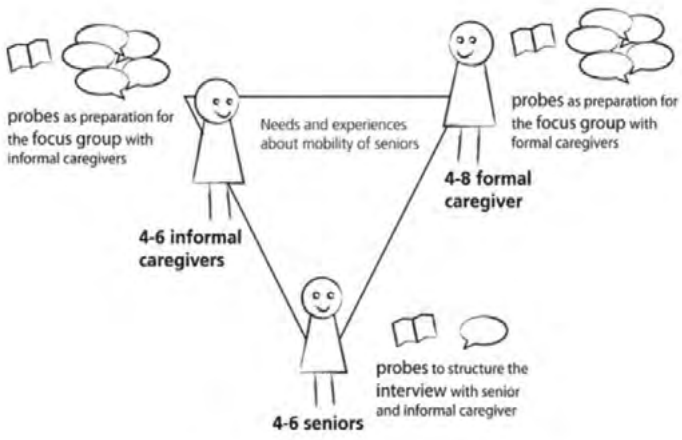

Figure 1 *The three stakeholders and methodology*

So, 4-6 seniors, 4-6 informal caregivers and 4-8 formal caregivers per country have been involved. Seniors and informal caregivers were related. Thereby, the available relationships were used in order to enable us to listen to the experiences about the seniors from multiple perspectives, and helped us to connect them to the situation, and therefore, better understand what the experiences means.

For instance, *probes* were used to prepare seniors for the semi-structured interview, and to make them aware of issues they were generally not aware of. At this stage, the researcher was present when the senior filled in the probe in order to help the senior, and at the same time, to get a feeling for the capabilities of the senior. *Probes* were also used, on the one hand, to prepare informal caregivers for the focus group containing open questions about their experiences with the seniors'

mobility, and on the other hand, to prepare to formal caregivers for their respective focus group addressing topics like a day in their professional life or an overview of whom they took care of. Furthermore, such *probes* provided us a *persona* and a summary of the conversation.

Figure 2 *From left to right: Probe for informal caregiver and Persona*

Acknowledgements

MyGuardian is a project funded under the Ambient Assisted Living Joint Programme (AAL JP) on the forth call AAL-2011-4, with the collaboration of the European Commission, Ministerio de Industria Energía y Turismo of Spain (MINETUR), Federal Office for Professional Education and Technology (OPET) in Switzerland, The Netherlands Organisation for Health Research and Development (ZonMw) and the Agence Nationale de la Recherche in France.

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INTRODUCTION: HIGHLIGHTS FROM THE FOUR STAGE USER INVOLVEMENT IN THE PROJECT SI-SCREEN/ELISA

Stefanie Erdt, Javier Gámez Payá and Martin Strehler[1]

The overall objective of the project SI-Screen/Elisa is to simplify, improve and facilitate social interaction through user-oriented communication support. In practice, this entails the development of a graphical user interface (GUI) that enables the elderly to connect virtually – via Skype, Facebook, mail, twitter, and similar programs – without having to deal with all the separate log-on:s, passwords, web browser and so on.

This will help the elderly to connect more/more easily as they are reassured by a user interface that always has the same structure and appearance. Relevant information is filtered and organized and access to local offers (of fitness, cultural, or social nature) is improved. From a technical point of view, the interface is modelled to a tablet pc so that the users just have to touch different icons. The project team attached great importance to developing a solution that meets the needs and demands of the target group and is accepted by it; therefore, serial tests were a core issue.

Four stages of user involvement determined crucial points during the development phase:

- December 2010 until March 2011: In order to subdivide the target group into user types, a poll and different focus group discussions were carried out. Five user types important for the project emerged: Snoopy, Bon Vivant, Familizer, Shy Guy, Social Animal.
- March & April 2012: The overall concept and the GUI were finalized after in-depth interviews with the target group.
- September 2012: Trials were set up and realized in order to determine the preferred design and the usability of the current Elisa prototype. The test persons opted for a final prototype in smoke-coloured leather and a blue GUI.
- March and April 2013: The main objective of this last trial run was to determine whether Elisa really improves the social interaction of the elderly and facilitates their access to Web 2.0 programs and if the test persons use and like this new form of interaction. Thus, a field test in a real live environment was realized. This test will be specified in the next paragraph and will be the focus of this abstract.

In March, 2013, ten test persons received their own Elisa tablet for two weeks. The tablets were

[1] Innovationsmanufaktur GmbH

preconfigured so that the elderly were connected to other test persons, selected friends, family, and the Elisa support team. The support team could be reached by Skype and landline or by email to Treffpunkt 55 plus (that is, the designated person of trust). Support was also available in form of a handbook explaining main functionalities and how to solve various tasks.

The test users belonged to the five different user types and had to fulfil tasks (such as, e.g., "call a friend" or "read and recommend an article") during the first week in order to determine how usable the Elisa system is. During the second week, the test persons could use their tablets as they chose; this phase should determine if the test persons still used Elisa even if they had no tasks to achieve.

The evaluation was based on filled-in task sheets and the technical data of the tablets as well as on the users' feedback during the tests, interviews, and a focus group meeting at the end of the two weeks. The results offered further insights into the users' experience and will be presented in detail at the AAL Forum 2013. They answer questions such as

- Could Elisa help elderly people to improve their social interaction?
- What did the users like about Elisa? Did they e.g. like the GUI?
- What did they perceive as barriers? What was missing (e.g. an integrated Google search or a Wikipedia function?)
- (How) Did the test persons use the interaction possibilities (email, Skype (video) calls, sharing articles, inviting other people to events)?

INTRODUCTION: CONNECT - DESIGN FOR AN EMPATHIC SOCIETY

Thomas Hammer-Jakobsen, Sabnine Wildevuur, Mie Bjerre, Anne Äyväri, Jesper Lund[1]

The prospects are clear: we will live longer. The number of people aged 65 and up will increase enormously over the next few decades. Society will change as a result, but how? Obvious things we take for granted will disappear; we might lose sight of the fact that all wealth, health and prosperity originate from social relationships. Connectedness is a powerful tool rooted in human nature. By unfolding the very nature of relationships and age-based transitions in life, we invite both individuals and public and private organisations to join us in an effort to design for connectedness: to reframe the picture, rethink our options and reinvent how to Connect!
Connectedness is a manifold phenomenon. It relates to our identity construction process, our need to feel independent while simultaneously being emotionally connected to other human beings. Connectedness is an opportunity, which differs from existing markets for experiences, assistive technologies and communication. Design for connectedness refers to creating environments (in the broadest sense) that support, amplify and motivate those things in life that are important for improving wellbeing.

The ageing society is causing a vast variety of new business opportunities.
In order to unlock the opportunities we have to reframe, by putting our self in the place of elders. This means:

- investigating the ”new old”
- making the perspective of elders the starting point for transformation
- In order to create new wealth we have to reconfigure, making connectedness operational: This means:
- applying tools that allow for design for connectedness
- We offer are a number of distinct processes that will guide organizations in their attempt to rethink and redesign services and reach new prosperity.

We will introduce 4:

1. People value Review – experience products or services through the eyes of elders
2. People value Insights – tool for thinking of elders as customers
3. People Value Creation – applying People Value Canvas, a human centered framework for building radical new value propositions
4. People value Assessment - estimate the ROI of connectedness

[1] Copenhagen Living Lab, Waag Society, Laurea University for applied science, Halmstad University

SESSION B2

Life-long learning – the EU Grundtvig Programme

Summary

Lise-Lotte W Järvinen, New Tools for Health Linköping Municipality, Sweden

Chair: Karina Marcus

Summary of the session

Loneliness and social isolation severely impact the wellbeing of people in general and quality of life of older adults in particular. The introduction of ICT has revolutionized the way that young people understand social relationships but what about the older generation and the socially marginalized?

In the present and absolutely in the near future we all have used ICT in some form in our very day-life. In this session we have had the chance to get a closer to view of some initiatives that try to promote social relationships of primarily senior adults through their use of ICT. Four successful projects, financed by the Grundtvig programme, are here presented and discussed.

The representatives of the four project could all agree that thanks to the projects, generation effects can be seen, benefits as in some economic way can be demonstrated but the most important result is that people afterwards are freer to take care of their own lives.

In a discussion with the audience questions like "How to measure the result? Can it be measured in hard facts? What criteria do you have for measuring your result?" came up.

The answer is that despite that it could be hard to measure result like "higher quality of "everyday life"", it is important that a frame-work for measure will be developed so the result can be measured.

The question "How much money do you save?" is maybe not the right question. The result is much more of people's feelings of freedom in their own life and feasibility to do things they want to do or as the use to do or longing for. But the answer about what have happened for example four years after the programme has been closed, has to be answered and then "Scientific scenes" maybe could be used to reflect over the result.

Introduction

Speaker: Karina Marcus /AAL JP/ European Commission/ Belgium

Karina as a chair welcomes everyone to take part of the session "Lifelong learning" and establish that the Grundtvig programme opens doors to initiatives that unifies EU. The demographic situation in Europe, with increasing of elderly, demands collaboration without borders and it also stands clear that even the older generation has to take ICT as a fact.

"The overall objective of the AAL joint programme is to enhance the quality of life of older people and strengthen the industrial base in Europe through the use of information and Communication Technologies (ICT)."

The EU Grundtvig Programme

Speaker: Ramunas Kuncaitis / European Network for Intergenerational Learning/ Belgium

The most important aims of Gruntvig programme is to respond to the educational challenge of the ageing population in Europe and to provide adults to improving their knowledge and competences, as a matter a fact to find new ways of learning.

In Europe and in the Grundtvig programme questions as how to do things better, incursions of marginalised groups and through educations include them, has to be answered and that with collaboration. The multilateral projects can be decentralised or centralised and are undertaken by institutions/organisations from different participating countries, pooling knowledge and experience, to achieve concrete and innovative results/products with indisputable European value. In many cases, this will involve piloting experiences in strategic areas and producing teaching products of high quality. These projects also seek to strengthen the European dimension in the field of adult learning.

As a fact, from countries where the economic situation today is strain or where there are many NGO-s, comes many applications and many projects wants to be approved.

The question is has Grundtvig made any difference? An overall ambition with Grundtvig is to help to raise the status and visibility of adult learning and create a culture of European cooperation in 'fragile' sector and that with little previous tradition in this regard. In that matter there could be seen impact in some countries at a national level.

In the future there will be one programme. The activities will focus on common priorities related to Europe 2020 Strategy / to Education & Training 2020 framework. That will be validation of non-formal / informal education, guidance systems and quality assurance.

The ENIL project

Speaker: Juliette Collier / Campaign for learning/ United Kingdom

This project´s key-word is "RECIPROCITY"! That means that everyone taking part in the project is part of a development and learning process. The project is part of European Network for Intergenerational Learning (ENIL) which is a network and not an association. Anyone can join!

It is also very interesting that the project´s bas is built on Intergeneral Learning (IGL), and is really special in its shape because it is an approach and not a method. That means that everything starts with a learning- and development process.
The criteria for the project is to involve more than one generation doing things together. That is

really a challenge because the participants have often very low confidence, bad experience in the past of learning and have fear of the "other". In the beginning of the project you have to put a lot of time and effort in finding something that everyone can share, both young and adults.

If you can motivate the adults to being part of a learning process, the children also get better results in there learning process in school and hopefully the education level in society will increase. And if the education-level will increase in the society as a whole, than several unemployed hopefully will come to work. From social cohesion to employment! Websites, magazines, learning sites support the learning-processes in the project.

"Join the Network now and keep up to date with the latest news in Intergenerational Learning- It`s free to join!"

The LEAGE project

Speaker: Henk Herman Nap/ SmartHomes/ The Netherlands

This project, LEAGE, is a part of Life-long learning Programme (LLP)-Grundtvig- Education and Culture DG with an active time from 1 January 2011 to 28 February 2013. The whole thing started with the idea to construct Learning Games for elderly people at Smart Homes.

In the beginning of the process planning for the project "no one took it as a serioues project". Why would elderly people, be interested in games at computers? Nowadays it is a success-story. Even if the project is closed, SmartHomes, still works on it in speaking-terms!

The aim of "The Beta Large Scale Evaluation", the study of the digital learning game for older people, was to gather an insight in "the knowledge acquisition due to game play, the perceptions and acceptance of the digital learning game and system, the player experience when playing the game and the accessibility of the game user interface and interaction devices".

The method that was used was experimental sessions and the participants were elderly people from Spain, Greece, Netherlands and Slovenia.

In this study the participants could for example travel in Europe, learning more of other countries, dance as a fictive figure, get a historical perspective of Europe etc. And that by computer, staying at home and including more knowledge.

Older adults from all the participant countries reported that they experienced learning. The project got also positive results on acceptance, yet, the game needed to be extended. The players experience in digital game play was high and the usability of the game menus and interaction devices were high. It is never too late to learn!

The OWLE50+project

Speaker: Monica Hjern/ Norrköping municipality/ Sweden

The main reasons and the causes of this project are that older people are still disadvantaged in EU labour market, the number of older women is growing, life and work circumstances changes rapidly and there are women over 50 years who need skills and information to manage senior work life, private life and citizenship. There are also lack of customized training and enterprise support for this group.

The tree partners from Italy (Tecnopolis), United Kingdom (LONDON metropolitan university) and Sweden (Municipality of Norrköping) are all grateful to have this money (320 200 euro) and it is a fact that it is a great benefit of learning over border. The project ran from the first of October 2009 to 30th September 2011.

The participants were older women, disadvantaged socio-economically in Europe by gender and age, unemployed, having disability or caring responsibilities. They also lack ICT skills and support from networks.

The task was to develop an adoptable a training model, called Multi Module (MM), for use across Europe, that would empower women over 50 years to get the very most out of life and achieve their potential. That will hopefully make them too continue to contribute to society and economy and in a personally way ageing “wisely and positively”.

The result is that the participants have increased confidence in many ways and using ICT has become part of their life. The Swedish participants have created their own business cards and CV by computer. All participants have started up an email account which they used during the MM. The Italian and Swedish groups communicated through SKYPE and a lot of the participants bought a computer if they did not have one. As a result of the project the participants continued to meet each other afterwards.

The WAVE 2.0

Speaker: Emma Beatty/ Ireland

The main goal of this project was to identify the social needs of seniors and investigate how ICT and Web 2.0 Technologies could respond to these needs. A task was to design and develop training materials and tools that are user-friendly and user-centred. The material should also address the social needs of seniors. Another task was to develop appropriate introduction tools for trainers and tutors. A pilot test of the materials was set up with 250 seniors.

The result of this type of “education” is to bridge the digital divide between seniors and younger generations IT users and also “promote an inclusive society through the use of ICT and Web 2.0 Technologies”. In the end- improve the every day lives for seniors.
From this project can be learnt that you should not make assumptions and that it is important to

involve the participants as much as possible from the beginning and also keep the seniors as the core focus of the project.

As an effect/ result of the project nowadays many of the participants use computer online and do for example there tax-affairs. One of the participants has broken his isolation and by Skype he associates with his relatives living in Australia, once a week or whenever he wants to. Another senior could through the computer study local history by his computer,even though he wasn't close to a library.

The most practical outcome of this project is "overall better quality of life" for the participants!

Conclusion

As a result of being a part of a project in the Grundtvig programme many people, not at least older women and disadvantaged socio-economically people, have "grown" as persons. It has also given a generation of people, which has not grown up with technology as computers, the opportunity to see the advantages to use ICT-based services. The contacts and collaboration between citizens in Europe also will be stronger thanks to EU-financed projects.

You can also see that SME-companies and NGO-s are growing partners and get chances to develop new technologies and collaboration forms by good EU-financing.

SESSION B3

Emigration and language barriers

Summary

Anders Carlsson, New Tools for Health, Sweden

Summary of the session

An aspect of social character is the high and increasing migration between European countries, as well as streams from other countries into Europe. It is obvious that language barriers may cause problems, and to a higher extent among older adults living in close family relations or communities. It is also a fact that older migrants tend to be less adaptive for the local language, which causes problems in terms of independence as well as elderly care. Migration could also be of a temporary character. A lot of older adults living in Northern Europe spend a considerable part of the year, preferably in the wintertime, in Southern Europe. This kind of dual country living tends to increase in popularity and also calls for the need of lowering language barriers for increased integration and to smoothly perform planned as well acute care tasks and measures. The session had the intention to show examples of impact of proven AAL solutions which facilitate integration in the society and/or facilitate the dialogue with care providers.

Else-Marie Anbäcken, Senior Lecturer, Department of Social and Welfare Studies, Linköping University, Norrköping, chaired the session.

Introduction

Else-Marie Anbäcken referred in the introduction to her own migrant experiences, as a guest researcher in Japan, where you need an "alien registration card" and the term "lost in translation" became a reality. She also referred to her experiences as a researcher in the field of ageing and later life. One obvious fact that people sometimes forget about is that the group of older adults is very broad and covers a great age span and huge differences between individuals, in terms of experiences and preferences. She also pointed out children to older migrants as an asset when it comes to communication. Finally, she raised some questions for discussion: Can friendliness be included in IT-systems? Is the solution integration or should we support the establishment of ethnical colonies? Should we establish special care homes for migrants or should they be integrated in generic environments?

Mobile assistance for empowerment of elderly migrants in health-care

Speaker: Walter Scheitz, FH Joanneum, Austria

Walter Scheitz started his presentation with some figures about immigration in Europe. Yearly nearly 2 million people immigrate to Europe and the foreign-born population of Europe is over 30 million. In general, immigrants represent globally the 5th greatest country in the world, if they would be counted as a nation. The project MASELTOV, Mobile Assistance for Empowerment of Elderly Migrants in Health Care, is a FP7/ICT Call 5 project. The target group is immigrants with specifically targeted problems and similar background, like low level education and a cultural background which differs greatly to the host country. The project has three themes: information

and assistance, learning and community building. The ICT based assistance under development is mobile based and range from public transportation service and navigation to language learning and support related to health care assistance. One useful feature is the Geo-social radar, which enable people to get in touch with the nearest local volunteer able to help. Specific problems and obstacles besides the language barriers related to healthcare access and utilisation of healthcare by immigrants are the different healthcare systems in the host country, cultural differences and specific medical problems of immigrants. Obvious demands are to find the nearest GP, make appointments, describe certain symptoms for care staff and to perceive the information given. The MASELTOV project aims at overcoming all these obstacles by different mobile features.

Free assistive technology for migrants

Speaker: Jose Angel Martinez Usero, Funka Nu AB, Sweden

The Swedish company Funka Nu (Swedish for "work/function now") has the vision that all humans regardless of ability shall have the possibility of reaching, using and understanding information and services. It was started by disability organisations in Sweden.

If you are not disabled it is today hard to get access to assistive technology, due to lack of availability but also due to high prices. Funka nu develops and designs web-sites, does analyses and user testing as well as issues guidance/requirements and provides education.

When it comes to language related obstacles, there is a general problem with small languages, like Swedish. Automatic translation services for such languages are not reliable. Funka Nu has designed a web-based tool that can be included in all web sites for an annual fee. The solution is both an assistive tool and a teacher. Examples of quotes from the users: "The best teacher I ever had", "now I understand what the authorities want from me", "I feel part of the community when I can keep up to date and read the local newspaper". Finally Jose Angel Martinez Usero concluded "There is no such thing as an average user".

TMGMT- A translation management tool for multilingual online communities

Speaker: Eduard Klein, Berner Fachhochschule, Switzerland

Eduard Klein started with an introduction to the AAL project TAO (Third Age Online), which has the goal to optimise the usability of Drupal (a common Content Management System) supported web-sites. A study object in the project is the multi-language web-site Seniorweb, which to date was not supported by translation management. In the project, the TMGMT tool (a translation management tool) was developed and used on Seniorweb as a pilot, but the solution should be applicable to any Drupal based web-site. It improves usability in the web site back ends, with strong improvement impact to front ends while maintaining a consistent end user view. Users can define translation jobs with a selected target language and translation service (professional or volunteer). Older adults may act as translators.
A beta version of the TMGMT module was published in May 2013: drupal.org/project/tmgmt_client

Discussion

In the discussion the issue of commercialisation and dissemination was raised. Funka nu has reached a commercial level, but the other does not yet have the intention. TMGMT was already from start intended to be available as an open domain software.

There is today a market gap, between solutions for people with disabilities and people in general with certain assistive demands.

Finally, the question “What are the challenges?” was raised

The main challenges that came up in the discussion were:

- People are different
- Access for all is a desirable principle, but multiple handicapped persons are a real challenge.
- Universal design is a big advantage and something all should strive for.
- Different attitudes to ICT tools and the “digital divide”.
- Cultural differences.

Conclusion

A general conclusion from this session was that ICT is a key, but systems should adapt to humans, not the opposite. Quality of translations is a general problem, but quality is generally improved as time goes by. Automatic translations are now much better, than ten years ago.

TMGMT - A TRANSLATION MANAGEMENT TOOL FOR MULTILINGUAL ONLINE COMMUNITIES

Miro Dietiker[1], Eduard Klein[2]

Abstract
The Translation Management Tool (TMGMT) provides functionality for translating website content. The translation can be done by people or translation services of all kinds. It is integrated in the popular Open Source CMS Drupal and can be used in automated workflow scenarios. It is expected that TMGMT improves community websites with multilingual support to a high extent.

1. Introduction

The Translation Management Tool (TMGMT) provides functionality for translating website content. The translation can be done by people or translation services of all kinds. It is integrated in the popular Open Source CMS Drupal[3] and can be used in automated workflow scenarios. Web sites in multilingual countries and many other community web sites without automated support easily get into trouble with multilingual implementation and thus the reach is drastically limited.

Starting with a multilingual community website for senior citizens, common problems have been identified including the setup complexity for language support, the cost and effort for keeping track of the (to be) translated content, and quality issues. TMGMT realizes a sustainable component for Drupal based websites tackling the above aspects.

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[3] www.drupal.org

2. The Approach

Workflow rules allow the definition of translation-before-publishing modes (synchronous publishing for e.g. press releases), or immediate publishing and translations with delay (e.g. for community content). Mixed modes can also be defined, e.g. for community content which is not subject for translation.

The approach has several advantages:

- Independent translators: People that aim for a part time translation job can easily take part in such a network to offer translation services. This helps keeping people in the business and boosts re-/integration.
- Improved quality through review: Transactional workflows enable feedback about translation in the context, including the tracking of requests for improvements.
- Management perspective: TMGMT shows the overall translation progress, shows missing pieces and helps to manage overall costs.

3. Usage of TMGMT

In this section, a typical workflow is explained through screen shots, illustrating the following actions:

- Fig.1: translation request
- Fig.2: selection of a target language
- Fig 3: selection of a translation service
- Fig 4: translator view - pending tasks are shown
- Fig 5: administrative dashboard

Figure 1 a *translation request*

Figure 2 *selection of a target language*

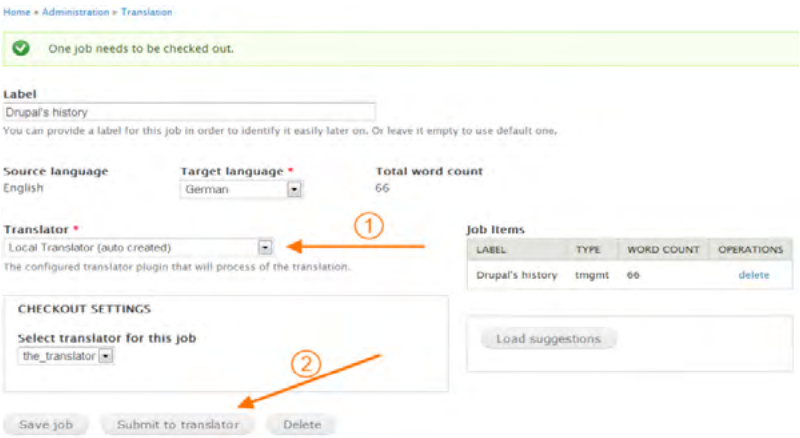

Figure 3 *selection of a translation service, e.g. a local translator or a professional translation service*

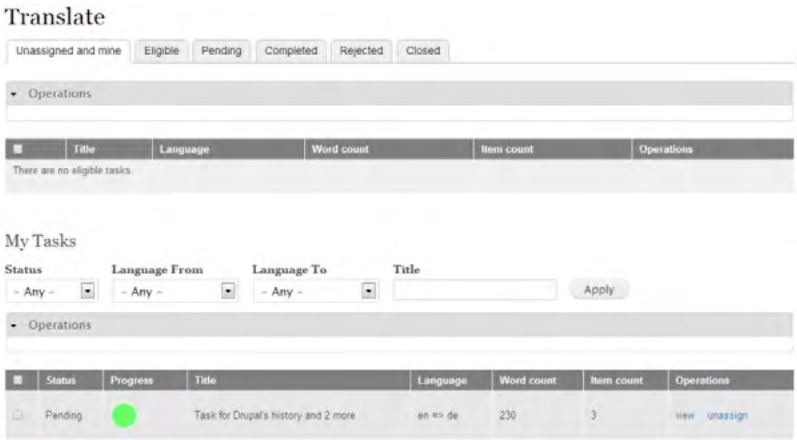

Figure 4 *translator view: pending tasks are shown*

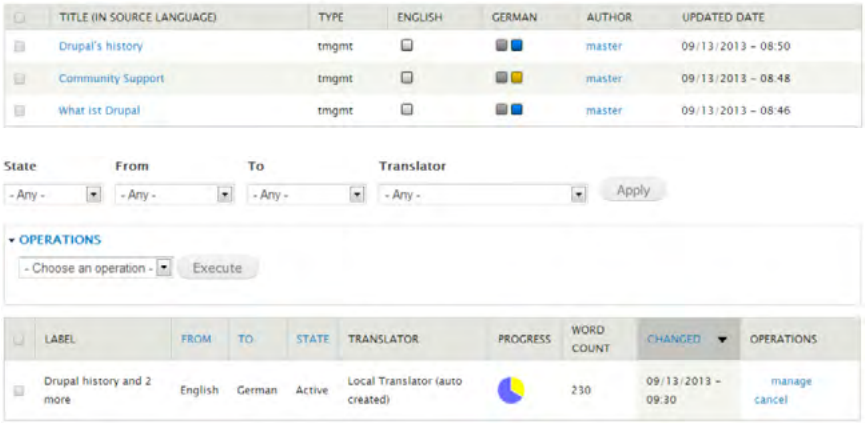

Figure 5 *administration dashboard: status of all translation jobs (above), and detail view on first translation job ("Drupal's history")*

4. Conclusion

The TMGMT module is currently under review, a release is in preparation.[1] An evaluation through a group of senior citizens is planned, who are part of an online community and could themselves register for translation jobs. It is expected that TMGMT improves community websites with multilingual support to a high extent.

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[1] https://drupal.org/project/tmgmt_client

INTRODUCTION: FREE ASSISTIVE TECHNOLOGY FOR IMMIGRANTS

Andreas Cederbom and Jose Angel Martinez-Usero[1]

Immigrants in Sweden study Swedish with the help of ICT, the use of assistive technology is included in the curriculum. The pedagogical reasons are obvious: all hearing children learn their mother tongue listening. Reading and writing comes afterwards. So listening to a text at the same time as it is highlighted on the screen, is very helpful for both understanding and learning.

The student can point to a specific word or a whole text and it is read out loud, making it possible to train pronunciation without the teacher. After finishing studies, many students still want to use the same technology to be able to understand public information on social security, the tax system or other public related services. Nevertheless, assistive technology is only provided to people with disabilities, being an immigrant doesn't give you the right to even apply for it. So the immigrants that really are in need of this type of service are not getting it. That's why Funka Nu AB has introduced an assistive technology that reads out the text loud and is free for the user.

Of course, there is Google Translate and other freeware for translation. But automatic translations only work when the languages used are big enough to have reliable statistics for the algorithms of the language data base. When translating to or from a small language like Swedish, and maybe translating it into an equally small language, the result is often nonsense. Human made translations from authorized translators are of course of high quality, but generally expensive and also a bit counter-productive, since the individual is supposed to learn Swedish when he or she lives here.

[1] Funka Nu

SESSION B4

Living labs

Summary

Ann-Christine Larsson

Chair: Jerome Boudy

Session Content

Living labs are becoming more prominent innovation-instrument for addressing the societal challenges: improve the quality of life (of elderly and their families), optimise the quality and productivity of care giving and strengthen the industrial base throughout Europe. These user-driven open innovation ecosystems have the ability to merge research and innovation processes within the local, real-life context of patients, caregivers etc.

A particular attention will be driven to the proposed contributions concerning the impact on the Ageing Society through the actual development of AAL technologies and potential new derived products and services.

Summary of the session

All the speakers addressed the question of which the end-users are (primary and secondary) and the importance of involving end-users in an early stage and throughout the different phases in the project. They have used different methods to involve end-users, focus group, end-users networking, workshops etc. They also stressed the importance of testing in real life environment. One problem discussed was the question of the difficulty to find the balance between entrepreneurs eager to get their prototypes tested and the elderly persons demand on stable and easy to use technical solutions.

Presentation "The Living Lab Schwechat as a base for AAL developments for the benefit of the ageing society"

Speaker: Harald Jagos, Living Lab Schwecat, Austria

The main goal of the project is to empower and enable older persons and people with special needs to live independently and autonomously in their own homes as long as possible. The primary end-users in the project were defined as healthy seniors and patients and the secondary end-users as professionals (therapists, physicians, caregivers).

The results of 6 years living lab is a heterogeneous group of potential end-users, network between stakeholders, several successfully completed projects, follow-up projects and prototypes for further productions by SMEs.

An important question for the success of the project was how important it is to have a close contact with the end-users, which gave a unique opportunity to test new developments, services and tools under real life conditions. Example of benefits for seniors during the project; meaningful activities, contact and cooperation between generations and not least a feeling of being useful.

Presentation "The IstoppFalls Living Lab: putting fall preventive technology in older adults' home – lessons learned from our elderly"
Speaker: Rainer Wieching, Universiteit Siegen- Institute for Information System, Germany

The aim of the project was to use an ICT based system to predict and to prevent falls. The target group were community-dwelling older adults between 60-80 years, which have had a fall within the last year. The expected impacts were; Improved quality of life, reduced fall risk and minor costs. The methods used were training, exercises, balance games, exergaming, fall risk asessments and fall risk test and score. Despite the poor functionality and usability of the system they have had quite a big amount of participant activities in Siegen Living Lab. In Cologne they were not able to disclose significant improvements in physical functions such as strength or balance due to technical problems. Even so the overall results showed that end-users-benefit gained in confidence in relation to their use of ICT in general and an improvement in self-esteem and social aspects. The end-users also had benefits in regard to their fitness and health, because of the awareness and the need to maintain and stay in good health while showing an interest in the subject of fall prevention. Qualitative and quantitative research methods revealed important information regarding usability, accessibility and user experiences of the system components and various input modes. One important lesson learned was that the mixed method approach was perceived to support a shared language amongst the researchers and the technology designers on one side, and the participants and users of this technology on the other hand side.

Presentation "Living Lab ActivAgeing: development of home-based social and healthcare solutions for the elderly using participatory design"
Speaker: Dimitri Voilmy, Universitéde Technologie de Troyes, France

The subject of the project was to develop home-based social and healthcare solutions to achieve health and autonomy of the elderly. The prototype experimenting took place in an "apartment" in the university area (i.e. a technical platform), were they developed and evaluated devices for usage at home. Despite the apartment they also had a tech centre and a laboratory for ideas that created an opportunity for SMEs and start-ups to set-up facilities at the heart of the living lab. The strategy in the project is closely association with businesses, which could give an added value for young entrepreneurs and also for regional actors. The involvement of end-users took place through trying to understand social interactions and social practices. Methods used for achieving an understanding was behavioural analysis based on video and audio. They also used videography for studies of social games at home and workshops with end-users to generate ideas, test innovations and working prototypes.

Presentation "The Great Northern Haven Living Lab – 3 years on"
Speaker: Julie Doyle, Great Northern Haven Living Lab, Ireland

Focus in the presentation was AAL for older adults between 60-89 years old and community energy monitoring. The testing area consisted of 16 apartments with over 100 sensors (for example controlling electricity, movement, temperature, lights, door, and windows) and actuators/apartment. Throughout the building 2240 sensors and actuators were placed and they had over 200 million database records. The benefits for end-users of living in "smart homes" were a feeling of security and safety, support at hand and health benefits. The end-users had mixed opinions on living with sensors and technology, but overall residents were comfortable with them. An important lessons learned in the project were the need to provide feedback to end-users to create a sense of empowerment. One important feature in the success of the project was that it was just not about technology. AAL needs to be integrated with service provision.

Presentation "Care Innovation Space Flanders: real-life experimentation and impact testing of innovative solutions for elderly care in large-scale living labs"
Speaker: Birgit Morlion, iMinds SMIT, Belgium

In this session the speaker presented four different geographically situated living labs that cooperated in one consortium. Three of the LL started in autumn 2013 and one was planned to start in January 2014. "Living and Care Lab" focused independent living at home with an integrated care and social participation of the elderly. "Active Caring Neighbourhood in urban environments" addressed 400 seniors living at home in local neighbourhood. Focuses are on making informal care visible and create a local home care network. "Ageing in place Aalst" gathers over 250 companies and organisations. Focuses are to work against social isolation and affordability aiming to give older adults an opportunity to live at home as long as possible. "InnovAGE" involves all levels of care: home, residential, hospital and informal care organisations. Their objectives are innovations resulting in effective and affordable health care, close to the people, with social and economic benefits for the whole region.

Presentation "Living Labs action activated in Puglia Region (Italy)"
Speaker: Marco di Ciano, INNOVAPUGLIA, Research & Innovation, Italy

The main purposes with Apulian ICT LL were to leverage user driven, open innovation, promoting the regional public administration and civil society from passive consumers to active prosumers and co-design between end-users and SMEs in real life conditions. An open call directed to end-users (socio-economic and non profit associations and public bodies) searching for ideas in order to collect and bring together themes, requirements, problems and challenges ended up in a requirements catalogue ("needs archive"). The catalogue were opened up to local associations, public bodies, research laboratories, which could register themselves and find potential partners aiming to provide solutions to challenges stated by the end-users. Phase 2 consisted in design of appropriate solutions. In July 2013 the project has a first final ranking list of 34 approved project

proposals and 350 needs were registered (classified into 8 domains). 21 % of the suggested needs was placed in the domain "social inclusion and active and healthy ageing" and so far 7 projects have been selected. Involved actors in the domain are 19 SMEs, 15 R&D labs, 8 social-economic organisations, 3 public organisations and 17 of the needs in the needs archive are addressed. Selected projects are; home-based care, e-health, waste recycling, spatial rendering and charity gift card. A final remark is that innovation needs recognition, which should be a continuous process. The "experiment" is still ongoing, but has great potential if it keeps its promises, concluded the speaker.

CARE INNOVATION SPACE FLANDERS: REAL-LIFE EXPERIMENTATION AND IMPACT TESTING OF INNOVATIVE SOLUTIONS FOR ELDERLY CARE IN LARGE-SCALE LIVING LABS

Birgit Morlion[1], Karen Willems[2] An Jacobs[3] Bram Lievens[4]

Abstract

To tackle the challenges due to aging society, Living labs can play an important role in accelerating innovation- and development processes of elderly care solutions via a multi-stakeholder approach. End-users (elderly, patients, (in)formal caregivers, etc.), industry, research and authorities collaborating towards detection of needs and opportunities, co-creation of new concepts and developing user-friendly and accepted solutions with societal and/or economical impact. That is the theory, but what about the practice? The focus in this paper is on the recent initiative of the Flemish Government (Belgium) in which they support the establishment of large-scale living lab environments. Within the "Care Innovation Space Flanders" program 12 mio EUR of regional funding is reserved to facilitate testing and experimentation with innovative care services, processes and products in all areas of elderly care. The objective is to search for future-proof solutions, mainly related in the domain of elderly care, that can keep on guaranteeing high quality of care within the budgetary constraints and stimulate economic growth.

1. Introduction

Flanders is, like many regions, looking for innovative solutions to face the challenges in elderly care such as soaring care needs, staff shortages and budget restrictions. That is why a "testing and experimenting space" or "Care Living Lab" is being established in 2013. In this paper we will give an overview of the conceptualisation and start up of this initiative. First, we will describe the goal of this "testing and experimentation space". Secondly, we give an overview of the current platforms

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in start up of this space. Next, we reflect on the supporting overarching bodies that where put in place to coach the development of this space in Flanders. We end with some first reflections on the start up of this initiative

2. Goal of Care Living Lab initiative

The goal of these "Care Living Labs" is to create new care concepts, services, processes and products together with the end users and to then test these in practice. The end user thus has a central role in Care Living Labs, not just evaluating, but also in developing and adjusting the care innovations. All of this of course requires open innovation and a wide ecosystem of partnerships to be developed throughout the care and value chain. Scale, multi-disciplinarily and cross-sectoral collaboration is absolute prerequisites. The Care Living Labs Flanders has officially started on the 19th of September 2013 in the presence of Vice Minister President Ingrid Lieten, Flemish Minister for Innovation, Public Investment, Media and Poverty Reduction. The Flemish government will finance the Care Living Labs for a period of 3 years. Today four elected and complementary platforms across Flanders will tackle this challenge, supported by the coordinating Care Living Labs institutions.

All platforms aim solutions allowing elderly people to live independently in their own environment for longer and with more comfort and quality, but each platform does have its own focus.

Table 1 *Overview of the selected and complementary platforms across Flanders.*

Living Lab Platform	*City involved*
Active Caring Neighbourhood	Antwerp/Brussels
Ageing in Place	Aalst
InnovAGE	Leuven
Living & Care Lab	Turnhout

3.Overview of the Care Living Lab platforms

In this section we discuss the complementarily of the platforms. Each platform had to tender and comply with some general platform requirements. For example the active participation by a city council was a requirement. External reviewers appointed by IWT (government agency for Innovation by Science and Technology) ranked the initiative.

Table 1 shows the different platforms and initiating city's across Flanders that will tackle this challenge, supported by the coordinating Care Living Labs institutions. All platforms aim to allow

elderly people to live independently in their own environment for longer and with more comfort and quality, but each platform does have its own focus.

"Actief Zorgzame Buurt" (Active Caring Neighbourhood) in Antwerp and Brussels intends to investigate how professional care can support and enhance self-care and informal care while consistently keeping itself second-line.

"Ageing in Place Aalst" (AIPA) it's mission is to enable elderly people to stay in their adapted homes. This platform tackles social isolation and aims to make housing and care affordable while paying extra attention to the socially vulnerable.

"InnovAGE" in the region of Leuven intends to develop integrated and innovative health care products and processes for seniors with complex care needs, through a series of innovations that lead to effective and affordable care that is close to citizens *and* can be provided in their own home environment for as long as possible.

"Living and Care Lab" (LiCalab) in the Kempen region wants to help people to live at home for longer, be it independently or with assistance, by improving self-reliance and social participation of the elderly, creating a safe, comfortable and accessible environment or strengthening integrated care, tailored to the user.

4. Overarching bodies

These selected platforms get for the period of three years support by three overarching bodies: the Program Office as coordinating body, the Scientific Consortium – KIO responsible for scientific support and the Sounding Board Commission led by the Care Innovation Platform Flanders' Care (fig 1).

The **Program Office**, embodied by iMinds, has been appointed as the coordinating body. It supports and facilitates bringing together all involved stakeholders. These are: the five platforms, KIO, the Sounding Board Commission, the government, IWT and interested stakeholders at home and abroad.

The **Scientific Consortium KIO** is a collaboration between the Free University of Brussels (VUB), the Catholic University of Leuven (KUL), Artevelde University College Ghent and University College West Flanders (Howest). The Consortium will gather scientific knowledge and insights on the platforms and projects, and will support them on the subject matter as well. It will also spread the gained scientific knowledge and formulate policy recommendations. The consortium is composed interdisciplinary and has extensive expertise in care processes, research methodology, the ageing population and the care economy.

The **Sounding Board Commission** is composed of representatives of Flanders' Care and various field actors, enabling it to effectuate the exchange of information, knowledge and ideas. The consortium will also offer new challenges and new ideas to possibly test in the Care Living Labs

later.

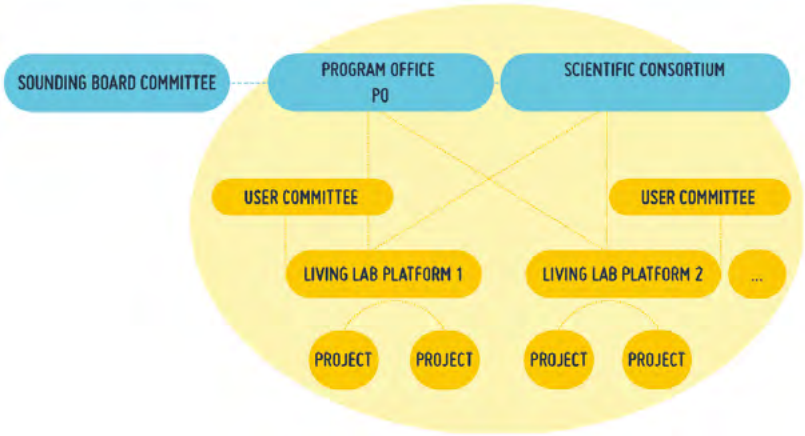

Figure 1 *The Care Living Labs and their overarching bodies*

5. Reflection

Both platforms and overarching bodies are starting their first activities. Each platform has to facilitate the initial projects as well as to realise the operational management of the platforms. In the proposals every platform had a vision on this, and has to translate this into a practical set up. The whole selection procedure took some time, and thus potential changes between the conceptualisation of the plan and the start up phase. The scientific consortium and the program office started therefore with a plan evaluation to look into the accents and dimensions the platforms embraced, and give advice on the adaptation towards a practical implementation and needs for support. Based on this info the program office offered in collaboration with the scientific consortium and external experts' workshops on specific themes: privacy & ethical committee, panel management in this first phase. We see the whole structure as an experiment in itself where activities to stimulate mutual learning are key. Next steps and topics will be decided on while transverse needs on the different platforms are detected, and lessons learned will be communicated.

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More information about this Flemish Care Living Lab Program can be found on www.carelivinglabs.eu

LIVING LABS ACTION ACTIVATED IN PUGLIA REGION (ITALY)

A. Agrimi[1], M. Di Ciano[2], F. Surico[2]

Abstract

Since their official launch and endorsement by the Finnish EU Presidency in November 2006, Living Labs have often been addressed as an original, truly European, innovation policy model. However, we have only recently seen examples of Living Lab adoption for policy innovation – not just innovation policy. One of such examples comes from a Convergence Region of Italy, Apulia, where the focus is on leveraging user driven, open innovation to give better technological responses to precise societal challenges. This paper reports the early achievements of a flagship initiative that is ongoing, A first outcome of this initiative is represented by seven financed projects in the "Health, Wellness and Socio-Cultural Dynamics" domain with a public investment of 3,9 Million Euro, with the aim of experimenting and adopting ICT solutions for home based care, patient monitoring, elderly person inclusion, serious gaming, etc.

1. Introduction

Despite a considerable number of successful Living Lab projects, until a few years ago there was little evidence of implementation on a wide scale at regional or cross-regional level in Europe. The LILAN programme from the Scandinavian area and cross-border experimentations carried out within the CIP-ICT-PSP flagship project (Apollon), are the most notable exceptions in this regard. In March 2012, the Regional Government of Apulia – supported by its in-house company, InnovaPuglia SpA – officially launched the Apulian ICT Living Labs initiative, a 7.2 million Euro private investment programme, supported by Action 1.4.2 of the ERDF Operational Programme 2007-2013 (Regional Government) with a maximum public co-funding ratio of 60% of total expenditure.

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2. The Apulian ICT Living Labs model

The core aspect of this initiative was the adoption of the Living Lab approach (InnovaPuglia) where in an open and dynamic ecosystem four actor of the quadruple helix metaphor (Public Administration, Enterprises, Research organization, and Final users) can design, interact, and deploy solutions according to the open matching between offer and demand, without a predefined partnership allocation.

2.1 Identification of domain specific requirements

At an early stage, has been promoted the collection of specific societal needs, lending themselves to a technological response, into a dedicated online database (http://www.livinglabs.regione.puglia.it) Requirements Catalogue which is structured into eight thematic domains: Competitive Renewable Energy, Cultural Heritage and Tourism, Digital and Creative Economy, Education, E-government, Environment Safety and Social Protection, Health, Wellness and Socio-Cultural Dynamics, Transport and Mobility. All the major stakeholders of the Apulia region (public authorities, third sector organisations, citizen and consumer associations, etc.) could freely publish their needs onto the platform in a structured, machine-readable way. This also enabled to achieve a sort of "census" of the potential end users of future applications trials, which were collected in another online database, dubbed the Living Lab Partners Catalogue. At present, the Requirements Catalogue gathers more than 400 needs and among them four main technological and application classification arise in the "Health, Wellness and Socio-Cultural Dynamics" domain: i) Remote Support Technologies for assistance and monitoring of disadvantaged people; ii) Advanced technological Systems for surgery techniques support; iii) Information platforms and applications for social and health needs sharing; iv) ICT applications for social inclusion. The Partners Catalogue hosts nearly 200 different entities (Fig. 1b) including the most important research institutes (both of public and private nature) and academia located in the region, irrespective of their being proposers of specific needs in the Requirements Catalogue.

2.2 Design of appropriate solutions

In a second stage (August 2012), initiated with a call for funding projects, the ICT SMEs located in Apulia were invited to submit cooperative R&D and innovation projects in alliance among themselves and with stakeholders registered in the Partners Catalogue. The aim of these proposals was to provide specific responses to well identified requirements extracted from the former catalogue, by working in a cooperative fashion with end user representatives and research institutes. The finance of these projects was established in order to devote major part of the budget to experimentations of the proposed solutions with and by the end users (employees, students, teachers, tourists, civil servants, patients, etc.) in real-life environments. The logic behind this scheme was to reverse the usual "technology push" vision of innovation, which has led many project results to the famous "Valley of Death", where they are no longer research prototypes worth of funding, while at the same time not yet ready for market launch (Molinari, F). Starting from authentic societal

needs and experimenting in real life conditions, was expected to be supportive of a more "demand pull" and sustainable innovation, also strengthening the quality, utility, usability, economy, and acceptance of the proposed ICT solutions.

3. Results and conclusions

A first ranking of 34 approved project proposals (out of 50 submissions) was published on the Region's Official Journal (no. 43 of 21st March 2013. no. 107 of 1st March 2013). Among the thematic domains "Health, Wellness and Socio-Cultural Dynamics" results as the second most addressed domain with 7 Living Labs projects (Fig. 1).

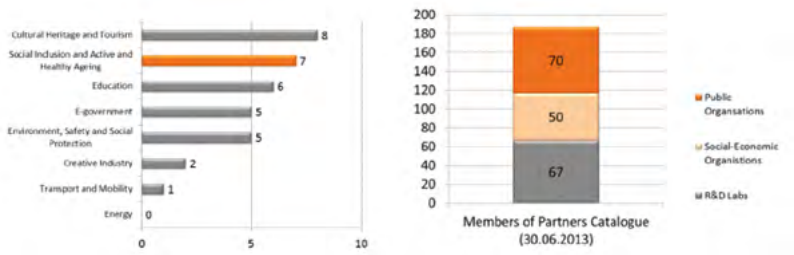

Figure 1 *(a-left side) Project distribution by Domain, (b-right side) Catalogue member*

Due to their nature of already-close-to-the-market ICT innovations, all project durations were limited to 12 months. As a result, we look forward to seeing the first tested and validated prototypes by Spring 2014. In Figure 2 the main technologies and methodology approach for selected Health domain Living Labs

Project Acronim	Keyword1	Keyword2	Keyword3	Keyword4	Keyword5
CARE@HOME	Home based care	E-health	Patient monitoring	Mobile access	Elderly persons
PRO DOMO SUD	E-health	Home based care	Patient monitoring	E-health record	Rehabilitation
STESEGEO	Web/GIS	Social care	Social networking	Mobile access	e-Health
PARS_ECO	Waste recycling	Door-to-door collection	Social networking	Mobile access	Serious gaming
IHCS	Home based care	Patient monitoring	Remote diagnosis	Alert system	Disabled persons
LAPIS	Spatial rendering	Augmented reality	Virtual reality	3d visualisation	Laparoscopy
SOCIALCARE	Charity gift card	Bar code numbering	Hybrid closed loop	E-transactions	Moneyless economy

Figure 2 *Health, Wellness and Socio-Cultural Dynamics - Selected Projects*

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THE LIVING LAB SCHWECHAT AS A BASE FOR AAL DEVELOPMENTS FOR THE BENEFIT OF THE AGEING SOCIETY

Hlauschek W.[1], Panek P [2], Jagos H.[3], Werner F.[4], Werner K.[5]

Abstract

This contribution describes the AAL Living Lab Schwechat, methodologies deployed, examples of projects and the experiences gained. Key actors and methods are described.

Issues which came up are discussed: the need of using a common language for researchers, developers, marketing experts and end users; involvement of persons of trust; respecting ethical issues when working together with elderly, often vulnerable persons; various exit strategies for the involved user groups and commercial partners; business aspects; early access to potential customers as early adopters and opinion makers of novel solutions.

1. Introduction

Within the design and development process of AAL-solutions it is important to design, verify and test the approach and outcome in a way, that these solutions fulfil the needs of the end-users. One of the best ways to perform design and test of usability, and to ensure acceptance by the primary end-users (elderly people) and the secondary end-users (formal and informal care persons, relatives etc.) is proactive involvement of the end-users and end-user organizations in the complete process, such ensuring usability, acceptance and supporting preparations for successful market introduction. A well-proven approach to do that is to use the advantages of a Living Lab: "*A living lab (LL) is a research concept, a user-centred, open-innovation ecosystem, often operating in a territorial context (e.g. city, agglomeration, and region), integrating concurrent research and innovation processes within a public-private-people partnership"*[6].

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[6] Pallot M., 2009: Engaging Users into Research & Innovation: The LL Approach as a User Centred Open Innovation Ecosystem. (Webergence Blog)

2. AAL Living Lab (LL) Schwechat

2.1 Structure

As part of a local innovation initiative the AAL LL Schwechat (SW) was initiated to actively involve citizens' right from the beginning of an RTD project into this project. Key actors are the older persons themselves, a centre for senior citizens, the research institute CEIT RALTEC, the senior's advisory board, mobile care providers and the municipality of Schwechat (a city with 17.000 inhabitants close to Vienna, Austria) (Hlauschek et alt, 2009)

Figure 1: *Symbolic presentation of key actors and stakeholders in AAI LL Schwechat*

2.2 Research Focus

The LL SW focuses on items of high priority within AAL, like supporting safe and comfortable living at the elderly's own home, prevention of fall risks, ICT-support for therapy and physical training and empowering of social inclusion by usage of ICT-solutions.

2.3 Users

The end-users within the LL are on one side primary users, such as healthy seniors and patients and on the other side secondary users, such as caregivers, nurses, therapists, physicians and relatives.

2.4 Methods applied

User centric methods often applied in the LL are focus groups with older adults (Oberzaucher et al. 2010), (Panek et al. 2008), interviews with users and carers (Werner, et al. 2011), (Panek, et al. 2007), workshop meetings with users and care experts for requirement gathering via low fidelity prototypes and for presentation of results, different types of evaluation activities (from lab tests to field trials) (Zagler et al. 2009), (Schumacher, et al. 2007),. An iterative approach is applied in nearly all cases. An important issue is testing in real life situations and environments by different groups of end users, a strong focus is to perform validations at private homes of elderly imbedded in their regular living situation; in some cases it is useful to perform tests in simulated home environments.

2.5 Examples of projects carried out

The projects carried out vary in different aspects like time-to-market, degree of user involvement, research/education, type of field trials, level of risks, etc. However, all of them focused on the research and development of new systems for empowering older adults to live a life as independently as possible. One of the first projects was to develop and evaluate a touch screen based video phone for older persons (Oberzaucher et al. 2009), other projects focused on distributed approaches for fall detection (Diermaier et al. 2008), (Werner et al. 2011), (Mayer et al. 2011), on wearable computing (Oberzaucher et al. 2010), tablet PCs for seniors (Werner et.alt., 2012) or social assistive robots (SAR) (Werner, 2013)

3. Results and lessons learned

Important results of the activities carried out thus far are a well-established, heterogeneous group of older adults who already have familiarity in participating in LL activities, an effectively working internal network between stakeholders (Senior Center, advisory committee, mobile care providers, municipality, CEIT RALTEC), fruitful academic and practical contacts to other similar activities in Europe (Italy, Finland, ENoLL[1]) and several successfully completed projects which were carried out in the LL.

One of the flagship projects is the setting up of an "AAL demo-apartment" in the Senior Center in 2009. This project was initiated and organised by the team of the Senior Center supported by the municipality, CEIT RALTEC and mobile care providers. A dedicated flat is equipped with already available assistive technology and offers the possibility to test technical aids and provide hands-on experience in real life settings for seniors as well as family and staff. The flat is also used to provide some insight in upcoming future systems by exhibiting some selected research prototypes (Werner, et al. 2011) and to gather feedback on those prototypes from the visitors of the demo flat

[1] ENoLL – European Networks of Living Labs, member Schwechat, http://www.openlivinglabs.eu/livinglab/livinglab-schwechat

Issues which came up are discussed below and provide some concrete examples of the research context in which they became known:

Use of same language: ICT researchers and users not necessarily speak "the same language" which can cause non trivial communication problems (Panek, 2007), (Oberzaucher, et al. 2009). Person of trust: For sorting out problems it was found to be of high value to have social worker / care persons on board who are well familiar with the test persons and can communicate with them (Werner, et al. 2011), (Mayer, et al. 2011)

Time and efforts needed: User-oriented research and technical development in these areas do need a significantly high amount of time and resources in order to come up with innovations which are mature enough to enable sustainable improvements regarding quality of life of older persons and carers.

Awareness regarding working LL: The wording "LL" does not seem to be that clear. What involved persons definitively consider much more important are the concrete activities and approaches which take place in daily life under the umbrella of a Living Lab.

Ethics: Taking care of ethical issues when including (often vulnerable) end users is of highest priority

Exit strategies: Finishing RTD projects causes severe planning of exit strategies respecting the way to phase out the end-users 8or continue the service for them), but also respecting the transition of test-phases into commercial solutions (Hlauschek et alt., 2012)

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THE ISTOPPFALLS LIVING LABS: PUTTING FALL PREVENTIVE TECHNOLOGY IN OLDER ADULTS' HOMES – LESSONS LEARNED FROM OUR ELDERLY CO-CREATORS

Rainer Wieching on behalf of the iStoppFalls Consortium[1]

Abstract

The primary aim of the "iStoppFalls living labs" was to evaluate an early prototype of the project's software and technology under real life conditions, i.e. during set-up and using a new ICT-based fall prevention & prediction system in older adults' homes. 27 participants from Cologne, 10 living lab users from Siegen, both Germany, and 4 participants from Sydney, Australia, participated in the "iStoppFalls living labs". Different test methodologies were applied, depending on the research focus and the respective system component under evaluation: diary, questionnaires, usability tests, interviews, workshops and focus groups. Detailed qualitative work with the participants of the "iStoppFalls living labs" was able to put all quantitative results from the pilot study into a specific context and thus revealed interesting insights into the attitudes and practices of older adults dealing with modern technology in their homes. The outcomes and implications of the living labs will guide the redesign process of the iStoppFalls technology and final demonstrator to be used in the upcoming randomized clinical trial (RCT) with a higher number of participants in different European countries and Australia. They emphasized again the utmost importance of end-user co-creation when putting ICT in older adults' homes.

1. Introduction

Demographic change and an ageing population in particular have elicited both interest and concern on the part of researchers, policy makers and governments in recent years. Older adults are living longer, and thus the challenge of implementing active health support and injury prevention technologies for older people has become a recognized issue in our health-care systems and society (Kannus et al., 2005).

Living Labs (LL) can provide a smart and self-adaptive ICT environment, which prevents and pre-

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dicts falls in an unobtrusive manner, and helps ageing people to maintain their independent living by gaining health protection and wellbeing.

Based on participatory design, these LLs can be adapted to the needs and wishes of the participants by a cooperative process, thus making them co-creators. The primary aim of the "iStopp-Falls living labs" was to evaluate an early prototype of the project's software and technology under real life conditions, i.e. during set-up and using a new ICT-based fall prevention and prediction system in older adults' homes.

2. iStoppFalls System

Aiming to provide technologies for older adults to support exercise and reduce fall risk, the iStopp-Falls (Kinect-based) fall preventive exercise training program (Exergame) facilitates home-based preventative exercises, consisting of balance games and OTAGO exercises. Data is acquired in conjunction with unobtrusive sensing through the Senior Mobility Monitor (SMM) and biomechanical modelling. The SMM provides quantitative information on frequency, duration and type of daily activity and qualitative information on balance function and muscle power. These two sources of activity information are correlated by a knowledge-based system for fall prediction and prevention, which in turn yields sufficient data to perform trend analysis. The system is based on an interactive TV solution with gesture and voice control and a tablet, providing advanced human computer interaction.

3. Methods

Three LLs had been established in Australia and Germany. With a generic interest in an integrated approach, each of the partners applied their own research methods, study design and focus. The different approaches are presented and compared below. For an overview of all participants in the LLs, see Table 1.

Table 4 *Overview of participants in the iStoppFalls Living Labs.* [1]

Study Location	Number of Participants	Gender (M:F)	Age (Years)	Dropouts
Siegen	N = 12	5:7	72.7 ± 5.7	2
Cologne	N = 41	18:23	69.6 ± 1.9	14
Sydney	N = 5	1:4	73.2 ± 8.2	1
TOTAL	**N = 58**	**23:33**	**71.8 ± 5.7**	**17**

3.1 Living Lab Siegen

In the Siegen Living Lab, data was largely collected from face-to-face and telephone interviews (questions reg. experiences, problems, wishes), workshops (exploration of technical and design improvements), and focus group discussions (exchange of experiences). Additionally, participants completed usability tests (observation of users while conducting defined user scenarios) and questionnaires (concerning usability and acceptance), and kept a diary (documentation of feelings, routines etc. after each training). Methodologically, this qualitative bias is the defining feature of the LL in Siegen as compared to the more quantitative approaches in Cologne and Sydney.

3.2 Living Lab Cologne

The LL in Cologne employed two sequent methods surrounding the test itself: standardized medical and socio-demographic questionnaires and assessment of fall risk. It focused on long-term exercise and compliance facets by gaining information on 1) housing and education, 2) medical status, 3) (health-related) quality of life (SF-36, EQ-5D), 4) level of physical activity (German-PAQ50+) and 5) digital device ownership and usage. The fall risk was assessed utilizing the Physiological Profile Assessment (PPA) instrument (Lord et al., 2003), timed up and go (TUG) and the short physical performance battery (SPPB) (Guralnik et al., 1994), which were implemented both at pre- and post-test stages.

3.3 Living Lab Sydney

The primary focus of this LL was to determine the feasibility and exercise-related usability of the iStoppFalls Exergame and SMM. Feedback on each component was obtained by observation and

[1] Dropouts were mainly due to “too much technology”, personal and health reasons.

completion of a set of questionnaires on the part of the participants. These standardized questionnaires measured and analysed disability (WHODAS II), quality of life (AQOL II), depression (Geriatric Depression Scale), PPA, TUG and sit-to-stand (STS) and cognitive abilities (ACE-III, Trails).

4. Results

Before the findings can be put into perspective with regard to the overall project and the benefits for the users (see Section 5), the individual results for each LL are presented below.

4.1 Living Lab Siegen

Participants of the Siegen Living Lab executed in total 1.599 exercise sessions, assessments and games. Figure 2 shows a detailed view of activities per user in the Siegen LL. Qualitative and quantitative methods revealed important information regarding usability, accessibility and user experience for the system components and various input modes.

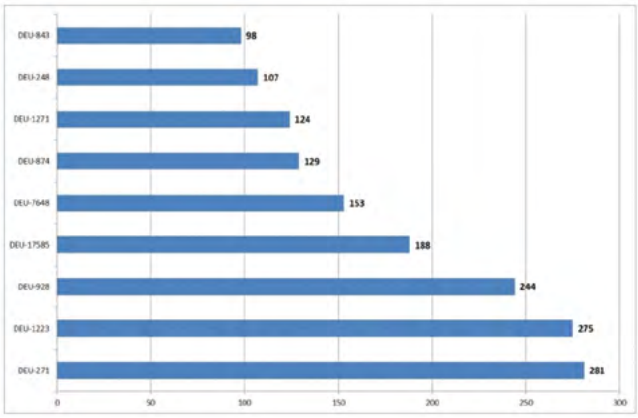

Figure 1. *Number of assessment test and exercise sets (incl. 1 balance game, 3 OTAGO exercises and 3 assessment tests).*

4.2 Living Lab Cologne

Unfortunately, technical problems and resulting low adherence to the program on user side prevented further evaluation of exercise components. We were not able to disclose any improvements in physical functions, such as strength or balance. The implications from the Cologne Living Lab included the impulse to add new balance games and exercises, new elements to the Fall Prediction Test, educational material and social media platform, and the I importance of providing a prototype with a certain “readiness” for use regarding long-term adherence.

4.3 Living Lab Sydney

Despite initial technical problems, the participants in the Sydney Living Lab rated the system positively and commented that they would like to integrate the program into their everyday life. The participants gave a positive overall score for enjoyment and usability of the Exergame.

Furthermore, this LL provided important experience from outside the EU and feedback concerning the ambient assisted exercise program (AAEP), which includes the OTAGO exercises and the balance games, and the Fall Prediction Tests (FPT), which include sit-to-stand, balance and reaction tests.

5. Discussion

The implications of the various methodological approaches employed in the different LLs can be considered from two aspects: 1) the project view and 2) the end-users view.

From the project view, the results supported a re-design of the iStoppFalls prototype by the valuable insights gained from qualitative and quantitative data, e.g. concerning the participants' motivation.

Benefits for the users included that participants gained in confidence in relation to their use of ICT in general and improved self-esteem and social aspects: the participants were able to explain the technological details and ICT, and demonstrate their newly acquired knowledge to their friends and family. They furthermore increased awareness and the need to maintain and stay in good health while showing an interest in the subject of fall prevention.

6. Conclusion

Our overall study design has displayed that a close link of quantitative and qualitative approaches was most productive. It was least obstructive where the more qualitative parts served to facilitate an understanding of the purposes of the study and a tolerance for technical and other issues. The mixed methods approach was perceived to support a shared language amongst the researchers on one side, and the participants and users of this technology on the other side.

We wish to conduct a multicenter randomized clinical trial (N=160) with study centres in Germany, Spain and Australia. In parallel, the Siegen Living Lab will continue to retrieve additional qualitative data. Finally, a health-economics and exploitation analysis will be carried out by Philips based on the outcomes of the RCT.

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SOCIAL INNOVATION IN ACTIVE AND HEALTHY AGEING USING LIVING LAB METHOD

Voilmy D., Duchêne J.[1]

Abstract

The Living Lab ActivAgeing (LL2A) specializes in the acceptability, usefulness and usability of technologies that enhance active and healthy ageing. The approach adopted is based on the design and evaluation of relevant technological solutions for ambient assisted living, using participatory and iterative design methodologies. The iterative development adopted by LL2A involves a large group of actors, with the aim of understanding the local support for elderly in the process of losing physical and/or social autonomy. This eco-system of actors includes health professionals involved in a gerontological network, or non-professionals, businesses and organizations wishing to test their product or service ideas with end-users in real environments. In this structure, the economic model and the organizational innovation of the solutions developed are addressed from the beginning, in terms of market relevance, acceptability, usability, and also ethics. The inclusion of, and focus on, the elderly in the design process is essential to understand how relational social networks work and how they support the elderly in maintaining their independence.

1. Introduction

The elderly population is growing at the same time as barriers to technology access are decreasing among the elderly. Technologies, including Ambient Assisted Living technologies, are increasingly used. The specificity of the elderly usage of technology means that comfort and ease of use for this population group is a vital element in the design of products that support active ageing. Given the increasing number of ageing users, comfort and ease of use are a growing necessity in the design of products that support active ageing. These new products and services, that empower the elderly and promote their independence, must be designed for everyone in a "design for all" approach. Indeed, their acceptability and actual use by elderly people are key to their success. Studies have shown that the adaptation of health technologies in the diagnosis, treatment and monitoring of the elderly, either at the practitioner's place or at the elderly's home, requires the evaluation step to be integrated in the design (Watbled & al., 2006). Acceptability and use therefore represent key research and design issues to be ad-

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dressed at every stage of the design and development process. The LL2A, founded by Troyes University of Technology in France, focuses on evaluating the social appropriation of relevant technological solutions for ambient assisted living, based on participatory and iterative design approaches.

2. Objectives of the Living Lab ActivAgeing

LL2A specialises in:

- Evaluating the social appropriation of technological solutions for health and autonomy of the elderly,
- Designing technologies for all types of end users to improve and support actions of care and surveillance,
- Understanding and accompanying elderly in the daily activities which give meaning, purpose, and pleasure to everyday life
- Facilitating the interaction and collaboration between the actors of the ecosystem

Coherent with the approach, and following recommendations (von Hippel, 1976), the LL2A places the "needs" of users at the centre of the innovation process and design decisions. Innovative technologies and services that support autonomy are developed, involving users, from the initial phase of requirements gathering to the going to market. The participatory ecosystem of LL2A, which contains an assemblage of various skills and competences, consists of: active elderly, frail elderly, formal caregivers, family caregivers, health professionals, and also socio-economic factors. The LL2A environment is composed of "clusters" of companies, healthcare stakeholders, and research laboratories. Interdisciplinary collaboration is emphasised, ensuring bridges between technological/social /economic/health approaches.

This human-centred ecosystem proves to be a suitable co-participation device: people are involved in the design of prototypes and of pre-series, which can be evaluated in real-life context of use, making it possible to adapt the usefulness of e-health technologies and improve the usability of their interface. Through the participatory design methodology they adopt (Niitamo & al., 2006), living labs allow four functions (Folstad, 2008): the evaluation or validation of new technological solutions by and for users, an overview of the unexpected uses of ICTs and new service opportunities, experiencing and experimenting ICT solutions in users' familiar contexts, and finally, allowing mid- and long-term studies with users. Therefore, the living lab can be a permanent testbed involving iterative testing and evaluation of products over a relatively long period of time (Voilmy & Duchêne, 2013), questioning the acceptability of the device, which is a major issue for the proper development of technological solutions.

An important aspect of LL2A is its implication in social innovation. The LL2A's approach aims at gaining an understanding of the complex interactions between the elderly and health care professionals, through a mix of methods coherent with the issue under analysis. The concept of "social" and ethics are at the centre of the approach developed to understand the acceptability of tech-

nologies to support ageing well. Especially in the health sector, which includes a certain number of ambient assisted living technologies, ICTs are used to store, process and share sensitive data. Therefore security and privacy are fundamental questions, which are part of the ethical reflection at LL2A. Ethics is at the core of our research posture framework: apart from raising awareness and training the actors associated to our living lab to privacy issues, we rigorously put into practice the ethical guidelines and the elderly person's dignity and respect in our research activities.
Therefore LL2A meets a clear demand – from society, innovators and funding agencies – for methods and tools to develop and evaluate solutions supporting the autonomy and well-being of elderly. By focusing on these technologies, LL2A addresses a major demographic and economic challenge in Europe and in France: the ageing of the population and the growing dependence of elderly.

3. Approach and Methods

All the activities at LL2A are based on participatory and iterative design approaches. The LL2A's participatory design cycle, we have developed clearly summarizes the objectives and approach.

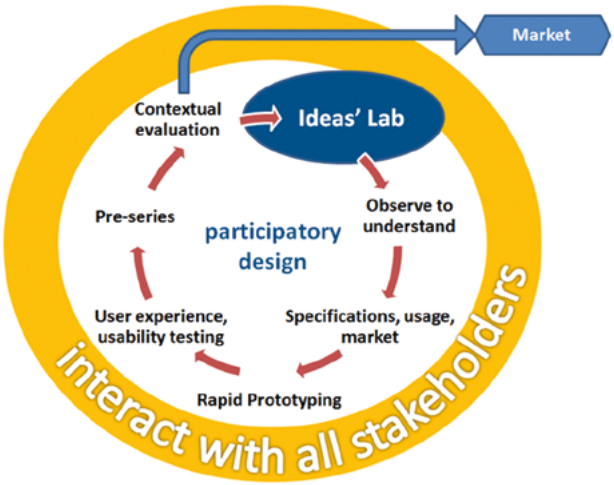

Figure 5: *Participatory design cycle developed at Living Lab ActivAgeing*

In order to design adapted products and to target the relevant market, LL2A seeks to understand and identify the obstacles to the use of a technology or service solution. We proceed by iteration, involving the user at each stage to test product concepts, placing the human user at the forefront of the design decisions, and interacting with all stakeholders,.

Some specific methods that LL2A uses constitute key elements in the success of our participatory design approach:

- **Field studies:** Acquisition of physiological and biomechanical signals, coupled with an

analysis of social interactions, thus ensuring that all aspects of ageing and the onset of frailty can be fully understood.

- **Prototyping:** Prototypes are developed early, allowing early evaluation of usefulness, usability and acceptability of technological solutions for the elderly and healthcare, and iterative improvements.
- **Individual and group interviews:** In-depth one-to-one interviews allow a thorough understanding of elderlies' habits and way of life so that the technologies or services developed correspond to people's values, and of the skills of the actors that cannot be grasped by simple observations. Focus groups allow ideas and viewpoints to emerge collaboratively.
- **Co-design workshops:** creativity workshops can take various forms in LL2A's "Ideas Lab", including collage, scenarios or brainstorming sessions, which enable the user to be genuinely involved in a participatory design.
- **Ethnographic observations:** Widely used in "human-centred design", ethnography allows specific needs and constraints when using a technology or service to be observed – initially in the controlled environment of the LL2A platform, then in situ, at people's homes, or prevention and care centres. Both note-taking and audio-visual recordings are used at LL2A.

5. Discussion

Since technologies for elderly autonomy are varied – from assistive technologies or medical monitoring devices to social interaction services – the approach is multi-disciplinary. The methods and protocol used adapt to the constraints and specificities of each project. To evaluate an application that enhances social connectedness, and ensure its acceptability and adoption, it is essential to adopt socio-technical approaches and methods, which take into account the needs of daily life and subtle aspects of the home into the design process, but also what elderly value about social interaction. Other solutions have been developed based on physical indicators, such as grip strength, walking speed, inactivity, and weight. Coherent with our user-centred approach, they were designed and developed with elderly end-users, thus ensuring their acceptability and usage.

Acknowledgement

Day to day functioning of LL2A is funded by grants from both The Champagne-Ardenne region, European Regional Development Fund (ERDF) and Grand Troyes, while specific investments to create technology platforms have also been provided by these organisations. In addition, the Aube General Council, which runs the Aube Department of France also actively supports LL2A by providing access to infrastructures. Facilities have been provided in the Technopole de l'Aube-en-Champagne, a business park located close to Troyes University of Technology.

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INTRODUCTION: THE GREAT NORTHERN HAVEN LIVING LAB - 3 YEARS ON

Julie Doyle, Lorcan Walsh, Andrea Kealy and John Loane[1]

Great Northern Haven (GNH) is a demonstration housing project consisting of 16 purpose-built smart homes in the north-east of Ireland, each equipped with a combination of sensor and interactive technology to support Ambient Assisted Living for older people. Such sensing technology monitors health and wellness, home security and energy usage within the homes. Great Northern Haven is part of the CASALA living lab, which is a member of ENOLL.
To date, residents have been living in GNH for three years, thus we have gathered large amounts of data from sensors in the 16 apartments, and validation and analysis of the data has taken place. Much of our research has been based on Passive Infrared (PIR) movement data, whereby we have examined activity levels and sleep patterns over a period of 3 years. Analysis of this data clearly shows older adults' normal patterns of behaviour and most importantly, deviations away from this normal behaviour that might be indicative of a health decline.

Our current stage of research is feeding this information back to residents to support them in independent living – essentially closing the feedback loop in Ambient Assisted Living. This is achieved through interactive devices such as the iPad, hosting a suite of applications involving health and wellness, energy and home security. A health and wellbeing application has been developed that supports the resident in self-reporting on their day-to-day wellbeing, including their emotional wellbeing, quality of sleep, quality of social interactions, blood pressure and weight. It also asks a daily trivia question. Most importantly, this application analyses the data gathered from the surveys and feeds it back to the person in an intuitive, easy to interpret format, to increase their awareness of their wellbeing and to help support positive wellbeing. This app has been deployed at GNH for a number of months and we have received a detailed amount of feedback on it in terms of usability, usefulness and motivation to use it from the residents of GNH.
We have a close working relationship with the residents of GNH who have provided us with much feedback on their experiences of living within GNH as well as their experiences with both the ambient and interactive technology.

[1] CASALA, Dundalk Institute of Technology

SESSION B6

Age-friendly cities

Summary

Monica Hjern, Municipality of Norrköping, Sweden

Chair: Liz Mesthenos, AGE Platform Europe, EU

Summary of the session

Both demographic shift and urbanisation are major changes our societies are currently facing.

Life expectancy is above 80 years in 32 countries, the numbers of old persons are colossal – peple aged 60+ will by 2030 be 17% of the world population and by 2048 a higher proportion will be aged 60+ (21%) than under 16 (20,8%)and now 80% of the EU population lives in urban areas and - so it is very relevant to talk about age-friendly cities.

To address these challenges, smart, interactive and well-designed cities are needed for better compliance with user's needs and greater comfort for everyone.

The three speakers addressed these challenges in different perspectives

- By informing of the necessity to find the user's perspective of an age-friendly city/place that includes and integrate the social, urban and transport policies– and also how to ensure the involvement of and effective cooperation between business, researchers, older people, local authorities, health and social services, designers
- By sharing good practise and experience of how different actors and organisations have collaborated and will find ways about - how to find and find out about new technology and innovations; the challenge to create broader and at the same time individual innovations; how to spread the knowledge about available technologies and how to implement new technology and last but not least to find a payment structure that show the gain you can make from the use of innovations and technology.
- By sharing the research and practical evidence upon which Europe can begin to make longevity an asset for social and economic development – especially in built and technological environments that include age-friendly architecture, products and technologies, services of public interests and hybrid solutions intelligently combining technologies and services.

The session showed different ways to integrate existing ICT solutions in spatial planning policies and to offer a platform for developers of AAL technologies to reflect on how products can respond to the urban planning needs of our ageing society.

Presentation: Age friendly cities: The Users' perspectives
Speaker: Liz Mestheneos, AGE Platform Europe, EU

Lis Mestheneos is a member of the AGE anti-discrimination expert group and a member of Hellas 50+. AGE Platform Europe is a European network of around 165 organisations of and for people aged 50+ representing directly over 30 million older people in Europe. www.age-platform.eu
AGE´s work focuses on a wide range of policy areas that impact on older and retired people. These include issues of anti-discrimination, employment of older workers and active ageing, social protection, pension reforms, social inclusion, health, elder abuse, intergenerational solidarity, research, accessibility of public transport and of the build environment, and new technologies (ICT). The Platform takes also active part in several EU projects.
The purpose of its work is to voice and promote the interests of the 150 million inhabitants aged 50+ in the European Union and to raise awareness of the issues that concern them most. AGE seeks to give a voice to older and retired people in the EU policy debates, through the active participation of their representative organisations at EU, national, regional and local levels, and provides a European platform for the exchange of experience and best practices.

Each city or place has it uniqueness – and so has each person – elderly or young. There is a tendency to work with a homogenous notion of older age and neglecting the reality that people aged 50+ forms a very diverse group characterized by a range of factors, only one of which is their age.

58 % consider age discrimination as quite widespread, according to the Eurobarometer, i.e. access to Internet and mobile phones and smart phones related to age and social class – in all EU countries oldest have least access. The consequences of not recognition of the needs of the 50+ means a denial of full citizenship i.e. a full member of society. The ageing issue has to be recognized.

80 % of EU populations lives in cities, the urbanization is continuing so in the future there will be a lot of old people in the cities.

WHO[1] have been discussing age friendly cities for more than 10 years and a few cities in the world e.g. Manchester has been proactive since 2003. There is a need to make cities accessible for all residents, the health life expectancy increases by allowing older people access to their city, friends, family, shops, parks, businesses etc. Depression, loneliness deriving from social and physical isolation is critical for health. Physical accompaniments to ageing process planners and innovators have to consider how to promote social inclusion allowing civic participation and a good quality of life.
Urban design – built environment, outdoor spaces, accessibility for buildings/transport, mobility, social interaction opportunities, feeling of safety, adequate and timely information, social and civic participation spaces keys to activate the full potential of older persons and make mobility and/or virtual participation possible for all.
There is also information to be found at the website for European Innovation Partnership on Active

[1] http://www.who.int/ageing/publications/Global_age_friendly_cotoes_Buide_Enlgish.pdf

and Healthy Ageing, Action plan on Innovation for Age-friendly buildings, cities & environments (http://ec.europa.eu/research/innovation-union/pfd/active-healthy-ageing/d4_action_plan.pdf)-

As the older population continues to expand, this diversity due to gender, religion, social class and country will further increase. And it is vital and urgent that modern production, modern technologies – move from exclusive concern with "mass" marketing – to a more age-friendly and personalization of services.

The role of AAL must be based on user involvement and participatory design that deals with variable/different users need and assistive technologies should be more specific and well defined for users needs in contrast to a design-for-all approach.
ICT solutions adapted to the needs of 50+ would represent the opportunity to upscale the use of AAL, and to explore the potential to create inclusive environments and it can open up the AAL market and maximize its impact on users' daily lives.
And the key factor is to involve users from the outset.

AAL should focus on the questions :

- How to ensure the involvement of and effective cooperation between all actors? – Business, researchers, older people, local authorities, health and social services and designers.
- How to ensure that such changes can be applied across policies, notably the social, urban and transport ones, in an integrated way?
- How to scale-up good practices from the AAL sector and ensure of facilitate their replication in comprehensive system?
- What role can standards play?

Presentation two: Innovation through cooperation: Case study from the City of Stockholm

Speaker: Carl Smitterberg, City of Stockholm, Sweden

Carl Smitterberg is Communications manager in The Elderly services administration in Stockholm, Sweden. Carl focused on the questions - Why innovations?; Who are the stakeholders for innovations?; What is necessary for creating innovations?; Which are the challenges for wide spread use of new technology?; Does innovations always have to be technical?; and finally he gave some examples of the challenges through cooperation

Why innovations?

- *To increase the wellness and also to empower the elderly*
- *A help for the staff*
- *To increase safety*
- *To help create an attractive choice for career*
- *To make a contemporary elderly care*
- *To get more value for money*

What is necessary for creating innovations?

- Transparency; share official data and be open to new ideas
- Creative environment; take time to reflect over what can be done in different ways
- Leadership; the courage to try new things
- Cooperation; a good idea will be even better when working together

Which are the challenges for wide spread use of new technology?

- Lack of knowledge about available technologies
- Innovators do not know the needs of society and the elderly
- The innovations are too narrow, the need is often for more flexible solutions
- The lack of will to use technology and new technology.
- Difficult for providers to show the benefit from the use of innovations and new technology – Payment structures does not go well with ICT solutions.

Examples of meeting the challenges through cooperation

- ICT infrastructure is necessary for future innovations – so in Stockholm – the public company Stokab provides optical fibre – for all players on equal terms. Almost 100 % of all real estates in the city are now connected to this fibre net. And Micasa – a public housing company that specializes in estates for elderly and persons with special needs – are of course one of the estates that are connected.
- The Activity guide – which is under development and being tested in Stockholm helps older persons to get more active since they can more easily find out about activities around the city. There are now 40 meeting points in all around Stockholm – but we are not sure that they offer activities that interest the elderly. This adapted searching tool helps both the elderly and also staff working with the elderly to find activities suited for the individual and will also improve the range of activities.
- Converting ideas into innovations – An Open lab that is multi disciplinary; a cooperation between City of Stockholm, Royal Institute of Technology in Stockholm, the Stockholm University, the Karolinska Institute and some more – collect ideas that can be needs or problems that need to be addressed from different participants. The needs or problems are then converted into innovations.

Carl Smittenberg also pointed out that some of the technology devices need a lot of support and services this can be quite expensive. Furthermore those who might benefit from ICT solutions might not be qualified to use them, not even the careers might be able. Some persons are also excluded from new innovations – if they live in a rural area the infrastructure might not support some use of ICT devices, it can be quite vulnerable so perhaps this might be something that should be more underlined within AAL. Like Liz M pointed out there is a discrepancy among the users – it is mostly the young, quite healthy and wealthy elderly that will benefit from the new technology.

And finally all innovations do not have to be technical – in Stockholm the introduction of the care dog has been successful. The care dog has made the elderly more active, it has also given consolation and in some cases the need for medicines and baritones has been reduced. The same effect as some ICT innovations has.

Presentation three: Health care is coming home – but how to open the door?
Speaker: Sebastian Merkel, Institute for Work and Technology, Germany

MOPACT – Mobilising the Potential of Active Ageing in Europe is a four year project funded by the European Commission under the Seventh Framework Programme to provide the research and practical evidence upon which Europe can begin to make longevity an asset for social and economic development.

The project has five dimensions:
- *Economic and financial consequences of ageing*
- *Societal structures, civil society and cohesion*
- *Social support, long-term care and quality of life in an ageing society*
- *The built and technological environment/physical, spatial and environments (PST)*
- *Health and well-being, biological ageing (bio gerontology), and the boundaries of frailty*

And the objectives are:
- To conduct the most comprehensive review to date of the social and economic challenges of ageing.
- To collect and analyze social innovations and policy initiatives.
- To map the steps required to realize active ageing in Europe and to propose innovative ways of doing so.
- To involve key end users and stakeholders, such as policy makers, practitioners, product producers, designers and older people in all project activities.
- To undertake the wide and effective knowledge transfer and dissemination of the work of MOPACT.

There are a lot of European projects in the area of ICT and Ageing, so there is a huge base of experience in Europe that we could benefit from.

But some projects are not sustainable, i.e. only 60 of 235 initiatives in Ehealth@home in Germany are offering sustainable services, the others are or were pilot projects.

Sebastian's presentation mainly focused on findings concerning one of the programs five dimensions - Built and technological environments/ physical, spatial and environments = PST-environments, include age-friendly

- architecture
- products and technologies
- services of public interests
- hybrid solutions intelligently combining technologies and services

The research questions were:
- What is the key enabling and constraining characteristics of PST environments for older adults, for example in terms of maintaining autonomy, well being and identity?

- What are the effects of implementing possible policy “to stay in your own home as long as possible” to the ageing individual, to the care services, and to society at large?”

The project care@home drivers report about societal trends in Europe
- For elderly living at home is first choice: The vast majority wants to stay in their own homes as long as possible.
- Households are important for well-being and health in old age – and their relevance will increase
- Increase of one-person households
- The hospital stays are shorter, so the need for successive support increases (Homecare)
- Households are becoming smaller, less stable and more inefficient
- Alone living elderly often have a strong need for safety, communication and services
- Ageing in the neighbourhood play an increasing role

What is meant by neighbourhood? And it turned that in Germany this has become more important – to age in the neighbourhood, and that there was several definitions and a lot of things included.
And the technical development trends
- Empowerment“ of the patient by providing health-related content online
- Expansion of social alarm systems
- Remote monitoring of vital signs (TeleHealthmonitoring)
- Ambient Assisted Living (AAL)

Health care is coming home!
But there is a need for new support architecture to enable households for the job. For many years the innovation development was technology driven. Therefore, it often was blind with respects to the interests, needs, competences and languages of careers, doctors etc.
There is no clear view about the role of eHealth in the future health and care systems. So the development of eHealth and Telecare in Europe is low and slow. There are several reasons for this – i.e. interest conflicts between professions, lack of common understanding on the future design of health and care service architecture and all this makes it difficult for innovators, economic researchers as well as service designers to develop reliable and sustainable business concepts.
So it is promising that EU and governments start an interdisciplinary and cross-interest innovation monitoring to foster an adequate and socially accepted use of eHealth and telecare.

Discussion with the audience

Why are there so few projects that have become sustainable?
The reimbursement fails; some solutions don’t find money – so they don’t get on the market; some of the products become very expensive and specialized – so who will and can afford to pay for the product or service; if a municipality or region gain from a project – should they not be more interested in co-financing the implementation and putting the project in the market? – Then there is a

problem with different boxes of money and different policies; big problems to implement the result in the mother-project organization and even more difficult to implement it in other organizations. Everyone agreed that one key factor to get projects more successful is to involve the elder persons in all kind of ways – and from the start of projects.

HEALTH CARE IS COMING HOME – BUT HOW TO OPEN THE DOOR?

Rolf G. Heinze[1], Josef Hilbert[2], Sebastian Merkel[2], Wolfgang Paulus[2]

Abstract

The household is continuously (re)gaining relevance considering healthcare due to the demographic change, regional disparities and due to new opportunities resulting in innovative ICT-solutions to support health activities in private households. However, innovative and promising approaches are still not widespread compared to political and social demand and the efforts which have been put into R&D. The reasons for this are manifold and can be found in technical, social, economic and regulative dimensions.

1. Introduction

Historically, long before European regions and countries had developed professional medical systems in hospitals and established out-patient services, various types of private households such as manor houses were the most important location for coping with diseases and maintaining health. Even though many aspects of medical treatment have moved to hospitals and surgeries, several of these activities may still be found in households today – yet confronted with increasing challenges. Regarding this, there are two main emerging trends which lead to problems: (1) The social transformation of households and (2) the changing healthcare sector.

1. The share of single person households is increasing due to both a growing instability of marriages and families as well as changing preferences as to pluralised ways and places of living. Thus more and more elderly people live alone and face rising problems such as finding a helping hand or an orientating conversation in case of emergencies, care or other health needs. Nevertheless, the vast majority of older persons want to stay in their own home as long as possible.
2. Changes in healthcare provision and delivery systems are manifold and dynamic. One main aspect is an increasing pressure for cost containment and efficiency by reducing both average length of stay in hospitals and hospitalization-rate of long term care people. At the very end, many of these changes result in a growing demand for strategies and instruments to professionally respond to health related interest and needs of people living at home.

[1] Ruhr-University Bochum, Chair of Sociology,

[2] Westphalian University, Institute for Work and Technology

Technology can play a crucial role within these developments. Today, countless of ICT-based products and services are already available across Europe, helping to support healthcare at home and enabling an independent life. The spectrum ranges from social alarm systems to more advanced ambient assisted living (AAL) solutions and telehealth-monitoring. Many research and development projects have proved that ICT for housing offers opportunities to help elderly persons staying at their home as long as possible. At the moment however, telehealth services (including AAL) still fail to be implemented at a widespread level. While some of the more "basic" devices, like first generation social alarms, are – at least in some countries – more or less widely accepted, the formula "the more technological advanced, the less adopted" remains true.

2. The deployment-gap of ICT-based products and services

Speaking of possible barriers which may hinder an increasing use of such products and services, a glance at the literature offers a broad variety of reasons (see e.g. Schultz et al., 2005; Häckl, 2010; Mollenkopf et al., 2010). The barriers to a comprehensive adoption of telehealth and AAL products and services can be classified into technical, social, economic and regulative dimensions, each covering multiple aspects:

- A major challenge is the technical and semantic interoperability. The participation of more and more players on the market led to parallel standards which are incompatible. Moreover, stakeholders and experts do not seem to be aware of existing initiatives within this area. No single player dominates the market and the communication between existing participants seems to be suboptimal up to now. This is an issue on the European as well as on the national level and can lead to uncertainty of potential users.
- Another aspect is the design of products and services. The developers of telehealth and AAL solutions have to be aware of their target groups, which also includes secondary users like practitioners and tertiary users like insurance companies. This leads to the challenge that devices have to suit very different requirements.
- Many pilot projects can only be started with the aid of public funding. The public financiers expect "successful" developments. Against this background small pilots are more promising than large scale applications which always involve risks – particularly in the intersections where technology and "traditional" social services meet.
- Further crucial aspects are unclear cost-benefit calculations and responsibilities. Especially within healthcare systems this can cause irritation; it has to be clear who can benefit from solutions, but also who has to bear the risk as well as the costs.

3. Conclusions

Health Care is coming home, but there is a need for new support architecture to enable households for the job. This is especially of importance due to the fact that the future of healthcare will be characterized by an increased relevance of households as point of care. Among others telehealth and AAL are a promising but underused pillars for the future health and care architecture. However, the deployment of these products and services in Europe is slow and patchy. The reasons for this are manifold: The bottleneck for the implementation and diffusion of promising approaches to support living at home in age is not technology – rather it is the "philosophy" of development strategies, design, economic cost-benefit modelling and fit with the circumstances of everyday life of the elderly and caregivers. Technology is no end in itself. It makes sense only if it really "supports" people to fully utilize their options. From this point of view the present patchwork of pilot projects, model applications and aims definitely needs more streamlining, structure and direction if investments, both past and future, are expected to return profits. There are many interest conflicts between professions, but there is also a lack in common understanding on the future design of health and care service architecture. It seems promising that the EU and national governments start an interdisciplinary and cross-interest innovation monitoring to foster an adequate and socially accepted use of telehealth and AAL.

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TRACK C

AAL and the economy

Economic aspects of AAL solutions – economic growth through new ideas, a new branch and new solutions.

SESSION C1

What does the AAL market offer today – an issue for SMEs

Summary

Dag Forsén, New Tools for Health, Sweden

Chair: Sofia Moreno Pérez

Summary of the session

The AAL JP wants to involve as many European SMEs as possible in its programme. The objective is to get SMEs to develop sustainable AAL solutions and create a viable market for these solutions all around Europe. Up to today the AAL JP has financed 141 R&D-projects. Only a few of these projects have yet made it to the market. Is there a European AAL Market for SMEs? What are the difficulties for SMEs to transfer the R&D results into market accepted AAL solutions? Could an AAL market emerge in Europe without an AAL JP programme? What roles do large enterprises play to create a viable AAL market? All of this and more were discussed during this session.

Challenge of SMEs in the AAL Market

Speaker: Dr. Urs Guggenbuehl , University of Applied Sciences t. Gallen, Switzerland

Up to today the AAL JP has financed 141 R&D-projects. However the resulting products & services have not yet created a noticeable traction on the market. Why is that?

Is it because AAL Markets do not exist yet or are they still developing? Or is it because AAL markets depend on innovation and companies from SMEs and that these companies have difficulties to perform in innovation? Whatever reason, either there is not enough money or not enough people to finish the development of an innovation. In addition to this, SMEs have probably difficulties planning an innovation properly as they are mainly driven by its daily business and not by strategic decision. In a study of SMEs in Eastern Switzerland, lack of time (14%), human resources (17.5%) and financial resources (36.8) were highlighted as the main reasons for the discontinuation of the R&D process. The time factor is seen as a major deal breaker, SME do not have the endurance to survive long enough and will end up in the “valley of death. Dr. Guggenbuehl identified the following basic innovation hurdles; “We always did it that way”, ”It is not possible”, ”Loosing of power in the organization”, ”Jeopardizing existing business”, ”Limited resources->wrong assignment of talents”, ”To short planning”, ”Short term vs. long term priorities”. Dr. Guggenbuehl sees radical innovation performed by start-up companies as one of the most efficient and market oriented approaches. The organization CTI is assisting SMEs in order to get through the “valley of death” offering the following tools; CTI project – project financing, CTI Start-up – business coaching for Start-up companies, CTI Entrepreneurship – first education and training for young entrepreneurs, CTI Invest – an efficient public private partnership to support the access to investors. CTI Focus – Strengthening the market-oriented innovation processes

Marketing or no marketing for my product
Speaker: Jose Angel Martinez-Usero, Funka Nu, Spain

Funka Nu's vision is that "all humans regardless of ability shall have the possibility of reaching, using and understanding information and services". Funka Nu was originally started by the disability organisations and is an expert in accessibility and user experience for very diverse target groups. Funka Nu has done an extensive study on behalf of the European Commission, to develop methodology and indicators and performing the actual tests of websites on e-accessibility in all EU member countries and more

There are a number of aspects to consider when looking at the European AAL market such as the difference between ATs and mainstream products, how to handle a fragmented niche market, and how to compete in a very harsh market with a lot of "sharks". A major dilemma is at the same time obtaining scale of economy and meeting very big needs for localization. The solution is European Entrepreneurship that through cooperation leverages various types' resources in multiple markets, which is a different approach compared to the traditional with one entity trying to do it all.

In the European AAL space, a lot of money is poured into R&D but not very much is spent on marketing. There is a big need to bridge the gap in order to get the market moving in the right direction. To make products successful, you need innovative products that truly are accepted by users and customers. These products should be delivered through selected channels in order to reach the appropriate targets. People, young and old, do not want products that highlight their disabilities and would like to be viewed as regular people as much as possible.
A final note: There is no such thing as an average user.

Challenges and experiences from implementing AAL solutions in European care organizations
Speaker: Catharina Borgenstierna / Bestic AB / Sweden

This section started with a presentation of the Bestic's main product, which is a robotic eating assistance device, and the presenter continued explaining its history and value proposition. Bestic is sold in 8 countries and there are around 150 units in use.
The Bestic can best be described as a small, robotic arm with a spoon in the end that can easily be manoeuvred. By choosing a suitable control device, the user can independently control the movement of the spoon on the plate and choose what and when to eat[1]
.
The presenter then continued with identifying the main challenges when trying to implement AAL-solutions in care organizations. The following challenges were identified:

- Fear of robotic solutions in healthcare

[1] A Bestic product presentation video can be found here: http://youtu.be/QMSzsZKI12w

- Are they taking my job?
- Knowledge and insight
- Adaptability to a variety of users
- No research around mealtime, several separate disciplines, need to bring them together
- Very slow process for buyers to make up their mind from, 6-14 months.
- Need more pilots to try the product.

The way Bestic is tackling these challenges are:
- *Developing training programs*
- *Academic partnerships*
- *Reference customers*
- *Introduce product in several markets simultaneously*
- *Discussions, meetings…*

Finally the presenter highlighted the following key success factors for moving the AAL-market forwards:
- *Shift focus from development to implementation*
- *Allow financial support for pilots*
- *Innovation friendly reimbursement models*

Challenges for an SME developing exoskeletons for elderly people

Speaker: Julia Bühlmeier, Hocoma AG, Switzerland

The presenter started with introducing Hocoma AG a developer of systems for robotic rehabilitation therapy for neurological movement disorders. Their products are applied in the field of rehabilitation medicine for:
- intensive locomotion therapy (Lokomat®)
- functional therapy of the upper extremities (Armeo®)
- early rehabilitation and patient mobilization (Erigo®)
- functional movement therapy within low back pain treatment (Valedo®)

The importance of the local innovation support provided by CTI (described above) was highlighted when it comes to be able to be innovative enough in order to achieve global leadership.
The presenter continued with a look at ExoLegs[1] which is a €4.56M AAL-project started in 1012 for developing lower body mobility exoskeletons for assisting elderly persons to move around to perform their normal daily activities. There is a big consortium involved in this with 15 or so partners representing end users, companies and research bodies. The two main challenges were a risk that the activities will be too much driven by technology itself and that all parties would like to start their own companies etc. focusing on self interests rather than the collective good.
Finally the presenter discussed other general challenges such as how afford to getting true radical innovation and surviving "the valley of death", deal with the ever increasing complexity of technology and how to achieve proper customer segmentation.

[1] http://www.exo-legs.org

Challenges for an SME developing Home Access Solutions for telecare
Speaker: Gonzalo Ugalde, Phoniro Systems AB, Sweden

Phoniro Systems is a developer of digital keys/access systems for the home care and was established 2004 in Sweden. Main markets are Sweden, Denmark, Norway and USA.

The presenter started with a presentation of the company and its products and then moved over to talk about the main challenges being an SME; Obtaining enough financing, how to deal with patents, handle the need for constant development, tackle increased competition, staff requirements ramping up, fight against competitors and establish the right partnership. Again, the slow and stale procurement process of the buyer side of AAL-solution was raised as a major obstacle for market formation and growth.

Phoniro Systems have chosen to use primarily private investors to get the capital they need for growth. With a private investor you get more benefits than just the money compared to dealing with institutional financiers. The co-design/co-creation process with customers and end users was identified as the single most important success factor for Phoniro Systems as well as any other SME in a similar context. It was also highlighted that partnerships are essential for being able to deliver a complete solution but as the same time develop true excellence in your own specific niche. It was also suggested that it could be very good beneficial for an SME to work together with a larger cooperation which have the market reach and the SME will bring innovation and agility to the table.

Discussion

The AAL is a classic example of a so-called novel market still very much under formation. The current markets activities are of an explorative nature and the market conditions and procurement processes are not optimal for the kind of new solutions developed by the AAL-community. As we all know, an aging population will eventually lead to massive opportunities for the companies willing to invest. The question is however if it is the right timing for SMEs to enter this market now?

Conclusion

During this session there was shown that you clearly already today could make profitable business as a SME in the AAL-market. Find your niche and work closely with buyers and users of your proucts and services and the likelihood of finding a killer app will increase. Identify your challenges and address them one by one and many the obstacles between you and success will be removed. It is also very clear that an SME is extremely dependant of developing a strong ecosystem around itself in order to get through “the valley of death” and all the way towards national and international leadership. Here the local innovation support system such as for instance the CTI in Switzerland many times means all the difference in the world.

INTRODUCTION: CHALLENGES AND EXPERIENCES FROM IMPLEMENTING AAL SOLUTIONS IN EUROPEAN CARE ORGANIZATIONS

Catharina Borgenstierna[1]

The main driving forces for care organizations to implement innovations within welfare technology are primarily to preserve and enhance the individual's Quality of Life and at the same time to manage and reduce costs. Independence, safety, participation and own needs and desires are in focus but at the same time this needs to be balanced with available caregivers and cost allocation.

How can innovative products and solutions address these driving forces? We will discuss some examples within assistive eating devices and see how these have been implemented in different care organizations. The experience varies between different European markets and we will also compare the implementation with the US marketplace.

There are a multitude of challenges that need to be addressed during implementation with the most important question "how to" that requires local adjustment and planning. Sometime the decision process is long and unclear but also attitudes, user insight and know-how needs to be developed. There is also an information- and matching-problem between users and suppliers. The threshold for SME's to be able to reach out to users and decision makers.

We will describe during the lecture how we as an SME, Bestic AB, addresses these challenges and lessons learned that could be relevant for other SME's in a similar situation. Lessons learned involve e.g. the market introduction process, know-how build-up, adaptability and dialogue and also academic partnerships. Many European markets also have complex funding structure for assistive innovations with regional and local differences that the SME need to adapt to and understand. Networking and information sharing is key.

[1] *Bestic AB*

INTRODUCTION: MARKETING OR NO MARKETING FOR MY PRODUCT

Jose Angel Martinez-Usero and Susanna Laurin[1]

Funka Nu as an international SME working in the field of ICT for social challenges in the last 10 years, we have had a huge range of experiences on how a good ICT product with no marketing or adaptation to user expectations can be a market disaster.

Most of the research project in ICT for inclusion and aging well, and also AAL develop prototypes that work and solve or mitigate a problem. Nevertheless, these prototypes very rarely can be launched to the market, even when at the moment there are many different options to reach final users with different platforms and applications. As a consequence, Funka Nu has carried out an internal analysis of what existing ICT products could meet the expectations, needs and preferences of disable people and the elderly . it is very interesting to see how they have made the marketing campaign (if any) and what has been the acceptance of final users.

Some examples, with videos and pictures will be shown as a way of examples of good practice that can be useful for SMEs in the field of AAL, as it is a lesson learnt for ICT companies of other sectors.

[1] Funka Nu

SESSION C2

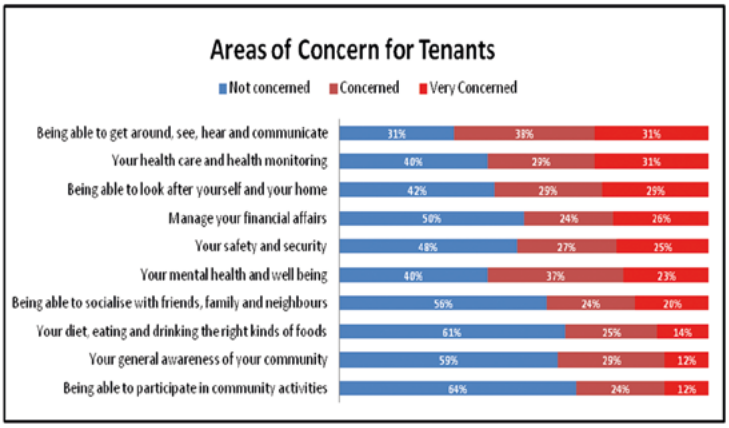
Successful AAL businesses

INTEGRATION OF AAL – TECHNOLOGIES AND SOCIAL WORK: KEY TO SUCCESS?

Anton Zahneisen[1]

1. Introduction

SOPHIA is meanwhile offering social services for elder people supported by ICT solutions for about more than 10 years in the area of North Bavaria, Germany
SOPHIA was founded 2004 by local housing companies as a prevention for the consequences of the demographic change.
The common aim of our business is to enable elder people staying at home and living independent. An actual study shows what are the main interest and fears of elder people:



SOPHIA started with a business model that was not defined as a B2C business but strictly designed as B2B concept for housing companies and professional caregivers. In our concept we gave the option to be a regional exclusive partner with SOPHIA services by its own risk and business or to be a business partner of the SOPHIA company, with a low risk. The exclusive partners address the SOPHIA services in their own name and contract to their customer. Therefore they have to pay a monthly fee to SOPHIA. By this it was possible to offer services without the need

[1] *CEO of SOPHIA living network*

of a big number of end-users to co-finance the costs of a 24h/7days service. The main topics of SOPHIA services are:

- Proactive Care & Support done by Volunteers
- Professional Analysis (aftercare) of Emergency Calls
- Services for Mobility
- Health monitoring
- Technology for security@home

The strategy of SOPHIA is to be a full service-provider for all identified requirements. That means that we give personal support to people in need (customer and families) and we give technical support just in time. Everything like information, consulting, installation, service maintenance, administration comes from one face directly to the customer.

Though we have a broad portfolio of modern technologies (intelligent emergency call with automatically alarms and activity curves by VIVAGO, home automation systems and health monitoring with SOPHITAL® for example), we are always very close to our 1.500 customers (only in North-Bavaria) Germany wide SOPHIA has about 4000 customers . The integration of volunteers enables us to talk weekly very personal to the people we take care of.

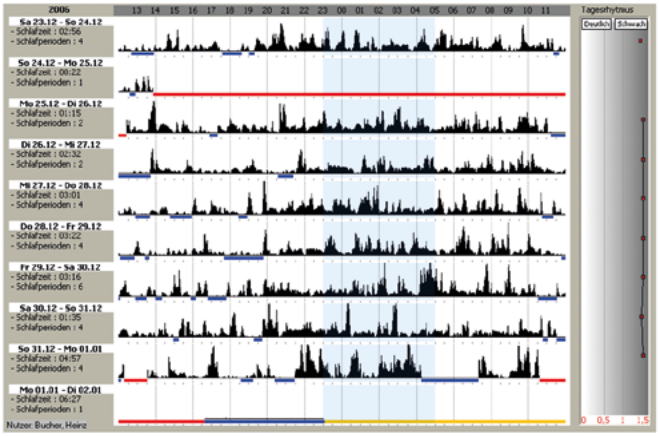


Figure 6: *Activity curves*

Figure 2: *Blood measure with SOPHITAL®*

Figure 3: *Summary*

What else have we learnt the last 10 years? A big challenge is to address SOPHIA services to the right people in the right way. People for example with restriction in mobility and a high motivation to be mobile are often able to find solutions to handle with these problems. For those a barrier is a challenge to tackle. People with the same kind of handicaps but a low motivation for mobility will not realize the SOPHIA Services for mobility.

THE SOCIAL BUSINESS CASE

Drs. F.J.M.C. Stravers[1]

Abstract

A social business case (SBc) is not only the weighing of the expenses against the income for economic purposes but also including the social revenue and the importance for society.

The development of a (VieDome)Community consists of an increased number of clients, financial growth and social growth. By comparing the expectations in the SBc, it is possible to draw conclusions on what a (VieDome)Community will really mean for a local society. A (VieDome)Community will not only save costs but is will also have social revenues. In some areas the costs will increase but they will be well compensated by a social revenue.

The SBc is interesting for (social) stakeholders and potential (social) investors. The SBc provides an insight that is as wide and as tangible as possible and deals with the viability, the social effects and the economic revenues.

The target group will live longer, more comfortably, more carefree, healthier and independently at home. This will be achieved by offering services in the area of care, welfare, service, comfort and entertainment. The care parties in a local society are important for the supply of care-related services. A (VieDome) Community emphasizes on co-creation in order to connect to a local society.

1.Introduction

This document encompasses the 'social business case' of a VieDomeCommunity. The various perspectives of the VieDomeCommunity projects are described in this document in order to provide the reader with a sense of what a VieDomeCommunity could mean for a local society. This will include the financial, organizational and social aspects. Each chapter will cover different aspects, which will be compared in the last chapter.

2. VieDomeCommunity

A VieDomeCommunity incorporates 138 services for use by consumers and organizations. Among other things it is a tried and tested image and speech system that enables communication with other participants, the local government of a care centre. A customer can use a VieDomeCommu-

[1] TKH Care Solutions, VieDome, stravers@tkhcaresolutions.com

nity on a PC, with and without touch screen, a TV or a tablet. A VieDomeCommunity contains as large number of services which can be personally tuned to each participant. A VieDomeCommunity will offer the services of various parties in a local society. These services will entertain, inform, help and connect the client.

2.1 Civil society

Civil society is the arena outside of the family, the state, and the market where people associate to advance common interests. It is sometimes considered to include the family and the private sphere and then referred to as the "third sector" of society, distinct from government and business.

With the introduction in 2007 of the social support Act (Wmo) in the Netherlands the concept of civil society became more real than ever. The social support Act differs in each local society in the Netherlands because every municipality submits their own accents. The social support Act is based on the idea of the civil society in which people can support each other. A VieDomeCommunity is part of the civil society. The vision of VieDomeCommunity is to support people with the aid of others.

3. The social business case

The social business case has a logical setup. The case consists of five parts, which are interconnected. The setup of the social business case is as follows.

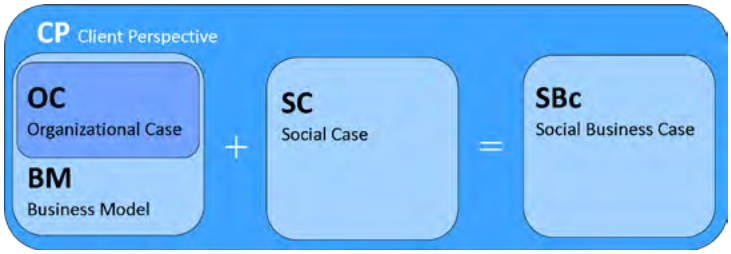


Figure 1 *Model of the Social Business Case*

In the next paragraphs the individual parts of the Social Business Case will be briefly described. For a more extended description please go to www.tkhcaresolutions.com. The client perspective (CP) is how the client feels about a VieDomeCommunity. The business model (BM)provides an idea of how a VieDomeCommunity functions as an organization. The services and the value they create are also discussed. The Organizational Case (OC) includes how the basic requirements of the business model will be financed. The Social Case (SC) explains the possible social impact of a VieDomeCommunity. The Social Business Case (SBc) is the combination of the other parts and provides an idea of how the social effect will cover possible shortages.

3.1 The Client perspective (CP)

From the client perspective point of view a VieDomeCommunity can help a local society. If offers clients and volunteer aids, safety, support and independence. By applying innovative co-creation with clients, clients can receive even better support. When a VieDomeCommunity is presented as a fun, social and entertaining product, people will be more inclined to use it. People do not like to be associated with care.

3.2 Business model VieDomeCommunity (BM)

The business model used is based on the book 'business model generation' (Pigneur, 2010). The purpose of this model is to review all the building blocks individually. The purpose for VieDomeCommunity for doing so is to create a stabile and fully fledged business model.

How do the services support clients?
In order to determine the level of support, an 8-pillar model has been designed. In order for the target group to remain living at home for longer, VieDomeCommunity will need to support all eight of the pillars. This means that the various services need to appeal to the client in all the pillars. In his essay's Frans Stravers explains why and how the 8-pillar model adds to living independently for longer.

Figure 2 *The VieDome 8-pillar model*

From this model can deduct that clients feel the need to obtain multiple dimensional assistance, so a one dimensional approach will not be successful. Apart from the perception the client has on his support a number of social and perceptional factors play an important role, without a relation with the actual needs and requirements, but have a relation to our self image. VieDomeCommunity aims to meet all eight pillars. The clients of a VieDomeCommunity do not all have the same needs. The 8-pillar model therefore varies per client.

3.3 Organizational case (OC)

The Organizational case (OC) is a description of the legal and organizational setup of a VieDomeCommunity. This setup needs to be determined for each local society parties which have to include the local government, the local organizations and the clients. This will strengthen VieDomeCommunity as a part of a local society.

3.4 Social case (SC)

The social case indicates the effect a VieDomeCommunity has on a local society. This effect is referred to as the 'social return'. This return can justify some investments if a VieDomeCommunity is not economically profitable. This is because a VieDomeCommunity has added value to society.

4. The Social Business case (SBc)

For a VieDomeCommunity to work it has to be organized and viewed as an solution which can use the economics of scale because it is a platform that is used in many parts of the country but that is organized at a local scale to involve in and be a part of a local society.
The business model of a VieDomeCommunity has the organizational side and a social side. For the purposes of comparing both outcomes, a simplified and put into a graphic:

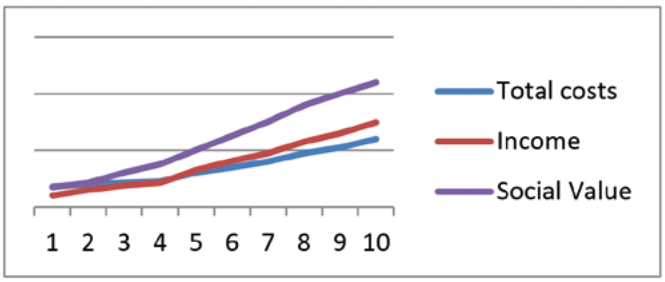


Figure 3 *The added value of a VieDomeCommunity*

From experience and calculations in the Netherlands it takes about 3 to 4 years to get an economical breakeven point. In the later years of a community the community will bring economical revenue to the partners that are involved in the community. If we take in account the social revenue than within about two years the use of VieDomeCommunity has its revenue. Also the social revenue is greater than the economical revenue.

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SMARTCOMPANION – FROM APPLIED SCIENCE TO FIRST AAL PRODUCTS

Elias D.[1], Castro R.[2], Verbeek F.[3]

Abstract

Smart companion is an internal development of Fraunhofer Portugal AICOS that, like a Swiss army knife, provides a multitude of functionalities for seniors on top of standard smart phone HW (COTS). The idea is to transform the phone into a 'companion' that serves its owner in all everyday situations. When AICOS presented the Smart Companion during the last AAL Forum in Eindhoven it caught the attention of Y2Y, a Dutch company interested in the business opportunities related to the 'best ager' market. Aside from us being able to provide state-of-the-art technology, it was also the ability to understand and support the clients' ideas on how to market the product that finally led to a commercial agreement, that honours the internal developments in the past as well as it is the basis for individual developments that currently take place for the customer.

1. Introduction

The projection of an aging population will pose a severe burden to the health services. The financial effort and physical requirements needed to provide the current level of care to such a large forecasted population are far too great to be feasible. Solutions need to be produced to provide an appropriate level of care in a more efficient manner by taking advantage of current technologies, allowing the seniors to remain at home and carry on with life as normally as possible.

Smartphones are a good starting point since they are more prevalent than ever, and there is still a tendency towards growth. Smartphones already account for 57% of the market share of mobile devices in the EU5 (Germany, UK, France, Spain, Italy) and nearly 75% of phones acquired in December 2012 were smartphones (comScore, 2013). In the U.S., 14.6% of people over the age of 55 own a smartphone, while in the EU5 region this percentage is slightly higher, with 18.9% of smartphone users being over the age 55 (Pew Research Center, 2013).

For older adults – the demographic group with the fastest growth – access to these increasingly

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powerful tools might be synonym of independence, better management of instrumental activities of daily living and ultimately of an increase in quality of life. Furthermore, smartphones hold the promise of acting as important tools in the disruption of centralized health care services as we came to know them.

2. SmartCompanion

SmartCompanion draws from a holistic approach and looks at opportunities. It is a result of a quest to deeply understand older adults and to meet their needs and expectations towards a thriving later life. In order to do this, SmartCompanion has relied on older adults as designers of their future technology. It looks for empowerment rather than patronization and draws from the acknowledgement that older adults may live their lives to the fullest. Therefore, it is envisioned as a round the clock companion that is able to empower older adults to live independently and safely, and to manage their social, personal or health-related affairs.

Bringing together the creativity of older adults with Fraunhofer AICOS young researchers' insights led to the solution, which came in the form of a 'Swiss Army Knife' designed to assist its users in a broad and ever expanding set of activities and environments: a companion.

SmartCompanion is an Android application that replaces the default Android Launcher. It can be installed in any Android smartphone and it can be configured and personalized to fit each senior's requirements. It has a set of essential features that allow seniors to have a better experience when using the smartphone such as a customized unlocker, home screen and settings and easy-to-use communication applications including calls, messages and contacts. Applications for health, entertainment, mobility and well-being & lifestyle are also available.

The Health applications include an agenda and medication reminder that help seniors during their daily life remembering of any event such as taking medication and doctor's appointments.

A camera and gallery applications are included in the entertainment area that allow seniors to easily take pictures and share them with their family and friends offering a simple way to foster social interaction.

Regarding mobility applications a navigation tool with location monitoring and easy management of points of interest is provided to greatly simplify navigation tasks while guiding the users to their preferred locations and reassuring caregivers that they will be alerted in case their family member becomes disoriented or lost.

Finally, the well-being & lifestyle area contains an activity monitoring application that tracks users' movements and classifies activities being performed such as laying, sitting, standing, walking, cycling or running. In addition, a fall detection mechanism that resorts to the smartphone's motion sensors is able to accurately detect dangerous falls and launch an alarm in case of emergency.

3. From internal project to market

Figure 2 *SmartCompanion: From internal project to market*

Already for long, AICOS has been researching the problems of marketing such type of developments, and some years ago we presented contributions targeting the commercial problems of AAL products during past AAL forums.

One of the key results of the research has been the finding that it might be impossible to sell high tech ICT products directly to seniors and that a trusted intermediary is needed. The best intermediaries that could get identified are family members; specifically the children that to a large extend also perform informal care giving tasks.

In order for the product to get recommended, the aspects that matter to those informal caregivers have been identified as high priorities for the implementation of the product. Thus the smart companion includes many features that help to support family aspects today, while only the part delivered on the side of the seniors requires special tools and on the side of the other family members 'standard' interfaces have been chosen.

When AICOS presented the Smart Companion during the last AAL Forum in Eindhoven, it caught the attention of Gociety, a Dutch company interested in the business opportunities related to the 'best ager' market. Aside from us being able to provide state-of-the-art technology, it was also the ability to understand and support the clients' ideas on how to market the product that finally led to a commercial agreement that honours the internal developments in the past by licensing of background knowledge as well as is the basis for individual developments requested by the customer.

During the course of 2013 both AICOS and Gociety worked together to bring to the market a solid solution based on Smart Companion that has been thoroughly tested with end users and that satisfies their requirements and the requirements of secondary users (caregivers).

The current solution – branded GoLive Phone – was handed to the client in September of 2013 and includes a rebranded and improved Smart Companion as well as a companion website for caregivers that allow them to manage seniors' smartphone settings, contacts, photos and receive alerts among other features.

The results of the cooperation will get available on the market already during this year and an internationalization strategy is already in the implementation phase.

Both, Gociety and Fraunhofer, are convinced that there is a market for sound and realistically priced products that really have a value to the users. The contribution will provide more detailed information on the product and its business model.

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BUSINESS MODEL ANALYSIS FOR AAL

John Barry[1], Filippo Cavallo[2]

Abstract

Aaliance2 project is tasked with developing a roadmap for AAL. To influence and guide thinking, Aaliance2 also seeks best practices for AAL goods and services available today by reviewing business model literature and best practices. Aaliance2 identified successful AAL business cases and explore their applicability in different markets within the EU. The Business model analysis drew heavily from IC-TechnolAge's investigation into existing best practices business models. The most promising model (managed services) was then compared against market conditions in three leading markets to test for likelihood that he business conditions will support the business model. The conclusion is that market conditions vary too much for successful adoption.

1. Introduction

As an industry-driven network, AALIANCE2's interest is in collecting and presenting good practice examples of AAL business models that are considered worth replicating to influence business models for similar products and services in other countries and regions. Drawing on recent EU projects this work will highlight selected findings that are considered of importance for deployment and explore the state of market conditions for future success, rather than invest time and effort into developing several theoretical concepts of AAL related business models.

To meet the objective of examining the reference business models within this market assessment and reviewing the current market conditions for growing the AAL market, it is first necessary to review the definition of a business model and to define the AAL market. This report is focused on Europe and more specifically counties and market where AAL goods and services are currently sold. Future work will consider opportunities from Asia and America.

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2. Business model

There are many definitions and interpretations of business models. To ensure consistency the definitions and model used is from Alexander Osterwalder's work. The book, titled Business Model Generation (Osterwalder, Pigneur, & al, 20010) was "crowd edited" and cites 470 co-authors. Many businesses, business schools and entrepreneurs are using Business Model Generation to harmonise the working definitions.

Business Model Generation uses a business model with nine basic building blocks that demonstrate how a company intends to succeed ("make money" is the direct quote; but because of the nature of AAL, where the focus is on delivering a sustainable service as much as it is to make money). The nine blocks cover four main business areas: customer, offers, infrastructure and financial viability.

Building blocks:

1. Customer Segments: an organization serves one or several Customer Segments
2. Value Proposition: seeks to solve customer problems and satisfy customer needs with value proposition
3. Channels: value propositions are delivered to customers through communications, distribution and sales channels
4. Customer Relationship: customers relationships are established and maintained with each Customer Segment
5. Revenue Streams: the result from value propositions successfully offered to customers
6. Key Resources: the assets required to offer and deliver building blocks 1-5
7. Key Activities: the acts preformed by Key Resources
8. Key Partnerships: outsourced activities or resources acquired outside the enterprise
9. Cost Structure: the business model elements result in the cost structure

3. AAL Market

ICTechnolAge project preformed a detailed market survey from 2012-2013 to identify representative business models for emulation. Their focus was on ICT and aging making the focus larger that the AAL market. In addition to the survey, the ICTechnolAge project evaluated business models and created recommendations for policy makers and business planners. In the study they considered less than 50 projects, businesses and trials. Using criteria to ensure scale of operation and proof of success, the field was narrowed down to 20 case studies that were reviewed in detail. From the 20, five were chosen as reference models (TechoIAGE: Study on business and financing models related to ICT for ageing well, 2013).

1. The Scottish Telecare Programme Board and the 2006-2011 Telecare Development Programme (STPB)
2. Simap (Vodafone and Red Cross)
3. SOPHIA
4. VieDome (Mextal B.V.)
5. Patient Briefcase (Medisat)

To focus the ICTechnolAge material into the area of AAL, this document will address the first two – Scottish Telecare Programme Board and SOPHIA - both service providers. The VieDome and Patient Briefcase platforms are private sector technology providers and operate in a different part of the value chain. This illustrates that each part of a value chain - a string of companies or players working together to satisfy market demands for a particular product, have their own business model. In the beginning of 2013 the general assessment of the AAL market is that technologies are available to deploy solution, but it is the lack of service offers that are hindering growth. For this reason only the STPB and SOPHIA business models will be considered.

Scottish Telecare Programme Board

The Scottish Telecare Programme Board business model (Figure 7 Scottish Telecare Programme demonstrates how governments invest strategically to provide better service to citizens. The STPB has consistently forecast the expected costs to society if nothing is changed in the service delivery chain. They then worked with the private sector technology providers as well as all the care providers to create cost savings scenarios that were then reviewed in a consultation process that included the public. This preparation work helped sell the project while creating a matrix that is used to measure the success of the project. Since 2006 STPB have a fact driven scorecard that explains how their actions and investments have changed the service delivery realities in Scotland. The results focus on reduced loading on hospitals, increased independence for the elderly and lessoning the stress of casual caregivers. The Scottish experience is growing from telecare to include telehealth and is becoming an example of a public sector managed service. Managed service business models look across the care delivery value chain and treat spending on social care and social health holistically. This enables service redesign and has potential to being a key tool to change spending from treatment to prevention.

The STPB business model is atypical in that it is described as a change project. The key activities for example include the vision for Scotland's telehealth. This is a key activity for the project, but is unlikely to be a key activity for ongoing operations of the service.

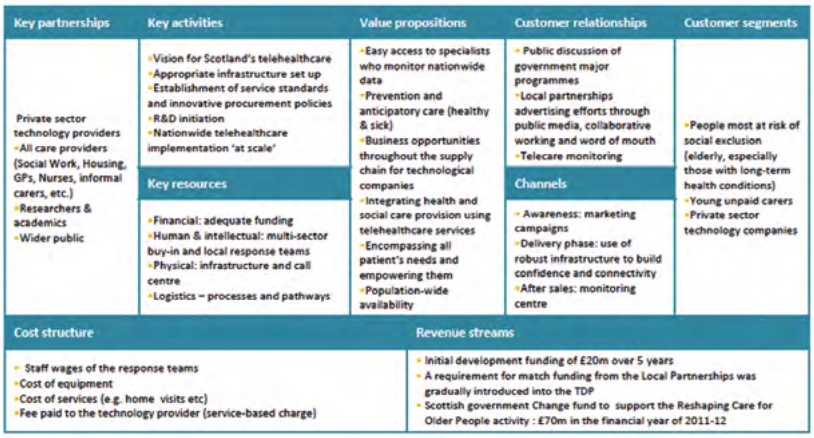

Figure 7 *Scottish Telecare Programme (TecholAGE: Study on business and financing models related to ICT for ageing well, 2013)*

SOPHIA

In 2001 a German project was funded to offer elderly and handicapped people better support in their own flat as long as possible. It offers 24 hours support through telecare and scaled up to a 1000 flat trial in 2006. One of the big differences in this business model was to target the housing companies as the principal customer or distributer for the service. In Germany assistance is available to support independent living through needs based, private insurance. This subsidy can be applied to the SOPHIA service, but it is not seen as requirement. Instead, SOPHIA had a dual focus of supporting the residents' needs and wishes while also supporting the housing companies' needs and desires. At the end of the successful project 50 residents wanted to continue the service and the SOPHIA Foundation was created to maintain support. The Foundation has grown the subscriber base from 50 at the end of the trial in 2007 to over 2000 people being monitored in 2012.

To keep labour costs down, SOPHIA depends on volunteers for much of the face-to-face contact as well as using a franchise model for sales and distribution. Their service offer is also tiered from the basic telecare coverage through to care visits as well as virtual care visits via video calls. The service pricing to the resident runs from €18.36 to 39.90 a month, with all services requiring roughly one month's service as a start of service fee.

<table>
<tr><th>Key partnerships</th><th>Key activities</th><th>Value propositions</th><th>Customer relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="2">•Joseph Foundation
•Federal Government
•Regional Governments
•Housing companies
•Technology providers
•Emergency call centres
•Assistance providers</td><td>•Provision of technology and 24h personalized assistance
•Coordination of tasks of different actors (emergency, social assistance, technical call centres, volunteer caregivers and the distribution)</td><td rowspan="2">•Social interaction and personal follow-up
•Coordination of counter-acting services of limited mobility and other functional limitations
•User friendly technology</td><td>•Continuous assistance from "godfathers"
•Mediation by the housing companies
•Monthly meetings with the volunteers to discuss on customer feedback</td><td rowspan="2">•Housing companies
•Professional caregivers
•Families and relatives
•Older people (final users)</td></tr>
<tr><td>Key resources
•Technological infrastructure
•Volunteer caregivers</td><td>Channels
•Regional SOPHIA franchises
•Housing companies</td></tr>
<tr><td colspan="3">Cost structure
•30% technology
•70% administration and service provision
•Initial pilot-project: development costs of about 1,5 million €</td><td colspan="2">Revenue streams
•Initial funds from "Joseph Foundation", the German federal government and the regional government of Bavaria
•Monthly fixed fees paid distributors and franchisees
•Monthly variable fees paid by the final users, depending on the service package</td></tr>
</table>

Figure 8 *SOPHIA (TechoIAGE: Study on business and financing models related to ICT for ageing well, 2013)*

Focus on AAL

Despite business models for telecare, telehealth and smart homes individually, few models for fully integrated AAL exist today. Out of the two reference business cases only one is beginning to offer clinically valid telehealth – STPB. Clinically valid telehealth goes beyond capturing biometric data for trend monitoring by capturing data that can be used by medical professionals for a medical diagnosis. Typically this requires specific medical approvals on the equipment, data storage and system design. Another difference is that the data is monitored for quality

and compliance and that limits are monitored by clinicians to evaluate the resident's condition. Trials like the STPB are occurring in several member states and cannot be considered to have an established business model. One model that is being used is an aggregated focused on providing support led by government's need to care, shelter and provide health services to their citizens. This unified service model or managed service model places an organisation between the existing care, health and housing structures and behaves much like the STPB to manage the societal outcomes of the three parties rather than address the needs in isolation.

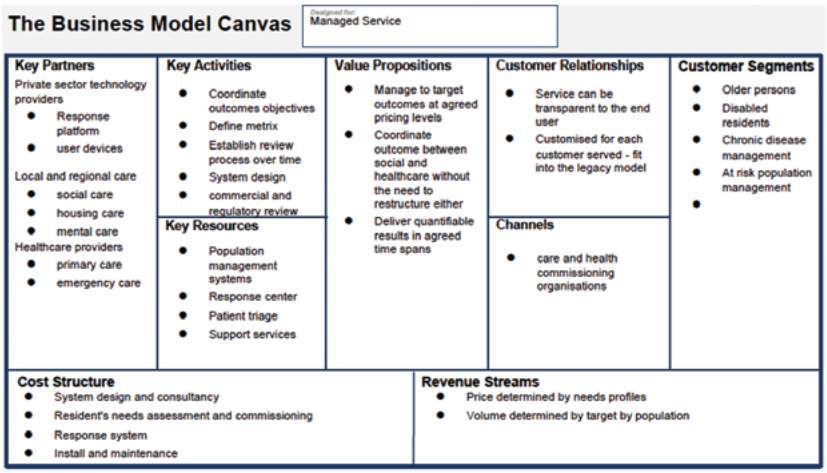

Figure 9 *Managed Service model*

4. Potential model for AAL – Managed Service

The big drivers for the adoption of new models in integrated care in the community are: the ageing demographic profile in Western Europe, the need to manage long term conditions out of hospital, and the commitment by governments to improve the ability of patients to live independently in the community without resorting to expensive residential care. The overriding objective is to achieve improved patient outcomes and satisfaction levels on a cost effective basis.

The financing of care in the community is typically funded from a variety of health, local government, insurance and private pay sources.

We have reviewed activities in the development of telecare and telehealth in larger markets in Western Europe and looked for the potential of managed service models where third parties could potentially accelerate the development of a more integrated offering by managing the whole value chain on a fee per service basis. The following chapter describes developments in three major markets: The UK, Spain and Germany.

5. Conclusions

Proven Ambient Assisted Living business models that meet the criteria of delivering the benefit of telecare, telehealth and smart homes were not identified. What was identified was the expansion of telecare business models to include new care technologies (especially video virtual visits) and the first examples of the convergence of telecare and telehealth. Based on the current state of the AAL market there are three alternatives to consider in future business care evaluations:

1. Continue to use the definition of AAL being the convergence of all three domains (telecare, telehealth and smart homes)
2. Open the definition to be include solutions that include two or more of the domains
3. Redefine AAL to include any assistive technology

In keeping with the Aaliance2 market survey, this investigation follows the second path with the hope that given more time solutions including all three domains will begin to be established. It is also possible that the future investigation into the US and Japanese markets may discover AAL solutions that meet the full requirement and can be emulated as a model for Europe as well.

In the longer term markets, where the needs and benefit are less formally aligned like Germany and other European markets where care is typically delivered by civil organisations and health by insurance companies or public entities, are likely to be served by offshoot business models from the midterm service providers. In Germany and other markets where insurance companies are active in providing health solutions, may also develop a high-end model where social care is added to health benefits. This is one of the expected models in the US and Japan where private insurance often is involved in corporate benefits packages.

THE AALOA EXPLOITATION MODEL FOR AAL PROJECT RESULTS

Hanke S.[1], Furfari F.[2], Làzaro Ramos J.P.[3], Potortì F.[2]

Abstract

AALOA, the Ambient Assisted Living Open source Association, was born to create an environment to foster initiatives linked to AAL. AALOA offers an environment where people and organizations can start an AAL project. Most projects are expected to be software projects, to be released using a Free / Libre / Open Source software licence, but other types of activities, like research, conference organization, standardization and lobbying are envisioned as well. This paper illustrates the idea of the Ambient Assisted Living Open Association, the actions initiated by AALOA and those planned for the future. The main focus is on the exploitation possibilities which AALOA provides to the outcome of several European and non-European projects. A collaboration here would be a win-win situation. On one side, AALOA has already appropriate prominence and is linked to European strategies which can help to group people and associations around different project results and to position them in the right way and manner. On the other side AALOA is depending on the community and on the projects it hosts. To demonstrate this ambition and to give a demonstration for other European projects, the paper presents the identified exploitable results of the universAAL FP7 project and their planned incubation in AALOA.

1. Introduction

Production of software infrastructures supporting AAL (Ambient Assisted Living) is the core topic of a number of EU projects some already completed, some still running. The legacy of these projects should not be allowed to die; rather, there is the need to promote them and support their evolution and maturation. This can best be done through an independent, non-profit association open to individuals, institutions and industry. In this sense, AALOA has so far been the actor of several political and strategic activities in Europe.

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[3] TSB Tecnologías para la Salud y el Bienestar

One aim of the Ambient Assisted Living Open Association (AALOA) is to fulfil its role by helping European research projects to exploit their results and to maintain them after the project lifetime. AALOA has already incubated some activities which follow now their own strategy including different stakeholders and interests. Prospective incubations in AALOA are based on exploitable results from the universAAL[1] FP7 European project. These incubations will play a major role as the resources on which the ReAAL[2] CIP project is built. ReAAL is committed to deploy the universAAL platform to 7000 houses all over Europe.

2. Ambient Assisted Living Open Association (AALOA)

So far AALOA has worked on some activities to build support around the ideas of the Manifesto which you can find on AALOA's website at <http://aaloa.org>.

First to mention, we organized and set up the AMB'11 workshop in Brussels and the Lecce Declaration, which are natural continuations of the Manifesto. The AMB'11 workshop focused on the problems that have been experienced by companies trying to establish business in the young AAL market and discussed possible solutions. AMB'11 on June 7, 2011, was organized by AALOA and eInclusion and supported by AALA. The workshop brought together representatives from technology and service providers in the AAL ecosystem, representatives from AAL platform projects and representatives from European funding agencies, all in all 42 participants. The goal of the workshop was to identify topics for newly funded, joint projects that would lead to faster, cheaper or more flexible product development of AAL products and services, as well as obtain feedback from the industry on the form and content of possible new funding measures in the AAL area. Since the premise of this workshop was that all stakeholders in the AAL market would greatly benefit from a widely adopted platform, this workshop tried to achieve its goals by focusing on existing platforms suitable for AAL, analyzing the barriers for the widely adoption of a platform by the industry and trying to define measures to increase the adoption of at least one platform..

The Lecce Declaration was subsequently included in the Strategic Implementation Plan and Operational Plan of the European Innovation Partnership on Active Healthy Ageing, published at the end of 2011[3] . This led to the creation of the C2 action group focusing on interoperable and flexible ICT based solutions for independent living. AALOA submitted a commitment for participation and was active in the definition of the C2 action plan made official on 6 November 2012

The action plan includes in particular the following deliverables:

- Interoperability process recommendation for EIP-AHA and recommendations for standardization
- Set of good practice documents for the implementation of independent living solutions

[1] universAAL: <http://universaal.org>

[2] ReAAL: <http://www.cip-reaal.eu>

[3] Strategic Implementation Plan of the European Innovation Partnership on Active and Healthy Ageing <http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=implementation-plan>

- A self-sustainable repository of information, practice and evidence to promote the deployment of independent living solutions

Beside this there have been some activities in the standardization efforts. More concretely, AALOA established a liaison with ETSI and IEC for starting standardization process for AAL. After having organized the Track F of the AAL Forum 2010 in Odense, connections have been created with the ETSI department on New Initiatives. In the context of AAL Forum 2011, more concrete discussions took place about the creation of an ETSI Industry Specification Group (ISG) for AAL; however, at the same time news about the creation of a Strategic Group for AAL at IEC known as IEC SG5 were published, so that we decided not to initiate any competing group but try to get connected to IEC SG5. We will proceed by referring to their agenda for "a roadmap with a timeline that includes a reference architecture and prospective standardization projects" using the example of the universAAL project and its results in terms of *AAL reference use cases and requirements*, *uAAL reference model*, and *uAAL reference architecture*. We try to keep this link alive in the context of community activities, such as the C2 action of EIP-AHA above.

On-going and future tasks in AALOA are divided into different working groups. The overall goal is to involve more supporters and promoters actively in the tasks of AALOA. One group is working on incorporating AALOA, which includes registering it as a legal entity with an official statute and bylaws. Together with this there will also be a renewal of the AALOA steering board. Another working group is working on the relationships with EIP-AHA, the ReAAL project, the Engaged project and the standardization groups. Also dissemination and exploitation of the work AALOA is doing is something which has to be improved. Dissemination and Exploitation is always a critical task for research projects. AALOA may contribute by creating synergies among the research groups participating to European projects and willing to disseminate their work beyond the natural end of a project. The visibility acquired by sharing and maintaining research results help to create links with other groups and to be involved in other projects. A new campaign should begin to bring new resources in AALOA from European projects like FP7, AAL JP projects. It is important that AALOA gets better known as an organization which is a powerful unity of AAL stakeholders and can coordinate initiatives, influence politics and funding strategies and can be a powerful tool for the exploitation of AAL results and developments.

3. The AALOA exploitation model for exploiting EU project results

Exploitation of EU project results is about adoption and use of project results to the benefit of individual partners, groups of partners and/or also to the benefit of non-members of the project consortiums. The benefit can take on different forms: improving the skills of researchers in such a way as to enable new research business in the future; improving or extending the scope of teaching in a university; producing or contributing to some product a partner has/wants to make (coordinated exploitation); or joint ventures (joint exploitation).

Industries are especially important in the first phase mostly as counsellors and providers of development forces. Industries have the need for clear business models about how the exploitable results can bring them return of investment which is important for the survival of the joint exploitation. AALOA can help to be a tool for joint exploitation and has already incubated and demonstrated some success stories.

In fact, AALOA is organized to be a *confederation of projects*, where a *project*, in classical Open Source parlance, is an independently managed activity inside AALOA with its own rules and responsible persons, which abides by AALOA's ideas, that is those explained in the AALOA Manifesto, and that uses resources provided by AALOA, such as web space, mailing lists and community tools.

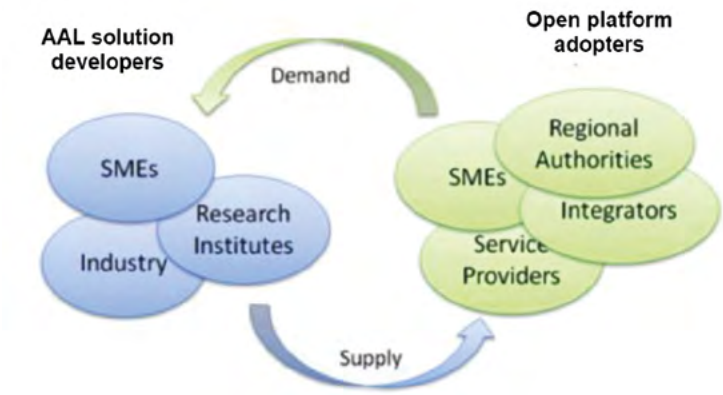

Figure 1 *Closed loop of demand and supply side for an open AAL platform*

Figure 1 shows the closed loop of demand and supply of open platforms. The market is stimulated in different ways as there are SMEs which can take both roles or respectively on or the other role.

Three successful projects that are alive so far are the **EvAAL competition** (<http://evaal.aaloa.org>) started by the universAAL project, **ZB40** (<http://zb4o.aaloa.org>, formerly Zigbee4Osgi) started by the FP6 PERSONA and the universAAL projects and **HOMER** (<http://homer.aaloa.org>, HOMe Event Recognition System) started by the Austrian project NovaHome. These three *AALOA projects* are based on the results of funded European projects and initiated by groups of former consortium and non-consortium members, from both research and industry, which are committed to participating and contributing to the incubated projects because of common interests.

Of these three projects, ZB4O and HOMER are software projects. More software projects are expected to be incubated in AALOA when the universAAL project will start to officially release its results. This could encourage other parties to choose AALOA as the place of choice for releasing their software, by creating further projects.

In the second phase of life, AALOA's will strive to include members from a wider range of stakeholders: policy makers, industrial associations, service providers, caregivers and society groups will need to be involved, from as much European countries as possible.

National regulators will need to be contacted or involved, in order to harmonize legislative requirements across Europe and allow a single market to be born. AALOA could serve as a lobbying centre, and could seek the status of European Technology Platforms (ETP).

The above planning sees AALOA as the centre of AAL initiatives in Europe. This might not probably be the case, but it is not possible now to foresee which other entities are going to gain importance in the field. Most likely, AALOA will try to get in touch and associate, incorporate or merge with other initiatives with similar aims.

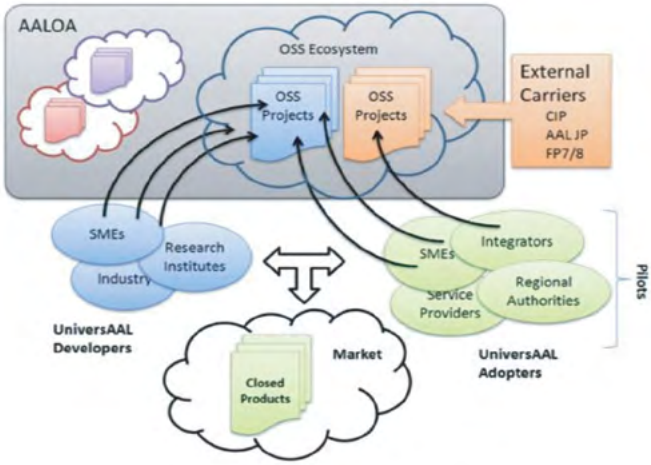

Figure 2 *Exploitation options based on OSS ecosystem*

Figure 2 shows the overall relationship and the AALOA role in the exploitation of project results or exploitable project through the incubation of projects, being AALOA the container where different OSS (open source software) projects are hosted.

The supply stakeholders can contribute to the open source ecosystem and most of all use the resources that fulfil the needs of the demand side. In between the demand and the supply side there can be a business established (based on the resources of the ecosystem) which provides some products or certified modules for the market (not necessarily anymore as open source projects).

ASSISTIVE TECHNOLOGY AND HOUSING FOR OLDER PERSONS

Tomas Lagerwall [1]

1. Background

Like many other countries around the world, Sweden is facing an increasing number of older persons, here defined as 65+. This fact may imply substantial expenses for society, in particular for smaller municipalities.

Several EU funded projects have been addressing the themes Ageing, Disability and Technology such as:

EU funded study HEART – Horizontal European Activities in Rehabilitation Technology 1992 – 1995 - showed among other things the fragmented market situation in Europe and the need for more technology in rehabilitation and welfare for older persons and persons with disabilities.
The main innovation of the EU funded MonAMI project lies in demonstrating how a complex mix of technologies, many of them so far only validated under laboratory conditions, can be brought together in a socially and economically viable way to facilitate inclusive access for older persons and persons with disabilities.

Technology can make independent living possible by providing help in daily life, safety and security at home, contacts with others, social integration and entertainment.

The political ambition in most countries is that older persons should continue to live in their ordinary home (stay or live in place) as long as possible. It is estimated that half of the 65+ population in Sweden live in apartments and houses less suitable to older persons e.g. apartments on second floor or higher without elevator.

A chain of conditions are needed to facilitate a live in place program. Subsequently technology will play a very important role.

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2. Welfare Technology

Welfare technology can be defined as technology that can help and assist users in their daily lives. Examples of welfare technology are intelligent devices such as communication equipment, robots, sensors in clothes, smart homes, etc. It is seen as a broader concept than assistive technology.

The first condition for staying in place is an accessible and appropriate apartment or house. This is a challenge when half of the 65+ population in Sweden live in less suitable apartments or houses. Tools have been developed to measure the level of accessibility or appropriateness, such as TIBB and Housing Enabler.

High-speed internet is required for many welfare technology products. About a hundred years age a process started where apartments and houses got electricity and water. This is standard today in OECD countries and increasingly also in other countries around the world. In order to promote live in place, we believe that welfare technology is a requirement. And many welfare technology products require access to high speed internet solutions. Subsequently high speed internet e.g. fibre cables are today in Sweden as important as water and electricity have been for about a hundred years ago.

Examples of welfare technology solutions include myJoice, Night peace “nattfrid”, the Giraffe, IPPI as well as Social alarm systems.

3. Method

The program Technology for Elderly has initiated and funded about 160 projects and Growing Older – Living Well 67. The Social Alarms programs have worked in two different geographic areas – a sparsely populated region in northern Sweden and a city in the south western part of Sweden, with about 100 000 inhabitants plus surrounding areas. Municipalities, user groups, researchers and enterprises including SMEs have participated in these programs.
Some 31 million EUROs have been utilized in these government funded programs.

4. Work and results

Several studies were made on how people live today in some municipalities, how they would like to live and the actual housing standard. Lack of appropriate accessible apartments, were common among municipalities studied.

One study by the city Luleå in northern Sweden, came to the conclusion that the city could save substantial amount of money by providing accessible and appropriate apartments for older persons e.g. Senior Housing for Assisted Living with access to welfare technology. One person staying in Special Housing for Assisted Living and Complex Care would cost around 66 000 EURO per person every year. If the person instead lived in an apartment in e.g. a Senior Housing for Assisted

Living the cost may be around 20 000 EURO for the city/municipality. In addition the individual is likely to pay around 1000 EURO per month or more for rent, food and services.

Research was also carried out on older persons moving habits. Conclusions include that older persons are not so interested in moving and when they move, they leave a house for a rented apartment. The apartment should be accessible and with access to outdoor environment, shops, transportation and with possibilities to socialize with other persons.

Another study on persons with dementia living in Special Housing for Assisted Living and Complex Care underscored the importance of good design and architecture. Persons with dementia in one unit were less restless and had better quality of life in a well-designed unit than in other units. The researchers concluded that the architecture and design had an impact on restlessness and anxiety, important elements in quality of life.

The transition from analogue to digital telecommunication systems means a challenge for stake holders and the weakest part of the chain will determine the quality.

Four geographic networks were established in different parts of Sweden with representatives from many municipalities.

Older persons, their relatives and staff should be involved when planning housing or welfare technology programs for older persons.

5. Impact

The programs have generated a high amount of interest in media, among politicians, decision makers and staff working with service and care for older persons.

Several municipalities have initiated studies about the housing standard and senior citizens interest and desires in regard to housing when growing older. This process is likely to continue. In addition some municipalities have started introducing welfare technology. One such example is Västerås about 100 km west of Stockholm and with a population of about 140 000. Västerås has initiated a @homecare program, which means that welfare technology is used by older persons, home care staff and relatives as a compliment to face to face visits by staff. Some examples:

Distance monitoring could replace personal visits at night by home care staff, which reduce cost and improves quality of life for participating older persons.

Another example is a lady 82 years old living by herself. Her two sons travel extensively, but want to stay in touch with their mother. She did not always answer their phone calls, which made them worried. Besides the telephone she now communicates with relatives, home care staff, health care staff and others through a device called myJoice using the TV as her communication point. Another alternative is called IPPI.

6. Conclusions and planned activities

Welfare technology aims primarily at improving quality of life for older persons and relatives. But it will also cut expenses for society, primarily municipalities. A pre-requisite for staying in place is however an accessible apartment with access to high speed internet.

A project has been initiated by the Nordic Welfare Centre where the situation in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) will be studied. Two commitments have been made and accepted in the European Innovation Partnership on Active and Healthy Ageing (EIP – AHA) program.

Discussions are ongoing to expand and develop the national networks created by the government funded program Growing Older – Living Well.

INTRODUCTION: THE TECHNOLOGY SHIFT FOR SOCIAL ALARMS INTO IP IS MAKING WAY FOR AAL

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1. Introduction

The Swedish Institute of Assistive Technology (SIAT) has between May 2010 and April 2013 coordinated a Swedish Government commissioned program for supporting the technology shift for social alarms from sending data using analogue tones (DTMF, STMF etc.) to using IP. The technology shift is imminent. Using analogue tone signalling to transfer data has shown to be ineffective, limiting development of new services, and unsecure because analogue tone signalling can be corrupted in digital and packet switched systems such as GSM and the IP based telecom networks of today.

2. Results

The program has resulted in a new open IP based communication protocol for social alarms, developed by the European market leading companies together with SIAT and the municipalities and regions in Sweden. The new technology, the value chains and the operational models for IP based social alarms have been tested in three major regions in Sweden. More than one thousand installations have been made in people's homes in cities and rural areas, using external antennas, different telecom operators, and low bandwidth internet connections such as General Packet Radio Services (GPRS) via GSM networks.

The Swedish Association of Local Authorities and Regions (SALAR) has coordinated a national procurement of IP based social alarms, communication and alarm receiving services based on the developed communication protocol and the results from tests in the program. In Sweden 253 municipalities stands behind the national procurement. Sweden has a total of 290 municipalities and approximately 200 000 users of social alarms in ordinary housing, special housing with staff available not included.

Within the program, SIAT has conducted several workshops to develop an operational model for social alarms and social care services in general. The workshops where based on the method

Business Model Generation. Participants where home care personnel, politicians, supplying companies, researchers, former representatives for the EU-commission etc.
New innovative social care services tested and verified in projects were included in the business/operational modelling work. Example of this is @homecare-services offered by the City of Västerås in Sweden. Depending on the individual pre-requisite, needs, and wants the users are offered an increased or substituted communication with the home care service via multimedia communication using a computer, the ordinary TV or a robot controlled by the homecare staff remotely. For especially vulnerable people, nightly personal visits were substituted by distant check-ups using video. The procedure for the video check-ups was decided by the user in discussion with the personnel. The project showed improving quality of life and lower expenses for the City of Västerås responsible for the home care services.

@homecare started as a project supported by SIAT, but in 2012 the City of Västerås decided to make the services offered in the project a permanent offer to elderly and people with disabilities. The City of Västerås is now conducting a procurement of the @homecare services tested in the project and participating in standardisation of IP based social alarms in order to develop open systems and services possible to integrate and administer cost effectively. One obstacle for the City of Västerås with a population of 140 000 is that only 60% of the households in the municipality had access to high speed internet connection during the project. The home care service need to be able to support users where ever they live.

3. Conclusions

Europe is undergoing an imminent technology shift into IP based communication for Social alarms. This affects users and services run by social care givers such as municipalities, companies and non-government-organisations. The technology shift affects all users, not only people living in cities with access to high speed internet connection. A technology shifts can give rise to new services and radical innovations. Different IP based communication AAL services can benefit from the technology shift for 200 000 social alarms in Sweden and 2.6 million in Europe. Standardisation and interoperability are important for the value chains and business models to work.

4. Future work

In Europe there are approximately 2.6 million users of social alarms in ordinary housing facing the imminent technology shift. SIAT and partners has a commitment with the EU-commission within the European Innovation Partnership program Active Healthy Aging (EIP - AHA) to support the technology shift in Europe until 2015.

INTRODUCTION: HOW AN AAL BUSINESS MODEL BASED ON OFFERING FREEDOM OF CHOICE HAS TURNED INTO A GREAT COMMERCIAL SUCCESS

Matti Groot and Christopher Mayer[1]

In AAL, arguably the most successful business model today in Europe is deployed by the Dutch SME Verklizan. Verklizan has developed an open, all-in-one telecare platform called UMO. The UMO platform is sold B2B and designed for telecare centres to monitor a wide range of traditional personal alarm, telecare, telehealth, video and security devices. It started 20 years ago with a simple premise: the telecare centres should be allowed a maximum freedom of choice in telecare equipment. This helps them to build innovative services and save money in buying equipment at the same time. The open universal UMO platform introduced a separation of concern for the users, turning it into a business success. Already 800.000 elderly Europeans in 14 countries enjoy the benefit of telecare connected to a UMO enabled monitoring centre.

However, there are always new challenges. New technology introduces the possibility to offer older adults the user interfaces fitting to their own needs and preferences. So now we are working on a second premise: to offer the older adults a maximum freedom of choice in user interfaces for telecare services. The AAL call 3 project AALuis plays a very important role in reaching this goal. The AALuis project partners develop an innovative combination of a well-connected, flexible, standardized UI layer and new AAL services, supporting user needs and wishes. The overall goal is to guarantee adaptable, accessible and usable user interfaces for older adults. The preliminary results are promising. Older adults appreciate being treated respectfully and having a freedom of choice. AAL companies can benefit from new age-friendly services, which are well connected and increase their robustness to market changes.

In a way, it is all about mainstreaming AAL services. Freedom of choice is a market issue, in combining preferred quality with offering inexpensive and scalable services.

[1] Verklizan BV and AIT Austrian Institute of Technology GmbH

SESSION C3

Financing AAL solutions – sources and success stories

Summary

Dag Forsén, New Tools for Health, Sweden

Chair: Urs Guggenbühl

Summary of the session

The AAL JP finances 141 R&D projects so far which should eventually lead to sustainable AAL solutions well accepted by the European market. The R&D consortia usually consist of research institutions, end user groups and SMEs. A set up which should allow an easy transfer form R&D results to a market accepted AAL solution. Is this the case? Have SMEs which are partners in the consortia the financial power to establish an AAL solution on the market? If not, who will drive the solution? Are there private and/or public funds available to support the industrialisation and market entry phases of the solutions and what do they want in return? All these questions and more will be discussed during this session.

The Challenge to SMEs to get their AAL project financed for market entry and market growth

Speaker: Charles Henderson, KTN, UK

The speaker opened up this session by delivering two questions to the audience; Are there resources for bringing AAL-products to market? Are there public and/or private funds available for AAL-related business ventures? The aim with this first presentation was to set the scene for the following speakers by delivering insights, tools, caution and encouragement. Mr Henderson then set off by delivering some market insights all pointing at the growing business opportunities arising from demographic changes and an aging population. The potential reach and need of AAL-technology is valid for all socio economic segments both in Europe and elsewhere in the world. There was highlighted that the pace of change in society in general is increasing many times enabled and spearheaded by Internet-technology. Some sectors are lagging behind and the healthcare and care industry is not being considered an early adopter. Apps for smartphones and tablets are a fast growing business and are considered being a great platform for bringing future AAL-solutions to market. To learn from success and failure in other industries can be a great way to accelerate the market formation within the AAL ecosystem. When it comes to AAL-projects the presenter pointed at the need to establish a very good communication platform that will make the project to stick out from the crowd. There is especially important to fully leverage the Internet in general and the social media channels in particular. The presenter then moved on to identify his view the main challenges for SMEs, namely; Finance, Cash Flow, Capacity, Reserves, Skills, Relationships, Access to markets and Suppliers. Michael Porters model of five forces[1] was presented and innovation procurement was identified as strong candidate for radically chang-

[1] http://en.wikipedia.org/wiki/Porter_five_forces_analysis

ing the market mechanics in a market like AAL. Partnering is very important strategy to overcome hurdles and is used frequently in AAL projects. Seeking a financial injection is not a walk in the park. The advice is to be proactive and do not start too late. Also seek other alternatives, such us crowd sourcing etc. Do not hesitate to ask for help. But remember, there is no such thing as a free lunch, money is always at a cost. Mr Henderson stressed the importance of delivering a first class elevator pitch using the format: Need, Approach, Benefit and Competition.

Practice your elevator pitch, it is expected of you during first encounter with the potential financier. Focus on what is in it for them. If you are being rejected, use it as a start for further actions and contacts. The business model canvas was recommended as good tool for planning business and communication activities. Some final tips were that interoperability is the key for success and that software is low hanging fruit. The future is bright for SMEs, which is the key for differentiation to meet the range of stakeholder needs.

Don't blame everybody else!
Speaker: Carlos Garcia-Gordillo, CGG Management, Spain

The speaker started the presentation with an analogy of the complicated process of putting together an AAL project, that it is kind of getting married where the offspring will be the product. He stated that the main problem is to find the means for the commercialisation of the product and that the SMEs are having serious problems to get access to the capital needed to enter the market. The fact that it is a consortium makes it even more difficult.

Mr Garcia-Gordillo said: "What is needed is a lifetime commitment, a commitment to be together "in sickness and in health", to abide by the principles that, when the idea was born and the partners decided to work together to make it real. That is, till the result of the R&D project has materialized into an industrialized product or service that can be launched into the market. Yes, the problem is finding means for the industrialization and marketing of the R&D result. And the problem is also that the consortium is made up of organizations with very different financial structures; most probably it is a mix of public organizations and NGOs, SMEs and big companies. Their problems are very different. Public organizations and NGOs have very specific problems of their own. As for SMEs, access to finance could be a problem and we know it is in short supply, more so if the SME is based in one of the southern European countries. So here we have the next culprits: banks. They should be obliged to finance good projects like ours! Don't they understand our business!"

The presenter went on talking about the European Economic Interest Grouping (EEIG) and it was presented as a good framework for obtaining real synergies in an AAL-project. The EEIG is an instrument for those wishing to internationalize their activities while giving them a European dimension. An EEIG can be set up by at least two legal entities registered in two different European Economic Area countries, those of the European Union plus Iceland, Liechtenstein, and Norway. Legal entities refer to any kind of company, large, medium, and small; institutions such as universities, scientific research centres, local authorities, and chambers of commerce; and also individuals. The only condition for them all is to have an economic activity of some kind prior to entering the EEIG. Its purpose is to facilitate the *economic activities of its members by pooling resources,*

activities and/or skills, exactly as we have done during the development phase. It can carry on the job and keep the partners focused on the project results. The presenter stated: "Why isn't it used more? I don't know, you tell me."

FOOD: bringing AAL solutions to mainstream white-goods market

Speakers: B. Carlsson, Jönköping International Business School, Sweden and Paulo Ciampolini, Università degli Studi di Parma

The speakers set of to describe the AAL-project "FOOD": "The FOOD system relies on a technical infrastructure, made of sensors, smart kitchen appliances and user's interaction tools (interfaces), thus building a kitchen networked environment. Communication among kitchen devices exploits a wireless network, compliant with the IEEE 802.15.4-ZigBee standard. On top of such network, a supervising system and a web server are built, which enable user's application, and manage exchanging of information through the Internet. The kitchen is therefore connected to external physical and digital networks (i.e., neighbourhood community, shops and to the web), enabling service aimed at increasing safety, at providing help and guidance in food preparation and at fostering exploitation of inherent social and cultural implication of feeding. End-users (which include elderly people as well as their supporting network) are involved in system and service design since its earlier phases, exploiting participatory design tools.[1]" A key project approach that was highlighted by the presenters was to design for all, not just for the elderly, by using inclusive design principles. Other important aspects are to build the solution on established standards and open up for third party developers of various devices and apps. Furthermore their idea is to leverage a service platform approach similar to the App Store in order to enable true and sustainable benefits for all stakeholders involved. In the platform two sides need to be satisfied; 1)Service developers need to be able to connect to the platform. 2) Users need to be able to see value-in-use. In order to make such a platform to work many number of things need to be considered like sustainable revenue streams for the service developers and customer support systems for the end users.

The FOOD concept is really ground braking in many ways, but the main question is if consumers are willing to pay for this kind of advanced kitchen solutions? In order to get the solution in your home you need to replace all your existing white goods which will be quite costly and the motivation to do so could be quite weak if you already have fully functional kitchen.

VHS – the VictoryaHome&SAGIO method for successful market orientation

Speaker: J. Artur Serrano, NST - Norwegian Centre for Integrated Care and Telemedicine, Norway

The VictoryaHome is a project that aims to help and enable people to live their lives the way they want, and to help people care for each other remembering important values such as never being alone, feeling connected, sharing and giving care as a pleasurable experience. The tele-presence function of the robot is the starting point and it will be expanded with additional services for tel-

[1] http://www.aal-europe.eu/projects/food/

ecare and smart homes giving a complete integrated care@home platform. The main focus of this presentation was to on how to increase the probability of a product reaching the commercial market. The main message is that you really need to include the commercialisation aspects from day one in any project. The SAGIO-approach was presented as best practice in order to achieve this. The project started with a two day workshop where a shared vision was established based on all major stakeholders' dreams and wishes. The group was asked to describe how it would/should be like to interact with the future VictoryaHome service. The commercialisation aspects were also discussed, should it be a product or service etc. The value proposition was defined and the essence "Freedom to live your life the way you want. Key Strategic Imperatives and Objectives were established making it possible to plan and execute with clarity. As a result of the SAGIO-method, everybody in the project was in the same boat, on the same mission with a shared vision.

TAO: Third Age Online: Innovative Aging as a Business Mode

Speaker: Stijn Bannier, Maastricht University, The Netherlands

From the project web[1]: "TAO" stands for the Chinese character meaning "way", "method" as well as for "Third Age Online". The main target of the research and development project is to highlight the ways in which the access of older persons to the opportunities offered by online communities can be facilitated." The presenter started by highlighting some current on-line trends relevant to the older adults market;

1. Internet and Web x.0 becomes ever more important for older adults
2. Web x.0 does not per se improve quality of life and social inclusion but is an important means for active older adults
3. A growing number of organizations that provide online platforms for older adults emerge
4. Businesses discover these communities as a valuable means for R&D and Marketing.

Key problems being identified are;

1. The rich experience and knowledge base of communities of older adults remains still untapped.
2. Lack of sustainable business models in many online communities of older adults.
3. Potential contribution of online communities of older adults to economy and society is disregarded.
4. Older adults lack products and services that meet their individual needs.
5. Manufacturers and service providers lack knowledge of the silver market.

The main reasons according to the speaker are;

1. Internet still dominated by "young" communities that appear rather unattractive to older adults.
2. "Old" communities often gravitate around hobbies and information or provide basic IT skills.

[1] http://www.thirdageonline.eu

3. Many platform providers evolved from social sector and refuse "business attitudes". Manufacturers and service providers have no or limited access to older adults in order to tailor goods and services to their varying needs. The net result of all of the above is that the older audience is not getting what it wants!

In order to establish a viable silver market solution the following were proposed;

1. Bringing together online communities of older adults, goods, manufacturers and service providers for the silver market.
2. Using platform providers/community managers as brokers and gatekeepers.
3. Organizing co-creation groups of older adults.
4. Provide academic and non-academic consultancy. This will enable a lot of advantages for all stakeholders such as older adults, community managers, platform providers, businesses, consultancies and more.

How to optimize your product with a business case tool (BLoC): impact for AAL projects
Speakers: Marian Schoone, TNO, The Netherlands and Leo Versteeg – Amsta, The Netherlands

From the project web:[1] "The healthcare sector is currently facing a number of major challenges. Due to the increasing demand for care and the decreasing number of healthcare professionals, the balance within the sector is under threat. One of the ways to solve this problem is to continually implement innovations which, for example, enable greater efficiency, increased productivity or reduction of the demand for care."

An important aspect in long-term care and care for the chronically ill is the quality of life. A majority of the care and service innovations are focused on life improvement activities. These innovations involve participation, effective time investment and social contact. In innovation processes, a business case can serve a number of purposes: to convince the collaborating parties of the added value of the new working method, to give an overview of the changes to quality of work, spent time and income share between the collaborating parties and convincing the outside world (e.g. health insurers) about the benefits of the innovation. This presentation was about the BLoC business case tool which can be used to structure ideas, convince other stakeholders and assist during implementation. The aim is to stimulate innovation in health care by bringing ideas towards good results and taking a holistic approach.

In a project a business case can provide you with answers on the following;
1. What are costs and benefits of the innovation?
2. What are the effects for my clients, staff and organisation?
3. What are effects for other parties involved?
4. Are the effects worth the investment? (time, people, money, etc.)

[1] http://www.businesscase-longtermcare.com/Introduction.aspx

The real benefit is that you can simulate the impact of innovations even before the product exists. As a concrete example of a healthcare innovation where BLoC was used is the A2E2[1] project was presented which is a virtual coach that offers a daily structure to lonely people.

Discussion

The main topic in this session was whether there are private and /or public funds available to support the industrialisation and market entry phases of the solutions and what do they want in return? In order to attract substantial capital to any market there is a need for success stories where early investors have made good investments. Very few private investors want to be the first one in, but many are like to follow once the market is established. The [venture] capital market is a fierce place and people seeking money must be able to stick out from the crowd in order to get the financing they need and want. The battle for national and international public funds for innovation support is also becoming more and more competitive.

Conclusion

The main take away from this session is that there are really a lot of different sources available for financing AAL-related projects but that the probability of getting funding is very much hinging on the ability to communicate with the financiers. Develop a business case as the foundation for putting together a professional pitch and practice that pitch until feels like second nature. The pitch should be focused on "What's in for them". Then go out and present your case and remember that SMEs are considered being the hotspot for innovation in the future!

[1] http://www.a2e2.eu

HOW TO OPTIMIZE YOUR PRODUCT WITH A BUSINESS CASE TOOL (BLoC): IMPACT FOR AAL PROJECTS - DEMO OF THE TOOL AND RESULTS OF ITS USE -

Ir. Marian Schoone (MSc.) and Evelien Rijken (MSc.)[1], Leo Versteeg[2]

Abstract

Commissioned by the Dutch AAL agency (ZonMw), an English business case tool (BLoC) has been developed to accommodate innovators in healthcare to make an integral business case for long-term care and well-being related innovations. BLoC has proven to be user friendly and gives a relatively easy insight into the changes that an innovation will bring not only economically but also on aspects such as quality of care and work. Three AAL project leaders have used BLoC. User experiences and results are presented in this paper. Both TNO and ZonMw aim to support, stimulate and increase the success of healthcare innovations with the development and deployment of this application.

1. Webtool for AAL Business cases: calculate the benefits of your innovation

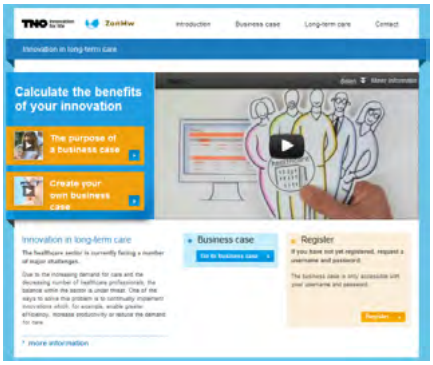

Figure 1 *Home page of the web tool www.businesscase-longtermcare.com*

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E-mail: marian.schoone@tno.nl or evelien.rijken@tno.nl

[2] Amsta, Amsterdam, The Netherlands. E-mail: l.versteeg@amsta.nl

Based on an existing Dutch tool for making societal business cases in primary care, *BLoC* was developed for innovations in the context of Ambient Assisted Living projects, where the focus lies on creating an environment for self-care, independence and participation.

BLoC is now available on www.businesscase-longtermcare.com. A short instruction video explains the purpose and use of the tool.

Figure 2 *Result panel of the web tool www.businesscase-longtermcare.com*

Three Dutch AAL project leaders have built a business case with the help of *BLoC*, taking into account all aspects of the innovative service being developed and tested in their AAL project showing the influence on time allocation, quality of life, quality of work, investment costs, preventing future health problems, postponement of care. Also the feasibility and risks of the innovation were assessed. Preliminary results were shown on the AAL forum in Eindhoven in 2012. The final results are now available and presented in this paper.

2. Making a business case

When having an idea for new products, or methods to improve services for healthcare and well-being, it is important to know if the innovation is worth the investment in time and money. Can we earn back the investment and how? What are the costs and benefits for all parties involved, i.e. client/consumer, service or care provider, manufacturer, health insurance company. In a business case all important variables are considered in a structured way. This will increase insights in the effects of the innovation and give input to further improvement of the innovation.

Definition:
A business case is a description that compares the costs/efforts and benefits/effects of an innovation. In other words, a business case systematically displays the advantages and disadvantages of innovations.

Making a business case with BLoC consists of three steps:

Step 1: Description of the (context of the) innovation
Mark out boundaries of the innovation, parties involved, work processes involved and assess the feasibility of the innovation.

Step 2: Assessment of the situation before implementation of the innovation
Assessment includes:

- *Spent time:* For all disciplines involved, determine how much time is spent on care and services.
- *Quality of care:* Rate the quality of care, quality of life and client satisfaction.
- *Investment & operating expenses:* Calculate the investment costs and the operating costs.
- *Income:* Indicate the sources of income.
- *Prevent & postpone:* Describe which prevention-related effects the innovation can have on acute care needs, postponement of care needs and independence.
- *Quality of work:* Rate the quality of work and employee satisfaction.

Step 3: Assessment of the situation after implementation of the innovation
Either virtual assessment (estimates) or effect measurements in the new situation.
Once the third step is completed an overview of the most important details and calculations of the business case will appear in the summary.

3. User experiences

The AAL project leaders who have been using the *BLoC* find its design attractive and the tool easy to use. Making a business case is useful: it makes you think systematically about all aspects of your innovation (also, for example, social aspects and aspects related to marketing of the product). The parameters that need to be taken into consideration are all presented in a structured way.

The users indicate that they will use the instrument again for making a transparent effect assessment of their pilot projects.

Two further improvements of the tool were indicated by the users:

- Assessment of the investment costs in more detail
- Inclusion of diverse stakeholder perspectives.

Structuring the innovation process with help of the *BLoC* constitutes an enormous added value for the project leaders. Each of the variables can be discussed with parties involved until all bottlenecks are pointed out. Sometimes solutions are obvious, sometimes not. The transparent discussion forms a basis for acceptance among the stakeholders. With the instrument an integral picture of the effects of the innovation can be generated: cost savings in relation to quality improvement.

4. Example use-case: A2E2

A2E2 offers daily structure to lonely elderly with health problems by way of a digital coach. Purpose of the system is to increase self-management and social integration and improve life style in this target group to stabilize their chronic condition. The digital coach stimulates activity, offers training exercises, measures vital signs and communicates with the care professional.

Although the pilot has not yet started, an estimation of the effects was made with the help of *BLoC*.

Figure 3 *Logo of the AAL project A2E2*

The high-lights of the business case are:

- Spent time (see figure below)
  Expected is a decrease of 40% due to a lower frequency of routine consultations with the care professional. Consultations are scheduled only when needed, based on results of the monitoring data. Specialist, General practitioner as well as Home Care will benefit, and the latter more so because of saving travelling time, generally calculated as overhead costs.

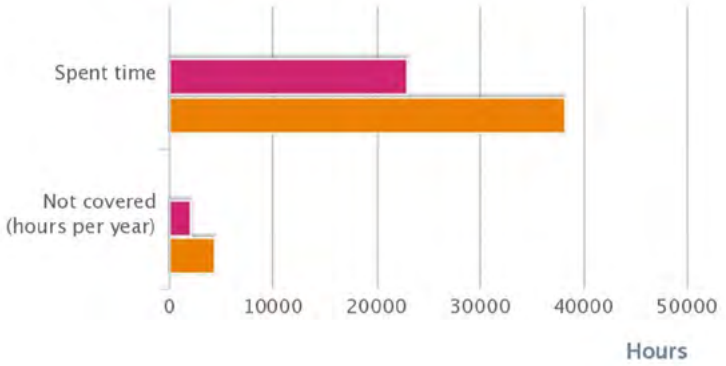

Figure 4 *Difference in spent time and not covered time before (orange) and after (pink) innovation*

- Quality of Life
  The second important effect of A2E2 will be an increase of quality of life of the user. Both because interventions can be more adequate based on the monitoring data and also A2E2 activates elderly into healthy and fun activities. On a scale from 1-10 an increase of 2-3 points is expected.

- Quality of Work
  Although e-care at distance may be uncomfortable at first for care professionals, the system is one of the future and will apply to the new generation with more affinity to modern media.

- Prevent & postpone
  Prevention of exacerbations are foreseen. Also elderly will be able to live independently longer. These effects cannot be quantified at this stage.

- Investment
  First investments are covered within the innovation project. Operation costs will be contained because of the general availability and decrease in prices of tablet and other media.

- Feasibility and risks
  Acceptance and adoption of the new way of working by the care professionals are the main factor for success of this innovation. Also readiness for further investments to implement broad use of the innovation within home care and well-being setting is important, but will be greatly influenced by the outcomes of the pilot study.

A business case can be used to convince partners within a consortium or support the decision-making process within the organization, but also to present the benefits of the innovation to external investors or public funding parties. Making a societal business case is an important step on the road to market for each new product or service.

VHS – THE VICTORYAHOME&SAGIO METHOD FOR SUCCESSFUL MARKET ORIENTATION STARTING AT THE KICK-OFF MEETING

J. Artur Serrano[1], David A. Jones[2], Stephen V. Rump[3], Ilse Bierhoff[4], Gunn-Hilde Rotvold[5]

Abstract

The problem: After 6 years and 132 projects involving 23 nations the AAL Joint Programme has delivered only a few solutions to the market. The reasons are described eloquently in the project AAL2Business final report: "When project is close to its end, there may not be enough time and resources left… to redefine value propositions."

What can we do at the start of an AAL project – literally at the kick-off meeting to define the right value propositions and create a market orientation? This methodology offers an answer.

1. The method

The VHS method targets early commercial strategy agreement as encapsulated in its mantras: "start at the start, with the end in mind" and "everyone contributes to the market vision." Developed, tested and applied in our project, the VHS method is simple, is applied at the kick-off and has 5 action points:

1. Prepare: Identify business goals.
2. Create: Deliver a common strategy via a "consortium vision workshop."
3. Sell: Identify potential commercial providers and partners from the start.
4. Plan: Decide how and where to compete and develop a first commercial plan.
5. Move forward: Set up objectives and benchmark them continuously throughout the project.

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2. Results

Some of the key results that emerged for VictoryaHome from this methodology:

- • Vision: “Be well – VictoryaHome – create possibilities” and Essence: “Freedom to live your life the way you want.”
- • Services development: 15 novel service components, e.g. creating a “network of cooperation between formal and informal carers.”
- • Market commitments: Every partner clearly positioned itself in the marketing strategy
- • Business model: We outlined a concept for a new company (see Figure 1).

Figure 1 *VictoryaHome – a first concept business model for a new company*

3. Conclusion

This methodology sets the “culture” of the entire project. We believe VictoryaHome will be successful AND result in a successful commercial service, and hope this model can help other projects achieve a similar result.

Acknowledgements

The authors acknowledge the collaboration of the whole VictoryaHome Consortium in the shaping and testing of this method.
VictoryaHome is a project funded by the Ambient Assisted Living Joint Programme (AAL JP) in call 5 with the topic “ICT-based Solutions for Management of Daily Life Activities of Older Adults at Home”.

FOOD: BRINGING AAL SOLUTIONS TO MAINSTREAM WHITE-GOODS MARKET

Carlsson B.[1], Arteconi L.[2], Vimarlund V.[1], De Munari I.[3] and Ciampolini P.[3]

Abstract

In this paper, the AAL-JP project FOOD is described, with specific emphasis on mainstreaming and exploitation issues. In fact, FOOD partnership includes a large manufacturing industry, and takes into account its peculiar point of view in approaching the AAL perspective market. Sustainability of AAL services is sought for by exploiting synergies: on the infrastructural side, common goals with emerging energy-aware applications are exploited, whereas on the service side, an open platform approach is pursued, fostering involvement of third-party application developers. FOOD system architecture has been fully designed and tested, and services are being currently designed onto it. Pilot deployment is foreseen in fall 2013.

1. Introduction

When getting older, kitchen and kitchen activities play an increasingly important role in daily life activities: besides its obvious relevance to subsistence, food is strongly related to health, culture and social involvement. Also, dealing with food is among most complex, demanding and potentially dangerous DLAs. Moreover, food and kitchen equipment have a substantial impact on home financial (and energy) budgets. The altogether makes food-related scenarios a promising yet challenging field for experimenting AAL technologies: the FOOD (Framework for Optimizing the process Of feeDing) project [1], funded in the framework of AAL-JP 3rd call aims at encompassing technical, social and health implication of food within a unique, user-oriented vision. Among peculiarities of FOOD project, the participation of a large manufacturing enterprise (Indesit Company SpA, ranking among European white-goods market leaders) allows for investigating effective market strategies and mainstreaming options. In this paper, besides a short technical introduction, the business model underlying the FOOD vision is discussed.

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2. The FOOD "strategy"

The FOOD project relies on a distributed intelligence approach, in which most kitchen elements are network connected. Environmental sensors and smart kitchen appliances [2] populate the system knowledge base with detailed information about the user's habits and needs. Based on such a knowledge, personalized services can be made available to the user: services may involve simple safety monitoring, as well as more complex functions dealing with cooking ("smart" recipe database, guidance for preparing complex dishes, automatic configuration of kitchen appliances), shopping (shopping list compilation, access to shops, support to payments) and social involvement (sharing kitchen experiences with friends, helping or getting help with grocery shopping and dish preparation, dining together). Personalized system interaction strategies and user's interfaces will be available [3]. The overall FOOD vision, of course, spans over a much wider domain than that allowed by the time- and budget-limited framework of the current project: in particular, the project aims at exploiting fully standard, commercial-grade kitchen appliances, instead of implementing project-specific prototypes: for instance, a networked oven will be exploited, featuring built-in wireless (ZigBee) connectivity. Within the project vision, connectivity will enable a number of meaningful functionalities; for instance:
Behaviour and appearance of the built-in user-interface can be personalized to the user's need, preferences and possible cognitive issues

- Automatic "download" of new cooking cycles can be managed, allowing for specific (e.g., selected on specific nutritional needs)
- Remote control and monitoring of the oven
- Successful cooking experiences can be "recorded" for subsequent replays and for sharing with friends

Besides being technically feasible, such features alone do not support a reliable business vision, for the following reasons:

- White goods market deals with huge volumes and very tight cost constraints: including connectivity nodes on the appliance circuit board adds significantly to the overall product costs, and could hardly be justified by the AAL-oriented features enabled. Market analysis have been carried out, showing that elderly people is less prone to invest in technology and, more specifically, in frequently renovating kitchen equipment, making the "silver" market not (yet) appealing in itself.
- Many of the user-perceived benefits does not come from the appliance itself, but instead come from services exploiting the appliance technical features. The service scenario is much wider than the appliance manufacturer scope and core-business, so that potential revenues strongly depend on the development of third service providers.

Hence, the FOOD business model aims at exploiting synergies of different kinds to overcome the above issues. On the appliance side, we seek for convergences with other fields in which appliance connectivity is important with many further respects, far beyond its AAL potentials. Just to name a few, connectivity is the key for implementing "smart-grid" services, in which the appliance

behaviour is adjusted to the current energy availability and costs; also, its enable remote maintenance services (prevention-based) and remote firmware updates. I.e., within FOOD, AAL features are developed looking at mainstream industrial trends, thus availing themselves of faster development rates and sharing their implementation costs with a much larger market volume.

On the service side, the key is found in making the food environment open to third parties, through the development of a platform that potential providers (typically, SMEs) can access and build service on. On a different scale, clear examples of such cohesive platforms can be found in "app stores" (Apple, Android …) to which entrepreneurs from all over the world can contribute. The main value contributed to the entrepreneurs of course is that of accessing a large market onto which financial revenue can be achieved with limited effort on advertising and business administration tasks. To the owner, these platforms also allow to govern, select and assess quality of the content and impose compliance with given organizations standards. In addition, platforms boost innovative solutions, giving the platform owner a competitive edge against competitors within their specific market. In order to state anything about the level of innovation the proposed services within the FOOD project has the project also aim at evaluating the socio-economic benefits from three different perspectives, namely the individual, the organizational and the societal. Tracking benefits from different services through the value-chain, making it easier for future service developers to make informed strategic investment decisions.

The AAL-FOOD project adopts the same frame-of-mind towards the use of platforms, in which a unique selling point (USP) is established, offering services to the elderly population and at the same time allowing SMEs to profit by contributing to the service offer. Similarities between Indesit and, e.g., Apple, although not acting on the same market, are substantial: both of them design and produce their own products, which allow them to demand a higher quality standard than, for instance, environments featuring multiple hardware vendors (e.g., Android or Linux). Through platforms, they both may create communities for innovation in which new services are produced on a frequent basis.

The AAL-FOOD project therefore paid a great attention to the development of a technical infrastructure supporting a platform for the distribution of food-related services: within a design-for-all approach [4-6], envisaged services are oriented, but not limited, to elderly people.

Within such perspective, SMEs (either project partners or third parties) will act as content providers, whereas Indesit will foster innovation by managing the platform administration, diffusion and revenue channels, thus relieving the work-load for participating SMEs. In return, the Indesit USP would be incorporated into larger service ecologies and foster brand-loyalty of customers.

The infrastructure has been currently completed and tested, and the service design phase has just started: in order to create sustainable and effective AAL services, design phases are participated by end-users coming from pilot countries (Italy, Netherlands, and Romania). In order to foster interoperability and ease the scaling up of services toward a European-scale market, the AAL-FOOD project strictly adhere to recognized standards and grounds on open-source resources.

3. The FOOD overall business model

In order to accomplish a shift towards services for classical product companies the concurring business model needs to be double-sided. On one end there is a need for a clear business strategy towards potential business partners, commonly known as B2B, as well as having a clear strategy of how to handle the business-to-consumer (B2C) side meanwhile attaining the level of quality in the product delivery.

In order to keep the quality of the services delivered through the platform a couple of prerequisites are required from the platform owner towards the SMEs. First of all general design guidelines need to be established in order to keep a certain level of commonality between the different service interactions. Clear rules of governance also need to be taken into account, such as how to for instance handle malware, which has become an increasing problem for platform owners.

On the consumer end, the platform owner needs to create an access point where all of the offered services can be found and bought by the consumers. Of course, implementing a platform-based approach in the white-goods market is greatly different from already established examples (Apple and Google, for instance): hence, the experiment is innovative in itself and will need much creative work and tuning.

The AAL-FOOD project aims at developing services for the elderly and hence the buying powers of that specific market segment need to be taken into account when developing the business model. Given the current financial state in Europe and the general scepticism amongst elderly towards the use of new technological solutions a possible solution would be for governmental institutions to subsidize some of the access points used by the services, i.e. the white goods. Of course, this implies a clear need for assessing potential benefits for social and health care providers, either in term of lowering costs or improving quality of services: to this purpose, the envisaged FOOD service palette include wellness monitoring and support to people with mild cognitive deficits in accomplishing kitchen-related DLAs.

Elderly people if often worried about the initial investment needed for renovating kitchen equipment: to reduce such burden, a strategy worth to be investigated is that of “free loans” tied to service (pay) subscription for a given amount of time (just like many telecom providers do). Indesit, in past years, also pioneered “pay per use” solutions for washing machines: relevant hints may come from such experience.

Of course, the specific market target makes it necessary to thoroughly validate both technical and business concepts underlying the FOOD project: besides users’ involvement in design phases, pilots will play the key role in this. Pilot start is expected by September 2013 and will involve users from the three countries mentioned above, allowing for accounting for a fairly wide range of situations, both in terms of social and cultural profiles and of economy and administration frameworks.

Within the FOOD view, hence, innovation, as well as a way for effective marketing of AAL services, is expected from constructive cooperation among large enterprises, SMEs and users organizations.

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DON'T BLAME EVERYBODY ELSE!

Carlos García-Gordillo[1]

Abstract

The partners of an AAL project are a balanced mix of academia, end-users, and companies big and SME's, representing different countries. Let's assume they have accomplished the objectives of the project. The problem is that they should be aiming at Europe, a market with over 500 million people and 23 different main languages. But before getting into adapting their service to each European culture, the problem is that each partner contributed to put together the constituent parts of a puzzle that, if pull apart, will lose its intended benefits. The blaming game starts! The most popular target is the European Commission. Next are the banks, and so for and so till we start blaming each other in the consortium and it breaks apart. But there is a system in place since 1995 very little used: the European Economic Interest Grouping (EEIG). An EEIG can be formed by any legal entity, even individuals, registered in the European Union. Its purpose is to facilitate the economic activities of its members by pooling resources, activities or skills, exactly as we have done during the development phase. It can carry on the job and keep the partners together focusing on the project results.

1. The blaming game

The life of an AAL project is very similar to the life of a human being. Let´s take a look at the process.

A human life starts even before inception, it is an act of love, the decisive moment when people start thinking about creating a new life. Similarly, a project is born from an idea; an idea created by business, end-user, and academia who think that what they have in mind will make a difference to themselves and to humanity.

Then the inception comes. This is the moment in which the partners –business, end user, and academia decide to go ahead with the idea and make it a proposal. The proposal needs to be fed by all parties involved, taking care not to overdo it in any aspect -neither technical, nor scholarly nor completely end user driven- but with just the right mix of all the ingredients. If we have been careful, the proposal will be accepted and a newborn project will come to life.

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Now starts a difficult period. The partners have to come to terms with each other, adapt to each other's idiosyncrasies, accept that things have to be decided in common while preserving everybody's interests. Just like those first moments of having a toddler at home. Let´s assume that the kid is well bred, behaves at school and its teachers are happy with it. It gets good marks at the interim reviews and obtains a good grade after obligatory schooling, meaning that the final evaluation is really good.

Would you send that kid into the world alone to earn its living? Do you think that because its grades at the end of obligatory schooling were excellent, your obligations towards the child are finished? Well, this is what many organizations involved in R&D are doing. And that's why most projects don´t pass the stage of pilots; you could say that they don't even reach puberty. The road to abandonment is a fight over the result. The path is similar to a divorce with unresolved issues about a child's custody, or in our case disputes about joint ownership of the foreground. The result is another pilot.

What is needed is a lifetime commitment, a commitment to be together "in sickness and in health", to abide by the principles that they would stick together till the child is not a child anymore and can have a fruitful and independent life. That is, till the result of the R&D project has materialized into an industrialized product or service that can be launched into the market.
But reaching that stage means investing in the industrialization of the product or service; kind of putting the child through university or vocational training. And there is not a vast array of grants for that, at least, not at the level of the grants for R&D. So we have found our first culprit: The European Commission. Is it the case that European entrepreneurs have to rely heavily on public finance and support?

The problem is finding means for the industrialization and marketing of the R&D result. And the problem is also that the consortium is made up of organizations with very different financial structures; most probably it is a mix of public organizations and NGOs, SMEs and big companies. Public organizations and NGOs have very specific problems of their own. As for SMEs, access to finance could be a problem and we know it is in short supply. So here we have the next culprits: banks.

Maybe the big company is willing to take over the industrialization phase, but what about our part. With so many resources they are not willing to cover our part? Don't they see that they will certainly recover their contribution once the product is in the market making millions? Well, apparently not and here we start the next phase of blaming each other, leading us back to square one: a pilot!

If the consortium had a legal status, with a clear coordinating, management and research structure, it would be a lot easier. We are not advocating the creation of a brand new company each time a R&D project pops out. But some kind of arrangement has to be found for the kid to get through university.

There is a system at hand since 1989: the European Economic Interest Grouping. The EEIG is an instrument for those wishing to internationalize their activities while giving them a European dimension.

An EEIG can be set up by at least two legal entities registered in two different European Economic Area countries, those of the European Union plus Iceland, Liechtenstein, and Norway. Legal entities refer to any kind of company, large, medium, and small; institutions such as universities, scientific research centres, local authorities, and chambers of commerce; and also individuals. The only condition for them all is to have an economic activity of some kind prior to entering the EEIG. Its purpose is to facilitate the economic activities of its members by pooling resources, activities and/or skills. It can carry on the job and keep the partners focused on the project results.

We are not going to go into any profound explanation on how to form an EEIG, which is for lawyers. Nevertheless I recommend that those who may have some interest in EEIG go to

http://ec.europa.eu/employment_social/equal/products/sup/pro-122-hb.pdf

and download the document. It is outdated in certain parts, but the main body is a very good introduction to EEIG. All you need to know before talking to your lawyer is there and, to some extent, what follows comes from that document.

There are some good reasons for choosing an EEIG structure:
First of all, it is governed under European business law, all members are on an equal footing, something that would not happen if another form of business structure is adopted, since in this latter case the governing law would be exclusively that of the country in which the company is registered.

The second reason is that, being able to draw from all quarters of economic life, from industry to academia, from public bodies to individuals, it is able to create an ideal playground for synergies to flourish.

Council Regulation nº 2137/85 of 25 July 1985 regulating EEIGs constitutes a very limited set of norms, allowing the members of the EEIG complete freedom for organizing its structure. Flexibility is then the third reason.

But at the same time, and this is the fourth reason, an EEIG is a stable organizational figure. It is an autonomous legal structure with powers for representation, negotiation, contracting and all the other features of an independent legal economic entity.

Fifth and finally, an EEIG is different from its members. The main difference is its ancillary nature, meaning that its purpose is to facilitate the activity of its members, but not to replace them.

I said before that the Council Regulation governing EEIGs leaves a lot of leeway to the members. Effectively, article 5 detailing what the Contract must have includes only: the name, the official address, the object, details of its members, and its duration in case this is limited.

And it is advisable to keep it like that, since any change to the information contained in the Con-

tract has to be unanimously approved and registered in the national registry of the country in which the EEIG is resident.

To complement the Contract the members are recommended to draw up a document, this time as complete as possible, of the Internal Regulations governing the EEIG. This document has the advantage over the Contract of being able to be modified as the members so decide and it is not necessary to register it or its amendments.

It could include, for instance:
1. the way in which it is to be financed
2. the way in which to share profits and losses
3. the conditions for admission, resignation, withdrawal, or expulsion of members
4. the rules for the general meetings
5. the appointment, dismissal, and powers of managers
6. the resolution of disputes among members.

Once this is agreed upon, the next step is to register the Contract in the registry of the country of residence and its publication in the corresponding national gazette and in the Official Journal of the European Communities.

An important factor to have in mind is the financial side of the EEIG. Since there is no requirement for capital, the members are free to regulate the way the EEIG will be financed. Contributions can be in kind, in cash, by provision of skills, etc.

Another important factor to consider is that "... the members of a grouping shall have unlimited joint and several liability for its debts. ...." In plain English what it means is that anybody having recourse against the EEIG, if not satisfied in a reasonable time, can go against any of its members to recoup its outstanding debt. It is up to that member to go against the other members in order to recoup the debt.

Another factor to consider is that the access to European Commission R&D project financing will be easier. An EEIG is already a multinational entity, at least from two different EAA countries. It shows the evaluators a commitment to working together and one structure already in place.

Summing up, tract C is asking: Have SMEs which are partners in the consortia the financial power to establish an AAL solution on the market? If not, who will drive the solution? My answer is that the consortia -research institutions, end user groups and SMEs- should keep together, and that it is only up to them and is their sole responsibility to take the necessary steps to make it possible for the final R&D result to make it to the market. And the best available legal instrument to bind those organizations together is the European Economic Interest Grouping.

Paraphrasing a former USA President: "My fellow Europeans, ask not what the European Commission can do for you, ask what you can do for Europe."

THIRD AGE ONLINE: INNOVATIVE AGING AS A BUSINESS MODEL

Stijn Bannier[1], Rüdiger Glott[2]

Abstract

While younger people maintain work-related experiences, expertise and skills in their working life, older adults usually experience a stark and successive loss of valuation and currency of these capacities with and after their retirement. Online communities of older adults provide a viable means to counter this process and to keep this group alive and available for society and economy. Few online communities of older adults experiment in this direction, and none has developed business models and value chains that systematically and sustainably maintain, advance and tap this rich knowledge and experience base of its members. This systematic approach requires a sophisticated technological and organizational approach towards managing heterogeneous groups within the overall community, to define values for economy and society that can be produced and delivered to companies, the public sector, and social and cultural institutions by the community, and that opens up new revenue streams for online communities to refinance their infrastructure, human resources, and services. Such approaches are particularly suitable for goods and services for older adults. Hence, they allow in particular for the design and testing of AAL solutions. This paper will highlight examples of such innovative approaches and identify key technological, organizational and economic success factors.

1. Introduction

In this paper we lay out how the experiences made during the Third Age Online project (TAO)[3] and the outcomes of it are deployed in order to realize a new business. Cornerstones of this business idea are the key challenges, best practice examples and needs of online communities of older adults that we have identified during the project period and of course the solutions we have developed to master the challenges.

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The challenges of online communities of older adults can roughly be summarized as

1. Attract and retain older adults
2. Activate older adults to contribute content
3. Managing the online community
4. Developing an efficient business strategy
5. Developing sustainable business models

These challenges appear in different ways and with different impact for different types of communities.

2. Strategic focus

The TAO business model draws on these five key challenges of online communities of older adults. The key idea is to use the knowledge and experience that was generated in the project and by the consortium partners to form a network of loosely collaborating partners – the "TAO Network" - that is able to provide consultancy services and training to help online communities of older adults and platform providers for such communities to master each of these challenges. A particular focus is thereby set on the development of sustainable business strategies and business models, the generation of revenue streams and the establishment of a business ecosystem around online communities of older adults. Hence, the solution to the key challenges identified in the section above lies in the interplay between following activities, which will be carried out by the TAO Network:

- Bringing together online communities of older adults, platform providers, goods manufacturers and service providers for the silver market
- Usage of platform providers/community managers as brokers and gatekeepers
- Organization of co-creation groups of older adults
- Provision of academic and non-academic consultancy

The TAO Network consists of three layers. The core of the TAO Network is provided by the academic partners of the TAO project consortium, i.e. the Maastricht Economic and Social Research Institute on Innovation and Technology of the University of the United Nations and the University of Maastricht (UNU-MERIT, The Netherlands), the Bern University of Applied Sciences (BFH, Switzerland), and the Center for Academic Further Education of the University of Ulm (ZAWiW, Germany). The second layer is provided by the community partners of the TAO project consortium, i.e. Seniorweb.nl, Seniorweb.ch and Wikimedia Germany. This layer also includes the TAO collaboration partners Zeix and Terz Foundation. The third layer of the TAO Network is provided by organizations that can benefit from the services provided by the TAO Network as well as contribute to these services. Such organizations are online communities of older adults, platform providers for such online communities, service providers and manufacturers that target at the silver market (Figure 1).

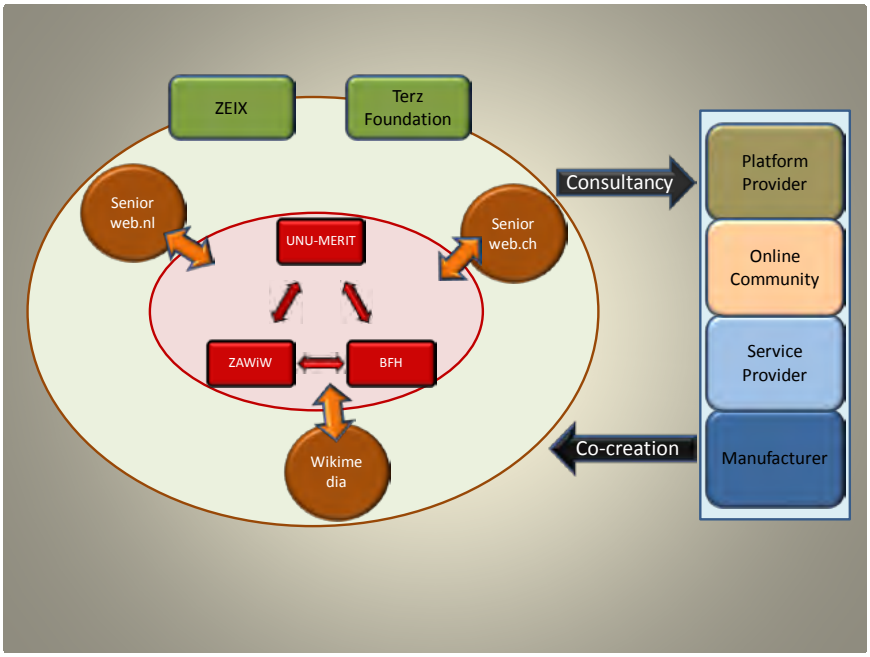

Figure 1 *The TAO network*

The core layer provides the conceptual and administrative level of the TAO Network, where consultancy services are developed and marketing, acquisition and the financial administration are performed. The second layer provides practical expertise that feeds in the service products, and the third layer represents the target groups of the services provided by the core and second layer actors. However, since the TAO Network pursues a co-creative approach, the target groups can be captured as traditional customers only when consultancy services are delivered to these groups. In the case of co-creation projects, clients become to some degree co-producers of the services offered by TAO.

In addition, it must be noted that the TAO Network is designed as an open association. This implies that other organizations, such as consultancies or organizations that build the third layer of the network are allowed to become part of the second or the core layer of the TAO Network. The only condition for this is that these organizations are willing to collaboratively share knowledge and expertise with the TAO Network partners, help developing or improving the network's service products and collaborate with the other network partners also in delivering services to customers. The idea is that sharing knowledge and expertise results in advantages for all collaborating partners and that through the growth of the TAO Network the scope of organizations, in particular online communities of older adults, can subsequently be significantly extended. This extension appears meaningful in particular with regard to countries that have not been represented in the TAO project consortium. Hence, the status of the TAO Network as illustrated in Figure 1 must be considered as an initial and provisionary stage of the organization.

The strategy of the TAO Network aims at establishing itself as a key knowledge and expertise broker between platform providers for online communities of older adults, managers of such communities, the community members, and third parties for which online communities of older adults generate value that can be tapped in form of revenue streams. Such third parties are companies that produce goods or services for the silver market but face problems to design their offerings so that they meet the specific demand of older adults, given that the needs of this group have undergone a serious process of differentiation due to the generic trend towards individualization and dynamics aligned with passing through different life-stages within the third-age period. The goals of the business activities of the TAO Network corresponds to the strategic goals of the TAO project and, more importantly, to the strong social and altruistic motivations of online communities of older adults by aiming at the improvement of the quality of life and of the social and economic inclusion of older adults. Another important goal of the TAO Network is to help developing tailored goods and services for different groups of older adults in order to better satisfy the needs of this age group.

This is particularly reflected in the strong conviction of the TAO Network that older adults and their online communities have to benefit from all activities carried out by the TAO Network. To this end, online community managers, often located at the site of the platform providers for these communities, are allocated a key function in the business operations of the TAO Network – they are considered and have to serve as gatekeepers for all other parties that want to get access to online communities of older adults.

The consultancy services provided by the TAO Network target following subjects:

- Community building and management
- Volunteer recruiting and management
- Organization of training for older adults in online communities
- Gate keeping
- Business model creation
- Business strategy generation
- Business ecosystem building and collaboration with external partners
- Co-creation

The mission statement of the TAO Network highlights the points laid out above:

“The TAO Network considers the rich experience and knowledge base of older adults as a key value for society that should not remain untapped. Our mission is to deploy this potential in order to improve the quality of life of older adults and to highlight the social and economic value of their knowledge. We carry out this mission in two ways: We empower online communities of older adults to help establishing the interests and capacities of their members to actively design the things they want for their life. We open opportunities for manufacturers and service providers to develop products and services that are tailored to the needs of older adults.”

SESSION C4

AAL2Business

Summary

Mona Jonsson, New Tools for Health, Sweden

Summary of the session

Following a pilot phase in 2012, the AAL JP launched a 3 years support action plan with the title "AAL2Business" supporting AAL projects to reach the market with their solutions. In this session, the AAL JP presented the scope of the AAL2Business support action and the opportunities and services available to AAL JP projects to improve the possibilities to reach the market. The AAL JP provides support and input for AAL projects from consortium formation to access to finance after the end of the project. On-demand coaching as well as workshops that allow exchanging experience with other AAL projects is available during the project period. Some of the AAL projects were represented during this session. Different challenges of getting AAL solutions to the market were also presented and discussed.

AAL2Business services

Speakers: Marco d´Angelantonio/HIM SA, Arto Wallin/VTT

Three organisations with business professionals were recruited by AAL JP to support the AAL projects: VTT Technical Research Centre of Finland, Health Information Management SA in United Kingdom and Nordic Health Group, Finland/Sweden. They are familiar with the challenges AAL projects and service providers' face.

The supporting actions started in March 2013. The main findings so far: It is important to find the right partners with market oriented incentives in the project and that all of them have specified roles. Agility and iterative developments is also needed to validate the initial value proposition with real value network partners. The mindset in the projects should be "business mode" – not "project mode". Different elements of support are relevant in different phases of the AAL projects. The support offers 6 types of services.

- Consortium building workshops
- Methodology workshops
- On-demand business coaching
- Support access to finance
- Deployment of AAL solutions event
- Post-project innovation environment

The speakers presented the objectives of the services and how they are executed. The service is available in 2014. Each AAL project can get 3 days of support. Most of the services are mostly free. The projects themselves pay for the facilities.

Challenges of getting AAL solutions to the market
There are challenges for AAL solutions to go to market. These challenges were presented. Depending on type of challenge different types of services are relevant.

Exercise – root cause analysis
The speakers introduced an exercise to the audience. It was a root cause analysis (5 whys). The problem to discuss was: Reaching the market with AAL Solutions is challenging with focus on why it is challenging for each respective AAL project.

Different aspects were discussed, for example problems with interoperability between different actors and that different stakeholders have different objectives. It could also be problems with leadership in the projects. The audience left their documentation from the exercise to the chair. The documentation will work as input to develop the services to the AAL projects.

Discussion

Coaching is very important now for the AAL projects. One project thanked theAAL management teamthat they support with this service. The projects see problems to sell to municipalities. Therefore you sometimes focus on private market instead. The projects could be in need of help to build up their knowledge about the private market. AAL2Business try to cover both private and public market. It is important to contact media to get the solutions out. Better to contact support early in the projects when they have the possibility to change and influence the projects. That depends of course of what kind of support you need.

How do you define if the support is successful? They are evaluated in different ways. There is a range of indicators. One way to evaluate the service is how many projects that succeed in going to the market and how many job opportunities that are created. On the AAL program level they try to reach new financing to projects, for example from insurance companies.

SESSION C5

Robotics Forum

Summary

Sandra Olt, New Tools for Health, Sweden

Developing Robots for AAL

Speaker: Dr Geoff Peggmann, R U Robots Limited, Great Britain

RU robots is a small advanced robotics company that has a staff with UK:s leading experience of robotics industry. A technology company that produce one offs and prototypes for other companies. R U Robotics began in the construction industry, the focus was on making it easier; process control, remotes.

In the beginning they got involved in the aerospace industry that had a lot of people and resources. It was all about making robots and people doing things together. For example surgery robots where the human is more of an assistant to the robot. It about going from remote to collaborative.

Moving out of the factory: intuitive interfaces:

The food industry had little automation and lots of people working in their factories. They do not have high ICT skills in a food factory and a lot more flexibility is needed.

"The grail project" aimed towards this was funded by UK department of environment, food and rural affairs went on for 2 year and was a 1,1 m € project.

There were major technical challenges; intelligent control systems, inherently safe electro-mechanical system, advanced user interfaces and low cost design. What they did was complicated software where humans can interact with a touch interface on the robot. An example is shown with a sandwich-making robot. It has its components on screen for the person to drag and drop ingredients to the right place; the robot is also layer sensitive.

Many of the principles of the food robot could be implemented to the home robot.

Dr Peggmann points out that assistant robots also could be used in the factory for older workers.

Stroke assistance in the home: The SCRIPT project

SCRIPT stands for Supervised Care & Rehabilitation Involving Personal Tele-Robotics and is a European financed project. The idea is home-based rehabilitation for post-stroke patients, an extended help in time for hand and wrist movement recovery. It has been a user led design process with motivation (game) driven activity. The project is targeted towards people with the two different types of exoskeleton orthosis; passive spring based and active (adaptable).

The project supports remote monitoring and support by a therapist. The aim was to examine the feasibility and if patients would use it in their homes?

The prototype is shown with a robotics glove connected to a robotics arm and a touch screen. There are a passive device and a active device where the passive is completed and the active ongoing. A couple of games for the patients exist, more are on the way. A motivational interface was also developed. A big challenge is the calibration. 11 prototypes have been made, 3 for each clinical site in the Netherlands, Italy and UK.

The aim was to get the patients to use this for 3 hours a week for 6 weeks. 10 patients have completed training and evaluations testing so far and 6 more are currently in training phase.
The system was reasonably well accepted by patients but there are limited clinical improvements so far. The patients had not reached the recommended training duration, mote motivational feedback on training time is needed. Currently more games are being developed, 4 more should be ready by November. Also in version 2 of the robot more variation and different hand gestures are possible.

Dr Peggmann ended his presentation with talking about natural interactions and the Coglaboration concept. The concepts purpose is to provide fluent transfer of objects between humans and robots, to result in more intuitive and adaptable robots.

CoogLaboration aims to understand Human-Human object exchange based on a series of scenarios. The challenge is to adapt robots motion to human actions, anticipating movements of the human: where and how will the interaction take place?

A technical objective is to design a robot hand and assemble the robotic hand with a robotic arm.

The future for robots in the AAL.

AAL support robots are very different from industrial robots. But industrial settings (technologies) can bring benefits to AAL. They can bring down pricing and be more effective in development. Robots in the home have to be usable, the best interface is no interface and if you can't´ do that then have a simple interface. Robots should be a part of the overall solution, not the solution. The robots will amplify the effect of people. Could also be used for cognitive deficits.

The area will be emphasized in the Horizon 2020 and there will be significant opportunities for this within its programmes.

The view from the commercial frontier
Speaker: Steffen van Romp, Giraff Technologies AB, American company based in Sweden

Giraff technologies was developed in Silicon Valley but needed a supportive environment which is why they came to Sweden and Robotdalen.

Sources for the hard lessons learned by Steffen van Romp are; AAL project ExCITE (enabling

social interaction through embodiment), AAL project Victorya home, various Swedish national projects and various U.S start-ups.

Some hard realities about our market according to van Romp; Venture capitals funds are slow to invest, there is an "Chicken and egg problem" see market validation. Most investors don't like hardware, they want software.

Very few EU projects achieve commercial success, and very few attempt it - most existing solutions evolved from independent entrepreneurial projects.

There are a lot of different stakeholders that want different things, care organizations (primary customers) are slow to act and many believe in AAL concept but FUD comes in the way (fear, uncertainty, doubt)

And yet the forces are compelling and irreversible, Romp says and the audience agrees.

Why are there so few commercial efforts, Romp asks. The AAL2Business study says that consortium partners are typically not chosen for business reasons – they lack experience of commercialisation and Consortium cannot (easily) add/change partners during project. The study also said that most projects don´t have enough iteration to converge, because real world user experience are not necessarily the same as real world customer experience.

Bottom line is that nobody believes it's real, Romp says.
The technological barriers are non-existent since they are basic stuff; cameras, sensors, Skype function etc. Most problems are at the project rather than the technology and this results from lack of true real world experience (an example with the giraffe robot was that the power button was asked to be removed).

The technology challenges that the Giraffe robot met was mostly about human factors; the robot should be moving similar to humans. E.g. "Sit down", nod and turn around. It needed to improve the video quality to be able to see details such as pills on a table. It has to be all about simplicity and reliability.

A ecosystem integration during project is critical, for Giraffe it was the AAL projects Victorya home and ExCITE. Innovation partnership can provide a bridge, e.g. support organizations such as Robotdalen or national partners such as Vinnova.

Economic modelling is critical and usually overlooked, Giraffe used a business model for the buyer to easily put data into to see if you can save money (time etc). Product concept then evolved into a service, Romp was amazed on how much customization that was required.
Even an experienced team underestimated the effort getting from 90% to 99%. Support elements became primary to technology elements.

Application and customer knowledge became primary to technical knowhow; care models differs

between countries, finding investors is difficult, market not as sensitive to pricing as other issues (if they can save money, then ok).

Marketing lessons learned – AAL is emotionally charged, robots and elderly care is controversial. The experiences are very different between the caregiver, care organization and end-user.

For the future, elderly needs expand as they age, they need more visits, and social care evolves to health care.

There are big differences between EU and US in economic pressure state/individual.
- Require better understanding of ecosystem.
- Require business planning and commercialization competence.
- More incubator organizations like Robotdalen.

Remember we are here to preserve and enhance quality of life.
To manage and reduce care costs.

Presentation
Speaker: Rich Walker, Shadow Robots
Didn´t come because of the flu. But Mr. Walker makes a brief walk through of the presentation and encourages everyone to download it. Ecosystem, there is a demand but a long way to go to make it commercial in homes,

He also speaks about Robosofts and makes a brief summary of the presentation.

Discussion

A question of interaction between robots and humans to Geoff. Geoff agrees with Stephen that we should focus on products that could reach the market. How much do a giraffe cost? Stephen tells 3500 KR, 380 € per month. But business model shows cost saving for Swedish caregivers. The questioner says that in Portugal that amount is impossible and too much, Stephen says that at a nursing home that is not much, and it depends on the economics. Who has the money?

Atti talks about Japan and insurance companies which have approached insurance policy program. Stephen says that you need to find out who has the money.
You don't look at the cost per se but the value proposition (Geoff).

Question: Did investors do an evaluation of other technologies and giraffe?
Stephen: for certain Skype solutions are fine, but in certain cases you need the mobility.
Atti: You don't have a relationship with Skype, you can have relation with a device, an embodiment.

Question: Giraffe, could it reach out to the consumer market?
Stephen: You need some kind of support infrastructure, right now it's hard, but maybe in the future. Has to be developed.

Geoff: We are at a very early stage of consumer robotics. We are missing a supply network. You need a top level that's buying the systems. Issues of making them safe etc. Fully foresee competent home robots, but don't know when.
Atti: Need modularity, the ecosystem needs do develop and identify value proposition. Thriving companies need to know where to act.

Question: Questioning robots in general. It's been a dream for mankind for so long. I still wonder, do you think that robotics ever will be mainstream? And where are the success factors? A humankind robotics? What is the killer application?
Stephen: We are a early company. It is happening.
Geoff: we haven't had them for a very long time. The big time is not for individuals, it's for healthcare, industry etc. We need to move to make it a bigger market and it will come.
Atti: inevitable, the demographic trends demand it. We have to stay competitive. The Japanese market are acting like they know, we have to be savvy.

Question: 2025, how is it going to be? Are we going to have a giraffe? A smaller device? What's the vision?
Atti: Depends on the environment, the mainstreaming environment.
Stephen: Preserving Q o L, if we are smart we will figure out how to integrate them.
Stephen: It's not going to be a universal robot but connected devices.

Question: Regarding the PR of robotics. What's the reaction from different stakeholders? The horror headlines in the magazines?
Stephen: In Västerås for example they just put the giraffe in there, they don't ask to put it in, they just do it. And the giraffe quickly disappears and interaction begins.
Geoff: the resistance is not as high from those who actually have experienced it.

SESSION C6

Large-Scale Roll-Out

Summary

Michael Peolsson, New Tools for Health, Sweden

Telehealth and Telecare at scale in Scotland

Speaker: Christine McClusky

The aim of the Telecare Development Programme, within NHS Scotland, is to provide new ICT based solutions and services to people in Scotland in order to live longer at home. The public service reform contains four pillars:– prevention, partnership, workforce development and performance further seven outcomes – assets based and co-production; Values driven; person- centred outcomes; prevention, reducing demand in the longer term; integration and partnership; workforce development and leadership; and performance improvement.

Over 163,000 people receive a telecare service, at least 4,000 people with dementia diagnosis. All 32 local partnerships have a telecare service in place. The services are developed in interaction with academic institutions to embed telehealth and telecare into undergraduate curricula for health and social care staff , carers Scotland Telehealthcare, trainers' toolkit and telecare practice guides but also knowledge and learning networks. In 2012 the Assisted Living Innovation Platform launched "Dallas" (delivering assisted living lifestyles at scale), a large scale demonstrator of independent living products and services. The long term initiative Living it up (LiU) that enable own creativity and willingness to participate in development of various services by way of co-design, co-production and co-creation in order to provide sustainable and innovative improvements and choices in health, care and wellbeing for 55,000 Scottish citizens by 2015 using familiar technology.

Smart Health Programme, Brabant, The Netherlands

Speaker: Mariëlle Swinkels Strategic policy advisor.

The objective of the program is to ensure that all citizens of Noord-Brabant will have access to affordable innovative solutions in 2020 in order to enable them to live independently with proper care and treatment in their home environment. The innovation strategy involve collaborations between stake-holders and industry, especially SMEs, testing grounds for large scale deployment, citizen/consumers need and competence, partnership of all stake holders, crossovers between smart health and design. It is estimated a cost reduction of € 15 million Euros per year (period of 5 years).

A special concern is informal care for citizens suffering from dementia. A specific program I under development to develop supporting tools for informal carers in the city of Helmond, covering seven municipalities and up to 700.000 citizens. SMEs will have a key role developing tools and services.

Large scale roll-outs in the Basque Country
Speaker: Carmen Pastor, Technalia

In 2009 the system wide-transformation started. It is about a strategy to tackle the challenge of the increasing amount of citizen living with one or more chronic diseases, it is a challange for health care organizations and service provider. Five key levers are focused: population, combined top-down and bottom-up actions, social care and health collaboration, patient empowerment and research, innovation and entrepreneurship alliance. 14 projects covers the program Population perspective Prevention and promotion Patient and community empowerment Integrated care and social care "pay for value instead of pay for activity", among others, population perspective, prevention and promotion, patient and community empowerment, integrated and social care, pay for value instead of pay for activity and configuration and delivery of care. Different approaches to the challenge of chronicity for example care coordination, disease and self-management and prevention. In order to implement the strategy interaction between different stakeholders are highlighted. Institutional actors, care providers, associations, political stakeholders and industry e.g. Bottlenecks and barriers are highlighted in respect to users: Present obligations, future benefits, Reluctance to lose face to face contact, Lack of confidence in new processes and systems, Lack of digital skills, Little power in decision making, customisation and personalisation, information and training.

As for health and care organizations: Stabile health care practices, No substitution effect in Service: new models require, health and social care need to be integrated, organisational change is required, political commitment and support is essential, and health professionals should be motivated and highly involved.

Regarding technological development, clinicians need evidences, difficult integration in clinical practice and information systems, doubts on scaling-up costs, high prices in pilots set-ups, no clear guidelines for technology development and evaluation, consider costs for maintenance, customisation and personalisation, human-machine interaction is underestimated, interoperability & standardization are still main issues.

ReAAL The EU CIP ICT PSP Project - piloting in the domain of active and independent living with 7000 users in real life
Speaker: Saied Tazari, Fraunhofer

This project is about personalized solutions for active independent living focusing the interoperability challenge where assistance and support might be needed in any possible aspect of daily life: health, hygiene and home cleaning, safety and security, shopping and cooking, comfort and entertainment, social integration and support of mobility, reduction of costs and avoidance of waste in consumption. The goal of the project is to demonstrate the socio-economic benefits of open service platforms as a basis for delivery of relevant active and independent living services.
The expected impact is to provide evidence of the return of investment for service delivery based on large scale experiences on open and flexible platforms.

Within the project several questions are focused: Large-scale investments need to be future-proof, socio-economic barriers, missing AAL ecosystem, vendor lock-in, lack of best practices and lessons learned, lack of evidence of RoI for the stakeholders / lack of criteria for optimizing RoI, technical barriers, scope of AAL too diverse and open, no clear technological trends in AAL, lack of interoperability guidelines based on open standards, lack of commonly adopted open platforms and maturity, usability and reliability of candidate platforms not proven.

The outcome of the project is promote standards, guidelines and open platforms for interoperable solutions in the domain of AAL and active and independent living and further to demonstrate by 2015 an ICT ecosystem that uses them in pilot sites involving at least 5000 users in at least five countries.

The project will also validate the role of common open platforms in putting interoperability standards in place, to measure the related socio-economic impact by way of a multidimensional evaluation framework that will allow to also considering the ethical, legal, market, quality of life, and user experience impacts in addition to the socio-economic impact. Also to analyse the effectiveness of pilots' value chains and derive replication guidelines and to publish findings and recommendations, lessons learned and best practices on technical and organisational aspects of deployment and public procurement in a public knowledge portal to serve as the ultimate reference for future roll-outs.

Track D

AAL related programmes and policies in Europe

European AAL policy – the AAL Joint Programme future contents and other AAL related initiatives, such as EIP-AHA.

SESSION D1

EIP on Active and Healthy Ageing – Supporting Integrated

Summary

Peter Larsson, East Sweden Regional Development Agency, Sweden

Chair: Christine McClusky, NHS 24, SCIT, Scotland

Speakers: Shabs Rajasekharan, Vicomtech, Spain and Donna Henderson, NHS 24, SCIT, Scotland and Mariëlle Swinkels, and Dipak Kalra and Jon Dawson, and Antonio Kung, EIP and Christine McClusky, NHS 24,SCIT, Scotland

Introduction to European Innovation Partnership on Active and Healthy Ageing

A short introduction of ageing as a global challenge was given. Connection with Health in Europe 2020 and the flagships for smart, sustainable and inclusive growth. European Innovation Partnerships (EIPs) are a new approach to EU research and innovation. EIPs are challenge-driven, focusing on societal benefits and a rapid modernization of the associated sectors and markets. EIPs act across the whole research and innovation chain, bringing together all relevant actors at EU, national and regional levels in order to: (i) step up research and development efforts; (ii) coordinate investments in demonstration and pilots; (iii) anticipate and fast-track any necessary regulation and standards; and (iv) mobilise 'demand' in particular through better coordinated public procurement to ensure that any breakthroughs are quickly brought to market. Rather than taking the above steps independently, as is currently the case, the aim of the EIPs is to design and implement them in parallel to cut lead times.

EIPs streamline, simplify and better coordinate existing instruments and initiatives and complement them with new actions where necessary. This should make it easier for partners to co-operate and achieve better and faster results compared to what exists already. Therefore, they build upon relevant existing tools and actions and, where this makes sense, they integrate them into a single coherent policy framework. Flexibility is important; there is not a 'one-size fits-all' framework.

EIPs are launched only in areas, and consist only of activities, in which government intervention is clearly justified and where combining EU, national and regional efforts in R&D and demand-side measures will achieve the target quicker and more efficiently.

Action groups

There are 6 action groups and in this seminar we focus on action group B3 and C2
Action group B3 focus on Integrated care for chronic conditions
Action group C2 focus on ICT solutions for independent living and active ageing
It is possible to join EIP:s action groups when they are open with an application, for the moment only B3 is open. But if someone wants to join they can contact EIP for more information. The value of EIP has been identified by the partners. Most value is in forming partnership and exchange good practice.

Action group B3 presented the membership and action plans. The key thing is to challenge/sharing good examples and success factors and lesson learning.
Action group C2 has focus on ICT solutions in 2 areas. Validating implementations and evidence on return on investment. They are also working on a toolkit to in an easy way share examples and what is going on. One of the goals is to build a sustainable AHA engaged learning community of networks. Communication between the action groups is important to develop. It is low engagement from the industries. The network must also be built on trust and relation.

Feedback from seminars day 1 during AAL forum 2013

Person Centred Care

- Drivers for person centred care are cost. 80 % of EU spending on healthcare goes to the chronic ill. We must integrate multiple health and social care actors and work with preventing and promoting wellbeing especially for the group 65-75 years old. The chronic ill have to be taken care on in a person centred way.
- User empowerment: Focus, good practice, opportunities and challenges.
- Four key points are Confidence building, Awareness raising, Co-creation and Inclusion.

Presentation of some examples from yesterday's seminar was given. One of the opportunities is more effective and commercially viable products and services. Among the challenges there is a question if good practice is transferable and another is how we can involve users to develop toolkits.

Innovation ecosystem

Will help to create a market. The barriers are no interoperability, no standards, and no critical mass. The main challenge in the innovation ecosystem is to practice interoperability and built an interoperability framework. How can big companies be involved more and interact with small companies in innovation of new solutions. How can we identify local needs?

How business modelling and return on investment can accelerate products to the market.
An example on a value network in healthcare shows, it is very difficult to follow and understand. That is one of the problems to get an overview over the system. The Scottish government is a good example how to get all the stakeholder to the same board. We have to build business modelling from a different viewpoint and look for value for the customer.

- Conclusions: Opportunities vs. Challenges
- Policymakers are open to innovation
- Time frames in politics vs. those in gathering evidence
- Business model canvas and a new language
- Involving all the value chain in process and time to market
- There is a return in ICT for integrated care
- Time to return is long
- EIP-AHA, marketplace to drive demand and supply
- Taxonomy, duplication and resources

Key questions for the future
- What kind of toolkit what form should it take to be effective and how do we involve users.
- Transferability of deliverables to other regions
- How the EIP digital marketplace should be defined to drive demand and supply.

SESSION D3

Scaling up AAL solutions – The integration of individual AAL approaches to larger testing projects

AAL4ALL: INTEGRATION OF INDIVIDUAL APPROACHES INTO A NATIONAL SCALE PILOT

Filipe Sousa[1], Liliana Ferreira[1]

Abstract

AAL4ALL is a project currently being developed in cooperation with 34 Portuguese interdisciplinary partners, ranging from areas as industry to academic, R&D and social disciplines. The goal of the project is the mobilization of an industrial ecosystem of products and services in the scope of Ambient Assisted Living. In order to achieve the maximum impact and usefulness of the project, individual solutions are being integrated and prepared to be tested and evaluated in real-life settings in a national scale. This document presents a roadmap for the field trials while describing which users are involved in the activities, how they will be recruited and some of the services offered in the project.

1. Introduction

AAL4ALL project started by specifying the requirements of users, informal and formal carers by using dedicated inquiries. These data has been used to understand how ICT technologies are already part of the daily activities of these target users and to define new markets for care products and services. A special focus of the project is given to the needs informal carers, and their awareness on how the new technologies can help improving the elderly and chronic disease patients' quality of life.

Currently, large scale pilots are being prepared and designed taking into consideration, not only the conclusions retrieved from the surveys, but also the business requirements of the involved institutions. Currently, the target of the AAL4ALL project is to run a study involving 450 users, including seniors, informal and formal caregivers, as well as technicians. The conducted questionnaires (Sousa et al., 2012) already allowed the definition of representative personas, which are being used to guide the recruiting and selection process. Based on business requirements and the defined personas a set of services are been designed following a service design methodology proposed by Stickdorn & Scheineder, 2010. In Figure 1 is presented the storyboard of one of these developed services.

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Attract Attention: Mother sees publicity on TV and talks with son.

Informs: Son subscribes service on the web and schedules installation.

Informs: Technician visits mother and explains how the service works.

Use: Mother receives reminders for the medication.

Maintain: Doctor advises mother to upgrade service to monitor vital signs.

Maintain: Technician visits mother to upgrade the service and train her.

Use: Son can monitor mother vital signs and medication intake history.

Use: Mother can control the lights and check if doors/windows are closed.

Support: Abnormal activity detected call centre personnel contacts mother.

Figure 10: *AAL4ALL service storyboard*

The presented service includes a touch point diagram of the service where the following questions were answered about the service lifecycle: How do you create awareness and **attract attention** for your service? How do you stimulate the customer to take action (**Inform)**? How do you respond to customers' needs with regards to service provision (**Use)**? How do you handle problems or questions during service provision (**Support)**? How do you **maintain** a relationship with the customer?

This service includes 5 different personas the senior, the informal caregiver (son), formal caregiver, technician and call centre personnel.

2. Pilot specification and user selection

The pilot will be developed in 3 phases, each one comprising 150 users.

In addition, three scenarios will be considered, namely:
1. Users in institutions of primary care;
2. Users at home; and
3. Users in a mobility scenario.

Each scenario has a minimum number of users. For the first scenario 20 users should be considered for each pilot phase. For this scenario users will interact with communication equipment that allows distributed communication among a set of wireless sensors.

For the second scenario 100 users should be considered for each pilot phase. The infrastructure for this scenario will consist of a communication equipment referred to as the Home Gateway. This equipment will allow a simple connection between a set of sensors prescribed for patients with chronic diseases. In the case of users that only require monitoring for diagnostic and well-being purposes, the equipment configuration might be simplified.

For the third scenario 30 users will be considered, and they are expected to have a mobile phone that should allow the communication with sensors adapted to a mobility scenario.

The final phases of the pilot preparation will include the definition of procedures, considering the reliability of the experiment (random errors and systematic errors or bias).

3. Conclusions

When designing a large-scale long-term evaluation, which aims at providing the impact of integrated AAL solutions, there are several factors that should be accounted for in order to achieve the desired outcome. The evaluation of the solutions within the appropriate user population is crucial for the project and the first aspect to be defined. The current phase of the pilot preparation is concerned with the definition of procedures, considering the reliability of the experiment, namely random errors and systematic errors or bias, but also the business requirements of the involved institutions.

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INTRODUCTION: LARGE SCALE INTEGRATION AND EVALUATION OF AAL TECHNOLOGIES IN EASTERN AUSTRIA - THE MODULAAR PROJECT

Johannes Kropf, Barbara Prazak-Aram, Lukas Roedl, Friedrich Praus, Christian Siegel[1]

The motivation of the activities and the work presented here are mainly driven by the demographic changes and the need for ambient assisted technologies for supporting a longer independent living of the elderly. Current AAL systems are rarely flexible enough for an integration into existing assisted living contexts including the infrastructure of the care provider.

The project aims to evaluate and implement highly integrated AAL solutions on a large scale and to evaluate it on economic, socio-economic and user level. For a long-term evaluation on a large scale 50 supervised living environments are going to get equipped with an integrated AAL system providing solutions from the domains security, comfort, health and social inclusion.

Technically, the installed AAL solution is formed by integrated services covering the domains comfort, safety, health and social interaction. The overall system is based on the HOMe Event Recognition System (HOMER) developed by AIT and supports expansion of already existing flats over battery-less wireless sensor technologies as well as erection of new smart flats with stable cable based solutions such as KNX.

The evaluation will focus on user acceptance of the system (this will include also the acceptance of the system by care personal) and on the influence of usage of such technologies of the quality of life of elderly people. Additional socio economic aspects will also be evaluated to develop a concept for further exploitation of the system. Qualitative and Quantitative methods will be used for data acquisition and analysis. The Evaluation will start a view months before installation of the system and will be finished after project end. Involved people will be interviewed on basis of valid questionnaires e.g. WHOQOL-BREF, WHOQOL-OLD.

The final paper will present first experiences with this AAL system in the supervised living environments and first impressions from the evaluation.

The project is co-funded by the benefit programme of the Federal Ministry for Transport, Innovation and Technology (BMVIT) of Austria.

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SESSION D5

Evidence, indicators and measurement

Summary

Karin Enander, Linköping University, Sweden

Summary of the session

In order to formulate appropriate policies addressing the challenges and possibilities associated with demographic change, we need to define useful indicators for quantifying active and healthy ageing and for assessing the impact of innovative solutions. We also need robust methods for data collection, able to handle the fact that cultural differences among survey respondents may influence the results. The session started with two presentations of ongoing projects addressing these issues. Asghar Zaidi (University of Southampton) presented the Active Ageing Index project, where active ageing in EU27 is measured as a combination of indicators covering four different domains. Jean-Marie Robine (INSERM France) continued with recent findings by the Joint Action European Health and Life Expectancy Information System, calculating the number of healthy life years in the EU member states on an annual basis. This was followed by a survey of current trends and policies regarding ageing research based on national quality registers in Sweden, given by Kenneth Abrahamsson (Luleå University of Technology). Finally, Peter Wintlev-Jensen (European Commission) motivated the use of indicators for guiding policy-makers on both the European and the national level.

The Active Ageing Index Project

Speaker: Asghar Zaidi, University of Southampton, United Kingdom

Active ageing is a multidimensional concept that can be measured and understood by observation in three dimensions: health (physical and mental), participation in professional and societal life, and security, i.e. being protected from fear and having resources for independent living. The extent of active ageing can be quantified by the Active Ageing Index (AII), which is the result of a combination of 22 indicators covering four domains based on these dimensions: 'employment', 'participation in society', 'independent, healthy and secure living' and 'capacity for active and healthy ageing / enabling environment'. It is important to compare activating outcomes between countries only after considering differences in institutions and enabling environment.

When measuring total AAI (i.e. including indicators from all domains) in the EU27, big differences are revealed, where, in general, people in Northern countries experience a more active ageing than people in Central and Eastern European countries (CEEC). Women generally fare worse than men, in almost all countries. When disaggregating AAI to the domain level, it is revealed that countries with similar total AAI satisfy the different domains quite differently. It can also be noted that total AAI does not fully correlate to GDP per capita.
Essential future research in this area includes a contextual analysis with the aim of understanding

sources of cross-national differences in active ageing - what policies and institutions distinguish those countries with high AAI? It is also essential to investigate how and what forms of active ageing that increase quality of life in individuals, as well as how the active ageing discourse will affect financial sustainability of public welfare systems. The newly funded FP7 project "Mobilising the Potential of Active Ageing" (MOPACT) includes mapping scenarios of active ageing.

After the presentation, subjectivity in self-reported data was discussed. Gender and cultural differences in the perception of, e. g., extent of social involvement should be taken into account when evaluating the results. It was also noted that cross-national differences in legal retirement age will influence AAI substantially, and extensive participation in the professional life may have different causes in different countries (e. g. active ageing vs. poverty).

The Joint Action on the Healthy Life Years (EHLEIS)
Speaker: Jean-Marie Robine, INSERM, France

Life expectancy in European countries continues to increase. But are these additional years lived in good or bad health? The European Commission has selected Healthy Life Years (HLY) as an important structural indicator to assess the quality of life and functional health status of Europeans, adding a quality dimension to the life expectancy parameter. HLY is life expectancy reduced by the number of unhealthy life years (LE-UHLY). The Joint Action European Health and Life Expectancy Information System (JA EHLEIS) is an effort to monitor European initiatives promoting healthy active longevity throughout Europe and to conduct in-depth research on HLY. HLY data is collected by three general questions covering self-perceived health, chronic health problems, and disability, being introduced into the EU Statistics on Income and Living Conditions (EU-SILC) survey since 2004/2005. There is an ambition by the European Innovation Partnership on Active and Healthy Ageing to increase HLY at birth in the EU27 by two years between 2010 and 2020.

Health data from EU-SILC 2005-2011 in the EU25 were reported. HLY in 2011 at age 65 was 8.6 for both men and women. Between 2010 and 2011, there was an increase in LE at age 65 but only small changes in LE without chronic activity limitation, which is worrying. There was a marked increase in LE without chronic morbidity. A decrease in LE in good perceived health was observed between 2010 and 1011, but seen in the 7-year perspective from 2005, this parameter has strongly increased, which is an interesting and satisfying result. A remaining challenge is that cross-national differences are very big.

After the presentation, the fact that the data is based on self-estimations among individuals was discussed. Cultural differences between countries may result in questions being understood differently in different parts of EU, and people's different attitudes towards answering a survey can also influence the results. In recent years, great care has been taken in formulating the questions in a consistent way in all languages.

Towards integrated data sets for ageing research in Sweden – a challenge for policy and research

Speaker: Kenneth Abrahamsson, Luleå university of technology, Sweden

An overview of the Swedish policy infrastructure with respect to personal data registration and access (including e. g. Statistics Sweden (MONA) and Swedish National Data Service) was given. There are currently a lot of resources invested in the establishment of national quality registers, along with development of policies for how to use these registers for research purposes. This boom of evidence, indicators and registers means new (and old) challenges for policy makers. For example, there is a particular interest in integrating different registers and combining them with bio banks, and in this context a number of ethical issues need to be addressed. Trends in Swedish research priorities where access to these registers is valuable include the new population structure, a longer working life, costs for care and multimorbidity, dementia, active and healthy ageing, intergeneration studies, and ageing and migration.

The European Commission perspective : ICT and aging well, evidence of impact.

Speaker: Peter Wintlev-Jensen, European Commission, Belgium

There is a great opportunity for Europe to become world-leading in development and implementation of innovative solutions to meet the societal challenge of active and healthy ageing. This development is intended to be catalyzed by the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA), an initiative from the European Commission that is intended to pursue a triple win for Europe:

1. Enabling EU citizens to lead healthy, active and independent lives while ageing;
2. Improving the sustainability and efficiency of social and health care systems;
3. Boosting and improving the competitiveness of the markets for innovative products and services, responding to the ageing challenge at both EU and global level, thus creating new opportunities for businesses.

In the process of development of solutions, from research to deployment via innovation, impact indicators are crucial to guarantee efficiency in innovation and to convince policy-makers that resources spent in this area are well-invested. Indicators are classified as process indicators and outcome indicators. Process indicators are divided into input indicators (e. g. time and money), and output indicators (e. g. number of regions and patients involved). Examples of outcome indicators are less hospitalization and less depressed people. The speaker gave the Vivago WristCare activity monitoring device as an example where straightforward outcome indicators have been presented to convincingly demonstrate utility (reduction in number of falls and reduction in number of hospital bed days). Indicators can and should be linked to the triple win aspects of EIP-AHA.

Conclusion

Impact indicators and indicators of active and healthy ageing are needed to guide policy-makers at all levels. Indicators have been defined in several projects and some are now being used to compare EU countries on an annual basis. When assessing active and healthy ageing, we need to understand the method of data collection in order to interpret results correctly. When assessing impact of innovations, different indicators may suggest different solutions. A careful analysis of the complex reality behind numbers is thus always required.

OTHER EVENTS

EXHIBITION

Over 60 different exhibitors – both AAL projects and representatives from industry, government and research institutes – showcased their projects and products in the forum's exhibition.
The exhibition got a lot of attention from the participants and the exhibitors provided the forum with knowledge, experience and cutting-edge technology.

The exhibition was located on two floors – both areas close to the entrance and the conference rooms.

All together, the exhibition was appreciated and well-attended

POSTER EXHIBITION

For the first time, the AAL Forum Poster Exhibition was digital. On the main floor of Louis de Geer, participants and visitors could take part of several posters on projects and products, using a tablet computer connected to big screens.

This solution, using digital posters instead of posters made of paper, wasn't only environmental friendly – the poster exhibiton became very popular and many of the AAL Forum participants was seen flipping through the posters.

The poster exhibition followed the same themes as the forum in general with a focus on impact.

POSTER SESSIONS

In parallel with the ordinary sessions, four 90 minutes poster sessions were held. They were organised in themes based on the major tracks and the number of posters in each theme. The vast majority of the posters were within the scope of track A, Autonomy, choice and control, which called for three of the sessions. In all, the themes of the four sessions were:

Poster session 1 (PS1): Social interaction and e-service society
Poster session 2 (PS2): Dementia and chronic conditions
Poster session 2 (PS2): Mobility
Poster session 2 (PS2): Issues of track B, C and D.

The sessions were held in a room separate from the poster exhibition. Each poster presenter got the opportunity to give an introductory summary of the poster during 5 minutes, by means of a surfpad with access to all the digital posters, connected to a projector. The time for questions was, however, very limited, why networking among the participants during the breaks was encouraged.

YOUNG RESEARCHERS WORKSHOP

24-26 Sept. Medea took part in the AAL Forum 2013 in Norrköping. Medea got invited by Vinnova to run this year Young Researchers Workshop, which is a traditional sidetrack during the yearly returning conference.

Below the headline “Occupation of life” a selected group of young researchers from all over Europe explored how technology and social innovation can be used to support elderly in maintaining a meaningful occupation after their retirement - and how digital driven solutions can help elderly engage, communicate and develop new social contacts and networks.

Idea-development workshop
The workshop was a mix of idea-development and a pre-incubator process. The ambition was to bring the participants briefly described concepts, through an intensively qualification process. Within 2,5 days 6 concepts for new services, products and solutions got a large step closer to a viable concept-idea.

During the process the participating projects were introduced to service design methods, prototyping and user engaging techniques. They worked iteratively with presentations in different formats, Quick n’ Dirty prototyping, video prototyping, business development and presented finally in an exhibition format to a huge number of interested delegates at the end of the conference.

The workshop is developed in collaboration with Stefan Holmlid, professor in Service design, Torbjörn Andersson industrial design, Linköping University and Andrea Otterstrøm Nörrgaard, representing the co-design cluster at The Royal Academy of art, design and architecture.

Concepts developed

Mentoring Me
The aim of this project is to reduce the unemployment rate of young people taking advantage of the talent and knowledge that our seniors have after their retirement. Outcome: Web platform

The Stories We Share
This concept is about sharing everyday experiences for people affected by Alzheimer/dementia, both people with the diagnoses and their relatives. When you are diagnosed with Alzheimer at a hospital, it can be difficult to grasp the consequences the diagnose entails. Outcome: Web diary that can be printed.

"Today"
People with a short-term memory loss and disorientation in time and place need technologies, which to support them. There are a lot of new technologies, which can help, but very often they are very complex and look unfamiliar. So why can't we use the TV to support them instead of confront them with new products?! Outcome: A digital platform for TV.

Walking Mate
As people get older, exercising becomes important for maintaining good health. Nordic pole walking is a form of exercise twice as effective as normal walking. To practice Nordic pole walking properly, the user needs to know the correct walking techniques, which can be confusing as there are many. Outcome: An attachable digital grip for Nordic Walking Poles.

XOS
"The afternoon knows what the morning never suspected." (Robert Frost, poet) People grow old; it is one of the facts of life and one of its beauties. But unfortunately, it can come with a list of problems to blur that beauty. Stresses, memory loss, heart problems or lack of physical activity, are just a few common issues seniors have to face. This concept aims to soften that transition, and act as your assistant, your guardian angel and friend. It helps you help yourself. Outcome: A watch, a planner/reminder, a caretaker customized for you.

The Wisdom Network
An online meeting point where retired experts share wisdom with young start-ups. Any retiree can join and contribute their knowledge to the community. On the other hand, the start-ups will also have a place for asking the experts the questions they have about how to run their businesses. This transfer of knowledge will be flexible, for those retirees with plenty of free time and for those that have busy days. Outcome: An online community

Workshop team:
Asta Wellejus: Mentor (interaction/experience)
Daniel Spikol: Mentor (business development, technology, concept development)
Andrea Otterstrøm Nørgaard: Co-design expert
Eva Wendelboe Kuczynski: Developer and project leader
Photos: http://www.flickr.com/photos/medeamalmo/sets/72157637301804886/

FIELD VISITS

In connection with the forum, on the 24th and 27th September, a number of field visits in the Norrköping vicinity and Stockholm was offered.

Tuesday 24th September

Field visit: IT use among older adults at a care home and a senior centre
Bus trip to the city of Linköping. First stop at a the Ekbacken care home in a Southern suburb of Linköping, where the older adults living at the care home are free to use a specific IT room where they may get assistance, as well. A positioning system was also demonstrated to show possibilities of tracking elderly at risk for disappearing. Secondly, the bus took the group to the city centre where the Hagdahls Senior Centre is located. Every day older adults who live in their own homes are free to visit the centre for a multitude of activities or just to have a cup of coffee. Recently, by funding from the Swedish Institute of Assistive Solutions (SIAT), it was also established as a showroom for products and solutions enabling increased independence.

Field visit: Testbed Norrköping
Just recently, two residential areas in the city of Norrköping were established as a test bed and living lab aimed at new technology for older adults. The residential areas (Vilbergen and Såpkullen) today have a demography similar to Europe 2060, i.e. the visit there was a visit to the future. During the visit, the intentions with the test bed were explained and some products and services, subjects to test, were shown.

Field visit: Key-free home care
This was a walking visit to a nearby residential house where Phoniro Systems showed how their electronic locks work. They may easily be installed in existing houses and enable care employees to open the home entrance doors by their mobile phones, without destroying the possibility to still open it by an ordinary key. The Municipality of Norrköping has decided to install electronic locks in all homes subject to ambulatory care.

Field visit: Transportation research related to older adults
Visit to VTI, the Swedish National Road and Transport Research Institute, Linköping. After arrival the attendees got a short presentation of the institute and the research areas and more specific about research on older adults in the traffic environment. Finally, the advanced car simulator, used for testing the behaviour of older adults as car drivers in different situations, was demonstrated.

Field visit: Printed Electronics Arena + Biosensor Research at LiU
Walking visit to Printed Electronics Arena, Norrköping, where the attendees got a glimpse of current research at Biosensors and Bioelectronics Centre at Linköping University. Printed Electronics Arena Manufacturing, PEA Manufacturing is a test environment, operated by the research institute Acreo, for development of small-scale production of Printed Electronics. The applications are many, like sensors and short-range communication. The tour continued to the Biosensors and Bioelectronics Centre at Linköping University. The Linköping Biosensors and Bioelectronics Centre was established in 2010, with the objective of bringing together the many competences, activities and resources at Linköping University that are already working on, or can bring valuable contributions to, the development of biosensors, bio sensing, bioelectronics devices and relevant biomaterials and nanomaterials. The mission of the Centre is to improve the quality of life, health and the environment by the provision of distributed diagnostics and personalised analytical tools and therapies.

Friday 27th September

SIAT/Micasa inspirational apartments in Stockholm
The Swedish Institute of Assistive Technology has in cooperation with MICASA, the municipality owned company that manages the City of Stockholm's care homes, established three inspirational apartments in the city centre of Stockholm. The aim is to show leading-edge technology for increased independence. The apartments were open for drop-in visits during the afternoon.

OPENING EVENT

In the evening of the 24th September, the forum was officially opened by the President of the AAL Association, Mike Biddle, and the Governor of Östergötland County (East Sweden), Elisabeth Nilsson. Catharina Rolfsdotter-Jansson, a well-known Swedish television programme host, professionally moderated the opening event.

The Vice President of European Commission, Nelly Kroes, stressed in a pre-recorded welcoming address the importance of cooperation between the European regions in order to deal with our common challenge related to the demographic change ahead.

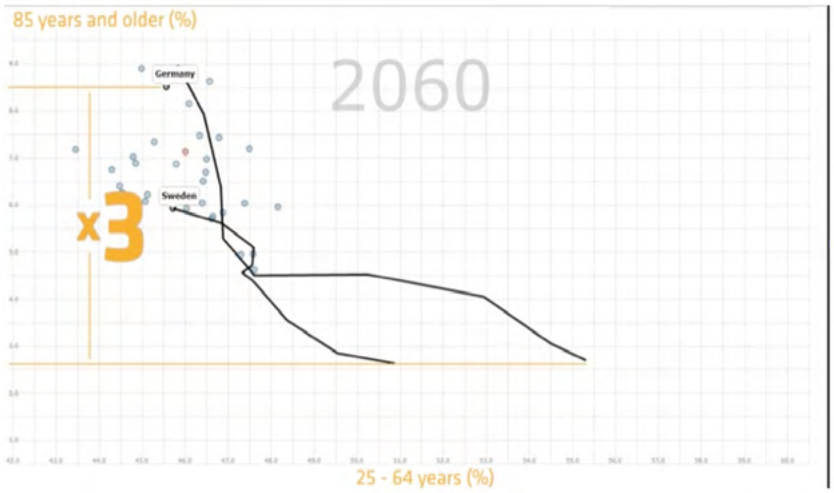
The challenge should be well known for all forum attendees, why it shouldn't be necessary to repeat it in each forum presentation. That is why the issue was brought up during the opening event, i.e. to give some light to it and then close it in favour of solutions to be presented rather than the challenge itself.

Since Norrköping has a certain academic and business profile in the area of data visualisation, the organisers of the forum gave a local company, Infviz AB, the task to create an animation for the opening event which illustrates the challenge ahead in a new way. It was based on two diagrams, one each for the development of the two age groups 65+ and 85+, in comparison to the working population, as time elapses. In this way it became very evident that for instance Germany will meet a much greater challenge than Sweden (snap-shot below).

The challenge was commented in different perspectives by a panel consisting of Peter Wintlev-Jensen, Deputy Head of Unit at European Commission, Eva Nilsson-Bågenholm, National Coordinator for Elderly Care at Ministry of Health and Social Affairs in Sweden, Marie Morell, Chairman of the County Council Board of Östergötland, Mona Olsson, Municipal Commissioner of Norrköping and Mike Biddle, President of the AAL Association.

On two occasions during the event, the Swedish singer and resident of Norrköping, Claes-Göran Hederström performed with his band. In 1968 at age 22 he represented Sweden in the Eurovision Song Contest with the Swedish song "Det börjar verka kärlek banne mig". Here, during the opening event, he performed the English version, which is very suitable translated to "My time has come", for the now 67 year old singer.
In addition he performed a special version of the famous Beatles song Obladi, oblada, titled "AAL, AAL".

After the plenary event the audience was invited to a get-together in the exhibition area with some food and entertainment provided by a group of older amateur circus artists, from the city of Stockholm.



A snap-hot from the demographic challenge animation, provided by Infviz AB.

CLOSING EVENT

In the evening of the 26th September, the forum was officially closed by a concluding event, with Åsa Sjöberg, a local talent and singer, as host.

The President of the AAL Association, Mike Biddle, and Anders Carlsson, the chairman of the forum programme committee, concluded the forum with some remarks. Anders reported that about 800 people had attended the forum, which was more than expected. He also took the opportunity to give attention to the forum programme committee and thanked the members for an excellent work. The overall impression was that the AAL Forum 2013 was a success.

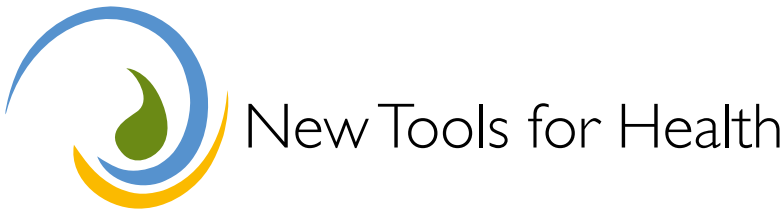
The closing event also provided the arena for three different prize ceremonies, the AAL Award, the Young Researchers Award and the EVAAL competition.
The AAL Award winner was selected based on a the pitching plenary session with the three finalist's projects, held earlier on the day of 26 September. The competition was a three months process along a three steps selection, which was participated by 19 projects of the AAL Joint Programme. Winner of the AAL Award 2013, selected by the jury by influence of the audience, was the project "I walk Active", a rollator system that enhances mobility of older adults in various surfaces and it is integrated with additional services, that together greatly improve the user's mobil-

ity in an enjoyable and motivating way.
The Young Researcher Award was based on the Young Researchers Workshop held as an integrated part of the forum, where a group of design students interacted with end-users and came up with various solutions exhibited in connection with the closing event. The award selection was based on the votes from the audience.
EvAAL is a competition that aims at establishing benchmarks and evaluation metrics for comparing Ambient Assisted Living solutions. EvAAL stands for "evaluating AAL systems through competitive benchmarking". In 2013 the competition was held in two tracks, localisation and activity recognition. The winner of the localisation track was a team from the RTL-Service & PetrSU (Russia) and the winner of the activity recognition track was a team from Jožef Stefan Institute (Slovenia).

The closing event also had a special secret guest. It was Europe's oldest blogger, Dagny Carlsson, 101 year old, from Stockholm. She has her own blog and is also a guest blogger at a web site hosted by Stockholm County Council, called "The Care Guide". That is worth attention, especially due to the fact that she had her first computer encounter at age 93.
She was thanked by the forum organisers by the handing over of an iPad, used at the forum.
Then, Johanna Ulfvarson, Vinnova, the Swedish NCP and member of the programme committee, entered the stage in order to thank the local organisers Anders Carlsson, Cecilie Moe and Erika Pohjanen by handing over gifts and a big hand from the audience.
Finally, Mike Biddle, took the opportunity to thank for his time as president of AAL Association, by introducing the new president Rafael de Andres Medina, Instituto de Salud Carlos III, Spain.

The closing event was completed with a welcome to the dinner, by Marie Morell, Chairman of the County Council Board and Olle Vikmång, deputy Mayor of Norrköping Municipality.
During the dinner, Claes-Göran Hederström entertained with his band and Åsa Sjöberg (the closing event host) as a special guest star. In addition, Erika Pohjanen (the communication officer of the forum) and her friend Martina Andersson successfully acted as disc-jockeys all night long.

SUPPORTED BY



NEW TOOLS FOR HEALTH

New Tools for Health (NTfH) is a regional initiative based in East Sweden with the objective of stimulating the creation of new products and services that lead to increased independence for older adults and more efficient and effective home based health and social care. NTfH is part of the East Sweden innovation system and financed by Sweden's innovation agency, VINNOVA (Swedish Governmental Agency for Innovation Systems), the county council of Östergötland, the Municipalities of Linköping and Norrköping, Linköping University and some 50 commercial enterprises.

Together with other innovation supportive partners we promote primarily mobile ICT solutions for older adults. We provide resources such as financing, contacts with potential customers and unique testing and development environments. The ideas may come from companies, innovators, researchers or employees working in the care/healthcare sector. New Tools for Health supports the entire process, from feasibility studies and development to the commercialisation of new products and services that eventually can reach an international market.

As one of the leading European regions in the area of assistive solutions were proud to host AAL Forum 2013 in Norrköping, Sweden.

CITY OF NORRKÖPING

The Municipality of Norrköping employs over 9 000 staff and is the largest employer in Norrköping. Its activities are wide-ranging. Pre-schools and schools as well as elderly care and the care of people with disabilities comprise the fundamental operations.

One of the largest departments in the Municipality of Norrköping is the Community Care Department. The role of the Community Care Department is to provide the care and support services you need to live as safely and independently as you can and live in your own home, for as long as possible. This can include things like home care, provision of a carer or health visitor.

But it also includes development of technique, health care and social structure for the elderly residents of Norrköping. All in order to create security and welfare of the elderly residents who sometimes need extra support in their everyday life.

VINNOVA

VINNOVA - Swedish Governmental Agency for Innovation Systems - is Sweden's innovation agency. Our mission is to promote sustainable growth by improving the conditions for innovations, as well as funding needs-driven research.

VINNOVA's vision is for Sweden to be a world-leading country in research and innovation, an attractive place in which to invest and conduct business. We promote collaborations between companies, universities, research institutes and the public sector. We do this by stimulating a greater use of research, by making long-term investment in strong research and innovation milieus and by developing catalytic meeting places. VINNOVA's activities also focus on strengthening international cooperation. In order to increase our impact, we are also dedicated to interacting with other research financiers and innovation-promoting organisations.

Every year VINNOVA invests about SEK 2 billion in various initiatives. Since co-financing from actors must total at least the same amount, our funds have more than doubled. Funding decisions are made with assistance from national and international experts and there is ongoing monitoring and evaluation of all initiatives. We carry out regular impact analysis to evaluate and draw lessons from the long-term impacts of VINNOVA's efforts.

VINNOVA is a Swedish government agency working under the Ministry of Enterprise, Energy and Communications and acts as the national contact agency for the EU Framework Programme for R&D. About 200 people work at VINNOVA´s offices in Stockholm and Brussels.

VINNOVA was founded in January 2001. Our Director General is Charlotte Brogren.

COUNTY COUNCIL OF ÖSTERGÖTLAND

The County Council of Östergötland offers an advanced medical care of high quality with excellence in several areas of highly specialized care, which contributes to very good medical results. A close collaboration between the County Council and Linköping University has also created an open research environment and a vibrant medical education, which leads to continuous development and improvement of health care.

According to several international rankings, the health care in Östergötland and Sweden are among the best in the world. Sweden ranks high due mainly to very good medical results while costs are moderate.

EAST SWEDEN
Convention Bureau

EAST SWEDEN CONVENTION BUREAU

East Sweden Convention Bureau is a non-profit organization whose focus is on marketing the region of Östergötland, and in particular the city of Linköping and the city of Norrköping, as a premiere meeting and convention destination worldwide.

The two cities have combined over 2,200 hotel rooms and convention locations with the capacity to hold over 1300 delegates in a theatre setting. Our mission is to work with public and private members to market and sell the region as a must visit meetings and conventions destination.

Let us make your life easier when planning your next event. Let us be your one stop shop! All our services are complimentary!

CITY OF VÄSTERÅS

Västerås – the local quadruple helix network with global potential. For the creation, developing, testing, implementation and commercialization of innovation within heath and elderly care.

Västerås stad
6th largest city of Sweden
Public care giver organisation experienced in adopting and implementing new technologies.
Now launching MISTEL – the real-life test bed offering elderly care innovations a unique possibility to test in regular homes.

VÄSTERÅS STAD

ESS-H
Research program Embedded Sensor Systems for Health at Mälardalen University
Develops health technology for promotion of health.
Provides user-centered development in collaboration with researchers, industry, municipalities and county councils.

ESS-H
MÄLARDALENS HÖGSKOLA
ESKILSTUNA VÄSTERÅS

Robotdalen
Government financed initiative for robotics
We help companies, researchers and entrepreneurs to ensure that their solutions are tested and evaluated by professional care givers and future clients. Our mission is to simulate innovation and enable commercial success.

robot dalen

Västerås Science Park
Network of Entrepreneurs
Guiding innovators from idea to successful business! Host for business networking!

VÄSTERÅS SCIENCE PARK