The Ambient Assisted Living (AAL) Joint Programme

Europe's population is ageing. Thanks to progress in health and social care, average life expectancy has increased from 55 in 1920 to over 80 today. With the retiring baby boom generation the number of people aged from 65 to 80 will rise by nearly 40% between 2010 and 2030. This demographic change poses significant challenges to Europe's society and economy[1]. Information and communication technologies (ICT) can play an important role in dealing with these challenges.

ICT can help the older individuals to improve quality of life, stay healthier and live independently for longer. Innovative solutions are emerging to help counteract problems related to memory, vision, hearing, mobility, loss of independence which are more prevalent with age[2]. ICT also enables older persons to remain active at work or in their community. Their accumulated experience and skills is a great asset, especially in the knowledge society.

The ageing of the population also puts pressure on the affordability of health and social care services and the availability of health and social care staff, requiring to adjust the way these services are currently offered to cope with an increasing demand in the future. New information and communication technologies mean that it is becoming possible to provide the care and treatment people require –at lower cost – in their own homes.

The European Commission wants to support positive benefits stemming from these technologies, for individuals' well being and for the opportunities they provide European companies and the economy at large. If we do not do it, others will, and if we do it before them, we have market opportunities, not just in Europe, but also overseas, notably Japan where the ageing phenomenon is even more acute.

As part of its overall action plan, Ageing Well in the Information Society[3], the Commission is supporting a new Ambient Assisted Living (AAL) joint research programme of Member States. Since 2008, this programme is joining together national research activities in the area and is complementing EU-funded activities within the seventh European Research Framework Programme (FP7)[4].

Between 2008 and 2013, the EU and Member States, and the private sector will have invested more than €1 billion in research and innovation for ageing well: some €600M in the Ambient Assisted Living Joint Programme, an expected €400M in the EU's latest research framework programme and so far more than €50M on large scale pilot projects in the EU's ICT Policy Support Programme[5].

This investment will result in innovative and affordable technologies and services responding to the challenges we face, for the benefit of the elderly, their carers and the companies devising the technology.

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[1] Communication of the European Commission COM(2009) 180: Dealing with the impact of an ageing population in the EU: http://ec.europa.eu/economy_finance/articles/structural_reforms/article14761_en.htm
See also the 2009 Ageing Report: http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf

[2] 45% of those aged 75 and older are to some degree impaired in their daily living activities.

[3] Communication of the European Commission COM(2007) 332: Ageing well in the Information Society: http://ec.europa.eu/information_society/activities/einclusion/policy/ageing/action_plan/index_en.htm
See also the Overview of the European strategy in ICT for Ageing Well: http://ec.europa.eu/information_society/activities/einclusion/docs/ageing/overview.pdf

[4] More on FP7 at : http://cordis.europa.eu/fp7/ict

[5] More on ICT PSP of the CIP at : http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm
See also the overview of the current deployment projects in the area of ICT for Ageing Well: http://ec.europa.eu/information_society/activities/einclusion/docs/ageing/cip_projects.pdf

What is Ambient Assisted Living?

Ambient assisted living (AAL) is the use of information and communication technologies (ICT) in a person's daily living and working environment to enable individuals to stay active longer, remain socially connected and live independently into old age.

ICT for independent living can be as simple as an alarm button or a reminder to take medication. It may also be very sophisticated such as a system that can predict when an older person is at risk of falling (a major cause of loss of personal independence). The box "Technology for users" gives examples of ICT for independent living. Whether simple or sophisticated, the philosophy of ambient intelligence is that the technology is at the service of the user, not the other way around.

Why is Ambient Assisted Living important?

The ageing of Europe's population is creating concern over the increasing cost of social and health care. By 2020 around one quarter of the EU population will be over 65. The dependency ratio of workers to retired persons in Europe will drop from 4:1 now to 2:1 by 2050[6]. This will make it difficult to sustain adequate social and health care spending and will create labour shortage in the availability of service providers. If innovative ways are not found in addressing these challenges, a growing share of our GDP will have to be used to meet the needs of the elderly, restricting the ability of governments to use national finances for other purposes.

But an ageing population is also a great opportunity. Many older people are quite willing to spend money on a better quality of life, provided they get the "right" solutions. ICT can empower older people by giving them control over their lives as much as possible, enabling them to maintain their dignity and deal with their concerns, such as chronic diseases. Ambient assisted living both meets the urgent needs of older individuals and society at large and represents a business opportunity for Europe.

Technology for users

Examples of products and services for ageing well in the Information Society

ICT can be used in many ways to help older people continue to live independently and to play a full part in work and society.

Social communication – ICT offers easy access to phone and video conversations, especially by broadband, to stay in touch with family and friends and helps overcome social isolation. In many countries over half the over 65s live alone.

Daily shopping, travel, social life, public services – Internet technologies already provide the means to shop from home and many public services are accessible on-line.

Daily Living, safety and security – Smart house technology and devices can ensure doors and windows are locked at night or when leaving the house, monitor for water or gas leaks and turn off unwanted lights. Automatic alarms can summon help when required.

Reminders – Memory problems tend to increase with age so help may be needed to make sure that medication is taken at the right times and that household tasks are not forgotten.

Mobility – Combined with GPS and sensors for vital sign monitoring, mobile solutions can offer assistance for navigation and provide access to alarm services, in the event of accidents or failing vital signs

User-friendly interfaces – All sorts of equipment in the home and outside can be adapted for users with impaired vision, hearing, mobility or dexterity.

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[6] European Commission COM(2006) 571, The demographic future of Europe – from challenge to opportunity: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0571:FIN:EN:PDF
See also the 2009 Ageing Report: http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf

Telemedicine – The use of ICT for health care opens up new opportunities for looking after patients at home. The many new developments include ways of monitoring well-being and providing a secure home environment.

Personal health systems – Wearable and portable devices can be used for monitoring, diagnosis, therapy and restoring functionality. They can assist with treatment of individuals with chronic disease and avoid the need for hospitalisation.

Future developments will make use of emerging technologies such as robotics, new materials and biosensors. The concept of ambient intelligence promises that the whole environment – both at home and in the wider world – has embedded intelligence to help meet the needs of everyday life.

Solutions and user experience

Case example: Smart homes for elderly people in Scotland

In West Lothian in Scotland, more than 2,100 elderly people have been using home safety services based on smart homes which support tele-monitoring of health data and safety and security over a three-year period. An in-depth assessment has concluded that a large group of respondents living at home, both older people and informal carers, reported the positive impact of the smart technology in prolonging their independence and quality of life. Analysis suggests that significant cost benefits of up to 25% could be achieved compared to the expense of a place in institutional care.

Staff experience: The new care model caused staff to question their former ways of working, to focus on promoting independence for older people, and to provide “support” rather than “care”. Staff worked in new teams, traditional professional boundaries were blurred, and tasks were shared which previously had been separate. The large majority of staff were supportive of the new model and felt it benefited older people and improved their quality of life. Smart technology was integral to the new ways of working.

Home-User experience: A large group reported the positive impact of the smart technology. It was widely seen as supporting safety and security both of the person and property, and thus as helping people to stay in their own homes. Many were reluctant to give in to a need for help and support. Mainstreaming, by making the technology seem normal, can reduce any stigma that people may feel. Technology is one element of the support older people receive along with help from families, neighbours, communities and carers. Family relationships emerged as especially important for providing both general social support and specific care and were often taken for granted.

Case Example: Viedome project in the Netherlands

With the Viedome project, the North Brabant region funded an experiment to help elderly or disabled people live longer independently by using new technology to provide distance care. The Viedome apartments now house 150 people in three locations in the region at a cost 25% lower than apartments in traditional institutions. The services include video phone, home automation (domotic) tools for remote control of the home, cameras for surveillance and safety and alarm systems.

End-user experience: The elderly people living in the Viedome apartments are satisfied and welcome the security offered while maintaining their own independence. The project has demonstrated that such care can be affordable and, indeed, cheaper than traditional institutional care. Elderly people continue to want to live in Viedome accommodation. As one inhabitant said: "It makes me feel secure to know that somebody is always there in case something happens to me."

Staff experience: The care providers from the centre are also satisfied. "The system is nice and easy to use, especially the visual contact with the person, so you can see directly if they feel good or not. You receive the signals better."

What is the AAL Joint Programme?

So far 20 European Member States and 3 Associated States have decided to pool their research efforts in ICT for independent living into the AAL joint programme for applied research. They agree on a yearly joint research work programme, which invites joint projects with participants from different countries, has a common evaluation procedure and is funded from national budgets.

The AAL joint programme is aimed at joining together national technology research activities in the field of information and communication for independent living. It is also focused on application research and therefore encourages participants to establish the conditions for market acceptance and future technology uptake. It complements longer-term research in the 7th Framework Programme by adding activity streams in the areas of independent living systems and applications with a short-to-medium term horizon. It provides the basis for activities in the field of innovation and market validation under the Competitiveness and Innovation Programme (CIP), thus completing the cycle from basic research to market uptake, as recommended by a number of independent assessments on EU research and innovation programmes.

Why Article 185 of the Treaty?

Article 185 of the Treaty on the Functioning of the European Union (former Article169 of the EU Treaty) makes it possible to strengthen research cooperation between Member States, using EU funding over and above the finance from national sources and the participants themselves. EU funding is only provided once member states have made a clear political and financial commitment to the programme. Use of Article 185 is designed to stimulate European research cooperation and to increase overall investment in line with the Union's objectives of boosting growth and jobs.

On 14 June 2007, the Commission submitted a proposal for a decision of the European Parliament and the Council on the participation by the Community in a research and development programme aimed at enhancing the quality of life of older people through the use of new Information and Communication Technologies (ICT), undertaken by several Member States.

On 13 March 2008 an amended proposal was adopted in a first reading by the European Parliament and adoption by the Council took place on 9 July 2008[7].

What are the Activities of the AAL Joint Programme?

The AAL Joint Programme supports two types of activities:

Technological research, demonstration and dissemination activities implemented via shared-cost trans-national projects. These involve partners from at least three different participating Partner states. The projects should be targeted at market-oriented research, should be of short to medium-term duration and should demonstrate the capability to exploit the project results within a realistic time frame.

Brokerage, programme promotion and networking activities, which may be implemented through dedicated events or in combination with existing events.

[7] Decision no 742/2008/EC of the European Parliament and of the Council of 9 July 2008: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:201:0049:0057:EN:PDF

How is the AAL joint programme managed?

Under the joint programme, participating countries have created the **AAL Association**. The AAL Association, an international not-for-profit association established under Belgian law, constitutes the dedicated implementation structure. It signs an agreement with the European Commission to receive annual funding from the overall 7th Framework Programme budget.

The Association is governed by a **General Assembly**. This consists of authorised delegates from the participating countries with the European Commission as an observer. It is the Association's decision-taking body and supervises the implementation of the joint programme. This includes approval of annual work programmes, allocation of funding to projects, and assessing applications for new membership. Decisions are taken by simple majority on the basis of one country-one vote.

Within the Association an **Executive Board** is elected by, and reports to, the General Assembly. It undertakes specific management responsibilities such as budget planning and contracting. In doing so it is also supported by the **Association staff** engaged by the Executive Board. Operational costs of the Joint Programme are set at a maximum 6% of the overall annual budget.

The staff of the AAL Association performs operations such as secretarial support for the General Assembly, contract and budget management, development of the draft annual work programmes. The AAL Association also organises the calls for proposals and it manages evaluation procedures at the end of which it proceeds to the ranking of projects for funding. The AAL Association also supervises project monitoring, the transfer of EU contributions to contracted national programme management agencies and organises dissemination of information on the programme's activities.

A stakeholder **Advisory Board** (users, industry) provides recommendations for priorities and topics to be addressed in the strategic coordination of the AAL joint programme.

National Programme Management Agencies are contracted by the Association to deal with administrative matters concerning national project partners within AAL projects. They fund national participants whose proposals are successful and additionally channel the central funding from the AAL Association, on the basis of a contract between the national agency and its national participants for each project. Finally, they provide support for the evaluation and negotiation of the project proposals, under the supervision of the Association.

The **European Commission** provides annual funding subject to approval of the annual work programme and evidence that corresponding national budget commitments and payments have been made. The European Commission's financial contribution amounts to a maximum of 150M€ for the duration of the AAL Joint Programme.

How does the programme work in practice?

After gathering strategic orientations from the Advisory Board, the AAL Association prepares a work programme on an annual basis to be agreed with the Commission as a basis for the financial contribution by the Union.

In elaborating the annual work programmes, the AAL Association makes sure to complement the activities within FP7 and bridge research initiatives from national programmes.

An annual budget commitment by participating countries is the basis for participating countries to be involved in the calls for proposal for the annual work programme. The target for commitments earmarked per year for the total public support is a minimum of €50 million. This is expected to be complemented by matching co-funding by industry and research institutes.

Subject to approval of the proposed annual work programme and proof of corresponding national budget commitments, the Commission signs an agreement with the Association. This includes an EU budget contribution up to €25 million, but not higher than the total of the national contributions on the basis of the agreed work programme. National contributions were at 35.9M€

for the second call, which is 50% over the minimum required by the decision establishing the programme.

The Association publishes calls for proposals. Participating entities submit their proposals via a central proposal submission tool which is made available with each call. Proposals are evaluated centrally by independent experts and are ranked based on their scientific excellence and quality. The General Assembly agrees on the ranked list and on the financial commitments of corresponding national budgets to fund the retained proposals. This decision is binding on the participating Member States.

A contract is concluded between each national agency and the national partners in selected projects on the basis of the common project description. The contract finalisation is conditional on the signature of a consortium agreement at the project level among the project partners.

Payment for the projects is done by the national programme management agencies. They also channel the corresponding EU contribution from the Association upon proof of national payments.

The Association also organises annual project reviews with operational support from the national agencies.

The practical procedures have been devised to make it as straightforward as possible for small and medium-sized enterprises to participate in the programme. This aspect is reflected in the high participation rate of SMEs in the programme: they represented 34% of proposals' partners for the first call, 43% for the second.

Running projects

To this date two calls for proposals have been launched. Under the first call (with the topic "ICT based solutions for Prevention and Management of Chronic Conditions of Elderly People"), 23 proposals were finally selected for funding[8].

Examples of Ambient Assisted Living research projects include, for example, 'eldercare social robots' which can help perform daily tasks such as lifting or cooking (DOMEO project: Domestic Robot for elderly assistance[9]), or set off an alarm if an in-built camera registers that a person has fallen (the CARE project: Safe private homes for elderly persons[10]). Another example is a 'smart home' environment, where smart cameras and sensors interpret the activities of people and can communicate changes in their behaviour to emergency centres (Rosetta project: Guidance and Awareness Services for Independent Living[11]). The technology respects privacy as it does not record pictures or sounds, but simply monitors and analyses the activities of a person in their home.

A project funded under the second call (with the topic: ""ICT based solutions for Advancement of Social Interaction of Elderly People"), titled "Express to Connect"[12], is developing a web service that helps the elderly to capture their personal histories, memories and stories - and share them with others. As a result, they are able to interact with each other and family members more easily. This eases any possible social isolation and increases general mental wellbeing.

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[8] The list can be viewed at: http://www.aal-europe.eu/calls/funded-projects-call-1

[9] More information on the DOMEO project at : http://www.aal-europe.eu/calls/funded-projects-call-1/domeo

[10] More information on the Care project at : http://care-aal.eu/

[11] More information on the Rosetta project at: http://www.aal-europe.eu/calls/funded-projects-call-1/rosetta
See also the Euronews 'Futuris' report on the project: http://www.euronews.net/2010/04/11/technology-for-people-living-with-dementia

[12] More information on the Express to Connect project at: http://www.express2connect.org/

A third call for proposals, with the topic "ICT based solutions for Advancement of Older Persons' Independence and Participation in the 'Self-Serve Society' ", is currently open, it closes on 30 July 2010.

More information:

- AAL Joint Programme home page: http://www.aal-europe.eu/
- European Commission's web page for ICT for Ageing Well: http://ec.europa.eu/information_society/activities/einclusion/policy/ageing

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