

FINAL PROJECT REPORT



AALIANCE

The European Ambient Assisted Living Innovation Alliance

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1. Final publishable summary report



AALIANCE - The European Ambient Assisted Living Innovation Alliance

The Coordination Action AALIANCE addressed Ambient Assisted Living (AAL) solutions based on advanced ICT technologies for the areas of aging at work, aging at home and aging in the society.

The AALIANCE project had a duration from 01/01/2008 to 31/03/2010. During this period a framework for stakeholders, led by industry, was provided to define research and development priorities, timeframes and action plans on strategically important issues in the field of Ambient Assisted Living. It played its role in ensuring the adequate focus of research funding for AAL, in fostering effective public-private partnerships and in developing a European research policy, in particular in focusing on FP7, but also on the AAL Joint Programme, launched in 2007/2008 by EU member states.

The AALIANCE project comprised 15 European contractual partners spanning from research over industry – among them large enterprises as Philips, Robert Bosch, and Deutsche Telekom – to user organisations. In addition, during the project's lifetime more than 30 organisations joined the AALIANCE network as associates.

With this strong partner base, the AALIANCE project achieved all its set objectives that are described in the following with the main achievements and/or recommendations.

1) Increase awareness and announcing relevant activities in the AAL domain in Europe

The AALIANCE website <http://www.aaliance.eu> was and remains to be the dissemination channel for all project relevant output material, i.e. essentially the various documents: AAL Roadmap and Strategic Research Agenda, policy recommendations and recommendations on standardisation issues in the AAL domain were hosted on the site. In addition, a section with news and event announcements was continuously maintained throughout the project's duration. Several electronic newsletters and four printed newsletters were published to inform the European AAL community about the project work, relevant activities from the partners and upcoming events.

Beyond internal events two huger events were organised: the first in September 2008 addressing the policy makers and programme owners represented in the AAL Joint Programme, and the second in March 2010 in Malaga, Spain, which was based on the AALIANCE roadmap, and addressing problems across the whole AAL value chain. This conference – which received broad acknowledgments – hosted 30 presentations and a similar number of posters – spanning from technological AAL topics, to system architectures, several application scenarios, but also covering ethical and business issues as well as standardisation. All this material was made available as pre-structured content for free download from the AALIANCE website.

On top of this, the AALIANCE organised three sessions of the first AAL Forum in Vienna in October 2009.

2) Setting-up a sustainable network of companies as technology providers and systems integrators, service providers, research organisations and user associations

Since the project start in January 2008, the network developed from 14 consortium members to 50 partners – involving companies such as technology providers and systems integrators, service providers, research organisations and user associations.

Consortium Members and expansion beyond

No.	Organisation	Sector	Country
1	VDI/VDE Innovation + Technik GmbH	Research funding	Germany
2	AGE - the European Older People's Platform	User organisation	Europe
3	Robert Bosch GmbH	ICT	Germany
4	Fraunhofer Institut für Experimentelles Software Engineering	Software	Germany
5	Fundacion Vodafone Espana	Communications	Spain
6	Institute for Microelectronics and Microsystems (CNR)	MST	Italy
7	Lulea University of Technology	University	Sweden
8	Nokia Corp. (<i>until 31/12/2008</i>)	ICT	Finland
9	Philips Research Laboratories Eindhoven	ICT	The Netherlands
10	Scuola Superiore Sant'Anna	Research	Italy
11	ELA Medical Sorin group	Medical Technology	France
12	University of Newcastle	University	UK
13	VERMON SA	Medical Technology	France
14	VTI Technologies Oy	Sensors	Finland
15	Deutsche Telekom AG (<i>from 01/04/2009</i>)	Communications	Germany

Associated Partners

No.	Organisation	Sector	Country
1	ACHMEA	Healthcare Insurance	The Netherlands
2	Ability Europe		United Kingdom
3	Austrian Institute of Technology		Austria
4	Bioingenieria Aragonesa - SABIA	Domotics, Telecare	Spain
5	BSH - Bosch und Siemens Hausgeräte GmbH	Home Appliances	Germany
6	CEIT RALTEC	Living Lab	Austria
7	CELS	Service Provider	United Kingdom
8	CSBT Centre Scientifique et Technique	Smart Home	France
9	Delft University of Technology Faculty of Industrial Design Engineering	Research	The Netherlands
10	Deutsche Telekom Laboratories (became full partner as of 01/04/2009)	Communications	Germany
11	e-Isotis		Greece
12	European Association for Directors of Residential Care Homes for the Elderly	User Organisation	Europe
13	Ericsson	Communications	Sweden
14	eVIA - the Spanish Technology Platform for eInclusion, eHealth and Ageing Well		Spain
15	Esaote S.p.A.	Healthcare Technology	Italy
16	Ibernex	Healthcare Technology	Spain

17	FIMI - Philips	ICT/Healthcare	Italy
18	IN2 search interfaces development ltd		Germany
19	Institute of Innovation for Human Wellbeing	Research	Spain
20	Institut der deutschen Wirtschaft Köln	Database provider	Germany
21	ITACA	eHealth	Spain
22	Orange Labs	Communications	France
23	Orbis Medical and Care Group	Care Provider	The Netherlands
24	Roma Multiservizi S.r.l.	SME	Italy
25	Siemens AG	Intelligent Autonomous Systems	Germany
26	SINTEF	Research	Norway
27	SportKreativWerkstatt	SME	Germany
28	Smart Homes	Smart home	The Netherlands
29	TECNALIA	Research	Spain
30	STMicroelectronics	ICT	Italy
31	Telbios	Telemedicine	Italy
32	TeliaSonera	Communications	Sweden
33	TSB Soluciones	Ehealth	Spain
34	Tunstall	Telecare	United Kingdom
35	University of St. Gallen - Institute of Information Management	Research	Switzerland
36	VTT	Research	Finland
37	Ingeniería e Integración Avanzadas (Ingenia), S.A.	SME	Spain
38	Clarity: Centre for Sensor Web Technologies	Research	Ireland

The intended creation of a sustainable network, i.e. an organisational frame backed by financial commitments of partners to continue the main work of the AALIANCE project, proved to be more time consuming and resource intensive than planned, but is persisting as an intention to be further pursued.

A model for a sustainable network was prepared and discussed by the consortium and the associated partners. An open questionnaire addressed following issues:

What shall be the main **objectives** of and what shall be the **benefit** for those who support a continued AALIANCE network?

Keywords: AAL stakeholder interests (lobbying), increasing AAL research budgets, support standardisation and interoperability, generally support an AAL market ...

Which **activities** shall be performed – by whom and in which frequency?

Keywords: Consultancy of EC / AAL representative with work programmes; continuation of Roadmap, SRA, other policy papers; project preparation in the AAL domain

Which **institutional or organisational set-up** do you consider most appropriate for a continued AALIANCE network?

Keywords: Governmental structure, legal form, personal and financial capacity of the structure, financing models, membership etc.

Which further **framing conditions** or barriers do you see?

Keyword: Subsidiarity to similar and already existing national structures; critical support, e.g. minimum number of commercial entities?

The answers to the questionnaires backed the originally presented model which resembled the “light-way” organisational set-up of European Technology Platforms, e.g. the EPoSS technology platform. Under this proposal, a differentiated – by type of organisation – membership-fee would have to be paid. From the fees, a central secretariat would be financed to perform central services as a website and PR, meeting organisation and support and central lobbying efforts towards the EC. The members of the network themselves would stay actively engaged and - unfunded by the central structure – perform core activities of the network, (i.e. updates of the AAL Strategic Research Agenda and Roadmap, policy papers on R&D issues, standardisation and interoperability, etc., but they also receive concrete benefits from the services provided within the network.

Reasons for the uncertainty related to the establishment of a ETP-like network consisted of:

- the present infancy of the AAL market which development is perceived as still very uncertain
 - the expected additional input of time and resources in a further structure as an European Technology Platform which might distract R&D staff from its core activities
 - the expectation that the AALIANCE objectives could be achieved also by existing ETPs
- as well as – given this circumstances - the price-value relation in between 5,000 to 10,000 € per year which has to be approved by higher hierarchies.

This position is shared by representatives of large and small enterprises who, at the very same time, highly acknowledged the outcome of the AALIANCE project and are keen to continue this work into the future (see also last page of this report for similar policy recommendations).

3) Preparing and maintaining a R&D roadmap and strategic research agenda (SRA) for AAL with a mid to long perspective

Currently there is a large number of (more or less linked) European and national research activities in the field of AAL involving various technology areas and innovative technology approaches. However, a common vision of AAL that provides and defines the future R&D steps and projects on the way to Ambient Assisted Living is still missing. It has been one of the AALiance rationales to close this gap by a “European Ambient Assisted Living Innovation Alliance” which developed a roadmap and strategic guidance for short-, mid- and long-term approaches (Strategic Research Agenda) for AAL related research.

This led to the first ever publicly available roadmap on Ambient Assisted Living technologies and systems. Input was mainly gathered from the AALIANCE core partners, i.e. leading research and industry organisations in Europe, but also from the network of the AALIANCE associated network partners. Comments of the project reviewers lead to the conduction of a workshop with external experts in autumn 2009 and this improved the first published edition substantially.

The 2nd edition was published as a book with IOS Press in The Netherlands. The roadmap was the main element of the final project conference that was also attended by high-level policy-makers. Several project partners chaired sessions at this event and started their chair work with presentations of chapters of the roadmap. A total of 300 roadmap books was received and disseminated to the conference attendees and further identified VIPs in the AAL area.

The roadmap describes the main trends towards AAL, analysed from a demographic, economic and technological point of view, and the barriers for their deployment, identified for each stakeholder of AAL, i.e. users and caregivers (primary stakeholders), organisations offering services (secondary stakeholders), organisations supplying goods and services (tertiary stakeholders) and organisations analysing the economical and legal context of AAL (quaternary stakeholders). Starting with the

identification of the needs of elderly people to live independently in different contexts and of the necessary technological support, the field of AAL is grouped in three principal application domains.

The roadmap also discussed system integration and interoperability issues, i.e. how to compose an AAL system. In AAL these different functions, provided by a heterogeneous set of disciplines (e.g. advanced human/machine interfaces, sensors, microelectronics, software, web & network technologies, energy generation or harvesting, control technologies, new materials and robotics), have to be integrated in a system that offers applications and services in a user-centred way. While ICT-enabled products in the field of walking aids or telemonitoring could be developed along already existing technological paths in the field of gerontechnology, more ambitious AAL solutions raise specific challenges regarding system integration and the design hierarchy. In AAL system integration is dependent not only on technical and functional integration factors, but has to take into account user needs and user knowledge. This could lead to a situation where the systems design can not be fully defined as long as the applications have not been defined at a basic level by the users themselves. This emphasises the importance of user involvement and user perspective in AAL-related research and innovation activities which have already been tackled by a number of R&D projects. On the other hand, a common AAL platform based on selected standards which allow the interoperability of applications and services could be the basis for 3rd party service development and provision, and could stimulate the development of products at an early stage and the establishment of value chains that put into effect the business opportunities within AAL. The contradiction between a user-centred system design and the need for a common application platform approach might turn out to be the central contradiction and challenge for AAL in the years ahead.

The 2nd main AALIANCE document (from work package 2) was the **AAL Strategic Research Agenda** that aiming at providing strategic guidance for short-, mid- and long-term R&D approaches in the context of AAL related research. In line with the technological content of the Strategic Research Agenda, the following recommendations were given concerning R&D priorities:

- New AAL devices need sensors, processors and actuators with high(er) capabilities in terms of intelligence, ubiquitous wireless network capacity, energy consumption and energy scavenging,
- Embedded and autonomous systems provide the infrastructure for new Internet-of-Things applications,
- Smart robotic platforms must be able to share intelligence with the environment and interface seamlessly with users,
- New paradigms of human-environment cooperation (interfaces, cognitive and physical models) are to be tested,
- ICT solutions have to be “green” and sustainable with lowest possible energy consumption,
- Interoperability and standardisation processes are of crucial importance for AAL technologies and need more attention,
- Legal and ethical consequences have to be considered in the design process of new AAL technologies (i.e. robotics), with direct participation and involvement of end-users,
- Horizontal services, based on new AAL technologies and oriented to a wide variety of end-user solutions should be tested in deployment projects.

4) Defining standardisation requirements

The issue of standards is of crucial importance for the establishment of an AAL market place. The AALIANCE project has thus compiled and published a document in which the most relevant standards were described. The main findings were also presented at the ICT conference in Lyon (November 2008) and at the AALIANCE conference in Malaga, March 2010.

The central output – an analysis of the standards in the AAL area –was revised at the end of the project. Not surprisingly, the situation on standards and interoperability issues was found as complex as the multiple facets of AAL products and devices.

The following figure presents the approach of the AALIANCE project to group AAL standards:



Figure: Standards relevant for AAL

The AALIANCE recommendations in relation to standardisation encompassed to:

- Increase the awareness on existing standards in a comprehensive effort. The actuality could be best kept up to date by maintaining the knowledge as an online database.
- Demonstrate the advantage of collaborative and integrated applications and services based on using standards.
- Develop and promote a reference model that gives guidance to product and service developers.
- Develop and promote design guidelines and a certification process for AAL products and services. This should be based on identification, selection and promotion of existing standards, and gaps should be identified and filled.
- Move beyond the syntactical interoperability to the semantic and process levels. Stimulate research to develop standards for the AAL context in the semantic and process interoperability levels.

5) Providing policy recommendations for a European RTD policy on Ambient Assisted Living

Policy recommendations were compiled and published on the AALIANCE website, based on the results of the AAL Policy Workshop on 25/26 September 2008 that was jointly organised by the AALIANCE Project and the AAL International Association. The short paper developed a rationale for AAL R&D policy in Europe, indicated barriers, market (pull) and technology (push) perspectives and ended with concrete recommendations for policy measures.

These activities aimed at strengthening the Ambient Assisted Living value chain in Europe, at reinforcing the position of providers of Ambient Assisted Living solutions and at addressing the challenges of one of the most promising markets in industrialised countries.

The AALIANCE project contributed significantly to shaping the research arena of Ambient Assisted Living in Europe and gave indispensable recommendations to further policy actions beyond research. The high share of large European industries within the project and its associated network ensured that the outcomes are attracting the attention of high level policy-makers.

Some concrete recommendations from the AALIANCE project included:

- Governments – particularly in the current situation of an early stage of market evolution – should be considered as the pacemakers of developments in the area of assistive technologies for elderly people in Europe. Governmental organisations – at all levels – should therefore actively contribute to the implementation of AAL technologies and services today – even so as AAL is not solely addressing the regulated health care markets, but private markets too.
- AALIANCE welcomed recent developments that R&D for AAL technologies and even for service-models are addressed by several programmes at European and national level. This progress is essentially to be attributed to the European Action Plan on ICT for Ageing Well from 2007. However, more can and shall be done. Perspective, the new instrument “Joint Programming” could add the underdeveloped link of regional experiences with European level activities. At regional level, investments and support of infrastructures – an enabler of AAL roll out – must be strengthened. On top of mere R&D issues, accompanying investments are to be made in education and training to address the upcoming demand for specialists and workforce in AAL.
- Given the variety of issues to be addressed in the AAL area, AALIANCE proposed to further develop the concept of the European Technology Platforms into a more open application platform. Such a **European Technology and Application Platform** would have to encompass not only developers and providers of technology, but also the demand side of AAL applications and services as well as the user perspective. Indispensable is the link to the public sector, particularly “owners” of national R&D programmes, which has to be further strengthened. More coherence of programmes is needed.