



The AALOA Manifesto



Version 0.14

AAL (Ambient Assisted Living) has great potential for positively influencing the lives of many people. But impact so far has been less than hoped, partly due to fragmentation of research efforts and the lack of a standardised approach for developers. To address this, we are forming the AALOA (AAL Open Association), and invite you to join in our efforts.

AAL - promising but problematic

The abbreviation “AAL” stands for Ambient Assisted Living¹ and is about making smart use of technology to support well-being in the preferred living environment for people who might otherwise find this difficult (e.g. infirm or very elderly people who want to continue living in their own homes). Research in the area is motivated by socio-political issues of the ageing population, and offers a promising approach with potentially wide-reaching benefits. It involves many ICT-related R&D disciplines in an application field that has attracted much attention. Several initiatives have emerged to tackle the challenges involved², and significant incremental progress has been achieved on many fronts. But a major AAL breakthrough, leading to a standardized approach and thereby to widespread adoption, is still not in sight. A way of doing things that has general acceptance and can almost be assumed, like the Apache Server is in the web world, is missing in the world of AAL.

Why have there been no AAL breakthroughs?

From an R&D perspective, part of the answer is to be found in fragmentation of research efforts in the area of Aml (*Ambient Intelligence*³ - also referred to as Ubiquitous and Pervasive Computing^{4,5}). Aml is the key research discipline that underpins the domain of AAL, and many innovative ideas and approaches have emerged from research projects, conferences etc. in recent years. The field has matured over time – but so far with no converging conclusions.

From a market perspective, there are two obstacles. The first arises from the lack of technical convergence: this leads to development of very different technical solutions that are difficult to compare, so there is no baseline against which to assess user experiences in the types of scenarios envisaged by Aml. It's hard to market something whose benefits you can't clearly quantify. The second obstacle is market fragmentation. The whole concept of “ambience” is all about making use of everything around you as part of a single overall solution. But today's commercial reality is that the growing number and types of devices around us (mobile phones, home theatres, games consoles, media servers, home gateways etc.) are treated as separate market segments – even though the devices themselves have the potential to interact. A paradigm shift is needed, but who will risk the investments and changes in business models needed in the absence of a precise model adopted by a large ecosystem of artifacts?

The concept of *co-opetition*⁶ - collaboration among competitors - has been put forward as a way to achieve commoditized infrastructures and been successfully deployed in some cases. But for there to be any chance of a real paradigm shift, a transversal cooperation over diverse market segments with the involvement of many stakeholders is needed. That is one of the key things that the AALOA aims to achieve.

AALOA – an Open Association promoting AAL research, development uptake and impact

The subscribers of this manifesto consider that the time has come to do something about the problems hindering progress in the area of AAL. We believe that this is something that transcends individual

¹ Ambient Assisted Living as introduced to the European research: <http://www.aal169.org/Published/aal2103.pdf>, 2006

² E.g., <http://www.aal-europe.eu/aal-association>, <http://www.aaliance.eu/>, and <http://www.continuaalliance.org/>

³ Emile Aarts & José Encarnação: “True Visions: The Emergence of Ambient Intelligence”, Springer, 2006

⁴ Mark Weiser: “The Computer for the 21st”, 1991

⁵ M. Satyanarayanan: “Pervasive Computing: Vision and Challenges”, 2001

⁶ Adam M. Brandenburger, Ada Brandenberger, Barry J. Nalebuff: “Co-opetition”, 1997

projects or organizations, and needs a long-term approach, with broad involvement from all types of stakeholders. This manifesto is intended as an invitation to join us in our **mission**, which is to:

- Bring together the resources, tools and people involved in AAL in a single forum that makes it much easier to reach conclusions on provisions needed to achieve AAL progress;
- Make sure that all technology providers, service providers and research institutions involved in AAL are either directly involved in AALOA or (as a minimum) aware of decisions it promotes;
- Involve end-user representatives in all work of AALOA;
- Identify key research topics in AAL, and reach agreement on prioritization of these;
- Design, develop, evaluate, standardize and maintain a common service platform for AAL.

Our mission is founded on a **long-term technical vision**. This will evolve over time, but gives an indication at the initiation stage of the direction in which we want to go. In our vision, ordinary hardware resources such as displays, keyboards and storage devices that nowadays need drivers integrated into Operating Systems (OS) will evolve into pluggable networked resources. We foresee the emergence of new programming languages, based on resource and service discovery paradigms, facilitating the development of Aml applications.

There will be a shift away from the idea of developing applications that run on different PCs and OSs towards the concept of developing applications for "AAL spaces". Middleware⁷ will be widely used, and help developers to identify the features available in the environment (sensors, other devices, services) and write programs which can exploit large classes of them effectively, without needing to know their actual whereabouts or be concerned with low-level configuration details.

This will involve more than just developing pluggable components: it will mean that developers will effectively be able to contribute to several distributed applications - without even knowing all of them beforehand. "AAL Spaces" will become the equivalent of today's PCs (in terms of widespread availability, standardization and acceptance) and new markets will emerge for software and hardware products, involving houses, cars, airports, hospitals and public spaces.

⁷ P. Bellavista, A. Corradi "The Handbook of Mobile Middleware" 2006

Getting started: defining a reference architecture

The hardware specification of the original IBM PC of the eighties, when several independent manufacturers started to produce peripherals and compatible hardware thanks to the standardization of connector interfaces and the availability of specifications, was one of the key enablers that led to the ubiquity of PCs we know today.

One of the first tasks of the AALOA will be to do something similar for the AAL domain: define a *reference architecture* to standardize the resources available in AAL environments, and how to integrate them. This will encourage the creation of new brands and the coalition of firms around new business opportunities.

Your AALOA needs YOU

To achieve our mission, and contribute to bringing about this long-term vision, the subscribers of this manifesto started to incubate the AALOA – the Ambient Assisted Living Open Association. As its name suggests, anyone can join the AALOA, and this manifesto should be considered as a direct invitation to do so.

The AALOA can only achieve its mission if its membership represents a significant proportion of the people and organisations involved in AAL/Aml, in one



way or another. We invite you to join the association, and to participate in its activities: to bring fresh ideas, to propose workshops and projects and to contribute actively to

the growth of the association. For details of how to join, please visit:

<http://www.aaloo.org>

The detailed organisational structure of the AALOA is in the process of being formalised in a set of statutes. These are still under development, and people responding to the invitation to join will have the opportunity to influence their development.

We envision a not-for-profit organization, with two boards that nominate common elective offices: a Governing Board following common best practices of

open source communities and an Advisory Board composed of industry and user communities. The latter will be organized into working groups whose role is to advise AALOA's open source community about emerging technical and market challenges.

The Open Source policy

The importance of open source software in the industry has risen to prominence in recent years, especially in the development of software infrastructures. Closed, proprietary approaches become less attractive as standardised infrastructure software becomes a commodity: high development costs due to the complexity of such software, uncertainty due to the "winner-takes-all" effect and diminishing marginal returns make the market for infrastructure software a risky business. The open source approach, on the other hand, promises easier software maintenance, allows cooperation between competitors and helps spread production costs over a multiplicity of stakeholders^{8,9}.

Call for project proposals

The association will be organised as a *federation of projects*, one representative of each project being a member of the Governing Board.

Proposals for new projects can be submitted to the Governing Board, whose main role will be their evaluation with respect to the association's mission, while still encouraging the emergence of diversity, and avoiding monoculture. Projects will autonomously organize their governance rules. Over time common rules suggested by practice may be formally adopted.

As one of the association's objectives involves building an open source community working on service platforms for AAL, projects related to software development are to be expected. But we emphasise that other types of projects are also welcome. The next section describes an example of one such.

We are setting up resources for building and managing projects. You can access these resources by submitting a project proposal with a list of individuals or organizations that support your project idea. Visit the web page at <http://www.aalooa.org/projects> for details.

The EvAAL International Competition

EvAAL has been the first project proposed to AALOA promoters and it is a paramount for the AALOA purposes. In fact, an important action for the assessment of the research results in this area is based on the analysis and comparison of the existing solutions provided by the research community¹⁰. To this end, we intend to promote an international competition called EvAAL ("Evaluating AAL Systems through Competitive Benchmarking"). The competition is intended to raise awareness of and interest in AAL, and to spread knowledge about the state-of-the art to a large audience. To do this, we will issue an annual "Call for Competition Ideas", in which we will invite practitioners and experts to propose the topics and rules for that year's competition. The idea received will be assessed and possibly merged, before the competition itself is announced. The competition itself will invite people to compete by developing hardware/software artefacts supporting the selected topic.

Generally, the competition will be organized around one or several of the functions enabling AAL spaces, such as:

- sensing
- reasoning
- acting
- interacting
- communicating

In order to stimulate the participation of PhD students, a cash prize will be awarded to the competition winner(s) each year. We would like this to be something significant, such as an amount equivalent to a research grant for one year at an international university. All participants in the contest will have the opportunity of publishing a peer-reviewed paper describing their system. For details about the contest please visit the EvAAL web site at <http://evaal.aalooa.org>.

⁸ François Letellier "Open Source Software: the Role of Nonprofits in Federating Business and Innovation Ecosystems" 2008

⁹ Brian Behlendorf "Open Source as a Business Strategy" 1999

¹⁰ K. Connelly, K.A. Siek, I. Mulder, S. Neely, G. Stevenson, C. Kray "Evaluating Pervasive and Ubiquitous Systems" 2008

Acknowledgments

The idea of forming the association arose from discussions between some of the institutions involved in the projects PERSONA and universAAL, funded respectively in FP6 and FP7 (the Sixth and Seventh Framework Programme of the EU), but similar ideas were also discussed by partners of other projects who had recognised the need for a common effort in the field of AAL/AI, as well. Today, the Manifesto is a dissemination effort of the EU projects BRAID, MonAI, OASIS, OsAI-commons, PERSONA, SOPRANO, universAAL and WASP. The subscribers listed below are people who support the ideas promoted by the Manifesto and are willing to participate in the life of the association.

In addition to the subscribers, there are few promoting organisations (details to be found on the Web site) that have allocated resources for carrying out the tasks in the incubation phase of AALOA, until its bylaws are finalised and the association itself is established as a legal entity. Nevertheless, more effort and voluntary contribution is still needed. Hence, we encourage you, as the reader of this manifesto, to get involved in this open process! This Manifesto will be revisited regularly to refine the vision and mission of the association with the contribution of its members.

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