



PAELIFE PROJECT FINAL REPORT

Please send this report ELECTRONICALLY to the Central Management Unit (CMU) as well as a copy to the National Contact Persons (NCPs) of the coordinator and project partners

The coordinator of the project must submit this report within 60 calendar days after the final date of the project, on behalf of the consortium.

***If you have any additional question,
please contact the AAL CMU at CMU@aal-europe.eu,
or your NCP (see details on www.aal-europe.eu/aal-ncp)***

Report date	31/10/2014
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PUBLISHABLE PROJECT INFORMATION (TO BE USED BY AALJP)

1A. PROJECT	
Project full title	Personal Assistant to Enhance the Social Life of the Seniors
Project acronym	PaeLife
Project No.	AAL-2009-2-068
Project Website	www.PaeLife.eu
Project duration	Starting date: 24/02/2012 Termination date: 31/10/2014 (after an 8 months extension)
Coordinator's name and details	Full name: Miguel Sales Dias E-mail address: Miguel.Dias@microsoft.com Telephone number: +351 (96) 2093324

1B. PROJECT PARTNERS					
No.	PARTNER ORGANIZATION NAME	PARTNER ORG. ACRONYM	TYPE*	PROJECT COSTS: PUBLIC GRANT IN EURO	PROJECT COSTS: PARTNER OWN CONTRIBUTION IN EURO
1 (coord.)	MSFT - Software para Microcomputadores, LDA	MSFT	Large	81322,53	81322,53
2	Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa	INESC-ID	RTD	71 062	0
3	Budapest University of Technology and Economics	BME-TMIT	RTD	256 100	0
4	The Bay Zoltán Foundation for Applied Research	BZN-IKTI	END USER	192591, 82	0
5	Knowledge Society Association	SSW	END USER	67 481, 74	16 886, 23
6	Genitech	GENITECH	SME	179 881	288 724
7	Troyes University of Technology	UTT	RTD	221 803	113 867
8	Universidade de Aveiro	UAVR	RTD	73 131	0
*Please select one of these options: SMEs, Large, END USER, RTD, other					

1C. PUBLISHABLE PROJECT RESULTS SUMMARY (1 PAGE)

In this section, please present the results of your project, including the following information:

1. What is your product/service (result of the AAL JP project work)

As a solution to facilitate the life of the Elderly we proposed AALFred, a personal life assistant that helps and guides users in the access to Information and Communication Technologies (ICT's). With AALFred, social networks, email and video calls can be easily accessed and used to make the elderly more active and less isolated. Also, interesting information such as news and access to nearby services is delivered in an easy and integrated way. To achieve such a goal, AALFred is based in two main principles: simple and unified user interface and multimodal human-computer interaction.

AALFred offers a simple and unified user interface that integrates and delivers all its features in a unified approach. For instance, AALFred offers an integrated system to manage contacts from several services. The user will not have to worry about if the contact is a Facebook contact or an email contact. From the user's perspective it's a contact, agnostic of its place of origin. It can always be used to reach the person in the same manner, regardless of the service to use. Another example is the messaging service. If the user wants to send someone a message he/she doesn't have to be concerned if the message will be delivered using Facebook, Twitter or Email. By providing a single contact point with different technologies, users are no longer forced to learn and deal with the specifics and idiosyncrasies of different tools and apps. Also, unnecessary complexity is hidden and the most important features are made available in an easy and accessible approach.

2. What needs/problems does your product/service respond to

PaeLife and AALFred aim to simplify the access to today's Information and Communication Technologies (ICTs) and improve its usability for the elderly in order to increase their quality of life by making them more active, more social and less isolated. With AALFred, ICT's benefits are directly used to serve the elderly's needs, helping them to stay social, active and healthy in their own homes, for longer periods of time.

The multimodal human-computer interaction present in AALFred improves the usability of the application and makes it a great experience. Users can interact via touch, speech, gestures or simply by using the traditional mouse and keyboard. The modalities can be used synergistically or as an alternative to each other. This allows users to choose the interaction modality that feels more natural to them or that works better in a particular context. For example, users can use speech to ask the system to help them on how to perform an action, or dictate a message instead of typing.

3. What are the target groups of users and payers

We have identified 2 main segments:

1. B2C with direct customers.
 - The first channel for this approach will be done directly, via the app stores*;
 - Traditional distribution channels will also be considered for a later stage.
2. B2B with Public and Private Institutions like retirement homes, social communities and local associations.
 - The channel for this approach will be a direct selling point via website or Partners.

* Starting with Windows App Store

The sales predictions are quite hard to forecast as the Mobile market is extremely unstable. However, we expect significant progress in the first year to get a definitive momentum on the Windows Store and among key players of the Public and Private institutions. For the first year, an objective around 200-300 units seems to be a good kick starter.

Objectives of the following years will be adapted with ambitious goals as product development may be accelerated according to field feedback.

4. What is the technological innovation of your product/service (in terms of novelty of concept, approach to the development etc.)

The technological innovation of AALFred is perceptible in several of its core features:

1. Simplified Apps: simple access to today's ICT's. AALFred offers a simple and unified user interface that integrates and delivers all its features in a unified approach;
2. Multimodality: multimodality is a great complement to AALFred's simple and unified interface. It greatly improves usability and makes the user's interaction with the application an even more delightful experience. But, most importantly, in AALFred, multimodality is especially designed for the elderly.

To offer the best possible speech experience for elderly users, AALFred is provided with new Automatic Speech Recognition (ASR) engines (that were developed and optimized for the idiosyncrasies of elderly speech) for each of the PaeLife Project Languages (Portuguese, French, Polish and Hungarian). These engines are the outcome of a data collection process to gather about 90 hours of pure elderly speech (per language) that were also transcribed and annotated to create the new elderly specific ASR engines for all PaeLife participating countries.

Synthesized voices used to convert text to audio (Text-to-speech) were also based in elderly voices (something that was considered a preference in the user tests) and even the virtual keyboard was designed according to the elderly's needs.

All of this integration and innovation that takes into account the elderly's preferences and needs, makes AALFred a unique application in the software market that will surely change the way how the elderly see today's ICT services. All the social media services and more modern ways of communication will no longer be exclusive of younger generations. AALFred is here to help the elderly to stay active, social and in touch with their loved ones.

5. What is the social innovation of your product/service (benefits to society and economic impact)

The main benefit of the project is to make technological innovation easy and accessible to elderly people, and thus bring an answer to the societal problem of ageing population and the risk of social isolation among the elderly. Elderly citizens are usually described as being refractory to technology, and this digital exclusion worsens their social isolation. By simplifying access to today's online services and mediated means of communication - be it email, Skype, social networks - through improved usability and multimodal interaction, AALFred improves seniors' quality of life by making

them more active, more social and less isolated. The elderly can stay in touch with their friends of the same age, but also with their family. Using the same communication tools as one's grandchildren facilitates, enhances and triggers communication, giving the feeling of being "connected" in every sense of the word. The link between generations is ensured and the elderly' self-esteem is improved as they use present-day technology (whose use is made easy for them through AALFred).

Therefore the social impact of the application has been demonstrated in the participatory approach evaluation we made. The economic impact is that the more socially active people are, the longer they live in a healthy state, requiring less medical and social insurance or help from their children. Therefore, it is part of the answer to the demographic, social and economic problems.

6. What is the expected time to market

The expected time to market is 2 years after the end of the PaeLife Project: October 2016.

7. How will you overcome the main possible barriers and exploit opportunities

Like already illustrated before, AALFred has definitive advantages over its competitors:

1. Simplified Apps;
2. Dedicated ergonomics and multimodal technology;
3. Focus on sharing and interacting with senior circles (social, relatives and family);
4. Ludic approach to strengthen the inter-generation link.

The product will be included in a set of software packages available with associated on-demand services. AALFred will therefore be introduced into the market in 3 main versions:

1. One for tablets, named "AALFred Pocket"
 - Limited features - Free version available on app stores*;
 - Full feature - Paying version available on app stores*;
 - Objectives: Mobility, Low Price, Limited to Medium modalities (touch & speech).
2. One for PC, named "AALFred Desktop"
 - Limited feature - Free version available on app stores*;
 - Full feature - Paying version available on app stores*;
 - Objectives: Home, Medium Price, Medium modalities (gesture & speech).
3. One for both PC and tablet, named "AALFred Home" where the tablet and PC will interact
 - Packaged as a full bundle with included assistance;
 - Objectives: Home & Mobility, Premium Price, Full modalities (touch, gesture & voice).

The main objective is to cover the initial cost of the first year for a 30% time sales employee with a balanced sales repartition for each AALFred product (around 200-300 units).

Objectives of the following years will be adjusted as product development may be accelerated according to field feedback. We plan to focus on the B2B segment once the product has created a momentum on the market.

* Starting with Windows App Store

CONFIDENTIAL PART OF THE REPORT

2. DELIVERABLES SUBMITTED AND MILESTONES ACHIEVED DURING THE PROJECT

In this section, please provide details in case your project deviated from the Description of Work (work plan) with respect to delivery dates, achievement of milestones or changes in planned outputs; please indicate whether and to whom (AAL NFA/NCP) the changes have been communicated.

All changes were communicated to the AAL Association and local NCP's after the Project's Mid-term review. A new version of the DoW was delivered and an 8 months extension was requested and accepted by the AAL Association and local NCP's.

Has the project been finalized in line with the Description of Work?

YES ☐

NO ☐

PARTLY ☒

IN CASE OF DEVIATION, PLEASE EXPLAIN:

1. Conclusion of some deliverables was delayed due to the internal revision and improvement procedures. Nevertheless, all were finalized within the PaeLife Project's reporting period (with the exception of D6.3 since the Pilots in France and in Portugal were extended until January 2015. However, a preliminary version of D6.3 was available by October 2014);
2. The content for D4.3 "Three Personal Life Assistants" was merged with D5.1 "Pilot Applications" as decided by the PaeLife consortium in the Warsaw Consortium Meeting (11 & 12 June 2013);
3. The content for D8.5 "Report on how dissemination activities actually took place" was merged with D8.1 "Detailed Dissemination Plan" as decided by the PaeLife consortium in the Troyes Final Consortium Meeting (22 & 23 September 2014).

Has the project achieved its expected results as described in the Description of Work?

YES ☒

NO ☐

PARTLY ☐

IN CASE OF DEVIATION, PLEASE EXPLAIN:

No major deviations were encountered. The project achieved its expected results.

3 A. PROJECT RESULTS - SCIENTIFIC/TECHNICAL PROJECT RESULTS

Provide a summary of the confidential results, including:

1. The progress per work-package
2. The performance of the project consortium (added value of cooperation, added value and performance of each partner etc.)
3. Scientific/technical achievements during the course of the project
4. End-user services developed during the course of the project
5. Other confidential information

1. The progress per work-package

WP1 – User requirements capture and system specification/design

In WP1 we had to prepare 4 tasks:

- Analysis of Users Context and available Resources, Services and Programs for Elderly Citizens;
- Gap Analysis and User Requirements Capture;
- Overall System Specification;
- Usability Evaluation Methodology.

The main goal of the work package was assessing Human Computer gaps that prevent an effective adoption of specific on-line services and household IT devices by the elderly population that would allow their social life and productivity to get better. Also we focused on a set of usage scenarios and derive user requirements for the improvement of HCI on those scenarios.

We planned and conducted a qualitative research (workshops in France, Hungary and Poland) and a quantitative research (211 respondents in France, Hungary, Poland and Portugal). Furthermore we wrote a desk research study about existing online services for the elderly in France, Hungary, Poland and Portugal. The last task related to the end users was preparing personas and scenarios in France, Hungary and Poland. As end-user related partners set foundation of end-users requirements, Microsoft and the other technological partners defined the overall system specification in D1.1. The second deliverable (Usability Evaluation Methodology) defined a protocol to evaluate the PaeLife product in the field trials.

WP2 – Speech technology adaptation for the elderly

In WP2, in accordance with the goals defined in the DoW, we focused in the improvement of existing speech technologies by adapting these resources to recognize speech from elderly citizens for the PaeLife Project's target languages (French, Polish, Hungarian and Portuguese) and text to speech technologies, by producing a new set of male synthetic voices for French, Polish, Hungarian and Portuguese. A new set of female voices was also developed for Hungarian and Portuguese.

To accomplish the goals for speech recognition we collected 29h of pure speech from French elderly speakers, 81h of pure speech from Hungarian elderly speakers, 87h of pure speech from Polish elderly speakers and 87h of pure speech from Portuguese elderly speakers. These sets of speech were used to develop speech recognition engines specifically adapted for the elderly in the

aforementioned languages, which were integrated into the multimodal framework produced in the context of WP4, and later used in the evaluation of AALFred, the output of WP6.

As for speech synthesis (TTS), we underwent a process to select talents for each of the project's languages, based on an initial pruning of potential candidates by a panel of speech experts, and then by a panel of elderly people to make the final talent selection. Based on this, 8 talents were selected, one male elderly French person, one male elderly Polish person, two elderly Hungarian persons (one male, one female), two elderly Portuguese persons (one male, one female) and two young Portuguese persons (one male, one female). After recording 1800 sentences per speaker, we were able to generate these 8 synthetic voices using two platforms, Microsoft's for Portuguese, French and Polish, and BME's platform to generate both Hungarian voices. Similar to what happened with the speech recognition components, these voices were also made available via an SDK that was integrated into the multimodal framework produced in WP4, and used in the evaluations of AALFred, conducted in WP6.

WP3 – Adaptation of multimodal interfaces for the elderly

In WP3, we studied how different modalities can be used by seniors to interact. We have completed the WP according to plan. In WP3.1, we studied the different possible modalities, the capabilities and limitations of our target users and decided which modalities would work better in that context: speech, touch, text-entry and gestures (described in D3.1). In WP3.2 we developed those modalities (except for speech, which falls under WP2). We studied how text-entry can be made effective for seniors using tablet devices. Software keyboards have well-known limitations such as the lack of haptic feedback. On the other hand, they are capable of adapting. We performed user Studies to find out which of several text-entry alternatives would work better. We found that certain strategies commonly used in tablets and smartphones (word suggestion and auto-completion, for instance) don't work well for our target users. Techniques that assist text entry but are invisible perform better. We also made a thorough analysis of how gestures can be used by seniors given their motor limitations. We defined a set of gestures that, based on our user studies, work, both for navigation and selection. We also looked at the use of touch (in the tablet) as a way to use it as a pointing device, to select objects on a large screen and as a way to navigate). All these scientifically groundbreaking results were described in several peer-reviewed publications. We created a set of libraries by implementing those modalities, and integrated them into the overall system, as described in D3.2.

WP4 – Integration of multimodal interfaces for the elderly

Work on WP4 covered the 3 subtasks described in the DoW:

1. Detailed Definition of Use cases;
2. Framework of User Interface and Interaction Management;
3. Development of Personal Life Assistants.

1. Use Cases

Based on the results from the user studies, and taking into account the objectives of the project, a deliverable (D4.1) was produced that includes: a global view of the PLA (later renamed as AALFred) based on AMITUDE; information on the set of services; users and Personas; Devices to be used; forms of interaction with the system; Scenarios and Use cases. This document resulted

from several cycles of discussion between the PaeLife consortium and was discussed in detail in a general meeting with all partners.

2. Framework of User Interface and Interaction Management

To provide an integrated and unified view of the multimodal interaction, both for users and for developers, a great effort was put in WP4 on the definition and implementation of a Multimodal Framework.

This framework aimed at integrating developments regarding interaction modalities of PaeLife WP's to ease the integration of multimodal interaction in the PLA.

Main requirements for the framework were: (1) support to multiple modalities, both input and output modalities; (2) support for distribution of modalities across computational devices (PCs, tablets, etc.); (3) Loosely coupled architecture for multimodal user interfaces; (4) Extensibility; (5) Centered on international standards and to avoid as much as possible proprietary or closed solutions; (6) Flexibility, the possibility to change or add modules without the rest of the system having to acknowledge that change.

The multimodal framework is directly based on the “standards” defined by the W3C. This choice is justified by the architecture's open standard nature. This architecture provides an answer to the previous requirements, easing the creation and integration of new modules.

Modality components, provide a simple way to integrate PaeLife's developed technologies regarding input and output, either by speech, touch or gestures, among others modalities.

The input Modality for Body Gestures uses the PaeLife Kinect Framework built for the PaeLife project for the recognition of user gestures.

To support speech in the interactions, both for input and output, a comprehensive generic speech modality was developed.

To make it possible for AALFred to support a multilingual interaction with a reduced development cost two important features were added to the speech modality and framework:

1. The capability of using automatic translation of the grammars needed for the speech recognition was added. This way, developers only have to create a grammar for English and the system automatically creates translations for the other languages of the project. By using webservice, the speech modality also allows a human correction and/or improvement of the grammars. This methodology was presented at ICIW 2014 conference in Paris and won a best paper award;
2. A standardization of the semantic output from speech modality – that is also used by other modalities - was adopted. This standardization was based on the concepts of Dialogue Acts and domain ontology.

3. Development of Personal Life Assistants

Making use of the Multimodal framework several Assistants were developed addressing a specific service identified as relevant by the project. This information and developments were included in the Use Cases deliverable. The Assistants developed included: Multimodal and multilingual News reader; unified access to messages and social networks and a Weather forecast.

These services were subject to several tests, including a preliminary usability evaluation.

Later these Assistants were improved and integrated in the AALFred application in WP5.

WP5 – Pilot applications: Interactive services that enhance elderly social life

Based on the requirements collected in WP1, in WP5 we focused on the development of the pilot applications which, in the case of PaeLife, were built around a common platform, the AALFred

Windows 8.1 application. Following the requirements specified in the DoW, AALFred offers modules for unified communications, via unified contacts and a messages hub that give the elderly user access to email, social networks and audio/video calls via Skype through a simplified interface. We also developed a set of modules to provide useful information for the elderly user, such as the services finder module, which provides information about nearby pharmacies, post offices, and other useful services, a news module that provides up-to-date news feeds to the elderly user, and a weather module providing up-to-date weather forecast information to the elderly user. Access to these modules is provided via the multimodal interfaces developed in WP4, which are integrated with AALFred through the multimodal framework component developed in that work package, allowing the elderly user to interact with AALFred using speech (speaking with the app, and listening to audio feedback provided by the app), as well as via touch, when using a touch-enabled device, or by keyboard and mouse if the user wants to or requires to do so.

WP6 – End-user Field Trials and Usability Evaluation

WP6 focused on the evaluation of the usability of the application and its multimodal interaction capabilities. The evaluation was composed of several tasks, adapted to the level of progression and to the type of evaluation required to inform design and development. D6.2 describes the user tests that were made on intermediary versions of the application, in an experimental lab environment, focusing mainly on usability issues. The insights were formalized and transferred to developers, both in detailed form - so that developers gain an understanding of the older users and their specific requirements - and reported on GitHub. The "bugs" and usability problems were progressively solved thanks to the close and constant collaboration between partners involved with the end-users, and the partners involved in development. D6.2 also presents the user studies of the gesture modality, combining quantitative and qualitative approaches in a complementary and innovative way. The insights produced have allowed to select the navigation and selection gestures that were most appropriate for older users, and improve them. D6.3 describes the field trials at older users' homes. We gained insight about how the application was actually used at home, what are the functions and services that revealed the most useful, what are the last usability problems that could only be revealed by long-term use, and what could hinder the actual adoption of the app by older users. The strength of WP6 is that all the four countries of the consortium participated in the user studies, including the older users at all the stages in evaluation, with a constant collaboration between technical and end-user partners.

WP7 – Regulatory Framework, Pre-Commercial Procurement and Standardization Issues

One of the goals of the Paelife Project was to contribute to standardization. During our analysis and research we found that, although ISO 9241-210:2010 has been created as a general standard for human and not specific for young, middle-aged or elderly, it can be applied for elderly usage without significant changes. The user-centered design method and usability guidelines have been used for all the design and evaluation tasks. We suggested a few simple modifications of ISO 9241-210:2010 for the elderly but the PaeLife project alone was not enough to run a full standardization process (only an initial contribution could be made).

In the Ethics document we presented the privacy and security issues related to the PaeLife project and how the consortium have addressed them in the different Work Packages and throughout the different project phases. The idea was to strictly balance the need we have for relevant information about participants and respect for their privacy and anonymity. All precautions were taken to ensure that participants were fully informed on their involvement and to respect their dignity and privacy, namely through the use of informed consent forms. Finally, the privacy laws and regulations linked

to digital and personal data for each country were presented.

WP8 – Dissemination and Exploitation

1. The dissemination was a vital process for the diffusion of the PaeLife project. It consisted of an administrative and systematic method whose purpose was the coordination of objectives, strategies and actions of the several stages of communication, such as advertisement campaigns, sales promotion or even public relations. In the PaeLife particular case this procedure provided guidance in the following key areas:

- What...
- When...
- To whom...
- How...

...to disseminate.

To gather all communication and dissemination strategies a specific deliverable was created by the PaeLife consortium (D8.1). PaeLife's communication plan also involved the publication of articles in specialized media, the participation in events and conferences related to the AAL and active ageing topics, as well as a maximum use of social networks. In what regards dissemination, all the planned channels have been used for a maximum efficiency and a total of **94** dissemination activities were achieved (Please refer to the document "PaeLife - Dissemination activities (ALL)", included in attachment, for more information).

2. Exploitation has been planned with the focus of providing the state of the art technology to enhance:

Innovation

AALFred should be presented firstly as a useful product and secondly as a high-tech product. Although its innovations are a key point in differentiating our PLA on the market, AALFred's innovations must be showed as tools for its services and usefulness and not as the final product. AALFred's advantages in comparison with its competitors are: social dimension (neglected by most of the competitors), new ways of interaction, by offering the possibility of choosing the language and the type of interaction with devices, and also the fact that it can be considered "shared-technology", therefore a multi-user product.

"First on the market" advantage

AALFred has the opportunity of becoming a big market player since it will be the first product to bring a shared-technology & social interaction integrated approach (with multi-lingual and multi-modal interaction capabilities) to the senior market.

3. Market analysis:

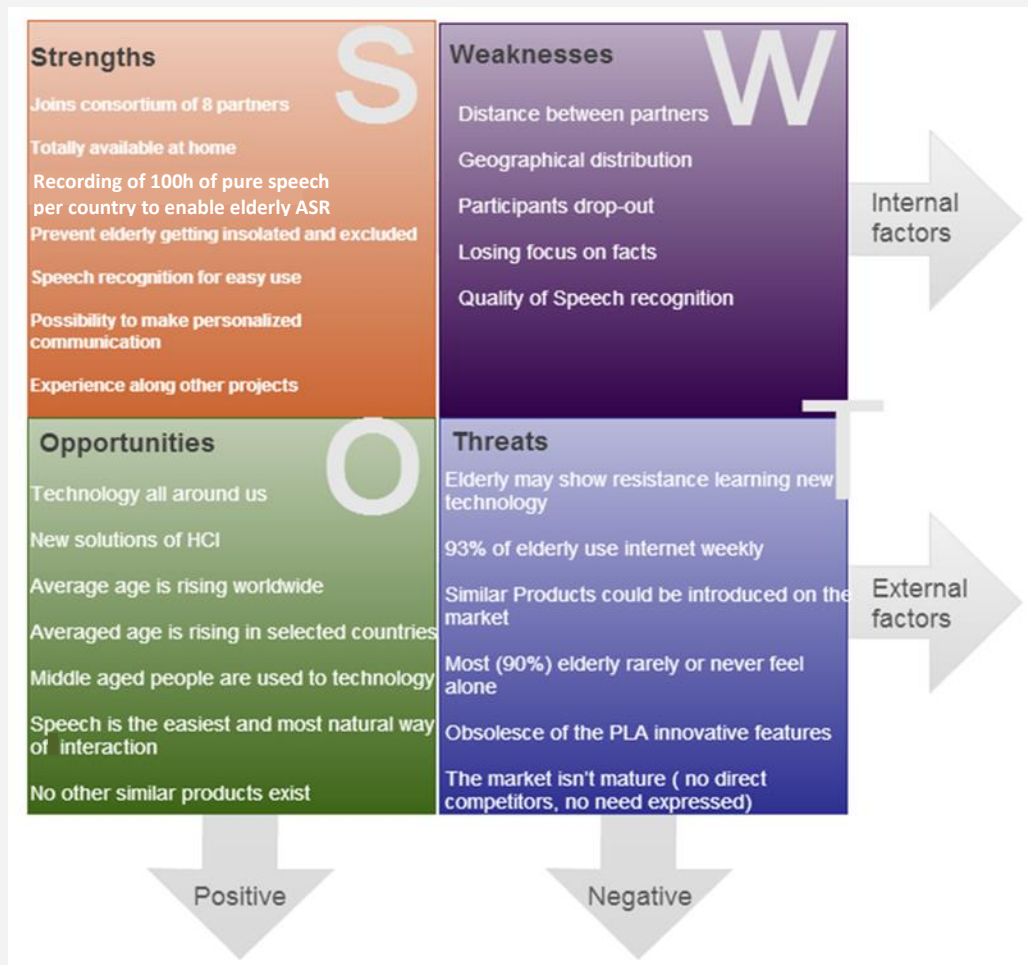


Figure 1 – PaeLife SWOT analysis

The vision on the market

Currently, there is a lack of technical products that are developed to improve the life of the elderly. The development of these products will prevent the elderly from getting isolated and excluded from the social and digital society.

The ones that exist, lack interoperability and are costly and difficult to use. The elderly need a product that will fulfil this gap in their lives. Seniors want a more and more independent living, the nursing home is often a taboo subject and no one wants to admit the fact that they are aging. By implementing technology based products in their lives the elderly might achieve an important improvement of their satisfaction and quality of life, allowing them to live independently in their home environment for longer periods of time.

Market trends

The senior market is booming, and opportunities are plentiful: there will be more seniors in the next decade. The market of tools and apps especially developed for seniors is also growing. The young people of today will be the seniors of the future. While the young adults are used to digital media and technologies, seniors of today are surrounded by technology, but in most cases this technology is not specially developed for them.

Touch screen products or devices that can be controlled by speech recognition are not the daily routine for seniors. Therefore, although these innovation will be designed to offer an easier and useful interaction, the resistance towards these innovations must also be taken into consideration.

Market growth

The average age of the world's population is rising: the senior population (65+) is expected to more than double over the next 30 years. And so will the senior market. The market for in-home-care is growing by 10% each year. There is no other business environment that is growing at this rate. In Poland, France, Hungary and Portugal the population over 65 will increase:

- In Poland from 13.0% in 2004 to 29.4% in 2050;
- In France, the population over 65 will increase from 16.4% in 2005 to 26.2% in 2050;
- In Hungary, the population over 65 will increase from 16.9% in 2011 to 29.4% in 2050;
- In Portugal by 2050 this segment of the population will be over 35%.

WP9 - Project Management

In WP9, Microsoft, in alignment with all partners, covered the management of the project, not only from a project leadership perspective, to ensure project success, but also by producing guidance documentation such as the project's quality manual (D9.1) or the project's report about inter project collaboration (D9.5). In this task MSFT also ensured that all communication, development and reporting processes ran smoothly and successfully and in alignment with the AAL JP organization guidelines.

2. The performance of the project consortium (added value of cooperation, added value and performance of each partner etc.)

All partners have been fully committed to the activities that were defined in the last version of the DoW in accordance to the AAL commission's advice. Although some cutbacks were performed on the expected/planned grants, this was never a topic that discouraged the participation and involvement in the numerous Project activities. Some of the Project tasks also required the partner's adaptation to each country's own regulations and rules (e.g.: Voice talent selection). Nevertheless, with the participation of every partner involved and the guidance of MSFT, it was always possible to find a solution for each problem. Also, all the Consortium members have relevant experience in technological and innovation intermediation services, as well as due diligence and investment opportunities assessment. Although the PaeLife consortium greatly benefited from the fact that some of them have already worked previously together, we can now see that these professional and social relations have grown and became more efficient. Due to this close and meaningful relationship between the PaeLife Project partners, more collaborative initiatives and projects are planned for the near future.

3. Scientific/technical achievements during the course of the project

During the timeframe of the Project, the PaeLife consortium achieved several developments, particularly with the Personal Assistant, the main outcome of the project. The Consortium considers particularly relevant the following milestones:

1. AALFred

Result of the joint collaborative effort of MSFT, Genitech, UA, BME and INESC-ID, a final version of the PLA, renamed AALFred, was developed and used for evaluation in the project's field trials. This version includes functionalities in many of the areas identified as requirements in the users studies already described, namely:

- Agenda – allows the management of appointments on the calendar and the sending of alerts to users;
- Contacts – we provide an activity-aware contact list, where all contacts from email, Skype, Facebook and Twitter can be seen and managed in a uniform and integrated way. More than a simple itemization of contacts, AALFred's contact list immediately allows the user to see which contacts have been more active, have tried to contact the user through the different channels and whether they are available for talking in real-time. We do this by encoding the different relevant information bits (numbers of messages, messages sent directly to the user, time since last message, etc.) in meaningful visual ways found to be understandable based on a set of user studies with the target users;
- Messages – guides the user on how to send a message. It will help the user to know if the message will be public or private and what contacts will be able to see it through a wizard. The interface will always be independent of the service used to send the message;
- Services Finder – helps the user to localize pharmacies and post offices that are nearby. It also allows the search for services in a specified location. It will be extended to support other services;
- News – a service of news feed;
- Weather – shows and reads to the user the weather forecast;
- User Preferences – allows the user to configure the app settings according to his preferences. Settings include: email and social networks accounts; Interface settings, speech service settings and location settings.

All functionalities are available in all of the Project's languages, following an effort by all partners to localize AALFred's interface and speech interaction grammars to each of the project's languages (French, Polish, Hungarian, Portuguese and English). Continuing on the advice given by the European Commission in the Mid-term Review in 2013, we maintained the technical collaboration described in the previous report, using a common software forge managed by Genitech with access for all consortium members.

2. Extension and exploitation of the Multimodal Interaction Framework

As AALFred's interaction with the elderly is a foremost concern of the project, one major achievement in the period was the effective use of the Multimodal Framework by all partners involved in the development of AALFred. For that, following the development method previously defined by the consortium, the framework was further developed to support speech interaction in all of the project's languages, by resorting to a web-based grammar

localization platform developed by the consortium that allows the deployment of fixes to existing grammars / new grammars to support new features on AALFred whenever required, without requiring the deployment of new versions of the framework when these changes are put into place. The multimodal framework enables AALFred to be controlled by different and innovative ways (e.g. speech and gestures).

3. User interface iterative evolution

The user interface suffered additional iterative changes following the insights from the field trials, including, but not limited to user interface and user experience fixes, as well as functionality bug fixes based on user feedback.

During the field trials we identified additional interaction and technical requirements, such as the need of additional user feedback cues when interacting via speech, or the need for a local content cache to minimize the app's load time. Therefore the user interface can be configured to take care of those different needs.

A Picture of the main menu of the app can be seen below:

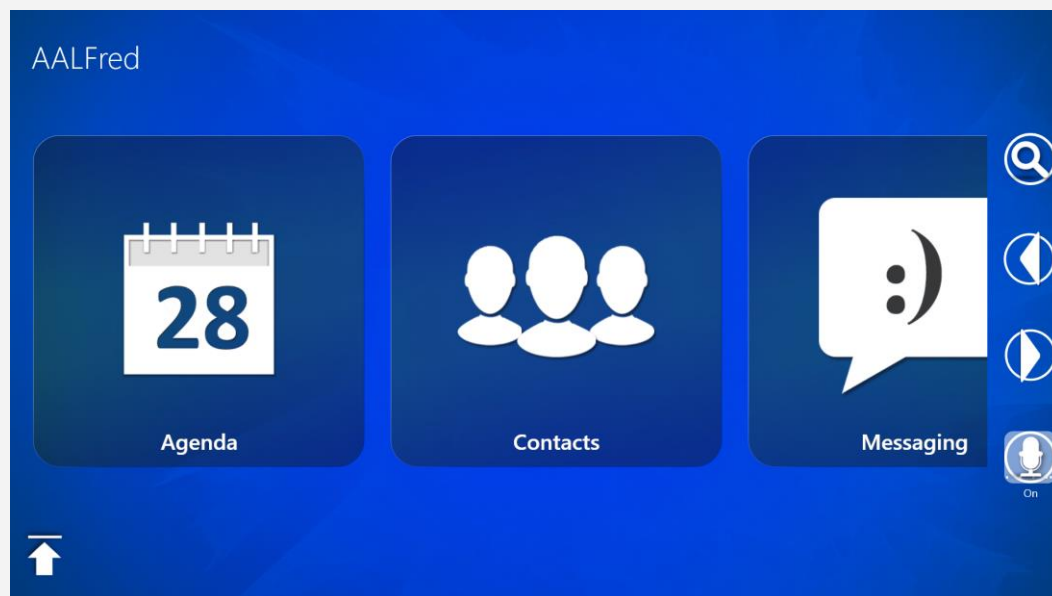


Figure 2- Main Menu of the AALFred application

4. Major advances in the creation of a new set of voices for TTS in all of the project languages

Eight synthetic voices, as described above in the WP2 section, were finalized and deployed in AALFred's field trials for use by the elderly trial participants.

The ultimate goal of making AALFred available to users motivated the consortium to make sure that the AALFred app would be up to date and compatible with all the Windows 8 and 8.1 systems. Taking this into account all contents were migrated to windows 8.1 and integrated with the latest API and with the .NET 4.5.1 framework. This way, we ensure that the application can be fully integrated with the Windows store ecosystem and easily accessed and installed.

4. End-user services developed during the course of the project

AALFred is the end user service that the project delivered. AALFred provides an easy and integrated way to use some on-line services such as messaging, contact management, or reading news from different sources in an optimized manner. The alternative ways of interaction given to the user highly contribute to enhance the user's experience.

All the features were delivered and integrated using a unified approach. For instance, AALFred offers an integrated system to manage contacts from several services. The user will not have to worry about if the contact is a Facebook contact or an email contact. From the users' perspective it's a contact, agnostic to the place of origin. It can be used to reach the person always in the same manner, regardless of the used service. Another example is the messaging service. If the user wants to send someone a message he/she doesn't have to be concerned if the message will be delivered using Facebook, Twitter or Email.

All the features available in AALFred can be used with multiple modalities (such as speech, gestures, touch, and accessible keyboard). All these modalities can be operated uniformly throughout the interface. Similar interactions will be possible in similar situations, even if in different AALFred services (ex: navigating a list of contacts, news or messages works in the same way). This makes learning how to use our platform simpler. The modalities can be used synergistically or in alternative to each other. This allows users to use the modalities they are more comfortable with or that work better in a particular context (gestures instead of speech in noisy environments, for instance).

Currently, AALFred offers the following features, all improved with the enhancements described above:

- Contacts;
- Messaging;
- Agenda;
- News reader;
- Weather forecast;
- Services finder (e.g. Pharmacies, Post Offices).

5. Other confidential information

Nothing more to add at this moment. Please get in touch if more information is needed or if any doubts should arise.

3 B. PROJECT RESULTS – BUSINESS MODELS & INDICATORS

Please insert here a short summary of the business model selected for your product/service (max. ½ page). If not explained in the publishable summary section, please describe:

1. *What product/service will you offer?*
2. *What main problem(s) does it solve or what benefits does it provide to the customer?*

Already included in the summary section. Please get in touch if more detail is needed.

3. *What is the added value of your product/service versus that of competitors and/or compared to existing solutions on the market? What is your unique selling proposition?*

The most important competitors of AALFred seem to be Doro, Ordissimo and Tooti Family. However, even though competitors such as Hakisa, Ordimemo and others do not seem to be on the same market segment as PaeLife (they don't encourage access to social media which is one of AALFred's main concerns), their analysis provided important "do's & don'ts" regarding their business strategy, distribution, promotion or ergonomic design and innovative features.

Taking into consideration what was already mentioned above, AALFred is a feature-oriented application that values the choice of interaction modality. Therefore, the value proposition and unique selling proposition can be considered: "best user experience through personal choice of interaction".

4. *How will the product be sold? Who will provide products/services?*

AALFred will be introduced into the market in 3 main versions:

1. One for tablets, named "AALFred Pocket";
2. One for PCs, named "AALFred Desktop" ;
3. One for both PC and tablet, named "AALFred Home" where there is interaction between the tablet and the PC devices.

As the visual presentation of these versions show (Figure 3: "AALFred's versions on the market"), while AALFred Desktop and AALFred Home can offer all innovative features, AALFred Pocket cannot support the Kinect feature in lower tier devices. Also, if AALFred Pocket is running on a Windows RT it won't be able to support offline continuous speech recognition, only online speech recognition. Windows 8.1 versions, on the other hand, are capable of offline speech recognition by using the multimodal framework developed in the project.

Furthermore, AALFred will provide a "free trial" option for a limited number of days and will also include in-store testing in its product promotion activities. The free-trial version should be a "full-featured product" (AALFred Home) so that senior can test the best of AALFred's features. By doing this, the potential customer's awareness regarding AALFred's innovative features will grow.

During the "free trial" period, special assistance services should be implemented to insure satisfaction with the proposed UX and also to obtain feedback and to discover which aspect of the

product needs improvements or further development. Therefore, it is also important that the user of the free trial benefits of free assistance services during the testing period. For additional information, AALFred's business model canvas can also be consulted in Figure 4.

Version	Standalone		Home Connected
			Up to 2 different screens
Name	AALFred Pocket	AALFred Desktop	AALFred Home (Pocket + Desktop)
OS	Windows RT* / 8 / 8 Pro		Windows 8 / 8 Pro
Prices (€)	100 €	120 €	150 €
Assistance/ Support	BASIC support (free up to 1 year)		
	PREMIUM Assistance: arriving in 2016		
Interactions	Touchscreen Interface / Text to speech		
	Continuous Speech recognition *Push-to-Talk limitation on Windows RT Tablets		
	Body Gesture on PC (Kinect)		
Hardware	Tablet	PC	Tablet and PC
		Options : Kinect / PC / Led TV	PC Options : Kinect / PC / Led TV

Figure 3 – AALFred's versions on the market

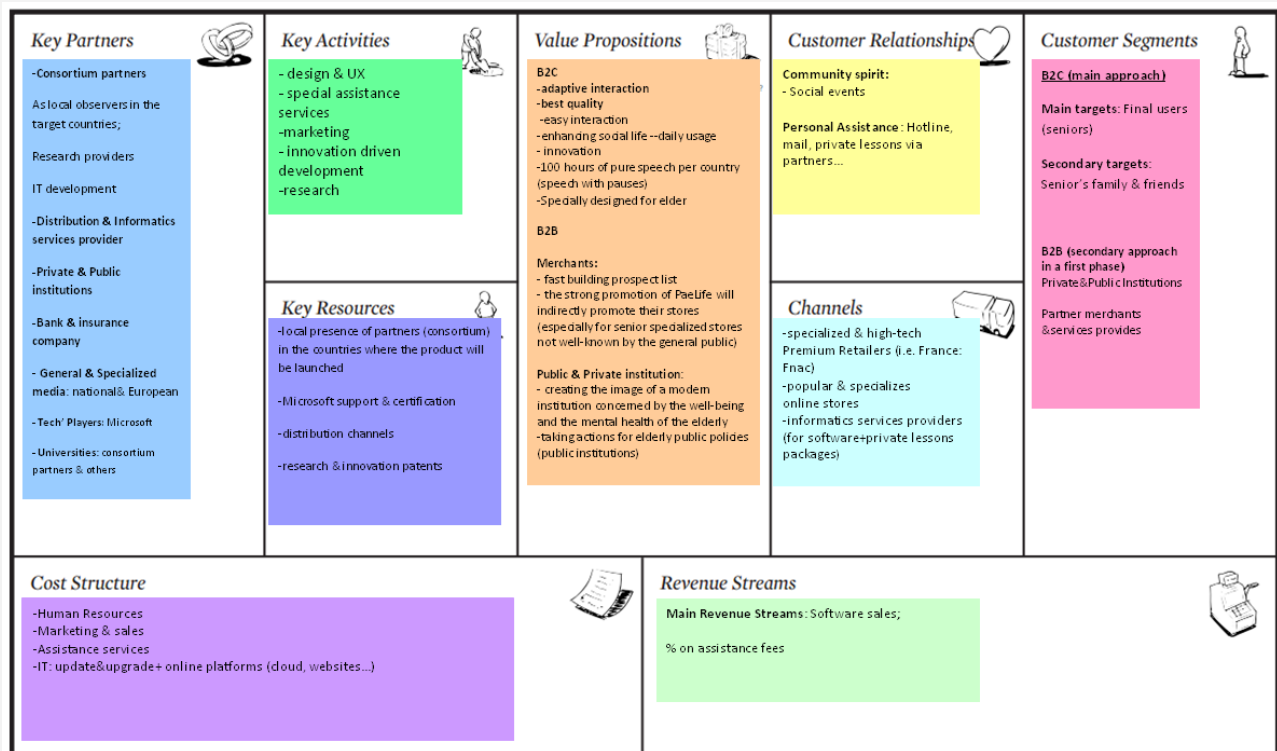


Figure 4 – AALFred's business model canvas

Please answer the questions below, if possible:	
What is the targeted range of manufacturing/service costs per product/service unit (€, € per month etc.)?	N/A. Please refer to the Final Remarks (on "Price") below.
What is the estimated size of the targeted market in Europe for your product/service (in €)?	N/A. Please refer to the Final Remarks (on "Price") below.
In your business model, who will pay for the product/service (you can tick more than one box):	
☒ End user (older person) ☒ Informal carers ☐ Formal care providers ☐ Public subsidies ☐ Insurance ☐ Other (add if necessary) ☐ not yet decided	
In your business model, who will take the decision about purchase of the product/service (you can tick more than one box):	
☒ End user (older person) ☒ Informal carers/family ☐ Formal care providers ☐ Public subsidies ☐ Insurance ☐ Other (add if necessary) ☐ not yet decided	
At what stage of development are you with your product/service (e.g. research, pilot, real life trial etc.)?	Pilot/Real Life Trial.
When will your product/service be ready for market ?	A first step is planned with the release on the Windows Store by October 2016.
What type of further research/development is necessary to finalize the product (technical, adoption, market research etc.)?	Technical improvements will need to be performed according to the final feedback received from the field trials.
What further investments are necessary to launch product on the market?	New services could be considered and added to the AALFred Palette. Support for mobile devices (smartphones), although optional, would also be interesting to consider in the future taking advantage of the Windows universal app paradigm.
Which is the expected turnover to be generated by your product/service in 2-3 years?	At this time there is not enough information that allows us to calculate the expect turnover. Nevertheless, we plan to cover the costs of a 30% sales person with the initial ramp up.
<i>Please insert here any other information related to the business model, such as:</i> 1. What is the targeted market niche? The considered target market niche are mostly the independent and active seniors (the so called "baby-boomers" and the "freed"). Based on the Market analysis done in D8.7 the core target of AALFred include seniors over 60 years old. However, by analyzing the market and senior's needs we could also notice that AALFred's services could also be proposed to seniors -60 years old since most of them encounter the same difficulties in interaction with technology as the +60 seniors. Therefore, we can state that we have identified a marginal target (the 50-60 segment), which also represents AALFred's potential customers. Concerning AALFred's market segment we further state	

that AALFred's core target (+60), could be better defined by splitting it in 2 different segments which contain the younger marginal target +50-65 segment and the 65-75 segment.

2. Do you need certification for your product/service before gaining access to the market?

AALFred is not a medical device/solution that will be integrated into a scenario where interoperability with existing systems is a must, or where it needs to follow certain standards to be accepted – it's a services application. If interest arises from enterprise clients that want to integrate AALFred with existing solutions, then certification might be considered, but it's not a hard requirement at this stage, as AALFred already follows many standards from the W3C or de-facto standards like RESTful communications.

3. What type of certification and from who?

N/A.

4. Do you need to perform reliability testing

As AALFred is not a critical system, reliability testing is not a must. The product must be well tested to ensure that it is secure, fast, and operates within required parameters, but there is no need to go to the lengths of running extensive reliability testing on our platform.

5. Any other information

We note that we must distinguish between 2 possible presentations of AALFred on the market: the AALFred Product (in 3 versions: Pocket, Desktop and Home) and AALFred's Packages.

As a matter of fact, AALFred can be sold as a standalone application (in one of its 3 versions), but it also can be sold in a package with services, devices or/ & internet connection.

Therefore, the Packages (Partner's packages) presented in the 4P matrix (5.1.2.section) of D8.7 – "PaeLife Market Analysis" represents a hypothetical presentation of the product. Nevertheless, each one of these Packages can only exist if AALFred establishes strategic relationships with partner(s) among retailers (i.e. Package 1); informatics services providers (i.e. Package 2) or mobile & internet connection providers (Package 3).

We note that some partners could provide more than one single service, such as Orange for example, who could offer a tablet (with AALFred pre-installed) + an internet connection package. However, for a full-pack device with AALFred + assistance services + internet or/ & mobile connection the association of at least 2 partners is required. These "Partner's Packages" could have an essential role in AALFred's competitive offer. We note that AALFred's competitors have at least one of these partnerships, Tooti Family being the strongest competitor from this point of view.

The marketing proposition concerning the nature of AALFred is that it should be sold as software via specific distribution channels either as a virtual license code or as a physical package that contains the license code. This proposition is based on the analysis of AALFred's competitors. The main arguments that sustain this proposition are the following:

- Being sold as software is vital to pilot the proposed services;
- Being present in popular/traditional distribution points (special stores for seniors, popular high-tech stores, mobile & internet providers stores, etc.) will attract promotion for AALFred and will introduce AALFred in direct competition with the actual market;
- Obviously, the presence of AALFred in popular distribution points will attract target awareness (B2C and B2B) about its existence.

Final Remarks (on “Price”)

We note that the price considered for AALFred is based on the costs of our competitors. A financial analysis of the product production, distribution and promotion costs is needed in order to achieve the exact figures.

Another issue concerning AALFred 's versions' (Pocket, Desktop and Home) prices is their inherent costs. Even if AALFred 's prices are reasonable, the costs of the required equipment shouldn't be neglected. Therefore, AALFred's bestselling packages are those via possible strategic partners that can offer financial solutions (i.e. credit loans) or special discounts on the equipment (retailers).

3 C. PROJECT RESULTS – END USER INDICATORS

In the section below, please provide the information you have gathered during your project on **primary, secondary and tertiary end-users¹** of your product/service. Note that secondary end-users can be formal and informal careers (see footnote). For the indicators cited below, please provide information if available; any other qualitative or quantitative information on beneficiaries can be provided instead.

Type of end-user (primary, formal and informal secondary, tertiary end-users)	Primary end-users
Total number of end-users involved (by type of end-user, gender, etc.)	92 elderly participants were involved in the user tests done in WP6: → FR: 35 (11 men) → PL: 3 (1 men) → HU: 42 (14 men) PT: 12 (5 men)
Average age and age distribution of involved end-users	FR: 68 years average (from 63 to 80) HU: 64 years (from 56 to 79) PL 68 years (from 56 to 79) PT: 74 years average (from 68 to 81) <u>Overall</u> : 68,5 years
Location of end-user (rural, town, large city, etc.)	FR: Small town – Troyes HU: large city, capital – Budapest PL: large city, capital - Warsaw PT: small town – Évora (5) and large city, capital – Lisbon (7)
Situation of end-users (single household, family setting, independence, etc.)	FR: 8 single household, 27 marital life

1 Definition of end-users in AAL Joint Programme:

- *Primary end-user is the person who is actually using an AAL product or service, a single individual, “the well-being person”. This group directly benefits from AAL by increased quality of life.*
- *Secondary end-users are persons or organisations directly being in contact with a primary end-user, such as formal and informal care persons, family members, friends, neighbours, care organisations and their representatives. This group benefits from AAL directly when using AAL products and services (at a primary end-user’s home or remote) and indirectly when the care needs of primary end-users are reduced.*
- *Tertiary end-users are such institutions and private or public organisations that are not directly in contact with AAL products and services, but who somehow contribute in organizing, paying or enabling them. This group includes the public sector service organizers, social security systems, insurance companies. Common to these is that their benefit from AAL comes from increased efficiency and effectiveness which result in saving expenses or by not having to increase expenses in the mid and long term.*

	HU: 31 single household, 11 marital life PL: 1 single household, 2 married PT: 3 single household; 9 marital life
Health status (disabilities, mobility, cognitive function, etc.)	End-users usually were active and lived on their own. Their health problems were usually the common disabilities among elderlies like: visual problems, hearing problem, diabetes, many of them suffering from arthrosis or rheumatism, and a few after stroke victims.
Socio-economic background (education, income class, etc.)	FR: 7 with higher education; 28 had an high school degree PL: 3 with higher education HU: 16 with higher education; 26 had an high school degree PT: 2 had an high school degree; 10 only completed primary school
Total number of end-users effectively using the AAL solution beyond the project implementation period	Most users expressed the interest in having AALFred once it was available on the Market. We also should mention that in some of the countries (France, Portugal) Pilots are continuing even after the Project has ended. Hungarian partners are also willing to continue the field trials after January 2015.
Any other information	From the very early stage of the Project users were involved in the decisions and direction of PaeLife. In WP1 211 elderly responded to the user requirement questionnaire: ➔ FR: 40 (4 male) ➔ PL: 48 (11 male) ➔ HU: 79 (26 male) ➔ PT: 48 (18 male) During the speech data collections thousands of elderlies participated in the PaeLife Project. All together we made recordings with 3164 elderlies: ➔ FR: 323 ➔ PL: 7796 ➔ HU: 1096 ➔ PT: 966 speakers These recordings allowed the adaptation of ASR Speech

	Technology for elderly citizens. Several elderly users also participated in the Voice Talent Selection: ➔ FR: 8 men ➔ PL: 8 men ➔ HU 8 men, 8 women ➔ PT: 8 men, 8 women After the winner voice(s) was selected, TTS synthetic voices were then recorded, trained and integrated in the AALFred application.
<i>Please describe here the principles applied and procedures followed in handling ethical issues such as ethics towards technology use, to privacy, data management, ethical considerations regarding human-robot interaction, exit strategy, etc.</i> As the research and design approach adopted in PaeLife was user-centered, there has been a deep ethical reflection both on older user involvement and privacy issues, namely: Privacy; Management of personal data; Confidentiality; Autonomy and dignity. These guidelines have framed all our actions. From an end-users' participation perspective, we ensured participants' fully informed involvement through the use of informed consent forms. They were explained the reason of their participation, how their data was used and saved, and that it was possible to leave the project at any given moment. Despite the constant collaboration between partners, the participants' personal data and anonymity were respected, by the use of "User1", "User2" etc. From a data storage perspective, neither PII (Personable Identifiable Information) or sensitive data have been stored in the local computers or shared by email. Furthermore, all online digital data transfers have occurred under a secure and encrypted communication channel.	

3 D. PROJECT RESULTS – OTHER INDICATORS	
Patents , which are the direct result of the project work	No patents were registered by the PaeLife Project Consortium as only software components were developed (AALFred, Multimodal Framework, etc.).
Other Intellectual Property Rights (IPR) resulting from the project work	Intellectual Property Rights (IPR) are covered by the Consortium agreement signed between the PaeLife Project partners. No further concerns regarding IPR were identified by the consortium.
Collaboration to standards , which are the direct result from the project work	The PaeLife consortium suggested a few simple modifications of ISO 9241-210:2010 for the elderly.
Publications (scientific or other) , which are the direct result from the project work (please provide details)	A total of 61 publication activities were achieved including scientific papers & posters and PhD and MSc dissertations. Please refer the document “PaeLife - Dissemination activities (ALL)”, included in attachment, for more information.
Other dissemination activities	A total of 33 other dissemination activities were achieved including the creation of newsletters, a site, a poster and 2 videos, and the organization of workshops & other dissemination events. Please refer the document “PaeLife - Dissemination activities (ALL)”, included in attachment, for more information.
Type and size of audience reached by dissemination activities	The PaeLife Project reached members of the scientific community but also the main stakeholders defined by the Project. Audiences from 20 to 5000 stakeholders were reached by the Project. Please refer the document “PaeLife - Dissemination activities (ALL)”, included in attachment, for more information.
Technology transfer agreements and/or any other business deals achieved	No technology transfer agreements and/or any other business deals were achieved.
Spin-off/s set up	No spin off is planned yet. Further collaboration Projects and initiatives are planned (some of them already approved and with the participation of some of the PaeLife Project partners.
Number of jobs created	During the Project’s timeframe 37 jobs were created (including research scholarships). After the end of the Project 10 of the recruited collaborators stayed in the same organization.

4. FINANCIAL INFORMATION - OTHER COMMENTS

Please check appropriate box:

The financial part of the project ☐ is in line with (or) ☒ deviates from the partner's Grant Agreements & Work Packages plans (personal efforts, other costs, etc.)?

In case of deviation, please give a short explanation:

MSFT - Software para Microcomputadores, LDA.

The following deviations were registered, besides the ones mentioned at the end of 2013 (that reflected the project's extension):

1. There was a deviation on the heading "Personal Costs" motivated by legal changes, implemented on the national salaries;
2. There was also a deviation in the heading "Missions" - the costs of "missions" was reduced due to the available Microsoft on-line resources that enabled productive remote meetings and reduce the need for physical missions;
3. In the "Equipment" heading lower costs than initially predicted were attained for the same (or similar) equipment including, in large part, replacement of equipment for the modernization and streamlining of the application. Also the consortium's decision to focus on the development for tablets significantly decreased the cost of equipment acquisition;
4. The heading "Service procurement and acquisitions" suffered a deviation seen as, for every action of the project, there were different interests from partners. This fact made it necessary to draw up an individual prospect of awareness/dissemination of each particular action, including its production, and also preparing the necessary materials for the inauguration of the website. The duration of the technical support differed from year one (2012) and lasted two years (until October 2014). In addition, and as indicated above, in order to develop synergies with the dissemination of results action, it was decided to merge both actions: conducting promotional campaign and events.

Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa

There were no deviations from the plans, except for a re-budgeting submitted and approved at the end of 2013 reflecting the project extension. A small part of the budget (~€600), under Equipment wasn't spent as we managed to purchase all required equipment at better rates than those originally budgeted.

Budapest University of Technology and Economics

There were only small deviations. BME had no subcontracting cost, and the personnel cost was reduced by about €7700; on the other hand other costs were raised by about €10.200 mainly due to travel costs.

The Bay Zoltán Foundation for Applied Research

Generally the costs were slightly different from what we had planned (~€25). The speech data collection turned out more difficult than we thought, so we faced some unexpected difficulties and extra costs in that. That's why the personal costs became higher than it was planned, but it was

covered by the redeployment of the other direct costs.

Knowledge Society Association

The main deviation from the plan was the reduction of the Project's budget in Poland. Due to a decision of the local NCP, SSW only received 60% of the originally planned budget. SSW planned total costs for the Project was 140 280,00 EUR with 112 224,00 EUR from the EU and 28 056,00 EUR from the SSW own contribution. After the decision of the Polish NCP, SSW's budget was reduced: 85 892,65 EUR with 67 481,74 EU contribution and 16 886,23 EUR from the SSW own contribution. Furthermore, the final decision and grant agreement was signed on 25.04.2013, a few months after the kick-off. We had to change our work plan and scope of work, especially in WP1 where SSW was the leader. The changes also affected WP4 "Integration of multimodal interfaces for the elderly" where we had planned 3 PM. After the changes we could not participate in WP4. The budget for voice data collection was also reduced: 10 000 EUR. All these problems had impact on a local level especially on the Project's original schedule and planning. Deliverable 1.1, which SSW was responsible for, was only submitted in T13, which was 9 months beyond the defined work plan. This deliverable was completed using SSW's own resources (only available at that particular time).

Genitech

Generally the costs were slightly different from what we had planned. The realization of the pilot and of the integration turned out more difficult than we thought so we faced some unexpected difficulties and extra costs in that. That's why the personal costs became higher than it was planned, but it was covered by the redeployment of the other direct costs.

Troyes University of Technology

The budget planned for non-permanent personal was 132 651 € and we spent 115 708 €. This gap corresponds to the maternity leave of Karine Lan, researcher. For the other costs, we spent 15 000 euros less than planned, mainly because we spent less than planned in sub-contracting. In detail: investment expenses and incentives for the end-users were slightly the same amount than planned. On the contrary, we spent 16 919 euros in travel costs, where 6000 euros were planned. It was due both to the necessity to have more meetings among consortium partners, and to a better dissemination work than originally planned.

Universidade de Aveiro

No major deviations were registered in the execution. The final total execution was around 86% of the budget. Even with the extension of the project and the need for some additional missions the execution for missions only exceeded in 5% the original plan. This small increase was more than compensated by the non-execution of approximate 11% of the budget for equipment acquisition (mainly due to the evolution of the project making unnecessary to buy cameras) and the non-acquisition of any service. The budgeted acquisition of services regarding Design and Cloud were performed or provided by partners and the software nature of the developments made by UAVR didn't provide ground for any patent process.

Other comments related to financial part of the project:

No further comments at this time. Please get in touch if any questions should arise.

5. AAL JP PROGRAMME

Please comment, using your AAL project experience, on the main advantages and disadvantages of AALJP projects.

MSFT - Software para Microcomputadores, LDA

The PaeLife Project was the first AALJP experience for MSFT. Overall it can be classified as very positive both in terms of the great collaborative work achieved by the consortium, but also in what regards the several networking activities and opportunities provided by the AAL JP organization.

The mix of the different partner backgrounds and specializations (required by the AAL Commission) proved to be a major asset in an already well-motivated consortium. The main goal of helping the elderly to stay social, active and healthy in their own homes, for longer periods of time, was from the very beginning, the major concern of all partners independently of the background and previous experiences. This Project also allowed for several networking activities which directly influenced the short term future collaborative activities between the several partners.

The main disadvantages of AAL JP Programme are related with the separate partner negotiations with the local NCP's. In the PaeLife case this lead to delays in the starting of the Project, mandatory changes in the original planned work related to local budget alterations (SSW), and different reporting timings for the consortium partners.

Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa

This was INESC-ID's first AAL project. The experience was very positive. PaeLife was fruitful in a number of aspects. The subjects of AAL projects are relevant and timely given Europe's ageing population. It was good to work on research with direct and important applicability. The nature of the consortium allowed us to conduct a number of user studies, both in a Living Lab environment and at the users' homes, with highly motivated users. This led to breakthrough results in the area of multimodal accessibility for the elderly. Other positive outcome of this AAL project were the scientific publications and the funding of the team that, on INESC-ID's side, conducted this research. The impact in the media was also interesting. The main disadvantage was the need to negotiate individually with the national funding bodies, with different rules, leading do different timings etc. between the partners.

Budapest University of Technology and Economics

This was the first experience of BME Department of Telecommunications and Media Informatics in AAL joint program projects and our experience was very positive. We had the possibility to work in an international team on language technologies which was really inspiring and fruitful. Dealing with elderly speech and with user interfaces for elderly people was a new and interesting field for us.

Integrating our speech modality components in the Multimodal Framework and our software modules in AALFred needed regular interaction and strong cooperation with the partners in the consortium. The results of the cooperation have been and will be reported jointly in scientific papers and conferences.

The main disadvantage was the slow negotiation with the national funding agency.

The Bay Zoltán Foundation for Applied Research

BZN started its first AAL Project (WayFiS: <http://www.aal-europe.eu/projects/way-fis/>) in 2011, which ended in 2013. During the WayFiS and the PaeLife Projects we experienced only positive aspects and outcomes of the AAL JP. One of the biggest advantages is that thanks to the wide variety and the collaborative work of the international consortium we shared many experiences and knowledge with all partners regarding Europe's ageing population and the technologies used by the Elderly. Also the AAL JP allowed us to:

- Develop social and technological innovations for elderlies;
- Have a big and active involvement with the ageing population of Hungary;
- Publish several publications;
- Fund several employees of BZN;
- Make a stronger connection with project partners in order to allow further collaborations.

It is also important to mention that BZN was very satisfied with the management of the AAL Project and with the help given by the AAL Commission.

Knowledge Society Association

SSW had other two AAL Projects - GomyLife in Call 2 (already finished) and NITICS in Call 6 (project still in progress). Our experience is rather positive. We had a chance to engage end-users and ask them for their opinion. It was a new approach to end-users and they appreciated it. The elderly were very helpful in all stages of the projects - in user requirement gathering, in testing and evaluation and creating business models. Nevertheless, seniors found sometimes pros and cons of working with prototypes and not-ready to market technology or products. The main advantage of the AAL projects, from our perspective, is the happiness of elderly people engaged in projects and the recognition of their ideas and suggestions. This way, they feel needed and find fun and joy in cooperating with other elderly and work with new technological solutions.

Genitech

The experience on the Paelife project has been extremely positive from the Genitech point of view. The whole team has been able to join forces to integrate in a single software a combination of state of the art technology that provides a new experience for the elderly.

The creativity showed by the team as a whole provided new directions and potential hits on the market for the future of AALFred.

At the end of the project, the Genitech group has been absorbed by a new company: Softeam Cadextan.

Troyes University of Technology

UTT was and is involved in 2 other AAL projects: Fosible (2010-2013), and TOPIC (2013-2016).

The experience on these three AAL projects is very positive for UTT on several levels:

- Development of social and technological innovations;
- Development of a Living Lab methodology for the integration of older people in all stages of the design of innovative services (deployed in the LivingLab ActiveAgeing UTT – officially launched one year ago);
- High motivation of older people mobilized in these projects: willingness to participate in projects to contribute to the solutions of tomorrow that they feel useful;
- Development of national and European collaborations with research teams, associations and

- businesses to a synergy of efforts;
- Numerous international scientific publications;
- Funding of master and PhD students.

The impacts on French territory and more generally for France are important, and significantly increase the visibility of research and development conducted in France (as evidenced by the presence of French academic staff, community and SME in the AAL Forum each year).

The disengagement of France in the AAL program will be damaging to the development of innovative solutions for seniors as it will put a stop to a dynamic that was well underway, even if there are other actions to develop the "Silver Economy".

Universidade de Aveiro

This was University of Aveiro/IEETA first experience in AAL Projects and we evaluate the experience as very positive. The AAL JP requested mix for the consortium resulted in a very good consortium and development method. Inclusion of end-users from several countries from the very start was very helpful. Also, the presence of software companies such as Genitech and Microsoft, made possible the application of recent methods and development tools. One of the richest experiences, made possible by PaeLife, was the collaborative development of AALFred by a team distributed across several countries and languages and without sharing the source code. The existence of AALFred proves that this experience was a success. The second most important result we take from PaeLife is the developed Multimodal Framework that already is being used in several other projects. We also consider as very important the integrated multilingual capabilities of AALFred, made possible by the several technologies developed in the project. As Europe is a multilingual region, this is a major contribution for the existence of speech interaction for more than a much reduced set of languages.

The way the consortium worked and the results obtained already resulted in the submission of new projects integrating several partners, that UAVR considers a very relevant outcome of the project.

Another positive outcome of this AAL project were the publications and the impact in the media.

The main disadvantage was a less than perfect articulation of the Joint Program with the national funding agencies.