

**COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME**

**ICT PSP call for proposals 2008 - ICT PSP/2008/1**

Project acronym: **Long Lasting Memories**

Project Number: **238904**

Project Type: **Pilot Type B**

Project full title: **Long Lasting Memories**

ICT PSP Main Theme addressed: **1.4: ICT for ageing well with cognitive problems, combining assistive and independent living technologies**

**TECHNICAL ANNEX – “Description of Work”**

Number and Date of preparation: v3.1 of 07/04/2009 – accepted on 10/\_04/2009

List of participants:

1	ARISTOTELIO PANEPISTIMIO THESSALONIKIS / Medical School	AUTH	Greece
2	UNIVERSITAT KONSTANZ	UKON	Germany
3	ATHENA RESEARCH AND INNOVATION CENTER IN INFORMATION COMMUNICATION & KNOWLEDGE TECHNOLOGIES/ Institute for Language and Speech Processing	ATHENA RC	Greece
4	Tero Ltd	Tero	Greece
5	CEIT RALTEC gemeinnuetzige GmbH	RALTEC	Austria
6	INVESTIGACION Y DESARROLLO INFORMATICO EIKON SL	EIKON	Spain
7	Fundacion INTRAS	INTRAS	Spain
8	E-SENIORS: INITIATION DES SENIORS AUX NTIC ASSOCIATION	E-SENIORS	France
9	GLOBAL SECURITY INTELLIGENCE LIMITED	GSI	UK
10	GENIKO NOSOKOMEIO ATHINAS IPPOKRATEIO / Health Centre Vyrnas	IGNA	Greece
11	Milton Keynes Council	MKC	UK

**A: Table of Contents Page**

<b>A1. PROJECT SUMMARY AND BUDGET BREAKDOWN .....</b>	<b>4</b>
A1.1. PROJECT SUMMARY .....	4
A1.2. LIST OF BENEFICIARIES.....	5
A1.3. OVERALL BUDGET BREAKDOWN FOR THE PROJECT .....	6
<b>B1. PROJECT DESCRIPTION AND OBJECTIVES .....</b>	<b>7</b>
B1.1. PROJECT DESCRIPTION .....	7
<b>B1.1.1 Concept.....</b>	<b>7</b>
<b>B1.1.2 Background: state of the art in ICT solutions for the elderly .....</b>	<b>7</b>
<b>B1.1.3 Long Lasting Memories service.....</b>	<b>8</b>
<b>B1.1.4 Envisaged usage of the service .....</b>	<b>11</b>
<b>B1.1.5 Integration of the different sub-systems/components .....</b>	<b>13</b>
B1.2. PROJECT OBJECTIVES .....	14
B1.3. EU DIMENSION .....	22
<b>B1.3.1 The European Pact for Mental Health and Well-being.....</b>	<b>22</b>
<b>B1.3.2 Health and the use of ICT.....</b>	<b>23</b>
<b>B1.3.3 ICT for Ageing .....</b>	<b>23</b>
<b>B1.3.4 Smart Homes.....</b>	<b>24</b>
<b>B1.3.5 Coordination with EU Member States.....</b>	<b>24</b>
<b>B1.3.6 EU-US cooperation .....</b>	<b>25</b>
B1.4. MATURITY OF THE TECHNICAL SOLUTION .....	26
<b>B1.4.1 Independent Living Component (ILC).....</b>	<b>26</b>
<b>B1.4.2 Cognitive Training Component (CTC).....</b>	<b>28</b>
<b>B1.4.3 Physical Training Component (PTC).....</b>	<b>29</b>
<b>B1.4.4 Integration of the three components.....</b>	<b>29</b>
<b>B2. POTENTIAL IMPACT.....</b>	<b>33</b>
B2.1. TARGET OUTCOMES IMPACT.....	33
B2.2. EXPECTED IMPACT .....	36
B2.5. LONG TERM VIABILITY .....	41
B2.4. WIDER DEPLOYMENT AND USE.....	45
<b>B3. IMPLEMENTATION .....</b>	<b>49</b>
B3.1 OVERALL STRATEGY AND GENERAL DESCRIPTION .....	49
B3.2. WORK PLAN .....	58
<b>B3.2.1 Work package summary tables .....</b>	<b>58</b>
<b>B3.2.2 GANTT chart.....</b>	<b>59</b>
<b>B3.2.3 PERTT chart - Interdependencies between work packages.....</b>	<b>60</b>
<b>B3.2.4 Deliverables list.....</b>	<b>61</b>
<b>B3.2.5 List of milestones and planning of reviews .....</b>	<b>62</b>
<b>B3.2.6 Work package descriptions.....</b>	<b>63</b>
<b>B3.2.7 Efforts for the full duration of the project.....</b>	<b>76</b>
B3.3. MANAGEMENT STRUCTURE AND PROCEDURES.....	77
<b>B3.3.1 Project Risk Management and Contingency Planning .....</b>	<b>80</b>
<b>B3.3.2 Project Management Key Performance Indicators.....</b>	<b>83</b>
B3.4. CONSORTIUM AND KEY PERSONNEL .....	84
B3.5. DISSEMINATION .....	85
B3.6. RESOURCES TO BE COMMITTED .....	89
<b>Other Costs.....</b>	<b>91</b>
<b>Travel.....</b>	<b>92</b>
<b>Subcontracting .....</b>	<b>94</b>
B3.7. SECURITY, PRIVACY, INCLUSIVENESS, INTEROPERABILITY; STANDARDS AND OPEN-SOURCE .....	101
<b>GLOSSARY .....</b>	<b>105</b>

**APPENDIX I: PARTNERS DESCRIPTION..... 107**

PARTNER 1: (COORDINATOR) ARISTOTELIO PANEPISTIMIO THESSALONIKIS /MEDICAL SCHOOL (AUTH) .....	107
PARTNER 2: (PARTICIPANT) UNIVERSITAT KONSTANZ (UKON).....	107
PARTNER 3: (PARTICIPANT) ATHENA RESEARCH/ INSTITUTE FOR LANGUAGE & SPEECH PROCESSING (ATHENA RC) .....	109
PARTNER 4: (PARTICIPANT) TERO LTD (TERO) .....	111
PARTNER 5: (PARTICIPANT) CEIT RALTEC GEMEINNUTZIGE GMBH (RALTEC).....	112
PARTNER 6: (PARTICIPANT) INVESTIGACIÓN Y DESARROLLO INFORMÁTICO, EIKON (EIKON).....	113
PARTNER 7: (PARTICIPANT) FUNDACIÓN INTRAS (INTRAS).....	116
PARTNER 8: (PARTICIPANT) E-SENIORS: INITIATION DES SENIORS AUX NTIC ASSOCIATION (E-SENIORS) .....	117
PARTNER 9: (PARTICIPANT) GLOBAL SECURITY INTELLIGENCE (GSI) .....	118
PARTNER 10: (PARTICIPANT) GENIKO NOSOKOMEIO ATHINAS IPPOKRATEIO / HEALTH CENTRE VYRONAS (IGNA).....	119
PARTNER 11: (PARTICIPANT) MILTON KEYNES COUNCIL (MKC) .....	120

**LIST OF TABLES**

Table 1: LLM underlined objectives.....	14
Table 2: Objectives, Indicators and goals .....	17
Table 3: LLM Pilots.....	21
Table 4: LLM positioning on the ICT for ageing priority .....	24
Table 5: Coherence of LLM with the Work Programmes targeted outcomes .....	35
Table 6: Coherence of LLM with the Work Programmes results.....	38
Table 7: Work Programmes expected results and main barriers and risk factors.....	40
Table 8: Deliverables list .....	61
Table 9: Milestones list.....	62
Table 10: Tentative reviews.....	62
Table 11: Summary efforts table .....	76
Table 12: Respective roles of Project Managers.....	79
Table 13: Project Risk Management and Contingency Planning .....	82
Table 14: Project Management Key Performance Indicators (KPI).....	83
Table 15: The break-down of the partners' personmonths per WP .....	90
Table 16: The break-down of the project's budget per partner .....	91
Table 17: List of planned meetings, workshops and their expected costs .....	93

**LIST OF FIGURES**

Figure 1: LLM service description .....	11
Figure 2: Integration scheme for the LLM services.....	13
Figure 3: Typical installation of an e-HOME System and its components .....	26
Figure 4: Floor-plan of a home equipped with several accelerometers for .....	28
Figure 5: LLM service integration requirements .....	30
Figure 6: Integration scheme of the system .....	32
Figure 7: A detailed system integration scheme by use of XML .....	32
Figure 8: Pilot Methodology .....	52
Figure 9: LLM pilots timeplan.....	54
Figure 10: LLM service and project evaluation criteria .....	55
Figure 11: Management structure .....	77

## **A1. Project Summary and Budget breakdown**

### **A1.1. Project Summary**

Long Lasting Memories (LLM) project regards the market validation of an integrated ICT platform which combines state-of-the-art mental exercises against cognitive deterioration with physical activity in the framework of an advanced ambient assisted living environment. By enforcing the unprecedented approach of simultaneously inducing neural and corporal stimulation in a safe and controlled environment, this platform will deliver an effective countermeasure against age-related cognitive decline, thus significantly reducing chances of mild dementia or Alzheimer's disease appearance. The integration of the existing components should provide a high-quality innovative service, actively improving the quality of life of the elderly and prolonging the time they can remain independent at home, while respecting ethical and legal boundaries. The LLM project will perform a 15-month market validation of this service of four consecutive rounds in 5 EU Member countries, thus targeting for a wide impact on the entire Union. This experience combined with the analysis of current market trends in the field of ICT solutions for ageing well will result into the development of a business plan for the viability, sustainability and scalability of the LLM service. Finally, effective cooperation of public authorities and private institutions will be pursued through extensive dissemination activities as an effort to promote a business model based on public-private-partnership.

The **LLM** project will perform a 15-month market validation of this service of four consecutive rounds in 5 EU Member countries, thus targeting for a wide impact on the entire Union. This experience combined with the analysis of current market trends in the field of ICT solutions for ageing well will result into the development of a business plan for the viability, sustainability and scalability of the LLM service. Finally, effective cooperation of public authorities and private institutions will be pursued through extensive dissemination activities as an effort to promote a business model based on public-private-partnership.

**A1.2. List of Beneficiaries**

Nº	Benef. Type	Beneficiary Name	Organ. Type	Short Name	Country	Date enter Project	Date exit Project
1	CO	ARISTOTELIO PANEPISTIMIO THESSALONIKIS / Medical School	PU	AUTH	Greece	M1	M30
2	CR	UNIVERSITAT KONSTANZ	PU	UKON	Germany	M1	M30
3	CR	ATHENA RESEARCH AND INNOVATION CENTER IN INFORMATION COMMUNICATION & KNOWLEDGE TECHNOLOGIES/ Institute for Language and Speech Processing	PR	ATHENA RC	Greece	M1	M30
4	CR	Tero Ltd	PR	TERO	Greece	M1	M30
5	CR	CEIT RALTEC gemeinnuetzige GmbH	PR	RALTEC	Austria	M1	M30
6	CR	INVESTIGACION Y DESARROLLO INFORMATICO EIKON SL	PR	EIKON	Spain	M1	M30
7	CR	Fundacion INTRAS	PR	INTRAS	Spain	M1	M30
8	CR	E-SENIORS: INITIATION DES SENIORS AUX NTIC ASSOCIATION	PR	E-SENIORS	France	M1	M30
9	CR	GLOBAL SECURITY INTELLIGENCE LIMITED	PR	GSI	UK	M1	M30
10	CR	GENIKO NOSOKOMEIO ATHINAS IPPOKRATEIO / Health Centre Vyronas	PU	IGNA	Greece	M1	M30
11	CR	Milton Keynes Council	PU	MKC	UK	M1	M30

PR = Private  
 PU = Public  
 CO = Coordinator  
 CR = Participant

**A1.3. Overall budget breakdown for the project**

Participant number in this project *	Participant short name	Personnal costs	Sub contracting	Other direct costs	Indirect Costs		Total costs	Max EC Contribution	Requested EC contribution
					Cost model (a)	Value			
1	AUTH	652,176.00	80,000.00	69,150.00	SFR	195,652.00	996,976.00	498,489.00	498,489.00
2	UKON	242,508.00	0.00	20,000.00	SFR	72,752.00	335,260.00	167,630.00	167,630.00
3	ATHENA RC	236,880.00	0.00	14,000.00	SFR	71,064.00	321,944.00	160,972.00	160,972.00
4	TERO	147,900.00	0.00	8,000.00	SFR	44,370.00	200,270.00	100,135.00	100,135.00
5	RALTEC	333,000.00	30,000.00	38,000.00	SFR	99,900.00	500,900.00	250,450.00	250,450.00
6	EIKON	340,430.00	0.00	14,000.00	SFR	102,129.00	456,559.00	228,279.00	228,279.00
7	FUNDACION INTRAS	226,800.00	0.00	23,000.00	SFR	68,040.00	317,840.00	158,920.00	158,920.00
8	E-SENIORS	423,500.00	27,000.00	29,000.00	SFR	127,050.00	606,550.00	303,275.00	303,275.00
9	GSI	312,785.00	0.00	21,000.00	SFR	93,835.00	427,620.00	213,810.00	213,810.00
10	IGNA	153,600.00	0.00	6,000.00	SFR	46,080.00	205,680.00	102,840.00	102,840.00
11	MKC	248,000.00	0.00	28,000.00	SFR	74,400.00	350,400.00	175,200.00	175,200.00
<b>TOTAL</b>		<b>3,317,579.00</b>	<b>137,000.00</b>	<b>270,150.00</b>		<b>995,272.00</b>	<b>4,720,001.00</b>		<b>2,360,000.00</b>

(a) AIC : Actual Indirect costs <sup>38</sup>, SFR : Standard flat rate <sup>40</sup>

## **B1. Project description and objectives**

### **B1.1. Project Description**

#### **B1.1.1 Concept**

The Long Lasting Memories consortium will develop a service that can provide senior citizens greater support towards their independent living. Long Lasting Memories will offer support not only to elderly people but also to their relatives and families. Apart from providing monitoring of day-to-day activities of senior citizens and identifying imminent hazards, the Long Lasting Memories service will most importantly increase their self-esteem and alleviate symptoms relevant to cognitive degeneration. It will thus facilitate their interaction with society and thus alleviate their loneliness and potential depression. The ultimate goal is to enable the elderly portion of the European population to live and work in their desired habitat.

Long Lasting Memories will be tested in real life situations in order for a consolidated set of requirements and validated functional specifications to emerge as a result of the project. To achieve consistency of requirements and specifications across the whole value chain, the consortium contains a multidisciplinary team of partners encompassing all spectrum of technology to end service providers, and including public authorities from each country that have responsibilities and budget control in the relevant area of care or supply of services.

The Long Lasting Memories consortium will intensively work out social and user-centric aspects of ICT and ageing and Independent Living services in order to implement a platform that will be easily accessible, widely available, and affordable for the end-users and their care providers. The Long Lasting Memories consortium will evaluate this platform through appropriate trials so as to validate its practical, supportive, and cost-effective characteristics.

A substantial and high-profile contribution to the European e-Inclusion Initiative and the i2010 flagship on ICT & ageing can then be achieved through Long Lasting Memories.

The Long lasting memories service can become a systemic solution for independent living and active ageing, including mobility aspects and reorganization of integrated care processes, leading to a significant prolongation of personal autonomy and participation in society across prevailing age-related impairments. Furthermore, the open reference architecture of its training component will enable its application to a wide spectrum of available ICT & ageing supporting solutions and environments, enabling its seamless integration and plug-and play operation with available sensors, devices, sub-systems and integrated care services, thus leading to a cost effective, reliable, privacy-respecting and trusted service for cognitive training.

#### **B1.1.2 Background: state of the art in ICT solutions for the elderly**

Substantial advances have been made over recent years in applying technology to meet the needs of older people. In parallel and in accordance with e-Health solutions, the field of Ambient-Assisted Living (AAL) has been developed, aiming on alleviating the difficulties of every day life for the elderly or people with disabilities in general. Taking into account the increasing number of elderly population in Europe and the identification of its subsequent social and financial consequences, national and European research efforts have focused on such independent living solutions, trying to make an edge on this quickly arising and expanding market. Condition observation of the senior person and notification in case of an emergency, comprise the most common features of such systems. This offers a sense of safety and reassurance to the elders themselves and their relatives that they will receive the care required in a time of need, without having to be succumbed to intensive care.

AttentiaNet and Seniority comprise two already completed projects which aim at improving the quality of assistance and hence quality of life of elder people in Europe by utilizing advanced technologies for telemonitoring and telecommunications. A different approach is followed by MobilAlarm which enables older people to initiate an alarm call whenever and wherever they need to do so (using GPS; mobile telephony; body-worn alarm devices; service centres; geographic localisation and alerting software). More recently, a number of solutions have been proposed that utilize various sensor networks, from audio and movement to micro- and nano-sensors hand, to detect common elderly accidents, like falls. Projects Netcarity, INHOME, EMERGE and OLDES fall under this category. Another, more recently proposed perspective for a solution to the same problem is offered by projects like Confidence and SMILING or that utilize wearable tags and non-invasive systems to detect mobility problems and provide a sense of security in the Third Age. Finally, the R&D project called Companionable, which is still in its initial stages, will try to synergistically combine the strengths of a mobile robotic companion with the advantages of a stationary smart home, improving the elder person's interaction with the system as well as the care itself.

Besides AAL systems, a second dimension has been introduced in the field of ICT solutions for the elderly, comprising of the systems that aim on compensating for their cognitive decline. In accordance with mainstream e-Inclusion targets, this approach's objective is to retain elderly people socially active and more self-reliant for a wider period of time. An example of such projects is VM (Vital Mind), which provides cognitive training by using related psychology, a TV-set and advanced ICT. The reasoning of VM is to enable elders to exercise actively and autonomously in front of the familiar to them television medium. On the other hand, the FP7 HERMES project aims at providing an integrated approach to cognitive care, based on assistive technology that reduces age-related decline of cognitive capabilities. HERMES offers cognitive training through games, while also supporting them in indoor as well as outdoor environments, when necessary. Support for elderly people with cognitive disabilities, and especially mild dementia and Alzheimer's disease, is provided by COGKNOW which aims to develop a cognitive prosthetic device which will help elder "navigate through their day". Functionalities like reminders and support for communication and anomaly detections are planned to deliver this promise.

Though several other categories for applications for the elderly can be identified like mobility aids or medical implants, the aforementioned ones are those more closely related to the **LLM** service. Nevertheless, they constitute subcategories of it, since as will be presented in the following chapter, LLM aims at providing cognitive training whilst monitoring the physical well-being of its users. In this respect, it integrates existing partial approaches into a unified innovative ICT solution.

### **B1.1.3 Long Lasting Memories service**

The **LLM** project aims to deliver an integrated ICT solution that will provide cognitive and physical training for elderly people inside the framework and safety of an assisted living environment. The service will be installed in homes and institutions and will ensure the accident-free, personalized and monitored corporal and mental training of its users. Meanwhile, users will be able to take advantage of the features of an independent living solution. This will be accomplished by home automations that will compensate for the disabilities of people with cognitive problems or mild dementia during their daily activities. Finally, an elaborate distributed sensor network will guarantee immediate response in case of an emergency, by calling for help through public telephone lines. In this respect, LLM aims at a unified solution that will combine independent living solutions with cognitive and physical training, according to recent research claims on the effectiveness of moto-sensory training on senior citizens with cognitive problems or mild dementia.

Extensive research on this topic has proven that sensory training is one of the most effective countermeasures against cognitive deterioration and mild dementia. Furthermore, corporal



activation is a well acknowledged factor of healthy living, having significant positive effects in the physical well-being of people. Finally, moto-sensory training, which makes use of the unified LLM environment, provides a third way of mental stimulation, thus creating a comprehensive training system for the elderly.

The LLM service regards assistance at home for the elderly (independent living solution), while providing cognitive and physical training according to a personalized training program. This approach renders LLM an innovative ICT solution for ageing well, featuring typical AAL solution characteristics, like accident detection, support in daily activities and third party notification in case of emergency, and combining them with preemptive measures like training.

To accommodate the deliverance of these services LLM system utilizes state-of-the-art hardware and software technology. It comprises of:

- User Interfaces: touch screens or simple screens for interaction with the users. All system functionalities, including home environment management, cognitive training and physical exercising performance monitoring, are displayed and set from the Local User Interface, which is a touch screen. Remote User Interfaces for communicating with the relatives, care takers or authorities in the case of an emergency.
- Sensors: to monitor movements inside the house. They are deployed as a distributed network of wirelessly connected sensors that identify moving patterns and detect deviations from those patterns or falls. In these cases they notify the user's relatives or caretakers via the Remote User Interface.
- Facility to connect Instrumented Power Outlets: which are sensors measuring voltage and current (power) fed into appliances. These sensors detect of forgotten switched on electrical appliances.
- Both aforementioned sensor components guarantee the safe living of the elderly inside their home environments without need for exclusive intensive care.
- Facility to connect Actuators: which facilitate acts like opening windows, doors and blinds and are remotely operated with the Local User Interface. These provide the daily activity supporting feature of the LLM service.
- Processing units: an embedded processor and a general purpose PC which are used for coordinating and management of the AAL environment, for executing the cognitive training software and for storing and processing the physical training performance information. The cognitive training software that will be initially used will be the BrainFitness of PositScience. Subsequently, different cognitive training software packets will be used.

BrainFitness was selected at this stage as it is considered state-of-the-art product in the United States and has already been translated by partner UKON in German, a first step to a wider deployment of the software in Europe. The Brain Fitness Program is designed to speed up auditory processing, improve working memory, and encourage the brain to produce more of the chemicals that help it remember. Having already acquired the endorsement of PositScience and following a cooperation formula that will be further elaborated during proposal implementation, our consortium will organize and hold the pilots using the BrainFitness software. Cognitive exercises provided by it are divided into six categories, bearing different cognitive impacts to the service's users.

- High or low: In this exercise, subjects hear sweep sounds and have to identify whether these sounds are rising or falling in their frequency (purpose: training basic sensory temporal discrimination)
- Frequency discrimination: Two pairs of sounds are presented. 3 sounds are identical; one sound is deviant in frequency. The subjects have to decide in which pair the deviant sound occurred. (purpose: training basic frequency discrimination)
- Tell us apart: In this exercise, subjects have to tell apart two similar phonemes, which might be difficult to understand because they are specially synthesized. (purpose: training speech relevant sounds by using specifically processed challenging speech sounds).
- Sound replay: The subjects hear several syllables and have to remember them. They have to repeat them in the right order by pressing the corresponding buttons. (purpose: trains longer syllables and auditory short-term memory)
- Match it: In this exercise, subjects have to press on rectangular buttons to hear syllables. The goal is to find two buttons that represent the same syllables and click on them one after the other so that they disappear. (purpose: uses longer syllables and trains auditory memory with visual components).
- Storyteller: Subjects hear segments of stories and are asked to answer a set of questions concerning the details of the respective segment. (purpose: uses whole words/sentences and trains story comprehension and memory)

Various training equipment like recumbent bikes and/or ergometers and/or treadmills, which offer a variety of physical exercising possibilities according to the special needs and disabilities of each user.

Recumbent bikes are the most suitable apparatuses for elder users with moderate disabilities. Allowing them to remain in the designated position on the specifically designed chair, well stabilized by the back of the seat and the side handles, enables the elderly to exercise to the extent required without being afraid of falling. Meanwhile, the users may interrupt the exercising procedure at any point without any risks.

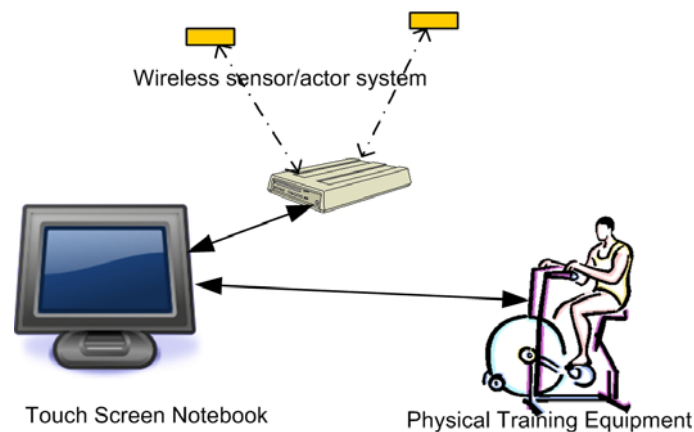
For people in a more serious condition ergometers might be used, as they require minimum physical exertion and can be used in normal sitting position.

On the other hand elders in better shape or of a younger age may use treadmills, simulating a walk they would do outside, within the eHome framework. Besides all treadmill built-in safety measures (like instant stop of the runway's movement upon the draw of a cord), LLM service users will feel even more secure due to the eHome monitoring system, which will respond immediately in the case of an emergency. Each of these training methods will be coordinated by the central management system to follow a specific training program, according to the each users abilities and special needs. Motivation messages and performance indicators will appear on the Local User Interface of the system, thus informing the user of his or her progress and adjusting his personal training program accordingly.

Figure 1 shows in a simplified manner the LLM service:

A notebook or PC with touch screen is the central element for the end user. It offers to the end user an intuitive, simple to use graphical interface for interaction with the cognitive training system, the physical training system and the independent living component. With simple operations (touching on a soft button) accessing the 3 different integrated components is possible.

The PC runs the cognitive training system and provides simple access to the wireless sensor system which is monitoring activities and movements of the end user and generates an alarm in case of detected emergency situations. Additionally it monitors the usage of the physical training components.



**Figure 1: LLM service description**

Efforts will be undertaken during LLM so as to integrate the different (existing) physical subsystems of the project, namely, the the Independent Living Component (ILC), the Cognitive Training Component (CTC) and the Physical Training Component (PTC). For this to be properly done, one needs each component to be able to sufficiently communicate with the others in a standardised (as much as possibly achievable) way. A reasonable solution to this end may be the use of XML in the description of each subsystem and the exchange of important information. Possible starting schemata for such integration will be provided below in other relevant sections.

#### **B1.1.4 Envisaged usage of the service**

The **LLM** service is designed to provide its features to elderly people living at home, staying at day care centres or being hospitalized in a simple user-friendly way. Though these three categories significantly differ from one another they can all utilize the **LLM** platform, by gaining different benefits each time. Each of these three cases is described with examples below:

##### A. Elderly remaining at home

Mrs B. is an old lady who has recently widowed and is now living in the same town as her daughter. Nevertheless there is such a distance between them that forbids her child to constantly visiting her and seeing if everything is alright. While this distance arrangement has successfully worked while Mr. B was alive, after his death, Mrs B's daughter finds herself worrying more intensely about her mother, afraid that she might fall at any time, without having someone to help her. She is thinking about hiring a personal caretaker, but knows that her mother will not accept full time care. Finally, her mother is already showing some signs of memory loss, a definite sign of cognitive decline.

**LLM** can be used in such or a similar scenario very effectively. First of all, it would be easier for Mrs B. to accept having around, since it would be less obtrusive than a home personal caretaker. Meanwhile, the eHome environment would monitor the movements of Mrs B. and notify her daughter at home or at her mobile if anything went wrong. Thirdly, it would create a training programme for Mrs B. following the pattern for an aged person in moderate condition and motivate her to work out mentally with BrainFitness (or any other cognitive training software) and on the physical training equipment, which for the case of Mrs B. would be a recumbent bike.

The usage of the service would go along these lines: Mrs B. wakes up. After washing up, she approaches the touch screen of the LUI of eHome and selects to automatically raise up the blind from her windows. She sits then on her armchair and clicks on the touch screen to initiate the cognitive training procedure. A number of exercises appear on the touch screen and Mrs B. clicks

on the correct answer by putting her finger on the corresponding button-image on the screen. At any time she can stop the procedure by clicking on the corresponding button; otherwise the procedure will eventually finish for this day, asking her to return tomorrow. During the evening the system suggests her to sit on the recumbent bike and follow the training program according to the displays on the screen. Since Mrs B. has improved during the last two weeks the program will set a slightly more challenging physical program and monitor her performance. If she can keep up with the pace then after two weeks a more intense work out will be proposed. Otherwise, the system will return to the previous pace and will display related messages accordingly.

The effects on the lives of Mrs B. and her daughter are various. First of all Mrs B. her self feels more self-reliant and independent, not only because she can move freely around the house without any worries, but also because she is feeling physically and mentally fit. Furthermore, her daughter is not afraid about her mother being helpless, since she knows that in the case of an emergency the system will immediately notify her. Finally, on a less important -but still worth mentioning- level, her family has saved a lot of money first of all by not hiring someone for exclusive 24 hour care but also by prolonging the cognitive and physical well-being of Mrs B and thus postponing any intensive care or hospitalization needs.

### B. Elderly day care centres

The day care centre for the elderly in a small town is a nice and clean place where aged people can spend their talking to each other, playing games and generally entertaining themselves. However, the number of elderly people in the centre and subsequently of the ones with mild dementia or more serious cognitive disabilities has risen over the years. Consequently, the care centre's staff does not have adequate time to spend on each person while the increased number of people with cognitive deterioration makes the situation even worse. Relatives are contacted and are asked to provide exclusive care to their parents, while the manager of the centre believes that more stuff is needed but cannot be afforded.

**LLM** could be used in medium and large size elderly care centres, because it provides an interesting way to keep the elderly occupied, while improving their mental and physical condition. In this respect, we envision that a day care centre using **LLM** would have an eHome installation and in a specific purpose room the touch screen and all physical training equipment. In this case, more than one apparatuses could be used, in order to provide different levels of exertion according to the user's abilities. The elders would enter the room, sit on the armchair and use on or more touch screens to access the cognitive training software. Meanwhile, they would work out on the equipment of their choosing watching their performance on the screens and remaining fit for a longer period of time. Finally, if any accident were to occur inside the eHome framework, the centre's staff would be immediately notified to urge to the place of the accident.

This advanced installation offers an added value to the day care centre, by prolonging, through the training process, the time that elders remain in a mental and physical condition that allows them to interact or at least coexist with other people, without the need for more intensive personalized care. This results into them being able to visit the day care centre for a longer period of time improving their own quality of lives but also the revenues of the care centre. Moreover, the staff should not be linearly proportional to the number of day care centre visitors since the monitoring system would take care that immediate action would be taken if an accident occurred.

### C. Clinics for the elderly

If an elder is hospitalized it means that he or she is in need of more intensive care. Nevertheless, many such places allow the elders to move freely around its facilities, provided of course that they have the required mobility skills. Much like as at the day care centres, constant monitoring of their moves is not possible. Meanwhile, though most clinics provide physiotherapy sessions, they lack of any methods for cognitive training.

**LLM** could be used in its extended installation for elderly clinics, providing a sensor network all over the place and moreover including at the clinic's facilities special rooms for the cognitive training of the hospitalized. Meanwhile, the physical training equipment could be used complementary to the normal physiotherapy sessions of the elderly. The **LLM** service would first and foremost be used by the hospital's staff to know whether any of their patients has had an accident, so as to take care of him or her immediately. Moreover, the elders would visit the cognitive training rooms and use the BrainFitness software to stimulate their mental functionality. For maximum effect, the clinic could have a specially trained neuropsychologist to evaluate each patient's progress in parallel with the **LLM** system and provide further feedback in the form of personal interviews. Finally, patients whose physical condition allows them to do that, could be encouraged by the hospital's staff to use the physical training equipment, following the system's motivational advice. This complementary training would further increase the mobility skills and improve the physical well-being of the patients.

Taking into account that hospitalized persons suffer either from a cognitive and/or a physical related problem, **LLM** could have a tremendous effect on each different group. Its cognitive training component could be used by every patient, with the only exception those with severe cognitive malfunction. On the other hand, this group could make use of the physical training equipment, thus improving its freedom of movement. Meanwhile, patients in a milder situation could benefit from both components, while all three aforementioned groups would enjoy freedom of movement within the hospitals premises due to the monitoring system of eHome.

#### B1.1.5 Integration of the different sub-systems/components

A possible integration scenario that may be utilised to put the aforementioned LLM service descriptions under a common umbrella (and following the integration notion provided earlier) is illustrated in the figure below:

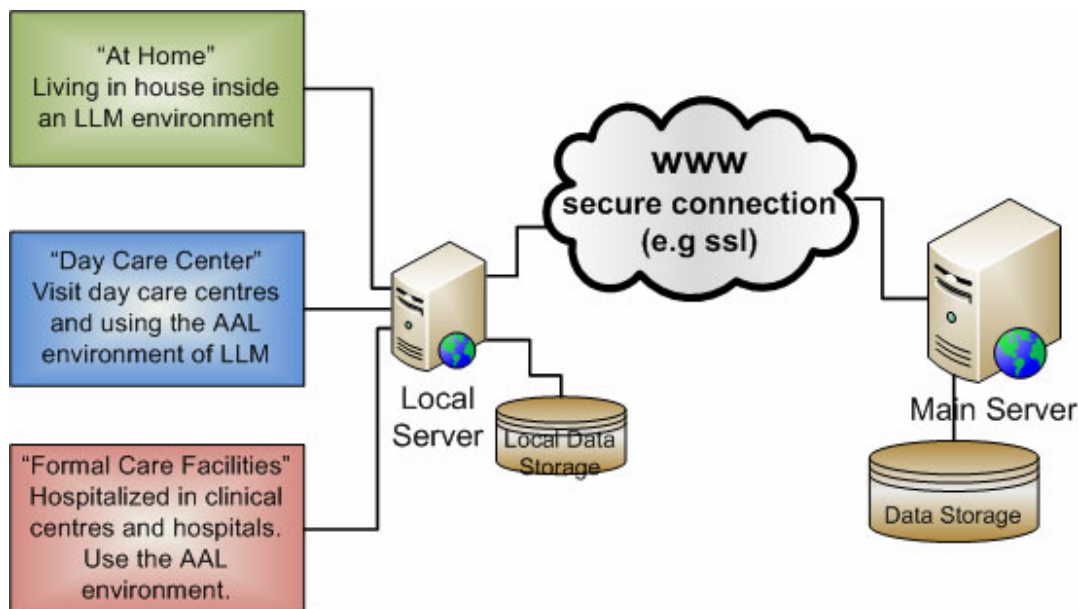


Figure 2: Integration scheme for the LLM services

Following these three envisioned usage scenarios, our business plan involves promoting three respective solutions in different scale (and consequent cost) to effectively cover each of those cases.

## **B1.2. Project objectives**

The strategic objective of the **LLM** project is to integrate two existing ICT solutions with physical training equipment, thus delivering an innovative system for ageing well and validating the resulting service in various sites all over the EU. The reasoning behind our project is our belief that a unified solution of different components from ambient-assisted living and self-training will be able to surpass existing unilateral approaches. Piloting this service at a European scale with the aid of the CIP funding, will comprise the pole on which the **LLM** consortium can step to reach a wider market and aim for extensive service deployment.

We are planning on validating the efficiency of our service, promoting and disseminating its results by holding pilots in five EU member countries: Austria, France, Greece, Spain and UK.. The people that will be directly affected by our pilots will be:

- The ones living at their houses inside an **LLM** environment, utilizing its AAL and training services ("At Home" installation)
- The ones visiting day care centres and using the AAL environment of **LLM**. Optionally, they might use the training components as well ("Day care centre" installations)
- The ones being hospitalized in clinical centres and hospitals. They use the AAL environment, while following the cognitive training and using the physical training component as complementary to their physiotherapy sessions.

As indirectly affected we count end-users (elders and their relatives) that find out about the **LLM** service or watch it being applied to others. In this respect, we anticipate that all residents inside a care or clinical centre will be affected by the pilot trial there: either directly or indirectly. Furthermore, we remind here that all pilots will be iterated in four phases, a fact which increases the number of implicated users. Moreover, as the profile of users addressed in **LLM** includes not only end users but also providers of services supporting the end users, in most of the cases "professionals" that act as de facto "prescriptors" of the service and public administrations promoting and backing PPPs (public-private-partnerships) and funding initiatives under the corresponding National Programmes, in the planned pilots we will try to include all of them in order not to miss any important feedback.

The overall project objective can be broken down in the following underlying objectives, described on the table below:

<b>Objective N°</b>	<b>BRIEF DESCRIPTION</b>
O1	Integrate two existing ICT solutions with physical training equipment, thus delivering innovative ageing well / independent-living support services for elders
O2	Demonstrating the significant impact potential of <b>LLM</b> service in five different countries
O3	Verify the technical, organisational and legal feasibility of <b>LLM</b> service along the complete value chain of stakeholders
O4	Verify the sustainability, scalability and applicability of <b>LLM</b> services across Europe

**Table 1: LLM underlined objectives**

No.	OBJECTIVE	INDICATOR	GOAL
<b>O1. Integrate two existing ICT solutions with physical training equipment, thus delivering innovative ageing well / independent-living support services for elders</b>			
1.	Ensure that all technology components are effectively integrated in field operation.	Successful technology installation in field is completed by trained staff according to budgeted time frames, and technical workarounds are not required.	For all sites, no or minimal: <ul style="list-style-type: none"> <li>• Additional installation costs</li> <li>• Additional training costs and staff</li> <li>• Time extensions</li> </ul>
2.	Ensure that all technology components, and the integrated solution operate according to design in field operation.	Number of technical support calls for non-training issues is within established threshold. Comparison of log-files and system responses with diary notes of the test persons and/or supporting and trainer persons indicate correct and consistent operation of the system.	For all the rest piloting sites, where the trained staff might help the elderly less than 3 calls per installation. Log files will be correlated with caretaker notes: no discrepancies will be allowed, in the sense that all accidents must be identified by the system.
3.	Ensure that all documentation (training and reference) is complete and accurate.	Number of technical support calls for training issues is within established threshold.	For all sites, at most 3 calls per installation.
4.	Ensure that all user interfaces with the technology meet usability needs of the operators and end-users.	End-user satisfaction levels regarding usability of the technology are within established threshold, based upon interviews with and questionnaires from end-users and operators.	For "At Home" installations, a goal of 75% satisfaction on the service is set, bearing into account that most elders still feel uneasy with technological solutions.  For "Day care centre" installations a goal of 80% is set, since the elders are free to use the service at their own discretion, while being provided help by the trained supervising staff.  For "Clinical Care Facilities" installations a goal of 85% for user satisfaction is set, since the LLM training is included in the services of the clinical centre and will be thoroughly explained to the users.
5.	Ensure that the form factors employed are considered attractive by users	End-user satisfaction levels regarding form factor attractiveness are within established threshold, based upon interviews with and questionnaires from end-users and operators	The same as for objective 04.
<b>O2. Demonstrating the significant impact potential of LLM service in five different countries</b>			
1.	The user experience with the solution is positive, encouraging compliance with a recommended programme for that user.	End-user compliance with specified programme is within established target range.	"At Home" end-users should be in accordance with their testing programme at approximately 85%.  "Day care centres" and "Clinical Care facilities" users should be in accordance with their programmes over 90% taking into account that

No.	OBJECTIVE	INDICATOR	GOAL
			their supervisors set the parameters for each user
2.	Cognitive and Physical Outcomes	End-users meet or exceed defined primary (neuropsych testing) and secondary (real-world outcome) outcome measures.	
3a		Primary efficacy endpoint: Improvement of experimental group in standardized cognitive function and cognitive/motor activity in daily living relative to control groups.	These results should be coherent with recent studies on neuroplasticity and cognitive training.
3b		Key secondary endpoint: Quality of life related to improvement in cognitive, motor and social function indices and autonomy.	More than 30% of personal interviews and caretaker or relative answers should indicate positive evolutions in these fields. Another 30-40% should denote stable situation for the user. Less than 30% should detect cognitive or physical deterioration.
3c		Key secondary endpoint: Changes in abnormal brain waves that correlate with mild cognitive decline and dementia (using MEG-Konstanz or EEG).	These results should be coherent with recent studies on neuroplasticity and cognitive training.
4.	Legal and Ethical Compliance	Based upon a detailed ethical and legal review, all relevant national and European level requirements are met, enabling the solution to be delivered competitively across the EU.	All pilots should comply with the ethical guidelines in this sector. A minimum set of complains (less than 1% among the service's users) should be expressed.
<b>O3. Verify the technical, organisational and legal feasibility of LLM service along the complete value chain of stakeholders</b>			
1.	Installation procedures are efficient and require minimal specialised skill for completion.	Technical staff, with defined minimum skill level, is able to effectively install the system without additional training.	All installations take place on time and without problems in the functionality of the system. Possible acceptable problems, if any, may only be attributed to hardware problems, and not software or integration problems.
2.	Installation procedures are defined and documented thoroughly and accurately.	Number of technical support calls from installers is within established threshold.	At most 5 calls per installation
3.	Training programme for operators is thorough and accurate.	Number of technical support calls from operators for non-fault conditions is within established threshold.	At most 5 calls per "At Home" installation and 3 calls for other installations.
4.	Technical support and help desk procedures are effective.	All reported technical problems are addressed on a timely basis and responses are commensurate with the severity of the issue.	Less than 0,1% of the overall testing population should call or email us for not being supported by our staff.
5.	Monitoring procedures	Data collected from during and	All requirements for operational and



No.	OBJECTIVE	INDICATOR	GOAL
	are well-documented and easy to complete.	after pilot is complete and effective in providing insight into outcomes for end-users.	technical specifications should be able to be addressed in the provided documentation.
<b>O4. Verify the sustainability, scalability and applicability of LLM services across Europe</b>			
1.	End-User Response	Based upon questionnaires and interviews, pilot organisations and end-users report a high level of satisfaction with the use of and results from the solution. The questions will include evaluation of user-friendliness, usability, safety features, usefulness of actuators, correspondence of the personal training programme to the user's own perceived needs.	<p>For "At Home" installations, a goal of 75% satisfaction on the service is set, bearing into account that most elders still feel uneasy with technological solutions.</p> <p>For "Day care centre" installations a goal of 80% is set, since the elders are free to use the service at their own discretion, while being provided help by the trained supervising staff.</p> <p>For "Clinical Care Facilities" installations a goal of 85% for user satisfaction is set, since the <b>LLM</b> training is included in the services of the clinical centre and will be thoroughly explained to the users.</p>
2.	Pricing	Pricing of the solution is competitive within a group site (i.e., elder care home) setting, and budgetary requirements of elder care facilities can be addressed effectively through the solution.	More than 70% of the answers to a related question in the user questionnaires should differentiate less than 10-15% to the real pricing for the product.
3.	Accessibility	The deployment of the solution is shown to be able to be delivered in a range of different elder care environments, and with minimal requirements for enhancement of infrastructure.	All three types of installations should be validated and approved by their end-users. This would demonstrate that <b>LLM</b> can be successfully deployed in various situations.
4.	Differentiation	The solution is sufficiently differentiated in terms of both features and quality of outcomes as compared to other solutions for cognitive exercises, providing competitive advantage through unique solution capabilities.	Less than 25% of the elders having used another ICT solution for independent living or cognitive training (since one that has both components does not exist, yet – hence the innovation of <b>LLM</b> ), should express the opinion that the other service was more helpful, robust, easier to user or more affordable.

**Table 2: Objectives, Indicators and goals**

Pilot	Description	Installation type	Services currently provided / to be provided by LLM
<b>Austria</b> The Municipality of Schwechat (that is planned to join the project as partner latest at month 4) in cooperation with RALTEC is going to include LLM service in the LivingLab Schwechat. It focuses on rehabilitation and Ambient Assisted Living technologies as well as on modern urban and regional planning technologies. It's open both to companies and research institutes.	<b>The Municipality of Schwechat</b> In Schwechat we will deploy a number of 5 to 6 "Home Environment" installations of the LLM service, thus directly reaching the end users of the service. We aspire that the results of these pilots will be easily disseminated in the Schwechat community as well as in the European through the Network of European Living Labs to which this Living Labs Schwechat belongs.	-At Home -AAL-demo apartment	<ul style="list-style-type: none"> <li>Care taking services for seniors living on their own</li> </ul>
<b>France</b> The LLM pilot in France will be tested in the following centres/places: - Day care center (OSE) - Retirement home (MAPI) - Network of home assistance (AGEP) - Long term hospital (Marne La Vallée Hospital)  Overall for the French pilots, we estimate some 500 users to be involved in the LLM service and about 50.000 learning about it through recommendation, formal care or public information channels, taking into account that the target area is the capital of France and that public and day care organizations are implicated.	<b>OSE (Oeuvre Sociale pour l'Enfance)</b> OSE is an organization which was created in the beginning of the 20th century. E-Seniors has been working for 2 years in 2 of the day care centres, setting up computer based activities for senior, handicapped and MCI sick people, and will continue next year to set up cognitive and physical stimulation activities in the new centre for younger Alzheimer sick people (from 50 years old). One to two "Day care centre" type installations of LLM are going to be installed into the 3 day care centres of OSE.  <b>East – Paris AGEP network for seniors</b> The institution intervenes with patients in close collaboration with the treating physician and all the professional health and social sector that supports the elderly. The services offered are as follows: <ul style="list-style-type: none"> <li>Practical information reserved for patients, their families and professionals about everything related to the elderly in the East of Paris (11 th, 12 th, 19 th and 20 th districts).</li> <li>Medical benefits and help</li> <li>Talk groups: Informal discussion meeting with the patient and his family</li> <li>Home visits</li> </ul> The AGEP institution will facilitate the deployment of 2-3 "At Home" installations for elderly people in East Paris. Through the AGEP platform we anticipate a wide dissemination of the results of the	Day care centres  Formal Care Facilities	<ul style="list-style-type: none"> <li>Small group lessons/support in pleasant surroundings; group classes to retirement homes and recuperation centers;</li> <li>computer assistance to housebound seniors;</li> <li>assistance with acquisition of hardware and set up; trouble shooting assistance on equipment;</li> <li>provision and running of exercises for cognitive and physical stimulation of the elderly.</li> </ul>

	<p>trials to the elderly people in the region.</p> <p><b>MAPI Les Amandiers Retirement home (Paris 20)</b> MAPI Les Amandiers is a private retirement home hosting elderly residents of various conditions, from autonomous and semi-dependent to ones suffering from mild dementia and cognitive deterioration. The institution has 124 beds and about 100 residents. We plan on setting one "Day care centre" LLM installation type to provide training for the entire population of the institution.</p> <p><b>Long term hospital (Marne La Vallée Hospital)</b> (formal care centre).</p>		
<p><b>Greece</b> Piloting in Greece will take place in municipal and other societal facilities selected for their access to the target population, average socio-economic status, and proven interest and effort in enhanced social services and new technologies. The sites complement each other in the characteristics of elderly served, one being primarily a recreation and social service community, thus serving primarily healthy aging persons, another being a medical service and prevention facility, thus serving a higher proportion of persons with mild to moderate cognitive impairment, while a third one is a day care centre. All facilities work directly with large populations of elderly and have earned the respect and acceptance of the local populations; they are sufficiently staffed and will be equipped for carrying out the LLM pilot; they are also committed to providing increasingly</p>	<p><b>Health Centre of Vyronas</b> The Vyronas Health Centre (HCV) is a branch affiliate of a large Athens General Hospital and caters to primary care needs of the area. The centre places great importance on prevention and health education, having recently being reorganized and already achieved a very high status among the locals. One "Formal Care facilities" installation of LLM is going to be installed at the Vyronas Health Centre, reaching an approximate 500 hospitalized residents. The LLM service will involve some 100 people. The indicated indirect impact potential of this pilot is very high, around 25.000, due to the fact that IGNA belongs to the Ippokration General Hospital of Athens.</p> <p><b>Municipality of Ymittos</b> The Ymittos Centre for Open Protection of the Elderly, operating under the auspices of the municipality, caters for the local population in its two branches, providing ample space and physical therapy facilities, as well as trained supervisory personnel. The centre attracts large numbers of elderly participants through social service and recreational programs (physical exercise, arts training, dance groups, excursions, cultural events, shows, etc.) and access to medical and physical therapy services. Pilot plans include a "Day care centre" installation of the LLM service affecting about 100 people and having a wider impact on about 3.000 people.</p> <p><b>CHARISSIO Day Care Centre of The Greek Association of Alzheimer Disease and Relative Disorders -</b> The Greek Association of Alzheimer Disease and Relative Disorders is a non-profit organisation founded in 1995, by</p>	<p>Day care centres</p> <p>Formal Care Facilities</p>	<p>Formal Elderly Care by multidisciplinary teams; Public guesthouses for the elderly under medical supervision; provision and running of exercises for cognitive and physical stimulation of the elderly;</p>

sophisticated services and special programs to address the needs of the elderly population.	relatives of patients suffering from the Alzheimer Disease as well as by doctors of all specialties and mainly by Neurologists and Psychiatrists and also by other experts (such as psychologists, civil servants, physiotherapists, etc) that deal with the problems caused by this illness and by other senilities. The Association cares not only for people with dementia, but also for all elderly people in need of support and aiming to avoid dementia. A number of more than 80 older people are daily/routinely served by a combination of experts as indicated above. The specific LLM trial will take place within the Day Care Centre called Charissio. Pilot plans include a "Day care centre" installation of the LLM service involving some 50 people, and having a wider impact on about 500 people.		
<p><b>Spain</b></p> <p>INTRAS will test the pilot in three provinces of the region of Castilla-Leon (Zamora, Valladolid and Salamanca), which is the Spanish region with a high percentage of elderly people. The LLM services involve some 200 patients in 2 Memory Clinics, a Psychosocial Rehabilitation Center, an Alzheimer's Center and a Geriatric Center. INTRAS having developed its own software for memory training (GRADIOR) will test the physical equipment with both the BrainFitness software and the Gradior software. The BrainFitness will be tested in one of the Memory Clinics, the Geriatric Center and the Alzheimer Center while the Gradior will be tested in the other Memory Clinic, the Psychosocial Rehabilitation and the Alzheimer's Center.</p>	<p><b>Memory Clinics, Valladolid &amp; Zamora</b> (Day care centers)</p> <p>The Memory Clinics are composed of a team of psychologists who developed research and intervention projects in the field of new technologies. Its main objective is to improve the quality of life of the elderly and the people with disability through the research an intervention, as well as the design of cognitive intervention programs through the use of new technologies. They provide GRADIOR courses, aiming at training in the traditional cognitive rehabilitation systems and at knowing the development and the operation of the GRADIOR software, as well as setting up future research lines. Each year, there are two courses sessions beginning in general in January and June, in addition to the correspondence courses. Furthermore, memory training sessions addressed to the elderly are carried out for about ten years in order to improve their cognitive skills. The LLM service will involve some 2x30 users.</p> <p><b>Alzheimer Reference Center, Salamanca</b> (Day care center)</p> <p>Reference Center of Alzheimer at national level. It is a public center, specialised in research, analysis, evaluation and knowledge of the best models for sociosanitary services and the improvement of the quality of life of people suffering of Alzheimer and other dementia as well as their families and carers. With regards services provided, the center promote basic and applied research on the sociosanitary field in all the country, it offers permanent and temporary residential services to patients, having about 112</p>	<p>Day care centres</p> <p>Formal Care Facilities</p>	<p>Sociosanitary services; sociosanitary related research; permanent and temporary residential services for people with Alzheimer; brain training and cognitive rehabilitation programs addressed to the elderly through the use of new technologies; Gradior training courses for professionals; support training of families and carers of people with Alzheimer and other dementia.</p>

	<p>places. It will also promote all aspects related with treatments and care provision models, rehabilitation and maintaining of the patients with Alzheimer and other dementia, and support training of professionals and of carers. The LLM service will involve some 50 users.</p> <p><b>Psychosocial Rehabilitation Center of the Zamora Province Hospital</b> (<i>Formal care facility</i>) Public hospital of the city of Zamora. It offers sanitary services to people with mental illness, among them elderly people. It has a special unit for the families and the carers of the patient, aiming to provide the families with the possibility to leave the patients for specific moments, where they are fully supervised and controlled. The Unit is composed by other structures such as supervised flats, where the patients have the opportunity to spend some full days. These structures are addressed to people with psychiatric/ mental illnesses, including elderly people, which do not need to be fully hospitalised but need a family support treatment. The LLM service will involve some 40 users.</p> <p><b>Geriatric Center, Toro, Zamora</b> (<i>Day care facility</i>). The LLM service will involve some 50 users.</p>		
<p><b>UK</b> The Milton Keynes Council as an LLM partner will act as pilot locations for the LLM solution in the UK under the guidance of partner GSI.</p>	<p><b>Milton Keynes Council</b> Milton Keynes is one of the fastest growing districts in the country. Growth expected to continue and accelerate through 2031. It is estimated that the elderly age group (60+) will increase by approximately 150%. The very elderly (85+) is estimated to increase by 248% (from 2,330 to 9,000 in 2031.)</p> <p>The pilot location will be senior day centres where a large number of elderly in the community are directly serviced, focusing upon individuals meeting the core criteria (i.e., the centre selected will not be focused upon dementia care).</p> <p>The LLM service will involve some 350 users, but having a wider impact on some 1500 elderly.</p>	senior day centres	<p>Identify two (2) – three (3) potential pilot locations.</p> <p>Coordinate medical and administrative staff to perform all necessary functions (screening, monitoring, and reporting).</p> <p>Conduct 3 iterations of the pilot at the selected locations and coordinate activities and communication of results with other pilot programmes through GSI.</p>

**Table 3: LLM Pilots**

### **B1.3. EU dimension**

It is today widely documented that the Earth's population is growing<sup>1</sup>. Demographic trends are revealing: In 1950 the European countries had a population of age 65+ of 45 million; in 1995 the population of age 65+ had more than doubled to 101 million; by 2050 Europe will have 173 million people aged 65+<sup>2</sup>. Eighteen out of the 20 countries in the world with the highest percentages of older people are in Europe. In these countries, between 13.2% and 17.9% of the population are over 65 years old. The UK Census 2001 found that, for the first time, there are more people over the age of 60 than there are children, with the greatest increase in the age group of 85 and over<sup>3</sup>. EU countries are the oldest in the world and are expected to age further in the next decades, in connection to longer life expectancies<sup>4</sup>.

Furthermore, other social trends (more women at work, dispersed families) lead to old people who are limited in their homes (smart or not) or institutionalised and left to face social exclusion. The elderly can feel safe there, but the quality of life that is imposed to them is low, further aggravated by cognitive degeneration which follows lack of opportunities to actively participate in the society.

To mitigate the impact of the above to older people, a number of policies have been designed and implemented in the EU. Below we present these policies and describe how Long Lasting Memories considered them during its preparation and how it supports their objectives.

#### **B1.3.1 The European Pact for Mental Health and Well-being**

An EU High-Level Conference "Together for Mental Health and Well-being" took place on 13 June 2008 in Brussels, and established the "European Pact for Mental Health and Well-being"<sup>5</sup>. The Pact calls for action in five specific areas, one of which being "Mental Health of Older People". Specifically the Pact recognises that:

"The EU-population is ageing. Old age can bring with it certain risk factors for mental health and well-being, such as the loss of social support from families and friends and the emergence of physical or neurodegenerative illness, such as Alzheimer's disease and other forms of dementia. Suicide rates are high in older people. Promoting healthy and active ageing is one of the EU's key policy objectives."

The Pact invites policy makers and stakeholders to take action on mental health of older people including the following:

- Promote the active participation of older people in community life, including the promotion of their physical activity and educational opportunities;
- Provide measures to promote mental health and well-being among older people receiving care (medical and/or social) in both community and institutional settings;
- Take measures to support carers.

---

<sup>1</sup> World Health Organisation [WHO]. Active Ageing: A Policy Framework. Available from [www.who.int/hpr/ageing/ActiveAgeingPolicyFrame.pdf](http://www.who.int/hpr/ageing/ActiveAgeingPolicyFrame.pdf).

<sup>2</sup> Eurostat, 2008.

<sup>3</sup> UK National Statistics Online (NSO), 2002.

<sup>4</sup> Ambient Assisted Living – European Overview Report, 2006

<sup>5</sup> [http://ec.europa.eu/health/ph\\_determinants/life\\_style/mental/mental\\_health\\_en.htm](http://ec.europa.eu/health/ph_determinants/life_style/mental/mental_health_en.htm).

**LLM** will implement a service that directly answers these concerns, enabling older people to combine physical activity with cognitive exercises, thus improving their mental health and well-being.

### **B1.3.2 Health and the use of ICT**

eHealth plays a key role in the eEurope strategy since the initiative was launched in 1999 and followed up by successive Action Plans eEurope 2002, eEurope 2005 and i2010. The first EU eHealth Action Plan adopted in April 2004 seeks to boost the creation of national eHealth infrastructure systems, electronic health records and patient summaries and to ensure their interoperability.

The Action Plan for the period of 2004-2010 focuses, among others, on accelerating implementation of eHealth information on for example health education and disease prevention.

In June 2006, the Commission's ICT for Health Unit adopted a new strategy to promote the transformation of the European healthcare landscape. It argues that in order to face the challenges of the ageing population and other healthcare challenges Europe needs a "new healthcare delivery model, based on preventive and person-centred health systems, which can only be achieved through proper use of ICT".

The approach is said to build upon the eHealth Action Plan and to be in line with the Commission's new i2010 policy framework to promote application of ICT to improve social inclusion, public services and quality of life<sup>6</sup>.

**LLM** is directly aligned with these initiatives, as it will offer the ageing population a preventive, person-centred, training service to improve its quality of life.

### **B1.3.3 ICT for Ageing**

ICT for Ageing is not only a CIP significant priority. It is a wider EC priority that is supported by many policies and initiatives at European level. The relationship of Long Lasting Memories with these policies is presented below.

<b>Policy</b>	<b>Long Lasting Memories</b>
iEuropean i2010 initiative on e-Inclusion <sup>7</sup> : One of the key societal challenges recognised in the i2010 strategy is to make real improvements in the provision of healthcare, when our ageing society is placing increasing demands on the underlying services and infrastructure.	Long Lasting Memories is answering directly at this challenge, as it is deploying and promoting a service meeting a clear demand of our ageing society, i.e. prevention of degeneration (or even enhancement) of their cognitive abilities.
iEuropean i2010 initiative on e-Inclusion: facilitate independent living and lifestyle management addressing also the needs of specific groups such as the elderly.	Long Lasting Memories is clearly promoting the objectives for independent living and exactly focuses on facilitating independent living and lifestyle management for the elderly by enhancing their ability to interact with their environment.
Ambient Assistive Living Article 169: aims to stimulate the development of products and services for societies being characterised by	Long Lasting Memories provides the technological solution and deployment proof-of concept for a service for real users in real life

<sup>6</sup> <http://www.euractiv.com/en/health/article-117474>

<sup>7</sup> COM (2007) 694 - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Policy	Long Lasting Memories
demographic change.	environments.
Ambient Assistive Living Article 169: improve policy co-ordination in a field where innovation process has to be accompanied and stimulated by public authorities because of its social dimension.	Long Lasting Memories incorporates a number of public partners from EU countries in order to get them actively involved in the process and enable them to exploit the opportunities offered.

**Table 4: LLM positioning on the ICT for ageing priority**

### **B1.3.4 Smart Homes**

Driven by the ageing of the European population, a recent focus on the smart home market is taking place. Also in EC funded initiatives, such as FP6, FP7, and AAL, a lot of effort is being put into making homes smarter, more assistive and more enabling for the elderly. The current smart homes can serve as a real shelter for fragile older people: they feel protected by the monitoring and surveillance systems and care is provided when needed; they also feel protected against intrusion and fire, they can watch TV and talk to anybody outside the world. But beside its "shelter" use, Long Lasting Memories aims to creatively utilise this environment, today available in smart homes, by providing training services through which the elderly will increase their cognitive abilities.

In this respect, **LLM** not only showcases the benefits of smart homes in real life situations, but also extends their benefits by integrating innovative training products and services.

The **LLM** consortium will also seek to be accredited by the European award scheme for smart homes and independent living applications that is to be established in the EU. According to COM(2007) 332, one i2010 smart home site will be recognised in each Member State by 2008, with a significant increase by 2010, leading to a European network for exchange of experiences and good practices.

### **B1.3.5 Coordination with EU Member States**

Health, including mental health, is a precondition to active ageing, and "fostering good health in an ageing Europe" is the first objective of the health strategy presented by the Commission in its 2007 White Paper "Together for Health. A strategic approach for the EU 2008-2013"<sup>8</sup>.

Within the overall health strategy, initiatives at EU-level address the situation of dependent frail older people, including those who live with some form of dementia, such as Alzheimer's disease. Work with Member States under the open method of coordination on social protection and social inclusion explores ways to address the multiple needs of the dependent population and tackle some of the ill-health determinants. Furthermore, the Commission opened up a debate on how the dignity of older people could be protected more effectively and how elder abuse and neglect can be prevented.

In a paper entitled "Mental Health in Older People - Consensus Paper", based on input by a consensus group that met in Luxembourg on 28th February 2008, the example of a project from the Czech Republic is mentioned. The main goal of the project is to improve cognitive and physical functions of seniors who are clients of the Municipal Centre of Social/Domiciliary services in the city of Sokolov. In a series of regular small group encounters, training of cognitive

<sup>8</sup> <http://www.ec-mental-health-process.net>.



functions in a playful format are organised (by the means of puns, puzzles, relaxation techniques, music therapy and art therapy). Simultaneously, lessons of fitness training are also scheduled. Evidence-based training methods of cognitive function and improvement of physical fitness and physical movement are employed in the project. The evaluation tested the cognitive functions and changes in physical fitness and mobility using tests of physical movement and medical examination of general health status. Results showed improvement of the general mental health status and communication skills of clients and improvement of the participants own approach to personal health and physical fitness."

**LLM** is fully aware of the above project and EU wide initiatives, and will work in close cooperation with the appropriate actors in all Member States in order to ensure its service is tailored to different national conditions. Long Lasting Memories will deploy a solution that is coordinated among different value chain actors, and implement a service that covers a specific need of the elderly with growing importance, i.e. cognitive degeneration. The consortium partners will interact not only with end-users (older people), but also with service providers, care organisations, social professionals, industry, research, and governmental actors and other public decision bodies involved in financing and providing social and medical care in different EU Member States.

#### **B1.3.6 EU-US cooperation**

Last but not least, the EU-US cooperation in the field of eHealth is of special importance. According to the Commission's Information Society DG Director-General Fabio Colasanti, "EU-US co-operation on eHealth is important as we are both large economic areas with the same characteristics [c.f. ageing population]. We need to co-ordinate the development of standards and interoperability in this field"<sup>9</sup>.

**LLM** offers such co-operation by enabling common cognitive training standards to be established in the EU and the US through the cooperation of the European partners with the US Company (PositScience) that is most advanced in the field of cognitive training in the US. A cooperation letter by PositScience is also provided, documented the strong links have been developed across the two sides of the Atlantic.

---

<sup>9</sup> <http://www.euractiv.com/en/health/article-117474>

## **B1.4. Maturity of the technical solution**

The **LLM** service will provide its innovative service by integrating two existing successful ICT solutions with custom training equipment, along the lines of the CIP work programme, which accepts proposing the market validation of non-existing systems that can be created by the merging of existing partial solutions. Of course, one prerequisite for such a service is to demonstrate significant impact potential according to the specific objective of the work programme. As explained in chapter B2.1 of this report, we believe that the **LLM** service complies perfectly with the target objectives of the 1.4 objective for the CIP programme, and therefore its integration process will be worth as it will result into a really relevant innovative ICT solution.

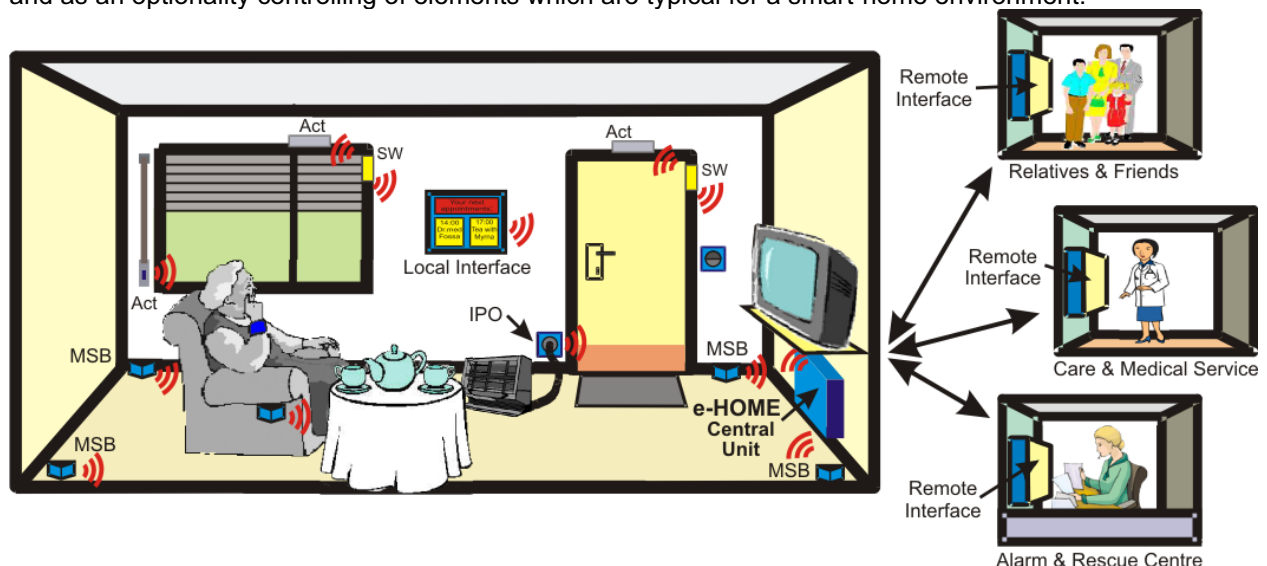
In this respect, the **LLM** does not currently exist. However, as it has already been explicated, the **LLM** service will be based on existing partial solutions. More specifically the system is designed to comprise of three existing interoperable components which perform complementary and interactive tasks to provide the system's services:

- the Independent Living Component (ILC)
- the Cognitive Training Component (CTC)
- the Physical Training Component (PTC)

The ILC and CTC Components do already exist offering independent living and cognitive training solutions through the use of ICT. As for the PTC, since it comprises of regular home training equipment, it can be roughly described as an ICT solution, but more as another component that will be further integrated to the delivered system to provide additional features to the **LLM** service.

### **B1.4.1 Independent Living Component (ILC)**

The ILC is based on the eHome system, which is comprised of a network of distributed wirelessly operating sensors connected to an embedded system (the e-Home central unit). It includes features such as intelligent learning of normal and exceptional patterns of behaviour (dangerous situations or indicators for emerging health or social problems), raising of alarms and as an optionality controlling of elements which are typical for a smart-home environment.



**Figure 3: Typical installation of an e-HOME System and its components**

- User Interfaces: Local Interface and Remote Interfaces (on a PC or sent to a cell-phone).
- Sensors: MSB: Multi-Sensor-Box (sensor cluster), SW: Simple on/off switch,
- Facility to connect Actuators: Act: e.g. for moving blinds, door opener, window opener
- Facility to connect Sens+Act IPO: Instrumented Power Outlet (sensors for voltage and current, remote switch)
- Home Control Unit: (e-HCU) (eHome information processing)
- Connection from Local to Remote Interface over broadband

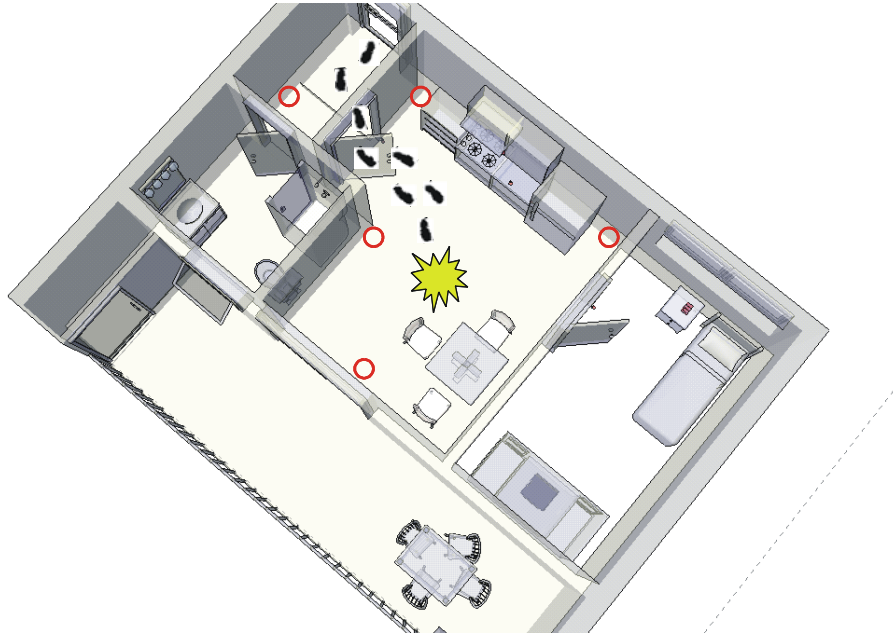
Around the embedded system forming the e-HOME-Central-Unit (e-HCU) which is managing the sensor and actuator network and carrying out the inference-drawing, two user tailored multi-modal interfaces, one for local and one for remote interaction with the system are provided for the inhabitants, the relatives, as well as for formal and informal carers.

For financial reasons the sensor network mainly consists of modules which contain a whole set of sensors connected to an embedded processor and a wireless communication unit. The sensors that are working together in a "Multi-Sensor-Box" (MSB) are:

- Temperature sensors
- Accelerometers to detect movements and vibrations (one to three axes)
- Reed-Switches (work together with a magnet)
- Facility to connect Illumination detectors for measuring the ambient light level

Every MSB-unit containing an embedded microprocessor collects the sensor readings, performs a low level signal analysis and data compression and transmits the coded and time-stamped results via the wireless network. The MSB-units are primarily battery powered. Alternative energy sources in the sense of "energy harvesting" (photovoltaic cells, energy from movements or pressure variation) are investigated to make the modules maintenance-free as much and as long as ever possible. A synchronisation with the system clock is periodically carried out to ensure accurate time-stamps.

Falls constitute one of the major safety and health risks in older people. For this reason the detection of possible falls plays an essential role in the concept of the sensor technology to be used. Feasibility tests with state-of-the-art accelerometers have shown that already a small number of accelerometers placed on the floor have the potential to detect the impact of a body to the floor and to relay this event whenever the signal shows certain characteristics in the combination of signal amplitude, duration and frequencies.



**Figure 4: Floor-plan of a home equipped with several accelerometers for**

An optional second type of sensor application regards the technology for an instrumented power outlet - IPO (wall mounted or as a power-strip) which has the capability to measure voltage and current (power) fed into an appliance connected to this power outlet. Wireless technology is also used here in order to report the readings to the e HCU.

The system provides two different user interfaces:

- The Local User Interface (LUI): This is a rather simple control box with a display, a speaker and a suitable input device (soft keys or touch screen). It is linked to the e-HCU by the same wireless network as used for the sensors / actuators – so it can be placed everywhere in the home. The entire software to run the LUI is installed in and executed by the e-HCU.
- The Remote User Interface (RUI): This interface is mainly used by relatives, carers and service providers. It is Web-based and can be accessed by using any Web-Browser. Especial attention is paid to administer the access rights in a proper way and to guarantee a high level of data protection (encryption, various levels of access rights).
- Optional a central Alarm Routing Server (ARS) can be used, which provides a VoiP-telephony based alarm signalling to central help desks of different alarm or caretaking services.

The ILC will remain as is during the integration with the rest of the **LLM** service components, as each of its functionalities need to be retained, while providing a stable basis for the cognitive training component.

#### **B1.4.2 Cognitive Training Component (CTC)**

The CTC is designed to support the cognitive exercising procedure provided by the BrainFitness software. Though any other software could be used for this process, the 6 kinds of cognitive training provided by this package, together with the extensive experience of partners UKON and ATHENA RC on it and the subsequent potential ease of customization and localization have rendered BrainFitness as the optimal choice for the initial deployment and the pilot testing of the

**LLM** system. This software is already developed and functional, running on systems with minimum requirements:

- At least 256MB RAM (512MB for Windows Vista)
- 1GHz or faster processor
- X24 CD-ROM or DVD drive
- 500MB free disk space
- Headphone jack
- Internet access

Since BrainFitness needs to be executed on a regular personal computer, whose usage we want to avoid in an effort to make the cognitive training procedure more user-friendly and accessible to the elders with reduced familiarity with technology, this component needs to be extended. The envisioned final form of this component will constitute of:

- Software: BrainFitness
- Presentation Layer: Local User Interface of eHome (touch screen)
- Central Management System (CMS): Regular low-cost personal computer close to the minimal running requirements of BrainFitness
- Delivery: Wiring with the rest of the system

The exact way plan this component integration to the rest of the system will be analysed in chapter B1.4.4

#### **B1.4.3 Physical Training Component (PTC)**

The system is completed by the Physical Training Component (PTC) which is comprised by custom training equipment. The only prerequisite for this equipment is to be able to provide exercise performance output. This signal will be hardwired to the rest of the system and its results will be processed by the CMS of the CTC.

#### **B1.4.4 Integration of the three components**

The service adaptation is divided into two directions: the first one regarding integration of the three aforementioned components comprises and the second dealing with the localization of the service for the countries where it will be piloted. Preliminary work on the merging process indicates that the components can be integrated within required time limitations. The following analysis is provided as evidence to support this claim.

The three components interact in a very clear manner as shown in the picture below:

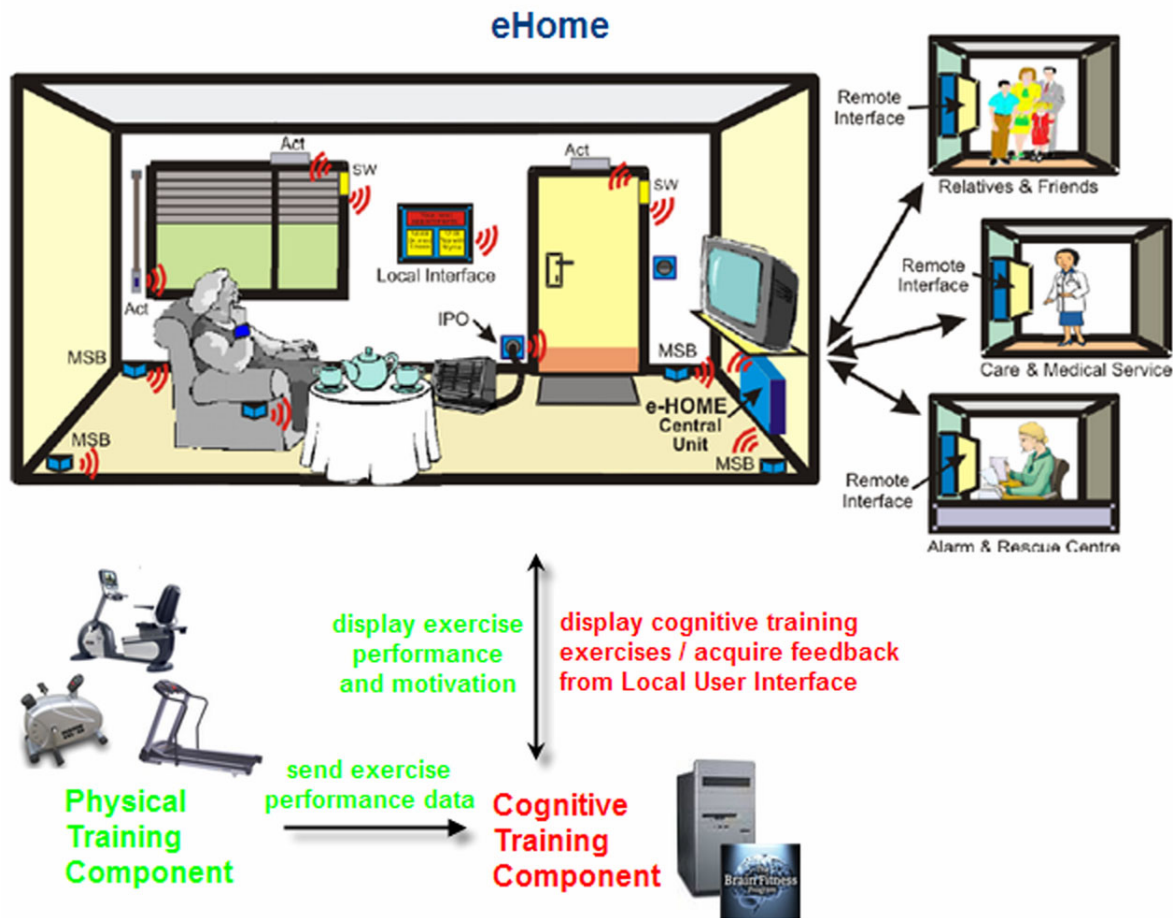


Figure 5: LLM service integration requirements

One of the most profound trivialities of the design is that the physical training equipment is merely used as an input device to the system, by providing signals corresponding to the performance of the user on that exercising device. This information is transmitted to the Central Management System (CMS) of the CTC, which digitalizes the signal and processes its values in three ways:

- By storing it into its local database for future use
- By correlating it to existing values from the database to reach conclusions about the performance and effectiveness of the exercise, creating responses like "Very good", "Not so intense", "Try a little harder".
- By forwarding the digitalized input as well as all processing resulting information to the eHome environment for display

Algorithms needed for the 2nd step of this procedure will simply look up into predefined tables for each training equipment and elderly condition (sex, age, disability etc) and provide the appropriate response. These tables will be defined by a group of medical experts taking part in our consortium during task T.3.1. A relevant table will also be used by CMS to provide the personal training programme for **LLM** users. The parameters for the system's users will be set on installation. For "At Home" **LLM** installations a few user profiles (and corresponding training programme parameters) will be set on installation. The profiles will change from the LUI. However, for "Day care centre" and "Formal Care Facilities", multiple user accounts and personal training programmes will be used, that will be administered by the trained staff, having direct

control on the CMS system.

Meanwhile, eHome participates in the physical training process by monitoring the moves of the users and identifying potential problems, as it normally would for any other kind of daily activities. In the case of a problem the eHome environment will act according to its standard specifications and notify for help. Therefore, no technical adjustments should be enforced on eHome in this respect.

The cognitive training procedure is more complicated in the sense that the eHome environment and the CTC (i.e. the CMS) interact both ways: the CTC displays its software through the eHome Local User Interface (LUI) and the eHome transmits to CTC the response of the users – whether this means pressing a button on a remote control or pressing images on a touch screen. The high level description of this process is:

1. The CTC notifies the users for the initiation of the cognitive training procedure according to the training program by displaying a related message on the LUI of eHome
2. The user initiates the process
3. The CTC presents its training content through the LUI of eHome
4. User responds through the LUI
5. The CTC processes the response, stores its value (correct, false) into the database and interacts with the user
6. Steps 3-5 are repeated until the training is concluded or user decides to stop the procedure

To accommodate this procedure, a two way communications scheme should be followed to link CTC with eHome. More specifically, the operational requirements are:

- the CMS should display its exercises on the LUI of eHome
- feedback should be acquired by CMS from the LUI of eHome
- Home Control Unit of eHome (HCU) and CMS displays should appear interchangeably on the LUI

This results into the following technical requirements:

- signals from CMS should by-pass the signals from HCU to the LUI. In other words, once the cognitive training process starts, the LUI would display the CMS output (the cognitive training programme of the BrainFitness software) and not its normal display.
- The system should ensure that only the display of CMS or HCU appear on the LUI

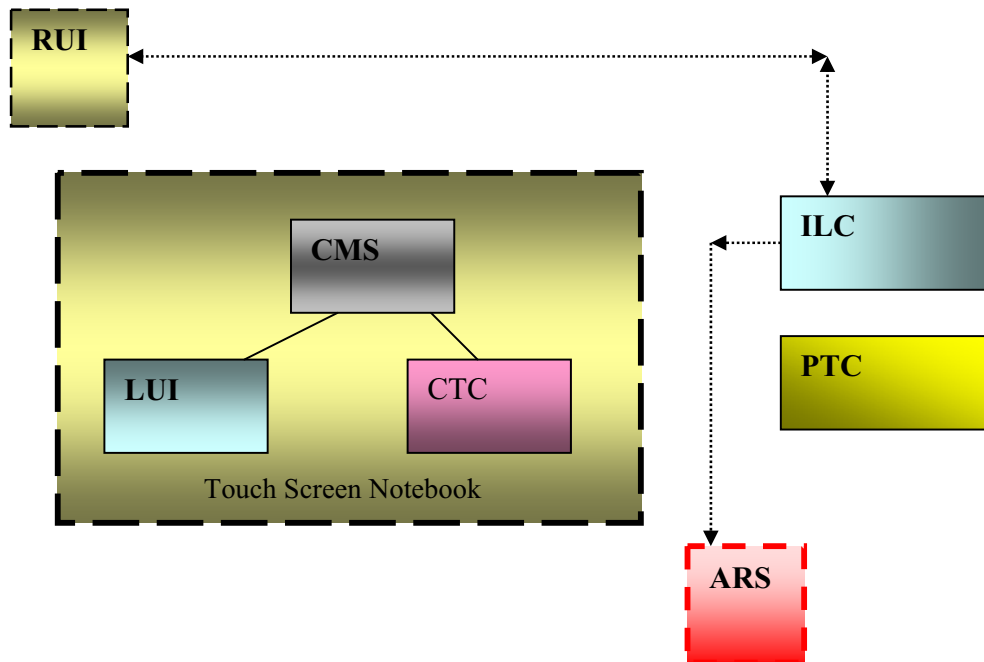
The technical solution for these requirements would comprise of:

- developing a driver for the LUI unit on the CMS
- a switch that would have a controller deciding which display will be shown on the LUI

In conclusion, apart from the necessary wiring to physically connect the three components, the technical adaptations required are well focused, and thus realizable within the available time frame.

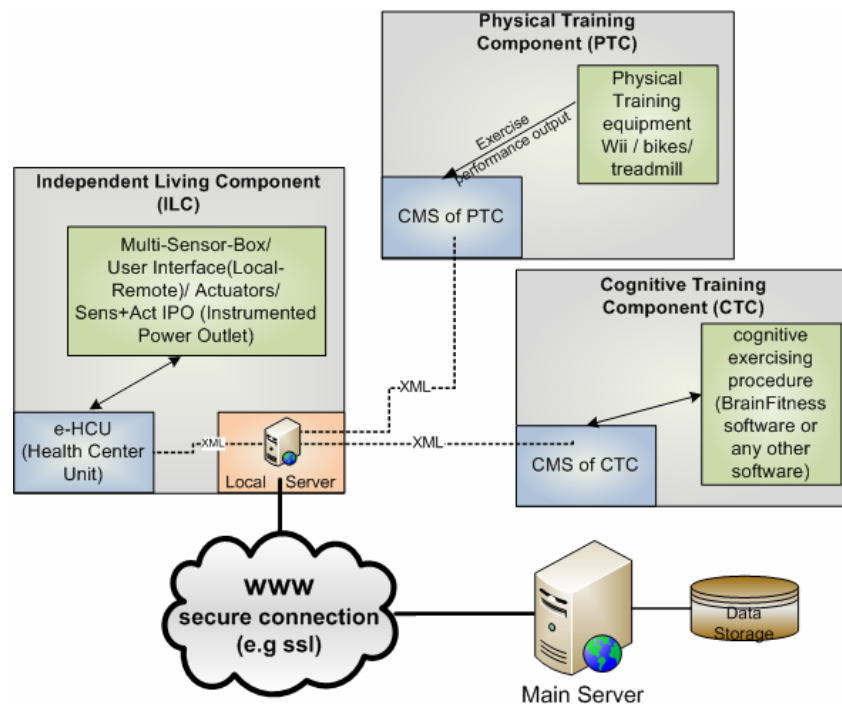
Figure 6, shows the integration scheme of the system: LUI of the ILC (a touchscreen Notebook) is used to host in addition to its ILC functionality the CTC- and the CMS-functions. Wired/wireless connections are provided to the ILC's embedded PC which controls the wireless sensor-/actor-network and to the physical training components.

The RUI, which is a system offering a standard Web-Interface like a PC or Notebook is connected form the "outside world" through an standardized TCP/IP connection (Internet, GPRS, UMTS) An optional central Alarm Routing Server can convert alarm signalling of the LLM system to normal VoIP telephone calls.



**Figure 6: Integration scheme of the system**

A more detailed integration scenario is envisaged to take place by exploiting the power of web services and XML; a starting idea is provided in the figure below:



**Figure 7: A detailed system integration scheme by use of XML**



## B2. Potential impact

### B2.1. Target outcomes impact

The **LLM** project, which targets on proposing an innovative ICT solution towards the benefit of older people and especially those suffering from cognitive related disabilities, adheres with the target outcomes and expected impact set under the Information and Communication Technologies (ICT) Policy Support Programme (ICT PSP) Work Programme.

More specifically, the **LLM** service integrates cognitive and physical training with the eHome AAL solution, thus being in remarkable accordance with the fundamental goals set for Objective 1.4: ICT for ageing well with cognitive problems, combining assistive and independent living technologies of the Work Programme. Meanwhile, the effectiveness of our approach and service will be demonstrated through a series of pan-European pilots and evaluated over a set of measurable goals defined for each region and event.

In accordance with the specific objectives set for target ICT solutions, the **LLM** service offers:

- Cognitive training, activation and reinforcement through the CTC and the BrainFitness software and the PTC
- Support to elderly day-to-day activities: with the eHome sensor network to identify emergencies and call for help and with the eHome actuators, which accommodate everyday home activities
- Support to social interactions: Directly with the communications system from the Local User Interface to the Remote User Interface and indirectly through the training sessions which render elderly more durable to cognitive deterioration and hence socially active for a longer period of time

Regarding the scheduled piloting application of the **LLM** service, we provide to the tables below to demonstrate the coherence of our approach with the Work Programmes targeted outcomes.

ICT PSP Work Programme	Target outcomes and characteristics of LLM
<p>1 <i>Pilot solutions addressing the above goal. These solutions should be based on a complete set of common specifications for technology and end to end services involving the whole value chain. (users and their families, care providers, hospitals, technology providers) This should cover daily activity support, self activation, support for care service provision, and compensation for cognitive and mild dementia problems related to ageing (e.g. related to memory, orientation, daily routines, etc).</i></p>	<p>The pilots planned are designed to address three different deployments of the <b>LLM</b> service, covering the whole value chain of interested parties. These are:</p> <ol style="list-style-type: none"> <li>1. <b>“At Home” installations:</b> which directly refer to the end-users (the elders), by installing the solution in their home environment. This type of installation has the lowest cost of all, since it directly targets on end-users; hence affordability is of the utmost importance. Overall, we will have about 7-9 end user installations for the pilots.</li> <li>2. <b>“Day-care centre” installations,</b> where the <b>LLM</b> service will be installed in the corresponding facilities. This is the medium-scale solution for small to medium size housing institutions. We are planning on having 8-9 day-centre installations for the pilots.</li> <li>3. <b>“Formal care facilities”</b> (specialised hospitals, nursing homes for the elder, etc), who will install the solution in their facilities. This is the most costly type of installation addressing large institutions who are willing on investing to offer the added value of <b>LLM</b> to their users. We are going to hold 5-6 such installations for the pilots.</li> </ol> <p>The involvement of relatives and carers is different but definitely strong in each of the planned piloting scenarios. Hence, the</p>

ICT PSP Work Programme	Target outcomes and characteristics of LLM
	<p>relatives have a more significant role in private home installations, in contrast with caretakers which are more implicated in formal care <b>LLM</b> service deployment. Still both are required in both scenarios.</p> <p>Though the deployment width and cost varies between these deployments, all of them fall under the same technological specifications:</p> <ul style="list-style-type: none"> <li>• mentioned in this report in chapter B1.3 for each component separately and for the integration requirements</li> <li>• explicitly spelled out during project implementation at WP3 and specifically deliverable <i>D3.1: <b>LLM</b> technical and operational specifications</i></li> </ul> <p>These specifications should ensure:</p> <ul style="list-style-type: none"> <li>• physical training for <i>daily activity support and self activation</i></li> <li>• health condition monitoring for <i>support for care service provision</i></li> <li>• <i>compensation for cognitive and mild dementia problems related to ageing</i> through the cognitive training procedure.</li> </ul> <p>Moreover, these specifications will be widely disseminated during and after the service piloting phase as a means to arouse interest from technology providers in search for <b>LLM</b> compatible:</p> <ul style="list-style-type: none"> <li>• cognitive training software (other than BrainFitness)</li> <li>• physical training equipment</li> <li>• sensors and optional actuators</li> </ul> <p>Thus we anticipate to create a new market around the <b>LLM</b> solution through the standardization of our approach and the integration of various added services to the system.</p>
2	<p><i>The pilots shall carry out validation for a wide integration of innovative ICT solutions (not be limited to individual components of such support).</i></p> <p>The <b>LLM</b> service is designed in an interoperable and adaptable way. Though the information data path within the eHome framework remains the same, the training components can support and integrate a variety of software and equipment to facilitate this goal. Therefore, the <b>LLM</b> pilots will be held for a number of physical training equipment, like bikes, pedals or treadmills, while different deployments will include different sets of features. This will lead into the validation of various customized versions of the initial system, resulting into customized solutions according to the mental and physical disabilities, to the needs of the system's users and to the designated deployment approach.</p>
3	<p><i>The solutions shall be tested in real life and a consolidated set of requirements and validated functional specifications should emerge as a result.</i></p> <p>Each of these installations and pilots</p> <ul style="list-style-type: none"> <li>• will involve end-users from the whole value chain implicating them with the service in real-life situations</li> <li>• will adhere to the general piloting methodology proposed in the WP4 description in this proposal (chapter B3.1.a)</li> <li>• will concord to the common specifications set in the deployment plan during project implementation which will be documented in the deliverable 4.1</li> </ul> <p>Meanwhile, all of our methods will be evaluated according to the objectives, indicators and targeted goals delineated in this proposal in chapter B1.1.5.</p>
4	<p><i>Pilot must associate public authorities (at national, regional or local level) from each country participating that have responsibilities and budget</i></p> <p><b>LLM</b> project clearly identifies the significance of the public authorities' role during the course of the pilot implementation and beyond. Public authorities on board are associated in the service in multiple ways:</p> <ul style="list-style-type: none"> <li>• providing day-care centres administered by public</li> </ul>

ICT PSP Work Programme	Target outcomes and characteristics of LLM
<p><i>control in the relevant area of care or supply of services. (we will search for relevant associates) A precondition for proposals will be evidence of the timely availability and own financing of infrastructures required for the successful implementation of the pilots. (can we find such public authorities?)</i></p>	<p>organizations (like municipalities) as piloting sites.</p> <ul style="list-style-type: none"> <li>• extending the care and supply of services they provide within such places with the <b>LLM</b> service</li> <li>• encouraging people in their regions to accept the trial of our system at their own homes (like Municipality of Schwechat will do with the people of Schwechat)</li> <li>• disseminating the results of our project and forwarding it to official authorities in public insurance or health care</li> </ul>
<p>5 <i>The work should wherever possible build on and contribute to relevant standards to ensure interoperability and take into account best practices and relevant standardisation efforts as well as provide appropriate safeguards against relevant ethical and privacy issues.</i></p>	<p>Integration and interoperability play a crucial role in the development and the deployment of the <b>LLM</b> service. Smoothly integrating the existing defined components (as analyzed in chapter B1.3) according to current best practices in the terms of clear technical and operational specifications is of the utmost importance to the finally delivered service. Furthermore, standardizing the platform's architecture and allowing its extension with new software and hardware is a pillar on which we are planning on founding future market possibilities and cooperation openings to technology providers.</p> <p>Moreover, the responsible management of sensitive personal data is more than an undisputed objective; it constitutes an imperative obligation of any ICT solution that deals with the mental, physical and overall health condition of users. This need has been acknowledged by our consortium and will be thoroughly investigated in WP6, resulting into publicly documented ethical guidelines that should and will affect the technical and operational specifications of the service as well. For example, personal performance data will remain locally stored and encrypted at each <b>LLM</b> installation, while emergency notifications will only be published to the relatives or caretakers of the elders; such pieces of information may never be disclosed to third-parties. No privacy or human rights violation that should injure the dignity of the user in any way is going to occur in any way. Relevant national and European legislation will also be advised, considered and adhered to throughout this process.</p>
<p>6 <i>The work will include a non confidential, comprehensive socio-economic evidence base for ICT investments in the field (including cost-benefit analysis and user satisfaction) to facilitate the development of sustainable business models</i></p>	<p>A publicly available business plan is going to be developed during the implementation of the project, after a detailed investigation of the related market (demand analysis) and of existing best practices in the field. Measures towards the development of sustainable business models will include:</p> <ul style="list-style-type: none"> <li>• seeking for public-private partnerships</li> <li>• promotion of the service through our public authorities to regional and national institutions in the field</li> <li>• forwarding and dissemination of the results to public authorities like insurance companies and health care providers</li> <li>• market creation around the service implicating technology providers and SMEs</li> <li>• strategic national market infiltration for advanced economies via inclusion of <b>LLM</b> in insurance systems.</li> </ul>

**Table 5: Coherence of LLM with the Work Programmes targeted outcomes**

## **B2.2. Expected impact**

The **LLM** service offers cognitive and physical training in the framework of an AAL solution. This approach guarantees:

- Mental training through the already established specific purpose software BrainFitness
- Physical exercising with the specific purpose equipment following a personalized training program
- Actuators, that will facilitate living at home
- Sensors that will detect potential dangers or accidents and will notify people for help

The coherence of the beneficial nature of the aforementioned **LLM** service with the results defined in the Call Work Programme is presented in the table below:

ICT PSP Work Programme		Expected results
1	<i>Substantially prolonging the time that elderly people with cognitive problems or mild dementia can live independently at home and be supported in their day-to-day activities in a socially integrated manner.</i>	<p>The mental training procedure:</p> <ul style="list-style-type: none"> <li>• will alleviate the cognitive deterioration of people with such problems or mild dementia.</li> <li>• leading to slower deterioration rates</li> <li>• leading to longer lasting social interaction skills</li> <li>• delaying any needs for intensive care</li> <li>• increasing the elders' independence</li> <li>• thus substantially prolonging the time elderly people with cognitive problems or mild dementia can remain at home</li> </ul> <p>The personalized training program:</p> <ul style="list-style-type: none"> <li>• augments the efficiency of the time spent on these activities</li> <li>• enhancing the physical stamina and endurance of elders</li> <li>• affecting positively a number of health-factors</li> <li>• increasing mobility for a wider period of time</li> <li>• thus substantially prolonging the time elders can live independently and be supported in their day-to-day activities in a socially integrated manner</li> </ul> <p><b>LLM's</b> sensors:</p> <ul style="list-style-type: none"> <li>• will monitor the moving patterns and identify deviations</li> <li>• detecting possible dangers and accidents during everyday living</li> <li>• detecting possible problems during the physical training procedure</li> <li>• calling for help in cases of emergency</li> <li>• providing a sense of safety, confidence and self-reliance to the elderly</li> <li>• reducing the need for physical human presence in the everyday life and training procedure</li> <li>• thus substantially prolonging the time elders can live independently and be supported in their day-to-day activities</li> </ul> <p><b>LLM's</b> facility to connect actuators:</p> <ul style="list-style-type: none"> <li>• support the elderly in their everyday living</li> <li>• relying less on their own mental and physical effort</li> <li>• rendering their life more relaxed, independent from external help and safer</li> <li>• thus substantially prolonging the time elders (and especially those with cognitive problems or mild dementia) can live independently and be supported in their day-to-day activities in a socially integrated manner</li> </ul>

ICT PSP Work Programme	Expected results
<p>2 <i>Improve quality of life of older people and their families and increase effectiveness of care systems, and facilitate wide implementation by the public authorities in conjunction with industrial players of sustainable innovative services.</i></p>	<p>The <b>LLM</b> service improves the quality of life of older people and their families:</p> <ul style="list-style-type: none"> <li>• by allowing older people to remain at their homes, which is their most frequent request</li> <li>• by providing a safe and cozy environment for living with the eHome AAL solution</li> <li>• by rendering them socially active for a longer period of time through the cognitive training process</li> <li>• by ameliorating the fears and anxieties that older peoples' relatives feel when they leave their parents alone with the usage of the monitoring system</li> </ul> <p><b>LLM</b> service increases the effectiveness of care systems. Older people are commonly set under constant observation (intensive care) as a countermeasure to physical weakness (which may result into accidents like falls) or mild dementia, which has the risk that they will put their selves into danger by mistake. Not only does <b>LLM</b> counteract these reasons by stimulating the physical endurance and mental sanity of the elderly, but it also provides a constant monitoring and assistive system. This results into less need for the physical presence of a professional caretaker and hence less costs for the families and care systems in the long run. Meanwhile, care systems will be able to focus on the people where intensive care is an absolute necessity and not a precautionary measure and thus will enhance their effectiveness.</p> <p>The project intends to facilitate the wide implementation by the public authorities in conjunction with industrial players of sustainable innovative services according to the following steps:</p> <ul style="list-style-type: none"> <li>• Design, plan and realize the pilots within the framework of the CIP</li> <li>• Create an Evaluation Report with feasible and demonstrable positive results on people as well as the public authorities and organizations that actively participated in the pilots</li> <li>• Use this report as a Good Practice example and approach public authorities in strategic regions that haven't been included in the piloting stage exhibiting the added value and the impact in the community resulting from such activities</li> <li>• Ensure public administration support in the form of the establishment of an emergency help line that would be called by the eHome system for people who do not have anyone close enough for a time of need</li> <li>• Provide adequate training by currently implicated partners initially and certified training partners for wider deployment</li> <li>• Establish a 24 hour Help Desk service for supporting the usage of the system</li> <li>• Support the usage of different cognitive training software and physical exercising equipment by academic institutions or industry providers</li> </ul> <p>The last four steps clearly demonstrate our efforts to promote wide implementation of the <b>LLM</b> system by public authorities (who will support and disseminate the service) in conjunction with private organizations that will enhance and expand the service.</p>
<p>3 <i>World leading position for European industry and in particular SMEs in new markets for innovative ICT based products and</i></p>	<p>A number of SMEs (3) participate in the <b>LLM</b> consortium, eager to bring the service to the market and exploit it commercially. Furthermore, an agreement with a US partner (who could also become a potential competitor without such an agreement) is already in place, and support for the further development of products is guaranteed. As the field of</p>

ICT PSP Work Programme		Expected results
	<i>services for independent living and assistive technology for the ageing population</i>	cognitive training is fast evolving to catch up with the ageing of population and its tremendous market growth, innovative ICT companies like the ones participating in the <b>LLM</b> consortium are most suited to bring new services and products to the market. EC funding will greatly assist these companies to overcome the <b>LLM</b> initial investment and launch difficulties, and support fast and effective market deployment
4	<i>Opening up an internal market for ICT based solutions for the elderly (e.g. home and portable systems).</i>	The <b>LLM</b> project will enable all consortium partners and potential external investors to make informed decisions before the final launch of the proposed service, based on thorough analysis of the issues involved. Within the project, the <b>LLM</b> service will be initially implemented in diverse countries and locations, enabling the comparison between different approaches and the identification of the most effective paths for commercialisation. User feedback will be collected, and the most promising aspects of the service will be promoted first, in order to open up the market where most demand and value are present. This way the <b>LLM</b> benefits will quickly and efficiently transferred at a European scale. Furthermore, commercial agreements with public and private partners will be sought in order to successfully bring the service to the market.

**Table 6: Coherence of LLM with the Work Programmes results**

eInclusion is an issue affecting all European countries as also demonstrated by the European e-Inclusion initiative. The tremendous gains of technology towards the improvement of people's lives remain unfortunately unknown and unexploited by a significant amount of people, especially those belonging into disadvantaged or socially excluded groups. The wider uptake of technology as a means to facilitate the everyday life of senior citizens, which falls under this category, constitutes one of the most significant targets of our project. Meanwhile, the **LLM** project contributes towards a number of problems that arise all over Europe. Covering the universally identified technological gap between different social groups comprises one of the most important features that can be provided by **LLM**. Moreover, by monitoring the health status of the elderly and motivating them to follow a personalized training program, thus strengthening their cognitive and physical capabilities, reduces the marginalization chances against people of the Third Age.

Dealing with the aforementioned issues requires coordinated European strategy. Public Authorities from different regions all over Europe must join their forces in promoting and supporting services like **LLM**. Besides that, care systems in EU member states need to identify the added value in promoting such initiatives, by investing and supporting them. Furthermore, pilots' organization, results dissemination and market openings across the European Union results into better chances of accumulating the interest of the investors and industrial partners, who will support and evolve the service.

Moreover, there is no contradiction about the significance of public funding and support to e-Inclusion initiatives at a European level. Though national funding has evolved into some meaningful results in the area, like the eHome platform, international aid is required to complement those efforts by quickly disseminating research results and evolving them into real-life services all over Europe. Closing thus the technological gap in a consistent way throughout the EU, does not only positively affect the elderly but brings forth Europe's standard policy of providing equal treatment to sensitive social groups all over the Union.

Indeed, the consortium strongly believes that the successful bringing of the **LLM** service to the market would be better pursued under the auspices and the funding support of the European Commission. The alternative of proceeding without the European Commission's support would

mean that the service would be initially implemented in a limited number of countries or locations, lacking the opportunity to quickly and efficiently transfer its benefits at a European scale. Furthermore, a potential successful implementation of the service in a limited scale might trigger the activation of competitors from the US (where the field of cognitive training is also quickly advancing), jeopardising the potential of European businesses to become pioneers in the field. The EC funding would enable the consortium to faster reach the critical mass needed in order to defend itself against US competition, and to find investors and even penetrate the US market with a proven service model and solid financial backing.

The consortium is committed to implement a high-standard and well-documented initiative that requires a great deal and range of resources. Involving the financing of the European Commission permits to retain a pro-community orientation and integrate partners from all corners of the EU. This strategic choice permits to invest in the direction of a wide partnership that will build a service of common interest as described and aimed in the context of CIP programme. Achieving a critical mass while validating the proposed service model is crucial in order to seek commercial agreements and successfully bring the service to the market.

EC funding is also expected to help all partners overcome the **LLM** initial investment and launch difficulties. This help will reduce the commercial risk during the project's early stages, and support the trans-national implementation costs. It will also help with potential organizational problems related to organising a European wide partnership.

The EC support will also assist **LLM** by enabling investors to make informed decisions before the final launch of the proposed service, based on thorough analysis of the economics involved. Moreover, the gains realised by **LLM**, if selected for funding under CIP, in terms of visibility and authority are also significant. These advantages, which are brought through the EC support, are considered as extremely important assets for the progress and success of the proposed project.

In order to meet the project and programme's requirements, the consortium intends to self-finance a great part of actions involved, and also look for private and public commercial agreements. A first round of discussions with such investors (including insurance companies) has already taken place, and their interest has been high.

ICT PSP Work Programme	Assumptions and external factors	Main barriers and foreseeable risk factors
<i>Substantially prolonging the time that elderly people with cognitive problems or mild dementia can live independently at home and be supported in their day-to-day activities in a socially integrated manner.</i>	<p>Older people will take up the service</p> <p>They will follow the training program set for them</p> <p>They will understand how to use the service</p> <p>They will be motivated to work out physically as well as mentally</p>	<p>People are still reluctant in using e-Care services</p> <p>Many elders find it hard to trust and comply with the requests of an ICT system</p> <p>Our user-friendliness studies and efforts do not manage to overcome the lack of familiarity with technology.</p> <p>Many elderly find it hard to motivate themselves into self-improvement. Moreover, they often do not want to concede that they might suffer from cognitive decline or mild dementia.</p>
<i>Improve quality of life of older people and their families and increase effectiveness of care systems, and facilitate wide implementation by the</i>	<p>Relatives will trust the sensor monitoring system to respond promptly in the case of an emergency</p> <p>The service will replace intensive care</p>	<p>Relatives might still feel uncertain about trusting an ICT system instead of a personal caretaker.</p> <p>The service will be used complementary with intensive care thus reducing the effectiveness of care systems</p>

<b>ICT PSP Work Programme</b>	<b>Assumptions and external factors</b>	<b>Main barriers and foreseeable risk factors</b>
<i>public authorities in conjunction with industrial players of sustainable innovative services.</i>	<p>Public Authorities will be motivated from the project's pilots to take up initiatives that will facilitate the deployment of the service</p> <p>Third party industrial players will identify the newly arising market and focus towards developing software products and compatible physical training equipment.</p>	<p>Public Authorities will show no interest or have no available funds to invest in the <b>LLM</b></p> <p>Third party industrial players miss the opportunity or focus on promoting a different unilateral solution (only cognitive or physical training instead of a combination of the two).</p>
<i>World leading position for European industry and in particular SMEs in new markets for innovative ICT based products and services for independent living and assistive technology for the ageing population</i>	SMEs and industrial partners follow closely the piloting phase and are keen to bring the service to the market.	SMEs and industrial partners do not follow closely the piloting phase and miss the opportunity to bring the service to the market. Mitigation strategy: A network of interest in being created in the project where all partners and many third parties will be involved.
<i>Opening up an internal market for ICT based solutions for the elderly (e.g. home and portable systems).</i>	<p>Consortium partners and third party industrial players will identify the newly arising market and focus towards developing products and services targeted to the elderly. Commercial agreements with industrial partners are in place.</p> <p>Ethical and legal concerns don't inhibit commercial take-up.</p>	<p>Consortium partners and industrial players miss the opportunity or focus on other market segments. Mitigation strategy: Clear definition of service and documentation of users' needs and market potential. Industrial partners don't show the necessary enthusiasm for commercial take-up of the venture. Mitigation strategy: Start discussions with such partners early in the project.</p> <p>Ethical and legal concerns don't inhibit commercial take-up. Mitigation strategy: Dedicate a full Work Package in the development of ethical guidelines and in ensuring that all legal requirements are met.</p>

**Table 7: Work Programmes expected results and main barriers and risk factors**



## **B2.5. Long term viability**

The **LLM** deployment plan addresses the technical, socio-economic, financial and political challenges of its deploying, the scale and the scope of the task, and recommended courses of action. This includes not only how we can support efforts already underway, but also how to create powerful new initiatives.

**LLM** wants to be an outstanding **Public-Private-Partnership (PPP)** model in combining assistive technologies to compensate for cognitive problems or mild dementia with independent living platforms, demonstrating their resulting innovative ICT enabled products and services at European scale. **LLM** will help to foster the development of lead markets for innovative ICT-based solutions notably in areas of social public interest.

The ICT PSP will help overcome the initial hurdles hindering the development of **LLM** business in support of the i2010 goals. However, in order to reach a long term impact at European level, the Consortium has a clear view about how to achieve a satisfactory level of viability, sustainability and scalability of **LLM** after the end of the project and the Community funding.

### **Viability, Sustainability and Scalability**

**LLM** will be maintained and will be further developed beyond the end of the project and the Community funding in the context of PPP where Businesses and in particular SMEs can make more and better use of ICT to innovate in products, services and processes, and Public Organisations can take more advantage of advances in ICT in order to provide more efficient and higher quality services.

Accordingly, the financial support by Governments and public institutions plays a role of major importance in the deployment of new technologies and services as the one **LLM** is proposing. Disparities across Europe are also wide. Several Member States are among the world's top investors in ICT in areas of public interest like social care (vertical market) or inclusion (horizontal market) whereas other parts of Europe are still lagging behind. Therefore, the definition of adequate government level and dimension for managing the rollout of **LLM** business seems to be crucial for an effective deployment strategy.

Actions will be especially taken at regional level, where it is more viable to create partnerships with local banks and foundations. In our understanding, this level of actions is a key factor for the rollout of **LLM**. This is why the Consortium believes that one of the main possibilities for policy to really help the deployment of **LLM** is by facilitating the building of real public-private partnerships.

Member States are the natural reference points for an appropriate strategic vision, but Regions are closer to citizens and aware of regional and local problems and are in a position to create the conditions for industrial policies. They are important political actors. If we got them to commit to cooperate they can facilitate the creation of regional or local seed communities for a **LLM** economy.

The main objectives of the **LLM** Deployment Plan are to:

- Establish the structure and approach for the implementation of the **LLM** business
- Define resources and roles required to support **LLM** service with its ongoing operations and implementation efforts
- Identify incremental improvements and suggest other potential measures to reshape vital business processes as appropriate

This context will lead the Consortium to the creation of a new **LLM** Company, very flexible to reach any kind of commercial partnerships agreements with local business deployers.

In order to optimise the ongoing management of the **LLM** service, the **LLM** Company will commit to establish a European Economic Interest Group (EEIG), in the framework of Public–Private Partnerships (PPP) arrangements, which will take responsibility for the service in the longer term in each country, region or local area.

Ideally, one European Company should be enough. However, due to the different paces in each target country, according to the maturity of the market, National Companies (anticipated branches) or commercial National agreements would be created before the Pan-European Company.

The new **LLM** Company, inheriting the background IPRs of eHome and of the BrainFitness software used in the cognitive training process, will be the owner / provider / maintainer of the service in all Europe.

The public partners of Consortium (namely, IGNA and MKC) as well as public authorities implicated in the piloting phases (like the Municipality of Schwechat, the Birmingham City Council, the Barnet Council or the Paul Brousse Hospital) and public institutions like UKON will lead the commitment of Regional Governments in Europe to share the new opportunities raised from the new framework and growing acceptance of Public–Private Partnerships (PPP) arrangements. The positive characteristics of PPP arrangements appear particularly attractive for the New Member States for deploying services like **LLM**, given the financing requirements, the equally large funding shortfall, the need for efficient public services, growing market stability and privatization trends creating a favourable environment for private investment. In this respect, an **LLM** PPP will present a number of recognized advantages for the public sector to exploit. These include the ability to raise additional finance in an environment of budgetary restrictions, make the best use of private sector operational efficiencies to reduce cost and increase quality to the public and the ability to speed up e-Government services deployments.

Of course guaranteeing benefit from PPPs requires recognition of the relative strengths and weaknesses of each type of structure and the aims and objectives of each party. Of particular importance is the role of the public sector that may transform itself from a service provider to a supervisor of service contracts. As the prime responsibility of the public sector is to ensure value for money for society, several techniques and considerations will be presented for determining and assessing value.

Although it is too early, at this stage, for deciding the final structure of **LLM** business, the strong coupling of Public and Private Partnership suggests working with a very flat hierarchy, to guarantee a rapid flow of information among business (investors, prescriptors, etc) and technical experts. Accordingly, EEIG seems to be the best approach to properly tackle the sustainability of **LLM**. **LLM** EEIG will be a legal entity based on Community law (Council Regulation No 2137/85 of 25 July 1985) aimed at facilitating and encouraging cross-border cooperation and promoting a wider "European" vision in doing business of "Public Interest" between Public and Private sectors (Public Private Partnership).

The purpose of the grouping in **LLM** EEIG will be to promote and develop socio-economic activities of Public Interest in the care e-Services sector by a pooling of resources, activities or skills. Such a structure allows the different partners to bring their staff into the PPP without the need of creating new labour, administrative or retirement structures. On the other hand, this structure of an EEIG allows managing the activities of **LLM** EEIG in a very direct way, independent of a large administrative overhead from each country.

This will produce better results than the members acting alone thanks to scale and scope synergies in implementing activities through members; autonomy of the grouping from its members and flexibility as the EEIG can rely not only on its own capacities and structure, but also on those of its members. At the same time, **LLM** EEIG will be a more structured and long-lasting grouping compared to temporary consortia. In this it guarantees for stronger and shared values,

resources, strategies and competencies amongst members. **LLM EEIG** will be allowed to tender for public contracts and participate in programmes financed by public funds on an equal footing with other firms.

On the other side, **LLM EEIG** will provide a unique methodology which combines both institutional know-how and a technical approach with the following strengths: maintaining a strong and stable structure and a wide roster of Public-Private experts which enable us to design and implement solutions tailored to beneficiaries' needs and local strengths; being part of a larger network of institutions, agencies and professional bodies with outstanding skills and expertise; and applying the experience gained in the field, working side-by-side and over time in the New European countries, assisting them in development, in the European integration and stabilization process and in continuous improvement.

**LLM EEIG** will be governed by the President and the Board of Members. The Board will be composed of one representative for each member (Public Administration and Private Companies) and decide on the general strategies of the EEIG. The President will be responsible for the overall management of the Grouping. The President will be supported by a Technical Secretariat, in charge of the administration of **LLM EEIG** as well as for the coordination of the members' activities on a day-to-day basis. Technical input to activities managed by the Grouping will be provided by the members, matching specific expertise to the requirements of the initiative in question. **LLM EEIG** will be thus able to act as a single entity, while drawing on the wide pool of human resources of the larger network of its members.

The **LLM EEIG** management and its structure will also take into account the fact that in addition to contributions that will come from the partners, there may be contributions from Public Administrations and funding agencies outside the EEIG. The budget from different funding partners will be managed according to the rules of an EEIG. Other participating institutions (Public and Private) will manage their funds related to the joint activities of **LLM EEIG** according to a memorandum of collaboration established between them and the **LLM EEIG**.

The public partners of the Consortium will also focus on a number of critical issues influencing the successful integration of public grants, private funds, IFI loans (such as the EIB or EBRD) and European Commission financing. Furthermore, the ICT PSP is built on and strengthens the activities aiming at the best use and wider uptake of ICT at national and regional level and in particular those supported by the European Regional Development Fund (ERDF). The **LLM** Consortium will be ensured that necessary Coordination between ICT in the CIP and ERDF will be reached in order to maximise the impact of Community support.

The **LLM** Company will further explore the new opportunities coming from the European Investment Fund (EIF)<sup>10</sup>, as the European Council under the Luxembourg Presidency urged the EIF to diversify its activities, in particular towards the financing of innovative "services of public interest" through individual-investor (business-angel) and technology-transfer networks. Flexible funding suited to such activities are to be found, together with the Commission.

#### **Profitability metrics**

In the context of **LLM** services "profitability" means "utility" or "usefulness" in a wider sense than just "economic profit". Our main responsibility is NOT to maximize economic profit for investors (i.e.: fiduciary responsibility) and, accordingly, use of profit as the guiding metric will lead our company in the wrong direction. **LLM PPP** approach prevents to grasp huge investment returns and keeps the rule of "value for money", in a fair, reasonable, moderate and sustainable care Service.

---

<sup>10</sup> The EIB became the majority shareholder in EIF, which nevertheless retains a tripartite share-ownership structure consisting of the EIB (59.15%), the European Commission (30%) and European banks and financial institutions (10.85%).

We embrace to guide all our decisions focused on customers' buying decisions, because, conversely, attempts to boost profit often failed to put customers in their right place. Furthermore, profit is the by-product of actions taken in the past. Profit is merely a result and it gives no indication of which activities are lining the funds and which are draining valuable resources.

The actual metric we will use is based on "Customer-Market Efficiency" a term for a measure which directly ties every critical corporate activity to customers' buying decisions. This metric strives to maximize our return on finite human and financial resources. It is a leading indicator, giving immediate feedback if a planned initiative won't create sustainable sales gains; it gives very specific guidance on what **LLM** will generate the greatest long term growth; and, it incorporates all success drivers -- both financial and non-financial (many contributors to success are not just "economic profit": organization design, sales approach, cycle times, batch sizes and myriad other critical elements are poorly captured by traditional accounting approaches).

The metric "Customer-Market Efficiency" can be summarized in four steps:

1. Improve our understanding of customer needs. Since success rests on customers' buying decisions, the starting point is to model the complex array of interacting factors which determine our choices.
2. Link the customer decision model to the activities across our company. Our investment in customer understanding ("holistic business system mapping") delivers the greatest returns when we can directly model the effect of any change. It creates a virtual map tying the key elements throughout the business back to the customer.
3. Use the combination of in-depth customer knowledge and links to the business process to identify inefficiencies and constraints which are preventing us from pleasing our current customers at the lowest cost to us.
4. Explore opportunities to increase sales through incremental initiatives. One bonus of having an excellent model of customer decision making linked to corporate activities is the ability to run "what-if" scenarios (or Monte Carlo simulations) on investments in equipment, human resources, products and processes.

## **B2.4. Wider deployment and use**

### **Deployment Plan**

The **LLM** Deployment Plan will be flexibly adapted and localised to different places and kinds of partnerships agreements. In **LLM**, exploitation and dissemination activities will be tightly coordinated, as a part of detailed plans for larger-scale sustainable uptake and replication beyond the pilot. Dissemination and communication activities on the “achieved results” are provided in order to be a substantial and high-profile contribution to the European e-Inclusion Initiative and the i2010 flagship on ICT & ageing.

The purpose of the Deployment Plan is to describe planned dissemination and replication activities within the **LLM** project. Raising awareness of the project in order to make **LLM** a successful and sustainable project is the main purpose of the dissemination activities. This will be carried out by using various communication materials, but also by face to face information at conferences and workshops. The information will also meet the general public through media coverage.

### **Business Plan**

The **LLM** service will be sustained according to the updated forecasts of investments, P&L and Cash Flow summarized in the Business Plan of the new **LLM** Companies.

This Business Plan for **LLM** describes the funding flow, demonstrating quantitatively the long term viability of the service. However as already learnt, the creation of Business Plans has to be adapted to different investors and stakeholders needs and thus it will be a continuous activity. The refined Final Business Plans of the **LLM** services will reflect target end-users, customers, prices policies, penetration model and implementation model, according to the needs of the country/region and investor demands. However, the advanced figures of this chapter follow European averages.

The **LLM** Business Plan has been prepared to cover a five-year planning horizon, starting in Year 2011 as the Year 0 with the provisional figures coming from the Initial Deployment of the 5 pilots in 5 Member States during 2009-2010 that will directly reach about 3.800 and indirectly about 150.000 elders and their relatives in Europe.

The summary of financial figures and their assumptions (highlighted in yellow) are explained in the next tables:

The first assumptions and starting points of forecasts are the statistics of population forecasts of Eurostat for Year 2010 and following five years.

MARKET	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
EU Population (*)	464.100.000	464.796.150	465.493.344	466.191.584	466.890.872	467.591.208
% of Elder Pop (>65) / EU (*)	16,70%	17,00%	17,30%	17,50%	17,75%	18,00%
EU Elders Population	77.504.700	79.015.346	80.530.349	81.583.527	82.873.130	84.166.417
Eu Regions (*)	268	268	268	268	268	268
Average Elders Pop / Reg	289.197	294.833	300.486	304.416	309.228	314.054

(\*)Source Eurostat 2008: forecasts between 2011 and 2015

The most natural “customer” for **LLM** is foreseen to be elders with mild dementia using **LLM** services in three different environments: at home, at Day Centres and at Formal Care facilities. A “very complex matrix” of granular assumptions has been developed in order to present a summary report of the “most probably” rates of penetration in the three scenarios. Accordingly, the average

of Elders at home, at Day Centres and at Formal Care facilities, is used as an indicator for the penetration rate. All these figures must be revised deeply during the Business Plan creation in order to change the "European scale averages" by more concrete assumptions of "Europe Union diversity" with appropriate extrapolations of the pilots' results to all the Member States.

USERS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
% share "AT HOME"		0,00320%	0,00368%	0,00423%	0,00487%	0,00560%	0,02158%
% share Day Centres		0,00235%	0,00270%	0,00311%	0,00357%	0,00411%	0,01584%
% share Formal care facilities		0,00112%	0,00129%	0,00148%	0,00170%	0,00196%	0,00755%
Elders "AT HOME"		2.528	2.964	3.453	4.033	4.711	17.689
Elders Day Centres		1.857	2.135	2.536	2.962	3.459	12.949
Elders Formal care facilities		885	1.018	1.208	1.412	1.649	6.171
<b>Total USERS</b>		<b>5.270</b>	<b>6.117</b>	<b>7.197</b>	<b>8.407</b>	<b>9.819</b>	<b>36.809</b>

**LLM** is priced on a per-user basis, but grouped by "environments". It is :

1. End-users, who will install the solution in their home environment. The cost for this is estimated at about 2,500 - 3,000 Euros for the end service (hw + sw + training content).
2. Day-care centres, who will install the solution in their facilities. The cost for this is estimated at about 3,000 - 5,000 Euros for the end service (hw + sw + training content for 1-3 training installations, depending on the size of the centre and the number of users it will accomodate)
3. Formal care facilities (specialised hospitals, nursing homes for the elder, etc), who will install the solution in their facilities. The cost for this is estimated at about 8,000 - 10,000 Euros for the end service (hw + sw + training content).

The price estimation has been fixed at average.

PRICES	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
"AT HOME"		2.750 €	2.750 €	2.750 €	2.750 €	2.750 €
Day Centres		4.000 €	4.000 €	4.000 €	4.000 €	4.000 €
Formal care facilities		9.000 €	9.000 €	9.000 €	9.000 €	9.000 €

Revenue streams are initially low, but will grow steadily.

INCOMES	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
"AT HOME"		6.953.350 €	8.149.671 €	9.494.691 €	11.091.491 €	12.954.268 €	48.643.472 €
Day Centres		7.427.442 €	8.541.559 €	10.142.056 €	11.847.729 €	13.837.513 €	51.796.300 €
Formal care facilities		7.964.747 €	9.159.459 €	10.875.737 €	12.704.799 €	14.838.525 €	55.543.266 €
<b>Total INCOMES</b>		<b>22.345.540 €</b>	<b>25.850.689 €</b>	<b>30.512.484 €</b>	<b>35.644.019 €</b>	<b>41.630.306 €</b>	<b>155.983.038 €</b>

The costs forecasted according to the needs of a wide European market and in order to promote a new service and a new conceptual model in the care Services area, are those related to the assurance and quality of the services, being probably the most critical point of the business, so outsourcing, maintenances and strategic alliances to add capacity and increase scalability to accommodate growth, customer care services and technical assistance in the use of the software are the main investment areas for the **LLM** Company, besides marketing expenses.

The structure of cost is divided in five sections. The most relevant sections impacting in the sustainability of **LLM** business are the first two ones:

- 1) **LOCALIZATION COST**: Most of the work of **LOCALIZATION (CUSTOMIZATION)** of **LLM** can be done at Regional level.

The **LLM** Services must be supported and maintained for ensuring every aspect of the service is working at an optimum level for target users. That requires recruiting and retaining talent people for the customization of each local-regional-national instance. IT experts will be needed and training is a must to establish a structure that leverages strengths with the company's long term goals and objectives.

- 2) TRAINING COST: Training and technical assistance will be needed in order to support the potential end users of **LLM** in order to adapt the service offer panel to their actual needs and preference. To do on behalf of elders is a very close activity that requires acting at local level. Among other things, the technical assistance has to teach one by one how to operate and utilize all of its features:

- to familiarise them with the basic **LLM** modules;
- to familiarise them with how to use these;
- to help them quickly get to know all of its specialist features; and finally
- to enable them to utilise the systems capabilities effectively

This is the most “expensive” heading of **LLM**. However, the level of telematics know how is very low.

LOCALISATION COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
Localisation Human Team	1 / 100	53	61	72	84	98	
- Cost / Year	33.000 €	1.739.207 €	2.018.486 €	2.374.860 €	2.774.259 €	3.240.186 €	12.146.998 €
<b>Total Localisation Costs</b>		<b>1.739.207 €</b>	<b>2.018.486 €</b>	<b>2.374.860 €</b>	<b>2.774.259 €</b>	<b>3.240.186 €</b>	<b>12.146.998 €</b>

TRAINING COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
Personalisation Human Team	1 / 50	105	122	144	168	196	
- Cost / Year	30.000 €	3.162.194 €	3.669.975 €	4.317.926 €	5.044.108 €	5.891.248 €	22.085.451 €
<b>Total Personalisation Costs</b>		<b>3.162.194 €</b>	<b>3.669.975 €</b>	<b>4.317.926 €</b>	<b>5.044.108 €</b>	<b>5.891.248 €</b>	<b>22.085.451 €</b>

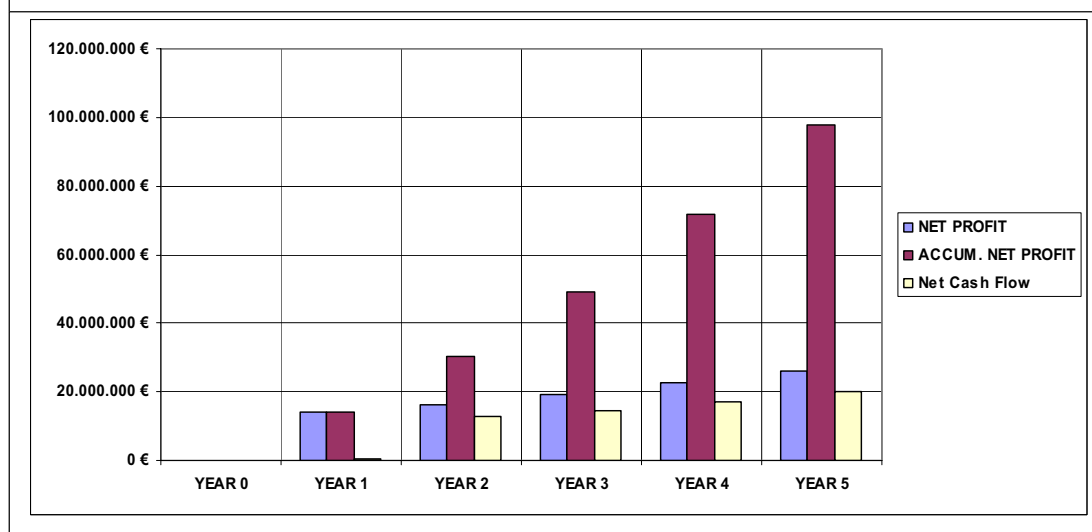
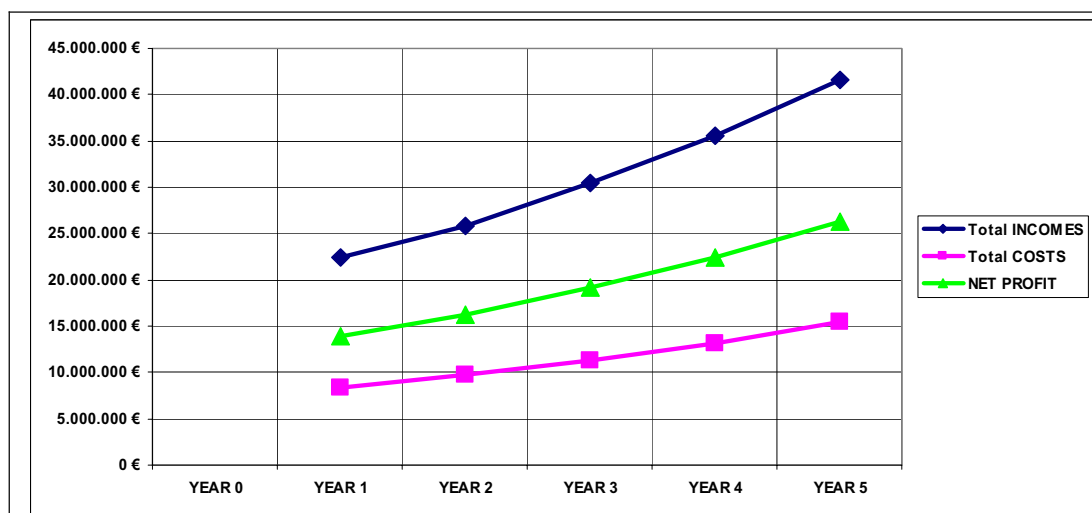
MARKETING COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
Marketing Human Team		15	17	20	22	24	
- Cost / Year	39.000 €	585.000 €	663.000 €	780.000 €	858.000 €	936.000 €	3.822.000 €
Promotion (% incomes)	2,50%	558.638 €	646.267 €	762.812 €	891.100 €	1.040.758 €	3.899.576 €
Travel Expenses (% promotion)	10,00%	55.864 €	64.627 €	76.281 €	89.110 €	104.076 €	389.958 €
<b>Total Marketing Costs</b>		<b>614.517 €</b>	<b>710.911 €</b>	<b>839.113 €</b>	<b>980.233 €</b>	<b>1.144.857 €</b>	<b>4.289.632 €</b>

OTHER COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
Rents	Growth 10 % yearly	72.000 €	79.200 €	87.120 €	95.832 €	105.415 €	439.567 €
Utilities	Growth 10 % yearly	50.000 €	55.000 €	60.500 €	66.550 €	73.205 €	305.255 €
Administration Human Team	1 / 200	26	31	36	42	49	
- Cost / Year	25.000 €	658.790 €	764.578 €	899.568 €	1.050.856 €	1.227.343 €	4.601.136 €
Management Human Team	(1 / 400)+3	16	18	21	24	28	
- Cost / Year	55.000 €	889.669 €	1.006.036 €	1.154.525 €	1.320.941 €	1.515.078 €	5.886.249 €
Miscellaneous	Growth 10 % yearly	80.000 €	88.000 €	96.800 €	106.480 €	117.128 €	488.408 €
<b>Total Other Costs</b>		<b>1.750.460 €</b>	<b>1.992.814 €</b>	<b>2.298.513 €</b>	<b>2.640.659 €</b>	<b>3.038.169 €</b>	<b>11.720.615 €</b>

R&D COSTS	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
IPRs		1.500.000					
R&D (% incomes)	5%						
- Cost / Year (Int+Outsourcing)		1.117.277 €	1.292.534 €	1.525.624 €	1.782.201 €	2.081.515 €	7.799.152 €
IPRs Depretiation	20%	300.000 €	300.000 €	300.000 €	300.000 €	300.000 €	1.500.000 €
<b>Total R&amp;D Costs</b>		<b>1.117.277 €</b>	<b>1.292.534 €</b>	<b>1.525.624 €</b>	<b>1.782.201 €</b>	<b>2.081.515 €</b>	<b>7.799.152 €</b>

The summary figures highlight the moderate sustainability of **LLM** PPP model. The Discount rate (30%) can be considered “fair”. However, the 42.807.454 € of NPV is quite enough for interesting social saving banks partnering European Investment Fund (EIF) in **LLM** business with an investment of 9.000.000 €.

	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	ACCUM.
<b>Total INCOMES</b>		22.345.540 €	25.850.689 €	30.512.484 €	35.644.019 €	41.630.306 €	155.983.038 €
<b>Total COSTS</b>		8.383.655 €	9.684.720 €	11.356.036 €	13.221.459 €	15.395.976 €	58.041.847 €
<b>NET PROFIT</b>		13.961.885 €	16.165.969 €	19.156.448 €	22.422.560 €	26.234.331 €	97.941.192 €
<b>ACCUM. NET PROFIT</b>		13.961.885 €	30.127.854 €	49.284.301 €	71.706.861 €	97.941.192 €	
<b>CASH FLOW</b>							
Net Profit + Depreciation		14.261.885 €	16.465.969 €	19.456.448 €	22.722.560 €	26.534.331 €	99.441.192 €
<b>In-Flow</b>							
Capital		9.000.000 €					
Revenues (1 year of delay)			22.345.540 €	25.850.689 €	30.512.484 €	35.644.019 €	114.352.732 €
<b>Out-Flow</b>							
		8.383.655 €	9.684.720 €	11.356.036 €	13.221.459 €	15.395.976 €	58.041.847 €
<b>Net Cash Flow</b>							
		616.345 €	12.660.820 €	14.494.653 €	17.291.025 €	20.248.043 €	65.310.885 €
<b>Accumulated Cash Flow</b>							
		616.345 €	13.277.165 €	27.771.817 €	45.062.842 €	65.310.885 €	152.039.054 €
<b>Investment PROFITABILITY</b>	100%						
Net Profit + Depreciation		14.261.885 €	16.465.969 €	19.456.448 €	22.722.560 €	26.534.331 €	99.441.192 €
<b>Investment</b>							
		-9.000.000 €					
<b>Discount Rate</b>		30%					
<b>NPV</b>		42.807.454 €					





## B3. IMPLEMENTATION

### **B3.1 Overall strategy and general description**

The objective of the proposed project is the integration of several existing separated services into an innovative ICT system for ageing well, called **LLM**, and the subsequent market validation of the resulting system in member states of the EU. To achieve this, a consortium of academic, technical and business expertise will collaborate in order to deliver a high quality service, accordant to legal and ethical standards that will be successfully deployed and piloted in five countries. A number of piloting phases with intermediate feedback, evaluation and adjustment stages will be planned, in order to conclude into a final assessment report. The results of these trials and the conclusions of this report should not only provide valuable insight and improvements for the service itself but moreover indicate strategies and policies for a wide-scale uptake of the **LLM** service, initially all over Europe and beyond its borders in the long term.

Meanwhile, the project's objectives and its results afterwards will be disseminated towards all directions as an effort to raise awareness at the **LLM** service and seek strategic business alliances. National and regional public authorities will be approached throughout the course of the project in order to support the service and promote it into public health institutions or care centres. Moreover, the consortium will closely follow the market trends in the field and identify potential partnerships with regional industry players and investors. Finally, the service will be based in open architecture standards that should incite the interest of SMEs, technology providers and physical training equipment manufacturers, thus creating a market around the service itself.

In conclusion, detailed planning, design and implementation of the service and the pilots in combination with extensive dissemination and awareness raising activities before and in parallel with the pilots comprise the overall strategy for **LLM**. In order to successfully implement this strategy we have divided our work in six WPs. These work packages cover the entire scope of our planned strategy, from Managerial tasks (WP1, WP4 and WP5) to Dissemination tasks (WP2) and Technical tasks (WP3). Besides those, a separate work package has been dedicated to the exploration of legal and ethical issues that should be taken into account during the pilots' design and implementation and that would influence technical and business exploitation choices for the **LLM** service.

To monitor and assess the project's progress and consistency with the aforementioned work plan the consortium has identified a list of major milestones, described below. Additionally, a more detailed description of each work package and of its tasks is given below, demonstrating **what** we are going to do and **why** (in contrast with the descriptions of the next chapter B3.1b, which present **who** is going to do what and **how**):

#### **WP1: Project Management**

This WP guides the **LLM** consortium for the successful implementation of the project. This work package includes the coordination and quality control of the undertaken work.

#### **WP2: Dissemination**

Dissemination activities are essential for the successful infiltration of an innovative service into the market. A detailed plan presenting and explaining methods and approaches will be elaborated and handed as the first deliverable of the project.

***Deliverables:*** D2.1: Dissemination plan

#### **T2.1: Network of Interest**

Creating a network of interested parties in the field (i.e. day care centres, clinical centres for people with mental disabilities, insurance companies, public authorities or elderly people or their

relatives etc) around the project so as to focus our dissemination activities to those on which they might have maximum effect will be an absolute priority.

**Deliverables:** D2.6: Qualitative analysis of the mailing list/network of interest with involvement of relevant local health and social care public authorities

T2.2: Preparation and maintenance of a web site and

T2.3: Preparation of online and offline dissemination and marketing material

Meanwhile, our efforts will be continuous throughout the project and will be implemented at a local and at an international level, aiming at respective audiences. Therefore, while preparing and forwarding sets of promotional and marketing material to the regions where the pilots will be held, a website will be set-up for wider information about the progress of the **LLM** project throughout its course. Offline material will be produced, including a project leaflet / fact sheet that shall be dispersed before the first pilot to raise awareness about the forthcoming events and towards the end of the project, in order to publish the results of the pilots and draw attention from public authorities and investors.

**Deliverables:** D2.2 Web site D2.3 Project leaflet / fact sheet D2.4 Report on offline marketing material dissemination

T2.4: Workshop activities

Following the same reasoning, two workshops will be organized: one will be held halfway through the piloting stages and the second one will be held at the end of the project

**Deliverables:** D2.5: Introductory **LLM** workshop report  
D2.7: Final **LLM** workshop report

### **WP3: Service Adaptation & Customization**

The third work package will relate to the merging of the three components constituting the **LLM** service:

1. The eHome AAL environment
2. The Cognitive Training Component (CTC)
3. The Physical Training Component (PTC)

The final result of this work package should deliver the integrated ICT solution, described here as **LLM** service, which will be used in the first phase of the pilots (before underlying any additional adjustments related to user feedbacks, as explained above).

#### T3.1: Requirements & Configuration

The first task regards setting the operational and technical specifications for the **LLM** service and designing the integration steps for the system. The defined requirements will be used as the basis of the integration process, of the testing of the system and of the operational validation of the piloted systems. The integration plan envisioned for this stage and the technical details to make this happen are more elaborately explained in chapter B1.3.

As for the localization customizations required, they relate to translations of the CTC and the eHome interface menus into the languages of the countries where the pilots will be held. It should be stressed out that the translation of the CTC, which regards the BrainFitness software, is in an already advanced state, since the software was developed in English and has been translated by UKON in German. Therefore the localization tasks to be performed at this stage are (YES = translation required):

	English	French	German	Greek	Spanish
<b>BrainFitness</b>		YES		YES	YES
<b>eHome</b>	YES	YES		YES	YES

**Deliverables:** D3.1: **LLM** technical and operational specifications-Integration design report  
D3.3: Cost analysis of LLM system deployment and customization

#### T3.2: Technical set-up

During the second task of this WP, the technical adjustments defined by the T3.1 and the D3.2 report will be realized on a prototype system in RALTEC labs. Namely, an existing eHome prototype installation will be enhanced with the CTC and PTC following the integration steps and hardware and software requirements dictated by the design task. This will be the first **LLM** prototype that should provide all operational specifications set for the service in the current proposal text and in D3.1.

#### T3.3: Technical testing and validation

During the last months of this work package, the prototype innovative integrated solution will be submitted to technical testing and validation. Testing will ensure the correct operation of the service in terms of:

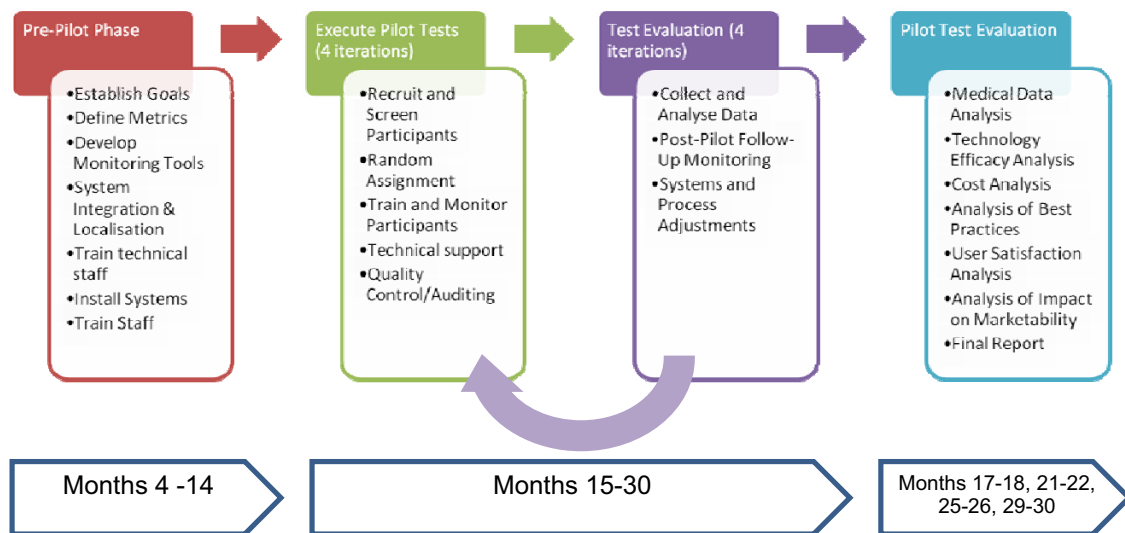
- user movement identification by eHome
- emergency detection by eHome
- user interaction with the system
- performance monitoring of the physical training
- cognitive training procedure
- personalized training program development

Validation against these general and all specific criteria set in the D3.1 deliverable will be the objective of this task. The corresponding changes and adaptations to the system should result into **LLM** services system that will be used in the first piloting phase.

**Deliverables:** D3.2: **LLM** system

### **WP4: Deployment & Operation**

Activities belonging into this WP will evolve around the planning, quality assurance and deployment of the piloting phase for the **LLM** service. The Pilot programme will incorporate best practices from the disciplines of technology hardware and software development as well as medical clinical trials, encompassing the testing of the efficacy and marketability of the solution, as well as the collection of user performance data to measure achievement of target cognitive outcomes. The Pilot programme will be designed in a manner to allow for adjustment of technical, training, procedures, and monitoring of outcomes, using an iterative approach. The procedure of the deployment phase is depicted below:



**Figure 8: Pilot Methodology**

Our deployment plan can be divided into three key phases:

**1. Pre-Pilot Phase (tasks T4.1-T4.3):** During this phase, efforts will be focused upon preparing all the elements for a successful pilot programme, including:

- Detailed goal setting for technology, processes, and end-user outcomes
- Definition of metrics and suitable approaches to collect the metrics
- Development of any monitoring tools, including questionnaires, standard interview questions, technical log files, medical testing requirements, etc.
- Development of a deployment plan, encompassing all logistical issues.
- Integration and localisation of technical systems will be completed and the finalised system tested in a laboratory environment.
- Development of a quality control/audit programme.
- Installation of systems in pilot site locations. The pilot programme will be executed in elder care facilities, and depending upon the facility, they will participate in one or more iterations of the pilot. The level of participation may depend upon whether more than one institution in the region will be used. The installation will be completed in a room inside the institution specially equipped with the eHome environment (sensors, actuators etc) and user-interface screens. Physical training equipment (recumbent bikes, ergometers) device will exist and will be connected to the eHome environment. An armchair will be set opposite to the interface screen.
- Train staff engaged in the deployment and support of the system, as required.
- Train staff at pilot site locations (technical operations and processes; pilot test monitoring processes).

**2. Pilot Test Phase (tasks T4.4-T4.5):** The second phase of the project will include 4 iterations of the pilot with different groups of users included in each phase.

**3. Pilot Test Evaluation Phase (task T4.6):** The last phase includes the post implementation review and evaluation of the pilot procedure according to designated objectives set in the deployment and strategic business plan.

More specifically for each task we have:

#### T4.1: Deployment planning

An analytical pilot deployment plan will be developed along the lines of inflicting the maximum impact to interested parties, while providing a high quality service whose effectiveness will be evaluated on a number of scientific criteria. Partner IDI EIKON, which has offered remarkable results in the past for eTen and ICT PSP CIP projects, will ensure the former target (organizational quality for maximum impact) and scientific partners UKON and ATHENA RC the latter (training effectiveness). Finally, this cooperation will be complemented by the results of WP6 through the participation of GSI in the task. In addition, the deployment planning process will evaluate the potential impacts on end-users subsequent to the end of the pilot, and determine what mitigating actions may be required to ensure that there are no negative consequences of withdrawal of services from the end-users, including either continuation of services or alternatives/substitutes for the services.

**Deliverables:** D4.1: Pilot deployment plan

#### T4.2: Quality of service assurance

Prior to deployment of pilots, a quality assurance plan will be developed, monitoring adherence to defined policies, procedures, training standards, reporting and record-keeping, and other elements of the pilot deployment plan. Throughout the term of the pilot phase, this plan will be executed to monitor ongoing pilot activities and ensure consistency across all pilot sites.

**Deliverables:** D4.2: Training and Quality of Service Assurance Report

#### T4.3: Technical support and training

Preparations of the pilot sites will include the technical support from our consortium and the staff training required to accommodate the procedure. In this respect, installations of the integrated pilot **LLM** service will be undertaken by our technical team, while guidance is going to be provided to the medical and supporting staff in each pilot organization with seminars and training documents dissemination.

**Deliverables:** D4.3: Pilot site installation report

#### T4.4: Piloting phase

In order to effectively coordinate the pilot deployment across five countries, ensuring consistency in the conduct of the pilots in varying environments and in the collection of data (medical, technological, and procedural), a central coordination and communication process will be established. This process will be defined concurrently with Pilot Deployment Planning in T4.1, and will include communication and reporting mechanisms for normal and exceptional situations (e.g., weekly pilot progress reporting, communication flows for technical questions and results, medical questions and results, etc.). GSI will take the lead role in both the development (and adjustment as necessary) of these processes, as well as for the collection of pilot progress data and reporting to the consortium as a whole.

Pilots will be held in 4 iterations of 3 months with one month in between for adaptation and will be held in five EU Member countries. The partners involved in the coordination of the pilots for each country are:

- Austria: **RALTEC**
- France: **E-Seniors**
- Greece: **IGNA**
- Spain: **INTRAS**
- UK: **GSI and MKC**

The pilots will be held over a period of 15 months, as shown in the timeline below:

Project month	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	<b>Pre-pilot</b>			<b>Iteration 1</b>				<b>Iteration 2</b>				<b>Iteration 3</b>				<b>Iteration 4</b>			
<b>Austria</b>																			
<b>France</b>																			
<b>Greece</b>																			
<b>Spain</b>																			
<b>UK</b>																			

**Figure 9: LLM pilots timeplan**

Each implicated partner will be responsible for:

- Recruiting and randomising participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration (weeks 1-3)
- Training the participants on the usage of the system over one week (week 4)
- Running the **LLM** service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3) (weeks 5-8)
- monitoring the procedure for the entire 8 week period
- noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments
- technically supporting the users of “At Home” installations throughout the pilots’ duration
- holding interviews and handing out questionnaires to acquire the direct opinion of the system’s users
- complying with internal pilot reporting requirements as defined in T4.4

#### T4.5: Pilot evaluation and service adaptation

Each iteration will conclude with a two-month period of trial evaluation and service adaptation. The trial evaluation will be based on the predefined deployment plan targets and expected goals for each region and pilot type as documented by task T4.1. Since, as explained above, these targets include operational as well as training effectiveness criteria, the same consortium subgroup composition of **AUTH**, **RALTEC**, **UKON** and **ATHENA RC**, will participate in this stage.

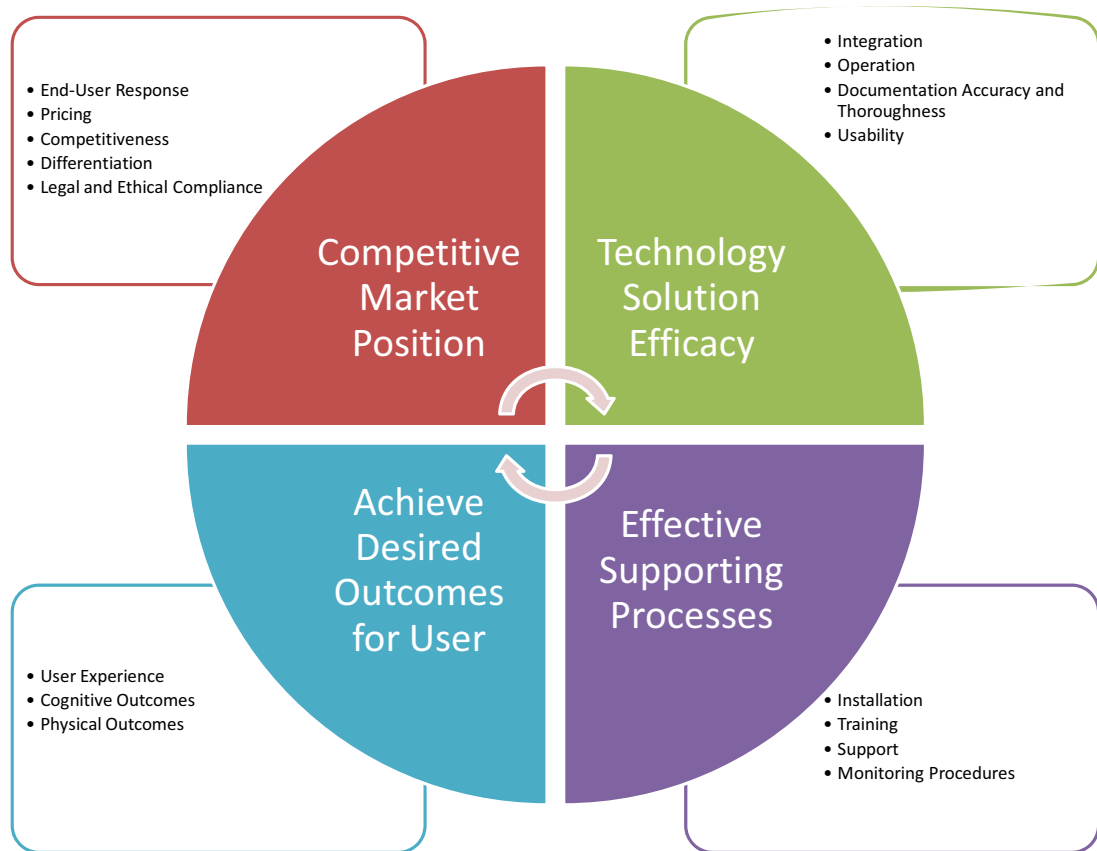
**Deliverables:** D4.4: Intermediate service evaluation and adaptation reports

#### T4.6: Post-implementation review

Upon conclusion of the final iteration of the trial, the **LLM** solution will be fully evaluated across a range of criteria, with an expectation of the following key outcomes:

- Efficacy of the technology solution
- Effective supporting processes
- Achievement of desired cognitive and real-world outcomes for the end-user
- Ability of the **LLM** solution to be competitive in the market as a solution for reducing cognitive decline in the elderly

**Deliverables:** D4.5: Post implementation review / Final evaluation report



**Figure 10: LLM service and project evaluation criteria**

### **WP5: Planning for sustainability**

Creating a successful sustainability plan that will be set in effect after the end of the proposal and that will render the **LLM** service viable and widely deployable is of the utmost importance to the project. In this respect, the fifth work package will investigate current market trends with an objective of developing a viable business plan for the service and seeking public and private cooperation. More specifically for each task:

#### T5.1: Service Market Assessment

The first task includes the performance of a market investigation in the fields of ICT solutions for the elderly. Though several such solutions have been introduced over the last years, these systems are still lacking the wide market penetration they could achieve. Reasons like lack of familiarity with technology from the interested end-users, cost and robustness of features are mainly to be attributed for this issue. Identifying all implicated factors and focusing on countermeasures to promote the **LLM** service in this newly arising market, will be the main target of this task that will be documented on the corresponding deliverable.

**Deliverable:** D5.1: Service Market Assessment report

#### T5.2: Business Strategy & Development

The sustainability of the **LLM** service will be based on the Business Strategy developed during this task. The business plan will be based on PPP and on the ways this approach will be promoted and reinforced by the results of the market validation of **LLM** during the pilots. PPP will

present a number of recognized advantages for the public sector to exploit like the ability to raise additional finance in an environment of budgetary restrictions, make the best use of private sector operational efficiencies to reduce cost and increase quality to the public. The strong coupling of Public and Private Partnership suggests working with a very flat hierarchy, to guarantee a rapid flow of information among business (investors, prescriptors, etc) and technical experts. Work on this task will result to the Business Plan for the **LLM** service, including the definition of the New **LLM** Company who will own the IPR of the system and will be responsible for its maintenance and provision to the public.

**Deliverable:** D5.3: LLM Business Plan

T5.3: Public initiatives for financing

T5.4: Private initiatives for financing

Actions will be especially taken at regional level, where it is more viable to create partnerships with public authorities, private companies, local banks, technical providers and foundations. In our understanding, this level of actions is a key factor for the rollout of LLM. This is why the Consortium believes that one of the main possibilities for policy to really help the deployment of LLM is by facilitating the building of real public-private partnerships. To this end we have incorporated three related tasks in this work package, which bear the objective of promoting actions towards this direction approaching companies like: Insurance companies, Health centres and Day care centres belonging to public and private institutions.

**Deliverable:** D5.2: identification of national stakeholders in terms of local health and social care public authorities related financial models

T5.5: Commercial alliances

The reasoning of the aforementioned tasks is to accomplish by the end of the project's duration strategic commercial alliances based on a public-private financing model that will support the sustainability and the maintenance of the service, while introducing to the market a high quality service, coherent with EU policies on e-Inclusion and social care, in an affordable price and demonstrated ease-of-use. The final service deployment report is going to record the results of our actions and providing modifications or highlighting points of particular significance from the initial business plan that need to be addressed for the successful service viability.

**Deliverable:** D5.4: Deployment Report (feasibility)

T5.6: IPR strategy and management

This task will provide an IPR framework for the services provided and for orienting the external collaborations. Activities will include:

- clustering with relevant EC services (like the IPR Help-Desk and other ongoing projects (M1)
- a clear statement of IPR strategy (M1 and M12)
- periodic internal review of IPR issues, every twelve month
- generation of a final IPR Management Report (M30)

**Deliverable:** D5.5: IPR strategy report

**WP6: Legal & Ethical issues**

Led by **GSI**, which has worked on ethical issues of ambient assisted living (AAL) solutions in several past projects, the consortium will undertake this work package to investigate the ethical and legal status quo and reach to conclusions and decisions on the approaches to be followed during the technical integration of the system to adhere to these rules while offering improved care through the use of ICT. The service should adhere to related rules and guidelines, while the clinical trials should be in accordance with current legislation (especially in terms of privacy



protection laws). In this respect, full anonymity is going to be used throughout the course of the pilots as well as:

- From a technological perspective, the design of the e-Home system, which collects and monitors behavioural data about the elderly participant, retains raw data locally in the HCU (Home Control Unit), and transmits an alarm/signal to an external third party for attention under exception conditions only, without providing any detailed personal or location data. Moreover, the CMS retains performance data strictly locally as a
- From the perspective of informed consent, special care will be taken with respect to providing full disclosure about the pilot programme, its technological and privacy implications, to the end-users. Best practices will be employed in ensuring that participants have been fully informed of these implications, and are able to provide consent, with the end-user's consent (as compared to that of relatives, physicians, etc.) taking primacy. These best practices will include the development of informed consent and release documents for signature by the end-user, in line with each country's relevant laws and regulations, and will accommodate the need to take special precautions for informed consent with end-users who may suffer from mild cognitive decline, and whose ability to provide consent may be in question. Such precautions would follow the approach used in medical clinical trials where the end-user's caregiver network and particularly, their primary caregiver, may be consulted in the informed consent process.

#### T6.1: Ethical issues guidelines

This task includes delivering a report on the guidelines that should be followed throughout the project in order to protect the basic human rights like privacy and dignity of all implicated end-users. Considerations that should be regarded during the specifying technical aspects of the integrated service are going to be explicitly spelled out and validated external independent factors. In this respect, guarantees on the full anonymity of the test and real users of **LLM** as well as protection of the information data are to be flow addressed.

**Deliverables:** D6.4: Ethical guidelines report

#### T6.2: Legal issues

The second task involved in our work entails the study of existing national and European legislation regarding clinical care experiments, marketing rules and privacy management. The objective of this task is:

- to safeguard the adherence to legal stature of each country where pilots will be held
- to ensure that our business exploitation and wide deployment plans are in accordance and will not be in anyway hindered by current legislation
- to identify possible risks sourcing from privacy protection laws and take them into consideration during the specification of the technical and operational requirements.

**Deliverables:** D6.1: National and European legislation on the clinical care trials and eCare systems

#### T6.3: Security, data protection and privacy management

The elaboration on the technical prerequisites that should be adhered to by the prototype integrated **LLM** service comprises the fundamental objective of this task. For example, this task should include the definition of whether any data will be encrypted, of the information flow, of the anonymity assurance mechanisms etc, and generally of ways that would render our final technical solution coherent with legal and ethical requirements.

**Deliverables:** D6.2: Technical specifications for user privacy reassurance

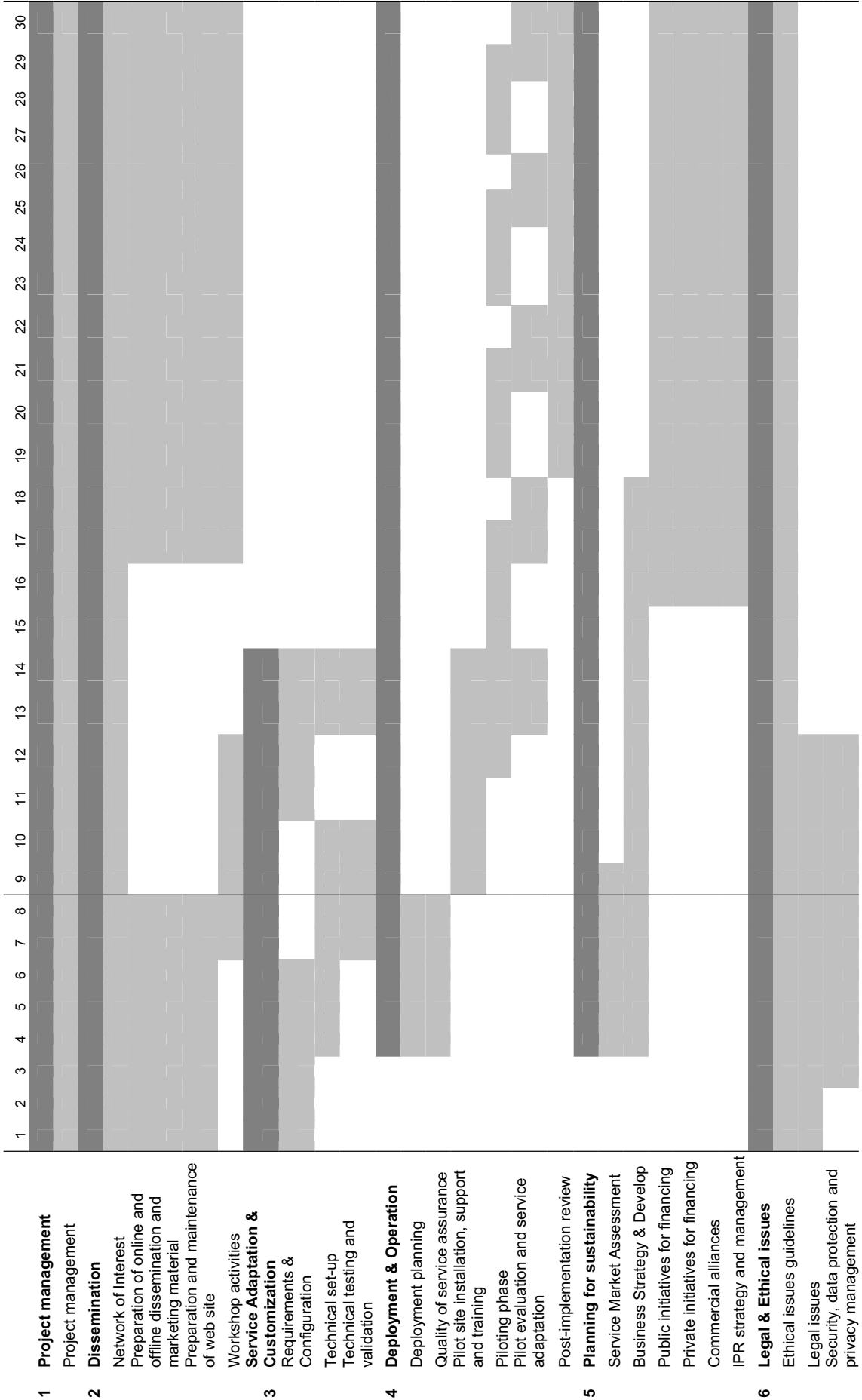
D6.3 National and European security and certification requirements including issues of liability

## **B3.2. Work plan**

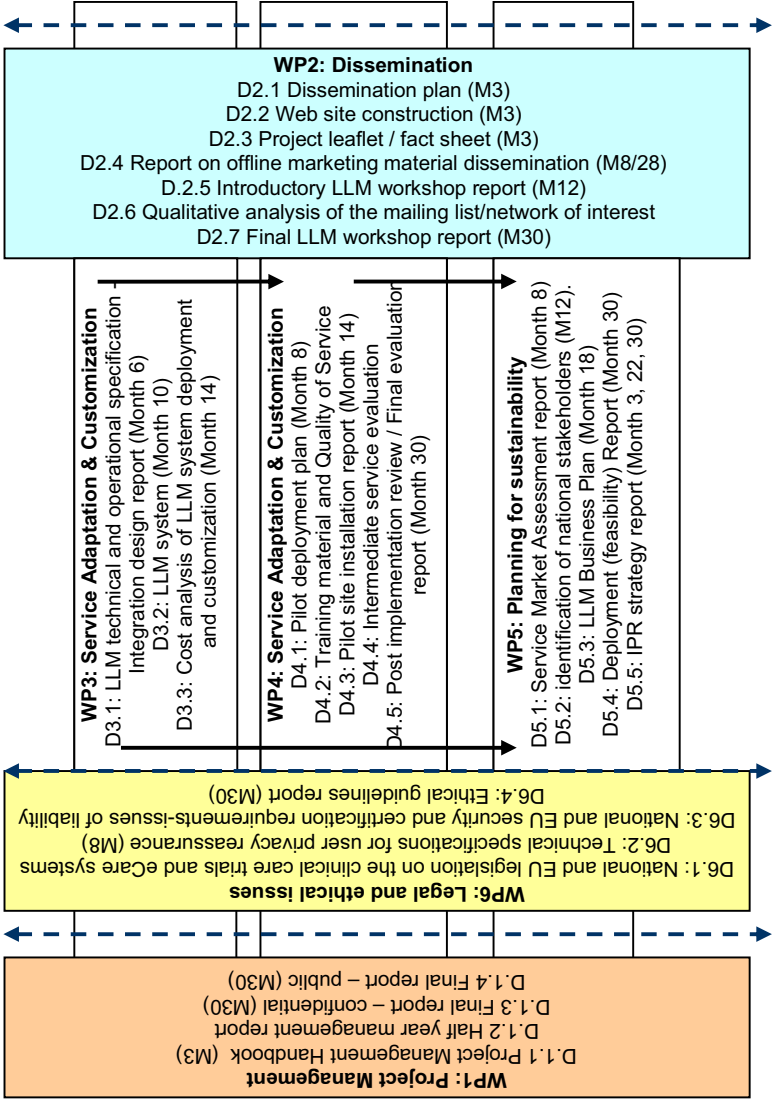
### **B3.2.1 Work package summary tables**

<b>Work package No.(i)</b>	<b>Work Package Title</b>	<b>Lead Participant No. (ii)</b>	<b>Lead Participant Short name (iii)</b>	<b>Total person months per WP (iv)</b>	<b>Start Month (v)</b>	<b>End Month (vi)</b>
WP1	Project Management	1	AUTH	32	1	30
WP2	Dissemination	1	AUTH	86	1	30
WP3	Service Adaptation & Customization	5	RALTEC	53	1	14
WP4	Deployment & Operation	9	GSI	302	4	30
WP5	Planning for sustainability	6	EIKON	116	4	30
WP6	Legal & Ethical issue	9	GSI	54	1	30
<b>TOTAL</b>				643		

B3.2.2 GANTT chart



B3.2.3 PERT chart - Interdependencies between work packages



**B3.2.4 Deliverables list**

<b>Deliverable No (i)</b>	<b>Deliverable name</b>	<b>Deliv. Leader</b>	<b>Nature (ii)</b>	<b>Dissemination level (iii)</b>	<b>Delivery date (proj. month) (iv)</b>
D1.1	Project Management Handbook	1	R	C	3
D1.2	Half year management reports	1	R	C	6/12/18/24
D2.1	Dissemination plan	4	R	P	3
D2.2	Web site construction	4	O	P	3
D2.3	Project leaflet / fact sheet	1	R	P	3
D3.1	<b>LLM</b> technical and operational specifications - Integration design	1	R	P	6
D2.4	Report on offline marketing material dissemination	3	R	C	8/28
D4.1	Pilot deployment plan	6	R	C	8
D4.2	Training material and QoS Assurance	9	R	P	8
D6.1	National and European legislation on the clinical care trials and eCare systems	9	R	P	8
D6.2	Technical specifications for user privacy reassurance	9	R	C	8
D5.1	Service Market Assessment report	6	R	C	8
D3.2	<b>LLM</b> system	5	R	C	10
D2.5	Introductory <b>LLM</b> workshop report	2	R	P	12
D6.3	National and European security and certification requirements including issues of liability	3	R	P	12
D5.2	Identification of national stakeholders in terms of local health and social care public authorities related financial models	1	R	P	12
D2.6	Qualitative analysis of the mailing list/network of interest	1	R	P	12/22/30
D4.3	Pilot site installation report	1	R	C	14
D3.3	Cost analysis of LLM system deployment and customization	5	R	C	14
D4.4	Intermediate service evaluation and adaptation report	9	R	C	14/18/22/26
D5.3	<b>LLM</b> Business Plan	6	R	P	18
D1.3	Final report – confidential	1	R	C	30
D2.7	Final <b>LLM</b> workshop report	2	R	P	30
D4.5	Post implementation review/ Final evaluation report	9	R	C	30
D6.4	Ethical guidelines report	9	R	P	30
D5.4	Deployment Report	6	R	C	30
D5.5	Final IPR management report	4	R	C	30
D1.4	Final report – public	1	R	P	30

**Table 8: Deliverables list**

**B3.2.5 List of milestones and planning of reviews**

No	Milestone	Planned Month	WP	Deliverables available
1.	Definition of initial operational and technical requirements of the LLM service	3	2	D1.1, D1.2, D2.1, D2.2, D2.3, D.3.1 (draft)
2.	Selection and purchase of training and other equipment for Austria pilot	6	3	D.3.1
3.	Equipment installed; initial test and testing of equipment	8	3	D2.4, D4.1, D6.1, D6.2, D5.1
4.	Baseline for training is defined	8	4	D4.2
5.	Selection and purchase of training and other equipment for the other trials	9	3	-
6.	Technical integration of the Austrian site – Initial Service Adaptation and Customization for all trials	10	3	D3.2
7.	Users selection and training	11	4	-
8.	Equipment installed; initial test and testing of equipment for the other trials	12	3	-
9.	Start of the pre-pilot in Austria	12	4	D2.5, D6.3, D5.2, D2.6a
10.	Agreement on an evaluation metrics for acceptability, usability and service use	12	4	-
11.	Technical integration of all sites – Service Adaptation and Customization completion	14	3	D4.4a
12.	Pilot site installation completion	14	4	D3.3
13.	Evaluation of the pre-pilot	14	4	D4.3
14.	Beginning of the trials	15	4	-
15.	Business plan ready	18	5	D4.4b, D5.3
16.	End of the first two piloting phases	22	4	D4.4c, D2.6b
17.	Founding decision of the new company	24	5	-
18.	End of the pilots - Service evaluation	30	4	D4.4d, D1.3, D2.7, D4.5, D1.4
19.	Deployment(feasibility) Report	30	5	D5.4, D2.6c, D5.5
20.	Compliance with legal , ethical and security issues	30	6	D6.4

**Table 9: Milestones list**

No	Tentative review month	Deliverables available for the review
1.	12	D1.1, D1.2, D3.1, D2.1, D2.2, D2.3, D3.1, D2.4, D4.1, D4.2, D6.1, D6.2, D6.3, D3.2, D5.1, D5.2, D2.5, D2.6a
2.	22	D3.3, D4.3, D4.4 (a,b,c), D5.2, D5.3, D2.6b
3.	30	D4.4d, D1.3, D2.6c, D2.7, D4.5, D6.4, D5.4, D5.5, D1.4

**Table 10: Tentative reviews**

**B3.2.6 Work package descriptions**

Work package number :	1		Start date or starting event:		M1	
Work package title:	Project Management					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	24	0	0	4	0	4
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	0	0	0	0	0	

**Objectives**

- To manage and monitor the project and to ensure that it is run efficiently.
- To establish effective project management procedures detailed in a project management plan.
- To enhance the communication flow both within the consortium and between the consortium and the EC project officer.
- To organise the kick-off and subsequent Consortium meetings.
- To monitor and oversee all project activities and ensure the desired awareness.

**Description of work**

A proper and effective management is provided in order to guarantee a seamless development of the entire project according to the stated work plan while insuring a timely response to any hazards that could constitute serious threat to the achievement of the overall expected results. The management procedures will be detailed in a quality assurance manual, guiding its successful implementation.

The quarterly reports are aimed at demonstrating the progress of the work to the Commission while requesting modification to the original work plan, should the event of a major change appear necessary.

The final reports will contain a brief history of the project, highlighting the major achievements and referencing the prepared business and deployment plan, while including forecast for future development.

**Deliverables**

- D.1.1 Project Management Handbook (*Month 3*)
- D.1.2 Half year management report (*Months 6/12/18/24*)
- D.1.3 Final report – confidential (*Month 30*)
- D.1.4 Final report – public (*Month 30*)

Work package number :	2		Start date or starting event:		M1	
Work package title:	Dissemination					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	26	10	14	11	12	2
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	2	3	3	0	3	

### Objectives

The objectives of this work package are to inform about the project's objectives, disseminate the results and participate and organize events of high publicity, focusing in *the exploitation of the project services, being the main path for sustaining the service beyond the project duration. In this context, the resource planning for dissemination as well as for sustainability support will be balanced according to its value for the project, introducing a close coordination and increased resource allocation for "pre-marketing" activities between this WP2 and WP5. Accordingly, the aim of this WP2 is to raise awareness on the LLM service among the different links of the whole chain of stakeholders in the chain of service provision* in order to:

- arouse the interest of service **end-users** along the whole value chain (older people and their relatives, care takers, housing institutions, insurance companies)
- promote the product in **public authorities** and private companies, forwarding the model for public-private partnerships as denoted in our business plans
- forward the **technical specifications standards** as a means to gather attract the attention of technology providers and SMEs
- to produce documentation and dissemination material oriented both to directly interested stakeholders, mainly to Local Public Administrations as future "**clients**" and to Older People as future the "**end-users**".
- to expose the progress of the project to a peer audience of the **market "decision-makers"** stakeholders that will provide their feedback and guide to the business process and overall sustainability.

### Description of work

Detailed course of action for the dissemination work package will be elaborated on the first deliverable of the project. Nevertheless, the general approach of our activities can be divided into three stages:

**Stage I: Pre-piloting stage (Months 1–11):** During this stage our target is to raise awareness on the upcoming pilots. The objectives set, the methodology to be followed and the expected results planned will be published through online and offline means. Moreover, an introductory workshop will present and familiarise interested parties with our work and its prospective goals, immediately encompassing public authorities and private industries in the information loop of LLM.

**Stage II: Initial piloting stage (Months 12-24):** This is planned to be the most stable stage in our dissemination planning as we will evaluate the service and estimate its potential impact on the market on our own through the validation taking place during the first two piloting rounds.

**Stage III: Evidence supported dissemination (Months 25-30):** During the last 6-months of the project and while the final pilots are taking place, we will initiate a second large wave of dissemination activities, being now in place to provide evidence to support the claims for the effectiveness, ease-of-use and potential applicability of the LLM service. We trust these efforts to comprise the beginning for a wider service uptake from related stakeholders.

To augment the chances and effectiveness of our dissemination policies, we plan on involved all partners in this work package. Lead by partner **AUTH**, which holds extensive experience in the results' dissemination of many EU R&D, the entire consortium will participate in the effort of raising awareness initially in all LLM implicated Member States and afterwards to the rest of the EU and beyond. The work package's work is divided into the following tasks:

#### T2.1: Network of Interest

Creating a network of comprising from the whole value-chain around the project (in the terms of end-users, caretakers and technology providers) will involve all LLM partners. Coordinated by AUTH, we aim on creating mailing lists and offline contacts that will facilitate the effective publication of our prospective, current and future work.



**T2.2: Preparation and maintenance of a web site**

Tero will be responsible for constructing, setting up and maintaining the **LLM** service web site. The site will include:

- a public area where interested parties may be informed about the project's progress, currently running pilots as well as existing and future results. User friendliness and cognitive training presentation in the form of videos of the procedure and Java applets will be set as top priorities for the content of the web-site
- a private area for the consortium partners as a means to facilitate the information flow and progress monitoring by the Project Manager.

In parallel with the **LLM** project web site, a project description summary will be outlined to be uploaded to the CIP "Projects" webpage.

**T2.3: Preparation of dissemination and marketing material**

By online and offline dissemination material we refer to:

- Logo and graphical identity
- Templates for text documents and presentations
- Internet Telephony
- News letters
- Mailing lists
- Media
- Press release and project fact sheets
- Brochures and leaflets
- Posters for conferences, exhibitions and conventions
- Videos and CD-ROMs with **LLM** powerpoint presentations, videos and any other relevant content (also to be provided through the website) etc

With the help of Tero and the research organization ATHENA RC (which will scientifically review the content to be delivered), AUTH will print and publish such offline marketing material during stages I and III (as they are explained above), different for each of them and focused on various objectives each time. Hence, material of phase I will target on raising awareness on the pilots and the prototype service itself, while the one of the last phase to the service and to business exploitation possibilities.

**T2.4: Workshop activities**

Following the same reasoning, two workshops will be organized: one will be held in the beginning of the piloting stages and the second one will be held when piloting has produced some complete results. The consortium will involve partners from research organizations (**UKON, ATHENA RC**), tech providers (**RALTEC**) and non-government organizations (**E-Seniors**), thus incorporating the all aspects of an innovative ICT solution for improving the quality of life of the elderly. By the time when the first of the workshops will be held, we anticipate to have created avid supporters within the "Network of Interest" circle that will be willing to participate and encourage others to do so in such activities. Results for each of the two workshops will be documented and respective deliverables will be published.

**Deliverables**

- D2.1 Dissemination plan (*Month 3*)
- D2.2 Web site construction (*Month 3*)
- D2.3 Project leaflet / fact sheet (*Month 3*)
- D2.4 Report on offline marketing material dissemination (*Months 8/28*)
- D2.5 Introductory **LLM** workshop report (*Month 12*)
- D2.6: Qualitative analysis of the mailing list/network of interest with involvement of relevant local health and social care public authorities (*Month 12/22/30*)
- D2.7 Final **LLM** workshop report (*Month 30*)

**Milestones**

- M1: Definition of initial operational and technical requirements of the LLM service (*Month 3*)

Work package number :	3		Start date or starting event:		M1	
Work package title:	Service Adaptation & Customization					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	14	5	2	0	24	0
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	0	0	5	0	3	

### Objectives

The objectives of this work package are to integrate two existing ICT solutions with physical training equipment, thus delivering innovative ageing well / independent-living support services for elders. As the **LLM** service can be categorized under the merging of existing ICT solutions approach, the third work package regarding service adaptation and customization comprises of:

- Providing the final service operational and technical specifications
- Integrating the three components of **LLM** (Intelligent Living Component – ILC, Cognitive Training Component – CTC and Physical Training Component – PTC)
- Testing, validating and adapting the service to adhere to the afore-mentioned specifications
- Localizing the service according to the regions where pilots will be held
- Delivering the **LLM** system that will be used for pilots

### Description of work

As has thoroughly been explained in chapter B1.3, the integration of the currently existing prototype solutions towards the construction of the **LLM** service will be based on the trivial interconnection of the CTC and PTC to the eHome solution of the Intelligent Living Component. In this respect, the most suitable partner to lead this work package is RALTEC, which has developed the eHome solution after a two-year research on relevant AAL solutions and approaches. **RALTEC** will cooperate with partner **AUTH**, will significantly contribute towards the delivery of the integrated system. The workload involved to make this happen consists of the following tasks:

#### T3.1: Requirements & Configuration

This task involves the definition of all operational and technical requirements of the **LLM** service. Operational requirements are strongly correlated with the cognitive and physical training process and the personal training programme scheduling. Therefore, **UKON** and **ATHENA RC** partners which possess expert knowledge in the field will provide their insights towards improving the effectiveness of the training programme for the delivered service. The operational specifications and the technical requirements will also affect the integration process design, which will be precisely documented and delivered to the PO. Meanwhile, the envisioned solution should properly address interoperability and standardization issues: we already know that the proposed architecture is not limited either by a specific CTC or PTC. In this respect, alterations, extensions and even replacements may lead to improved service features, especially in the case where trial results contradict previous assignments and work hypotheses.

Moreover, this task will include the definition of the required steps towards the localization of the service. Partner **UKON** which has already translated the BrainFitness software in German, will facilitate the process by indicating the vocabulary that had to be translated and the programme configuration that needed to take place. Meanwhile, **RALTEC** will provide details on how this procedure should take place regarding the ILT component to the **LLM** solution.

#### T3.2: Technical set-up

In the framework of the second task, **RALTEC** and **AUTH** will follow the methodology defined by the **LLM** integration design report to provide all missing parts that need to be developed, like the driver

for the Local User Interface (LUI) for the Central Management System of CTC or the required inter-component communication infrastructure. We anticipate both steps to complete on-time:

- First because RALTEC has already developed drivers for the LUI
- Secondly because the inter-communication infrastructure merely requires hard-wiring the PTC to the CMS, digitalizing its output (if it is not already in such a form) and processing it by the CMS

Moreover, the localization procedure can be widely based upon the paradigm of the BrainFitness software translation for the German language. In this respect, we regard that the six-month period and the relatively low amount of effort dedicated to the integration process should more than suffice to deliver the first prototype of the integrated system.

### T3.3: Technical testing and validation

During the last months of this work package, the prototype innovative integrated solution will be submitted to technical testing and validation that should take place in **RALTEC's** labs. Testing will ensure the correct operation of the service in terms of:

- user movement identification by eHome
- emergency detection by eHome
- user interaction with the system
- performance monitoring of the physical training
- cognitive training procedure
- personalized training program development

Validation against these general and all specific criteria set in the D3.1 deliverable will be the objective of this task. The corresponding changes and adaptations to the system should result into **LLM** services system that will be used in the first piloting phase.

### **Deliverables**

D3.1: **LLM** technical and operational specification - Integration design report (Month 6)

D3.2: **LLM** system (Month 10)

D3.3: Cost analysis of **LLM** system deployment and customization (Month 14)

### **Milestones**

M2: Selection and purchase of training and other equipment for Austria pilot (Month 6)

M3: Equipment installed; initial test and testing of equipment for Austria pilot (Month 8)

M5: Selection and purchase of training and other equipment for the other trials (Month 9)

M6: Technical integration of the Austrian site –Initial Service Adaptation and Customization for all trials (M 10)

M8: Equipment installed; initial test and testing of equipment for the other trials (Month 12)

M11: Technical integration of all sites – Service Adaptation and Customization completion (Month 14)

Work package number :	4		Start date or starting event:		M4	
Work package title:	Deployment & Operation					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	39	15	13	2	27	8
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	49	49	26	31	43	

### Objectives

The objectives of this work package are to demonstrate the significant impact potential of LLM service in five different countries.

The target of the deployment and operation work package involves the successful implementation of the service's demonstration in all piloting sites. As explained earlier **LLM** is scheduled to be delivered in three versions:

- **At Home:** for home environment installations
- **Day Care:** centre medium scale installations
- **Formal Care:** large scale installations

Our pilots are planned to validate all these versions in the various testing sites thus reaching conclusions for the subsequent uptake of the service by whole value chain in the corresponding market (end-users, day-care centres, clinical care centres). Besides that, another objective of the work package is to evaluate the service itself in terms of operational adherence with the specifications set in the previous work package. Finally, the results of the pilots should reach the target goals set for each region as roughly presented in this report (chapter B1.1.5) and thoroughly elaborated in the deployment plan to be evolved in this work package.

### Description of work

Partner **GSI** is responsible for planning the methodology for the piloting and operational stage of the service. According to preliminary study of the partner on the field, the work involved in this work package will be divided into three phases:

- **Pre-Pilot Phase:** Preparation for the pilot, specific target and success criteria definitions
- **Pilot Test Phase:** 4-round pilots comprising of 3-month pilot tests and 2-month for evaluation and adaptation procedure (the last month of the former and the first of the latter occur simultaneously). Each iteration may result into small adaptations or extensions to the service to better address user needs and real usage requirements
- **Pilot Test Evaluation Phase:** Following all iterations, the final pilot evaluation will reach the overall conclusions of the process, underlining points of interest that need to be taken into account during the wider deployment of the service after the project's conclusion

#### T4.1: Deployment planning

An analytical pilot deployment plan will be developed along the lines of inflicting the maximum impact to interested parties, while providing a high quality service whose effectiveness will be evaluated on a number of scientific criteria. Partner **IDI EIKON**, which has offered remarkable results in the past for eTen and ICT PSP CIP projects, will ensure the former target (organizational quality for maximum impact) and scientific partners **UKON** and **ATHENA RC** the latter (training effectiveness). Finally, this cooperation will be complemented by the results of WP6 through the participation of **GSI** in the task. In addition, the deployment planning process will evaluate the potential impacts on end-users subsequent to the end of the pilot, and determine what mitigating actions may be required to ensure that there are no negative consequences of withdrawal of services from the end-users, including either continuation of services or alternatives/substitutes for the services.

#### T4.2: Quality of service assurance

The same partners will be involved in the definition of a quality of service assurance plan, which will

monitor adherence to defined policies, procedures, training standards, reporting and record-keeping, and other elements of the pilot deployment plan. Throughout the term of the pilot phase, this plan will be executed to monitor ongoing pilot activities and ensure consistency across all pilot sites. Staff training documents and pilot holding practical, ethical and legal guidelines will comprise the results of this task. In this respect, this task depends on the results of T3.1 regarding operational specifications as well as on WP6.

#### T4.3: Pilot site installation, support and training

Staff training will be held in a decentralized manner for each piloting site. Technical support is going to be provided by partners **AUTH** and **RALTEC** which are, as explained in the description of work of WP3, responsible for the technical integration and standardization of the service. In this respect, they are the most suitable partners to perform the on-site installations of the system, while offering guidelines and support on the technical functionality of the system. On the other hand, scientific partners **UKON** and **ATHENA RC** will provide guidance to the care takers (for medium and wide scale service deployment pilots). This task depends on the results of T3.3 (since the system needs to be finalized before being installed) and to the ones of T4.2, which will define, formalize and document the training process for each piloting institution and site. Procedures followed and remarks made during the service installation will be documented in a related report to be used as a reference for future **LLM** installations. Disseminating this installation document increases the chances of private or public-private alliances overtaking our work in regional level, hence augmenting the chances for quick uptake, promotion into a number of local markets and overall wide deployment of the service.

#### T4.4: Piloting phase

A pre-pilot will take place in Austria on month 12 for three months. All pilots will start on month 14 and will be held in 4 iterations of 3 months with one month in between for adaptation and will be held in five EU Member countries. Partners involved in the coordination of the pilots for each country are:

- Austria: **RALTEC** (representing Municipality of Schwechat, that will join the project latest on Month 4)
- France: **E-Seniors**
- Greece: **IGNA and AUTH**
- Spain: **INTRAS**
- UK: **GSI and MKC**

Each implicated partner will be responsible for:

- Recruiting and randomising participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration (weeks 1-3)
- Training the participants on the usage of the system over one week (week 4)
- Running the **LLM** service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3) (weeks 5-8)
- monitoring the procedure for the entire 8 week period
- noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments
- technically supporting the users of “At Home” installations throughout the pilots’ duration
- holding interviews and handing out questionnaires to acquire the direct opinion of the system’s users
- complying with internal pilot reporting requirements as defined in T4.4

#### T4.5: Pilot evaluation and service adaptation

Each iteration will conclude with a two-month period of trial evaluation and service adaptation. The trial evaluation will be based on the predefined deployment plan targets and expected goals for each region and pilot type as documented by task T4.1. Since, as explained above, these targets include operational as well as training effectiveness criteria, the same consortium subgroup composition of **AUTH, RALTEC, UKON** and **ATHENA RC**, will participate in this stage. For example, training effectiveness will be assessed by having participants complete a number of established

questionnaires measuring cognitive performance (MINI [Mini-Mental State Examination], CERAD-Plus battery [The Consortium to Establish a Registry for Alzheimer's disease], ADAS-cog [Alzheimer's Disease Assessment Scale – cognitive subscale], CVLT [California Verbal Learning Test], ADL [Activities of Daily Living] and IADL [Instrumental Activities of Daily Living], GAS [individual Goal Attainment Scales], quality and quantity of social networks, WHOQOL-BREF [World Health Organization Quality of Life], GDS [Geriatric Depression scale]). In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved – on a number of parameters measuring compliance with treatment regimen, satisfaction with individual service components, clarity of instructions and ease of use, as well as general ideas for improvement of the service. Meanwhile, all pilot organizing institutions will report their conclusions to the representatives of those partners, conveying the remarks from their notes and the questionnaires from the end-users. The collaborating partners will then evaluate the comments and decide on whether any alteration/improvement of the service is feasible within the required time frame. To realize this prospect, it is imperative that the results of T3.1 on the technical specifications of the service are clear and concise, thus facilitating component replacement and plug-and-play style integration. This should be particularly true for cognitive training software and physical training equipment.

Public and private “business stakeholders” (with potential role of “clients” beyond the project phase) will be specially consulted during this task (pole) about the **viability** of LLM as a business (including specific questions/answers to the **engagement of market stakeholder, related to exploitation aspects**). This feedback of WP4 will be combined with the feedback of WP5 related to **sustainability** and **scalability** of LLM in a competitive environment.

#### T4.6: Post-implementation review

Upon conclusion of the final iteration of the trial, the **LLM** solution will be fully evaluated across a range of criteria, with an expectation of the following key outcomes:

- Efficacy of the technology solution
- Effective supporting processes
- Achievement of desired cognitive and real-world outcomes for the end-user
- Ability of the **LLM** solution to be competitive in the market as a solution for reducing cognitive decline in the elderly (in connection with feasibility and exploitation aspects)

The final results of this post review evaluation will be reported in the final deliverable of this work package which will be used as success indicator and reinforcing evidence for the effectiveness of the **LLM** service after the completion of the project. Providing measurable and quantifiable results will be essential in reaching our objective which regards convincing public authorities and private industries for the efficacy of our product and thus inciting new prospects of cooperation.

#### Deliverables

- D4.1: Pilot deployment plan (*Month 8*)
- D4.2: Training material and Quality of Service Assurance Report (*Month 8*)
- D4.3: Pilot site installation report (*Month 14*)
- D4.4: Intermediate service evaluation and adaptation report (*Months 14/18/22/26*)
- D4.5: Post implementation review / Final evaluation report (*Month 30*)

#### Milestones

- M4: Baseline for training is defined (*Month 8*)
- M7: Users selection and training (*Month 11*)
- M9 : Start of the pre-pilot in Austria (*Month 12*)
- M10 : Agreement on an evaluation metrics for acceptability, usability and service use (*Month 12*)
- M12 : Pilot site installation completion, Evaluation of the pre-pilot (*Month 14*)
- M13 : Evaluation of the pre-pilot (*Month 14*)
- M14: Beginning of the trials (*Month 15*)
- M16: End of the first two piloting phases (*Month 22*)
- M18: End of the pilots - Service evaluation (*Month 30*)

Work package number :	5		Start date or starting event:		M1	
Work package title:	Planning for sustainability					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	20	6	10	12	4	36
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	3	18	5	1	1	

### Objectives

The objectives of the Planning for sustainability work package are:

- To develop an overview and analysis of the current situation in the market of ICT solutions for improving the quality of life of the elderly
- To develop a business plan for the viability, sustainability and scalability of the **LLM** service
- To define the business operational steps towards the creation of a new spin-off company to own the **LLM** service
- To research and approach of public and private institutions for financing of the service in the framework of a PPP model and the development of strategic commercial alliances
- To ensure financial contributions and real customers for the service

### Description of work

Partner **IDI EIKON** will lead the service sustainability work package, as it has worked on many related projects in the past and has an important experience on the market of ICT solutions for improving the life of the elderly. Partners, will contribute to this effort by offering their insights in the deployment plan for an innovative system; a field they bear significant experience due to their participation in many R&D projects. These three companies will collaborate towards the implementation of the first two tasks, and all the consortium will focus on influencing the successful integration of public grants, private funds, IFI loans (such as the EIB or EBRD) for the success of LLM business. Tasks T5.3 and T5.4 will include respectively the **PUBLIC** and **PRIVATE role and selection** criteria to set up the EEIG. The feed-back of WP4 will be determinant to decide the final choice.

#### T5.1: Service Market Assessment

**IDI EIKON** will lead the task of the market investigation in the field of ICT solutions for the elderly. To perform this task it will:

- Present and analyse existing statistical data on the current evolutions in that market
- Analyse the publicly available business plans of R&D or market validation projects (eTen, CIP) and evaluate their effectiveness
- Utilize questionnaires and interviews of the end-users and caretakers in terms of service feature expectancy to money spent for that service

This task shall provide a service market report that will be referenced during the business plan implementation.

#### T5.2: Business Strategy & Development

The development of a business plan will be significantly influenced by the market analysis of task T5.1 as well as of the first phase of pilot application of the service (T4.4-T4.5). We anticipate that the combination of the theoretical estimation of the market's response with the practical validation of the actual service, will provide the necessary basis for selecting the optimal strategy for the future deployment of the **LLM** service. Though at this point it is premature to define details on this strategy, there are some key issues that will be included towards this goal:

- the ownership of the product will belong to the new LLM company, thus agreements should be reached for to guarantee all implicated IPR issues.
- three different versions of the service with different target group and cost will be provided:
  - “At home” **LLM** service
  - “Day care” installation
  - “Formal care” installation
- the participation of public authorities will be intensively pursued as it is obvious that only through their uptake of the service and the subsequent promotion
- set the “profitability” aspect of the service to refer to “utility” and “usefulness” in a wider sense than “economic profit”
- use the “Customer-Market-Efficiency” metric to directly tie every critical corporate activity to customers' buying decisions

#### T5.3: Public initiatives for financing

Immediately after the end of the first piloting iteration the consortium plans to initiate activities towards approaching public authorities in the field of care services. This will be realized in three ways: through public authorities or public organizations belonging or cooperating with the consortium like **MKC, IGNA, UKON, Municipality of Schwechat** (involved through RALTEC, will join the project latest on Month 4) and **AUTH**

- with the contribution of partners which collaborate closely with public authorities like **Tero, IDI EIKON, E-Seniors** and **INTRAS**
- with the exploitation of the Network of Interest circle from T2.1

There will be an effort to maximize the effectiveness of this contacts by highlighting points like:

- the social nature of the service
- the added value to the community
- the implicated cost reductions resulting from a wider deployment of the service
- the effectiveness of the service, which will be validated by the results of each of the pilot's phase iterations

The consortium will also target synergies with activities aimed at the best use and wider uptake of ICT at national and regional level and in particular those supported by the European Regional Development Fund (ERDF). In order to maximise the impact of Community support, the consortium will actively work with public partners in financing the deployment of the service through ERDF grants established in their respective territories.

#### T5.4: Private initiatives for financing

The private initiatives for financing task will focus on exploring cooperation possibilities with SMEs and private companies along two different directions:

- search for private institutions (like insurance companies, day care centres, formal care centres or banks, venture capitals etc) that will be willing to invest on the service, always however in accordance with the operational, ethical and business specification plans set during the implementation of the **LLM** project
- search for technology providers that will enhance the service and promote their own extensions on it. Designing the integrated service to be based on open standards and interoperable technologies on open specifications (as denoted in D3.1 from T3.1), will be the way to facilitate this action

These directions aim on financially supporting the service and on creating a new market around it, thus enforcing its long term viability and wider deployment.

#### T5.5: Commercial Alliances

Our plans for tasks T5.3 and T5.4 should conclude with the signatures of commercial alliances with public and private organization that will invest on, subsidise for the costs, adopt and build on the **LLM** service. The final alliances should be in accordance with the Business Plan of T5.2 and provide evidence for the success of our strategic approach regarding the sustainability of the innovative service.



**T5.6: IPR strategy and management**

This task will provide an IPR framework for the services provided and for orienting the external collaborations. Activities will include:

- clustering with relevant EC services (like the IPR Help-Desk and other ongoing projects (M1)
- a clear statement of IPR strategy (M1 and M12)
- periodic internal review of IPR issues, every twelve month
- generation of a final IPR Management Report (M30)

**Deliverables**

D5.1: Service Market Assessment report (Month 8)

D5.2: identification of national stakeholders in terms of local health and social care public authorities related financial models (M12).

D5.3: **LLM** Business Plan (Month 18)

D5.4: Deployment (feasibility) Report (Month 30)

D5.5: IPR strategy report (Month 3, 22, 30)

**Milestones**

M15: Business plan ready (Month 15)

M17: Founding decision of the new company (Month 24)

M19: Deployment(feasibility) Report (Month 30)

Work package number :	6		Start date or starting event:		M1	
Work package title:	Legal and ethical issues					
Participant number:	1	2	3	4	5	6
Participant short name	AUTH	UKON	ATHENA RC	Tero	RALTEC	EIKON
Person-months per participant:	3	6	6	0	7	9
Participant number:	7	8	9	10	11	
Participant short name	INTRAS	e-Seniors	GSI	IGNA	MKC	
Person-months per participant:	0	7	16	0	0	

### Objectives

The objectives of WP6 include:

- Studying standard ethical guidelines for user privacy
- Studying national and European legislation for eCare systems and clinical trials
- Documenting the results in a specifications report to be advised on the integration of the existing components to the innovative ICT solution of **LLM** service
- Alleviate any relevant concerns from potential stakeholders on account of these reports

### Description of work

Led by **GSI**, which has worked on ethical issues of ambient assisted living (AAL) solutions in several past projects, the consortium will undertake this work package to investigate the ethical and legal status quo and reach to conclusions and decisions on the approaches to be followed during the technical integration of the system to adhere to these rules while offering improved care through the use of ICT. The service should adhere to related rules and guidelines, while the clinical trials should be in accordance with current legislation (especially in terms of privacy protection laws). In this respect, full anonymity is going to be used throughout the course of the pilots as well as:

- From a technological perspective, the design of the e-Home system, which collects and monitors behavioural data about the elderly participant, retains raw data locally in the HCU (Home Control Unit), and transmits an alarm/signal to an external third party for attention under exception conditions only, without providing any detailed personal or location data.
- From the perspective of informed consent, special care will be taken with respect to providing full disclosure about the pilot programme, its technological and privacy implications, to the end-users. Best practices will be employed in ensuring that participants have been fully informed of these implications, and are able to provide consent, with the end-user's consent (as compared to that of relatives, physicians, etc.) taking primacy.

**LLM** will fulfil all legal or ethical requirements of the member states where the pilot programmes are carried out and any data or statistics reported from this project will be fully anonymous.

#### T6.1: Ethical issues guidelines

Within the scope of the project, ethical guidelines will be established and applied consistently, and will:

- Recognise the primacy of the views, choices of users and respect of their dignity;
- Operate according to universal principles of bioethics (Universal Declaration on Bioethics and Human Rights of UNESCO, 19 Oct. 2005; The Charter of Fundamental rights of the EU, 2000);

Particularly, the ethical guidelines will be established in accordance with the following key European legislation:

- The Charter of Fundamental rights of the EU, approved by the European Parliament, Nov. 14th 2000, and
- Directive 95/46/EC regarding data protection.

Moreover, each partner will respect the opinions of the European Group on Ethics in Science and New Technologies, as well as the ethical requirements of applicable national legislation, and where required by such legislation, will seek the approval of the relevant ethics committees prior to the start of activities that raise ethical issues. To further underline the importance of this issue, the **LLM** consortium plans on establishing an external Independent Ethical Board including members from medical, legal and technical faculties. Close cooperation with the board and accordance with its recommendations shall be of critical importance during the development of the ethical guidelines report for the **LLM** service.

#### T6.2: Legal issues

The objectives of this task regard observing the requirements of national laws of each participant and safeguarding the adherence to the legal stature of each country where pilots will be held. In this respect on representative for each Member State has been chosen to undertake this task at its national level:

- Austria: **RALTEC**
- Germany: **UKON**
- France: **E-Seniors**
- Greece: **ATHENA RC**
- Spain: **IDI EIKON**
- UK: **GSI**

A committee of legal experts shall be introduced in each of the five piloting countries in order to study related national laws and indicate legal pitfalls that should be avoided during the operation of the service and the implementation of the pilots. Moreover, EU directives will be researched as an effort to guarantee up-front legal adherence to the largest possible scope.

#### T6.3: Security, data protection and privacy management

**GSI** will gather the results of T6.1 and T6.2 and render them into an appropriate form to be taken into account during pilot holding and the technical integration of the service. This should result into a series of specific measures to be address technology issues regarding security, data protection and privacy management like:

- Recognising that data collected about an individual's activity in the home is their own data
- Seeking to minimize the intrusiveness of technologies
- Configuring technologies in ways that promote user control as much as possible
- Encrypting network transmitted sensitive user data

The results of this task will affect the integration progress designed at T3.1 and implemented at T3.2 and will be documented as a deliverable for future use and validation of the service.

### **Deliverables**

- D6.1 National and European legislation on the clinical care trials and eCare systems (Month 8)
- D6.2 Technical specifications for user privacy reassurance (Month 8)
- D6.3 National and European security and certification requirements including issues of liability (M12).
- D6.4 Ethical guidelines report (Month 30)

### **Milestones**

- M20: Compliance with legal , ethical and security issues (Month 30)

**B3.2.7 Efforts for the full duration of the project**

No	Partner	WP1	WP2	WP3	WP4	WP5	WP6	Total
1.	AUTH	24	26	14	39	20	3	<b>126</b>
2.	UKON	0	10	5	15	6	6	<b>42</b>
3.	ATHENA RC	0	14	2	13	10	6	<b>45</b>
4.	Tero	4	11	0	2	12	0	<b>29</b>
5.	RALTEC	0	12	24	27	4	7	<b>74</b>
6.	EIKON	4	2	0	8	36	9	<b>59</b>
7.	INTRAS	0	2	0	49	3	0	<b>54</b>
8.	E-SENIORS	0	3	0	49	18	7	<b>77</b>
9.	GSI	0	3	5	26	5	16	<b>55</b>
10.	IGNA	0	0	0	31	1	0	<b>32</b>
11.	MKC	0	3	3	43	1	0	<b>50</b>
	<b>Total</b>	<b>32</b>	<b>86</b>	<b>53</b>	<b>302</b>	<b>116</b>	<b>54</b>	<b>643</b>

**Table 11: Summary efforts table**

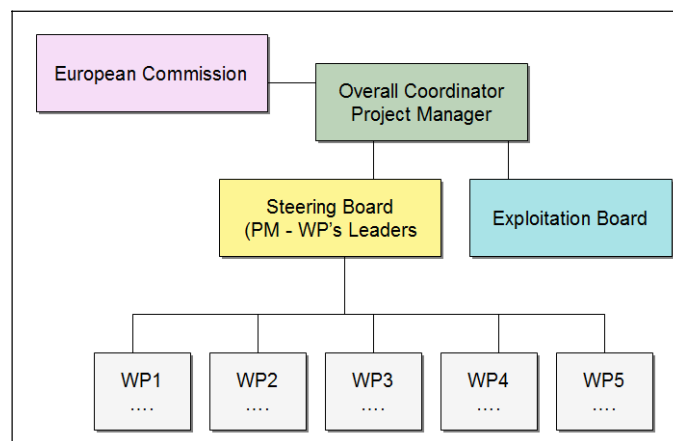
### **B3.3. Management structure and procedures**

The **LLM** Consortium has designed an analytical and detailed project management / co-ordination approach to ensure project's successful and on time implementation. Under this context the project management has been built in such a way so as to (i) address effectively all major particularities – characteristics of the project and to (ii) optimize the utilisation of the project consortium resources and experience. The coordinator will develop a **Quality Handbook** tailored to project's size, complexity and particularities. This will operate as a tool for measuring progress monitoring, smooth implementation and quality of the deliverables.

Essentially the structure consists of three major **management levels** (upper, middle and lower).

- The **Project Coordinator** constitutes the **upper** level of the structure.
- **The Steering Board** integrated by the Project Coordinator and Work Packages Leaders constitute the **middle** level of the management structure.
- The **WP Team** members constitute the **low** level.

The Consortium considers that Business Strategy being key to the results of a deployment rollout deserves a separated treatment, and an Exploitation Board for specifically dealing with these issues has been considered. It will run in parallel, at the middle level tier, with the Steering Board.



**Figure 11: Management structure**

The following table synthesises the roles and responsibilities of project Managers

	Coordinator (Main Project Manager)	Other Project Managers
<b>Scope:</b>	<ul style="list-style-type: none"> <li>▪ Develop the scope of the project</li> <li>▪ Coordinate input from the project team</li> <li>▪ Know and understand the scope</li> <li>▪ Be accountable to management for the success of the project</li> <li>▪ Approve modifications to the scope and update the document</li> </ul>	<ul style="list-style-type: none"> <li>▪ Completely understand and fulfill the scope of the project</li> <li>▪ Not work beyond the scope of the project</li> </ul>

	Coordinator (Main Project Manager)	Other Project Managers
<b>Contract:</b>	<ul style="list-style-type: none"> <li>Thoroughly know and understand the contract and fulfill all contractual obligations</li> <li>Understand fiduciary responsibilities to ensure proper expenditure of public funds and to ensure that contracted services are delivered</li> <li>Review deliverables, progress reports and other project monitoring tools to identify problems early</li> <li>Take decisive action if monitoring indicates a problem: work is deficient or the project is significantly behind schedule</li> </ul>	<ul style="list-style-type: none"> <li>Thoroughly know and understand the contract and fulfill all contractual obligations</li> <li>Fulfill all contract requirements on time, within budget and of an acceptable quality</li> <li>Ensure that all progress reports and deliverables are submitted on time</li> <li>Advise Coordinator of contractual problems on a timely basis and propose reasonable solutions</li> </ul>
<b>Cost:</b>	<ul style="list-style-type: none"> <li>Stay within the budget; be concerned about total costs</li> <li>Process appropriate changes in the contract amount</li> </ul>	<ul style="list-style-type: none"> <li>Complete the project within established budget</li> <li>Meet the profit objectives set for the project</li> </ul>
<b>Time:</b>	<ul style="list-style-type: none"> <li>Approve any change in project schedule</li> <li>Be concerned with schedule linkages in the work plan</li> <li>Identify actions required by the project management and ensure timely completion</li> <li>Ensure that partners review commitments, as define in the contract are met</li> </ul>	<ul style="list-style-type: none"> <li>Meet all schedule requirements</li> <li>Know which activities are on the critical path and manage these activities aggressively</li> <li>Update schedule as needed</li> </ul>
<b>Quality:</b>	<ul style="list-style-type: none"> <li>Assure that a process is in place and functioning and that will result in quality products - deliverables, service, ... (Quality Assurance)</li> <li>Coordinate reviews by other project reviewers and forward comments, after eliminating those that are redundant and inappropriate and deciding which to give when comments are in conflict</li> <li>Be responsive to the need of the partners</li> </ul>	<ul style="list-style-type: none"> <li>Provide the necessary reviews and checks to provide quality products (Quality Control)</li> <li>Comply with all laws and rules related to the performance of the project</li> <li>Ensure that all submittals are complete and of an acceptable quality</li> <li>Allow sufficient time and staff hours to perform quality control reviews on all submittals, in accordance with the project QA Plan.</li> </ul>
<b>Risk:</b>	<ul style="list-style-type: none"> <li>Be aware of high-risk elements that can jeopardize project success and be prepared to take aggressive action when necessary</li> <li>Be prepared to deal with external risks, such as changing political support, lack of public consensus and changes in key stakeholders priorities</li> <li>Identify actions required and ensure timely completion</li> </ul>	<ul style="list-style-type: none"> <li>Be aware of high-risk elements that can jeopardize project success and be prepared to take aggressive action when necessary</li> <li>Be prepared to deal with internal risk, such as loss of key staff, conflicting project, and underestimated budget</li> <li>Minimize risks of errors and omissions</li> </ul>
<b>Communication:</b>	<ul style="list-style-type: none"> <li>Clearly communicate all project related decision to the partners</li> <li>Be responsive to the partners</li> <li>Coordinate with other Project Managers in the project phase pipeline to ensure project continuity</li> <li>Provide or coordinate public involvement and media communications</li> <li>Establish procedures for communicating with local governments, other agencies, the press and others outside the project team</li> </ul>	<ul style="list-style-type: none"> <li>Take the initiative to ensure communication with the Coordinator</li> <li>Be responsive to the Coordinator</li> <li>Keep the Coordinator informed of all significant issues</li> <li>Keep the project team informed of all significant issues</li> <li>Communicate with local governments, other agencies, the press and others outside the project only if authorized by the Coordinator. If the Coordinator retain these roles, assist her/him as necessary</li> </ul>

	Coordinator (Main Project Manager)	Other Project Managers
<b>Human Resources:</b>	<ul style="list-style-type: none"> <li>Ensure that staff is available to perform the project and to review the project team</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the necessary human resources are available to perform the project</li> <li>Ensure that the key staff members work on the project as proposed to the Coordinator</li> <li>Delegate effectively. Coach and train others to become Project Managers</li> </ul>

**Table 12: Respective roles of Project Managers**

Within the Steering Board, **conflict resolution** will be handled and solved mainly through pragmatic negotiation. Should the consensus being not achievable, a majority vote will be used: each member will hold one vote and the Project Manager, in case of need, will count for an additional, decisive vote.

## Procedures

Normal co-operation will be achieved using e-mail, audio and video conferences, and phone. Additionally, general meetings are held to tackle discussions on important issues that require the participation and opinion of all partners. This is also an opportunity for partners to meet each other in order to solve small questions, doubts and requests not concerning the whole project. Different kinds of meetings are foreseen in **LLM**:

**Regular Meetings:** Approximately every 4-5 months the Steering Board and the workpackage leaders will meet. These meetings will be held during the same set of days to minimise travel expenses, but in clearly separated sessions, to avoid that purely technical issues will be mixed up with managerial ones. The meeting locations will rotate through the Partners' sites. A tentative list of these meetings is presented in Section B3.3 (Resources to be committed).

**Extraordinary Meetings:** Working groups meetings are organised when necessary or upon request of the involved parties and approval of the Technical Advisor. Extraordinary meetings of Exploitation and Steering Board will be held upon request of one Board member and approval of the majority of Board members or upon Project Manager request.

**Reviews:** reviews will be held at EC request.

**Kick-off meeting:** The Kick-off meeting will be held in the beginning of the project activities.

**Pre-review:** Immediately before each review, a General Meeting is held for preparation of topics to be presented in the review.

The consortium will produce a Periodic Progress Report (PPR) for the Commission every 6 months (if the EU-Commission does not specify other periodicity), accompanied by Cost Statements.

## Quality Control

The activity reports, project publications and other deliverables will be submitted for review to the Steering and Exploitation Boards. The Project Manager compiles and produces the final version of the reports taking into account corrections made by Boards' Members. Usage of the working part of the **LLM** web site improves the management reporting procedures.

The Project Manager will submit to the EC three-monthly management reports, six-monthly progress reports and cost statements. S/he will also prepare annual review presentations of the project.

The project will operate within certain administrative procedures, which will be defined at a very early stage covering management reporting, document standards, collaborative specification and development, review, configuration, change control and quality assurance. The quality reviewing functions are important to make sure that all contributions and conclusions are consistent to meet the requirements of the deliverables.

A common format will have to be agreed upon for the preparation of all documentation and the deliverables.

The partners of the consortium will exchange their contributions mainly via e-mail, but if necessary also through file transfer or CDs.

An on-line repository for working documents and software will be established on the **LLM** web site to allow rapid distribution of project work among the partners.

### IPR Management

The general guideline for intellectual property rights is that the person carrying out the work resulting in an invention, design or any other feature that can be protected possesses the rights.

If more than one Partner's employees and/or subcontractors have been included in the work, the Partners concerned should agree on the due course on a case-by-case basis and may hold the rights jointly. A more delicate issue arises concerning the IPR handling of ideas, solutions and tools submitted to **LLM** validation and trial. Pre-existing knowledge that is recreated or modified during interaction with the use cases will be property of the original consortia, but any general process model template or fragment therein will belong to the project. More detailed rules for property rights management will be settled in the Consortium Agreement and declared to external entities from the outset. The **PC** and the respective **WP Leaders** are responsible for handling the IPR issues and see to that applications for registrations (patents, designs, trademarks) are filed. The **LLM** project will encourage Partners to file patents applications and a fully-blown strategy on IPR will be part of the Quality Handbook. Its main aspects will include, first of all, an early approach to relevant EC services (like the IPR Help-Desk, and then a continuous attention to legal issues over the entire project duration.

### B3.3.1 Project Risk Management and Contingency Planning

Task N°	Task	Risk N°	Risk	Mitigation Plan	Risk Cleared Milestone
T2.1	Initial creation of network of interest	R2.1.1	Lack of interest from Public Administrations	Greater involvement of practitioners in the field  Second wave of <b>LLM</b> partners ready to join the deployment	M1, M4
		R2.1.2	Lack of interest from Users Private Networks	Involving closely all consortium partners to bring together the relevant stakeholders	M1, M4
T2.2	Web site construction	R2.2	Contribution Content and translation from consortium partners  Low visibility and poor audience for the Internet portal	Continuous review of these activities to prevent failure  Web site promotional strategies (link exchange directory, ...)	M9
T2.4	Workshops Activities	R2.4	Insufficient power call Failing to establish the goals and messages	Greater involvement of practitioners in the field	M12
T3.1	Requirements and Configuration	R3.1	Failure to elicit all the necessary	Repeated iterations of the requirements	M3



Task N°	Task	Risk N°	Risk	Mitigation Plan	Risk Cleared Milestone
			requirements by the Consortium members	catalogue to external Living Labs also	
T3.2	Technical Setup	R3.2	Limited programming time for adaptation	The project's coordinator can draw personnel from a pool of 1,000 employees. For specialised and urgent need subcontractors can be used	M6
T3.3	Testing and Validation	R3.3	Narrow scope and time for debugging	Technical coordinator will continue debugging and improving the service for the whole project's duration	M8
T4.1	Deployment Planning	R4.1.1	Previous infrastructure for deploying services is not ready	Second wave of <b>LLM</b> partners ready to join the deployment	M8
		R4.1.2	The consortium fails in getting involved Public Administrations and social systems	Join forces with current administration providers?  Second wave of <b>LLM</b> partners ready to join the deployment	M8
		R4.1.3	The consortium fails in getting involved private networks of users and final users itself	Second wave of <b>LLM</b> partners ready to join the deployment	M8
T4.2	Quality of service assurance	R4.2	Partners not prepare or unwilling to take the testing	Continuous review of these activities to prevent failure	M6
T4.3	Technical support and training	R4.3	The people responsible for organizing the pilots are not sufficiently trained before the pilots start	Technical support provision directly by the consortium experts to alleviate initially and disappear the problem	M11
T4.6	Post-implementation Review	R4.6.1	Insufficient evidence of a fully developed validation cycle	Further adaptations of the pilots according the different requirements	M20
		R4.6.2	Difficulty to maintain the service due to: Technical difficulties Too much efforts Too much cost	Technical partner and subcontractors providers total commitment with the project, the technological innovation to be always ahead of competitor	M20
T5.2	Business Strategy & Development	R5.2	Country-level differences Markets too differentiated for following a common strategy A poor market perspective is found for <b>LLM</b> service across European MS	An accurate mapping of the situation will enable the Consortium to adjust its strategy according the requirements of the different investors and countries situation	M10

Task N°	Task	Risk N°	Risk	Mitigation Plan	Risk Cleared Milestone
T5.3	Public initiative for financing	R5.3	<p>Not to raise enough interest for getting public support or involving public administrations as prescriptors of the service</p> <p>People making decisions change frequently according to political pressures (need to start from the beginning once and again)</p> <p>City councils budgetary dependence from autonomous governments and/or national government</p>	<p>Establish a network of interest and discuss Memoranda of Understanding and terms since Day One of the project.</p> <p>Also special attention has been paid to this issue by marking 3 out of the 5 tasks of WP5 for the establishment of partnerships.</p>	M20
T5.3	Private initiative for financing	R5.3.1	Partners do not find private investors willing to invest in the project	Redefine cooperation strategies and lowering expectations	M20
		R5.3.2	Failure to involve all the Consortium members in the new venture	All partners are already committed to the project follow-up in terms of service implementation	M20
T5.4	Commercial Alliances	R5.4	Not concluding commercial agreement with the different intermediaries that will be selling the services	Strategies refocus	M20
T6.1	Ethical issues guidelines	R6.1	Problematic cooperation with the external Independent Ethical Board or discrepancies within that board	<p>More active involvement of the Project Coordinator to alleviate the situation</p> <p>Addition of new members to the Board or usage of EU policy guidelines as impartial criteria to resolve arguments</p>	M5
T6.2	Legal issues	R6.2	Failure of the service or the pilots to comply with national legislation	Adaptation of the service or provision of "Terms of agreement" document to actively inform and receive the direct consent of the service's users	M6

**Table 13: Project Risk Management and Contingency Planning**

**B3.3.2 Project Management Key Performance Indicators**

	<b>Key Performance Indicator</b>
<b>Managerial</b>	percentage of deliverables produced on time
	project cost against budget to date,
	percentage of Partners dropping out
	Conflicts within the Consortium
	Number of Amendments to the original contract
	Number of conflicts within the Consortium
<b>Goals</b>	Number of stakeholders interested
	Number of PPP agreements for forwarding the solution into the market
	Sustainability of the service beyond the end of the project
<b>Dissemination</b>	average number of visits per month on the project website
	number of newsletters and the copies disseminated
	number of brochures and the copies disseminated
	number of dissemination events organised
	number of participation at other events
	number of articles/appearances published in the press and in other media
	estimated number of participants in events
	number of press releases disseminated

**Table 14: Project Management Key Performance Indicators (KPI)**

### **B3.4. Consortium and key personnel**

The consortium composition reflects the requirements of the ICT PSP Programme, involving all the stakeholders in the chain of service provision in order to assure an effective commitment to tackle the full deployment.

A detailed profile of all partners can be found on Annex I.

### **B3.5. Dissemination**

#### **Overview**

The dissemination activities of LLM will not be limited to conventional mass media, but will focus on spreading its results directly towards the involved stakeholders, through specialised communication tools, as well as through direct contacts and info days, visits, workshops, etc. Each partner will use all opportunities linked to the project's field of action to organise dissemination activities, extend cooperation, exchange knowledge and learn from other projects, and also to communicate the project results in their own language. These opportunities include trade fairs, workshops, meetings with local stakeholders, publications on local magazines and all other relevant events where the partners may participate.

#### **Dissemination strategy**

The aims of the LLM dissemination strategy are to:

- create awareness and build loyalty;
- encourage involvement in the project;
- change opinions and attitudes;
- attract additional funding;
- aid mainstreaming and achieve sustainability for the project;
- embedding project results into the practices of participants;
- ensure that the project's methods and outputs are adopted by stakeholders;
- further developing project results in different contexts and situations (e.g. different regions).

Three periods for dissemination are identified. For each period there are differences in the reasons for, and the intended audience of, dissemination:

- Early in the project, dissemination aims to ensure that the project is addressing the needs of its target groups (end users / elderly persons, medical providers, care providers), and that is creating awareness and understanding of its activities both within the consortium and among peer groups, resulting in a customised service of value for its end users. A dialogue mechanism with the target groups will be initiated, enabling them to provide constant feedback during the full course of the project.
- During the project, dissemination is about identifying lessons from what is being piloted, particularly in receiving feedback from end users and other stakeholders, and adjusting the project's strategy and developed service in order to maximize effectiveness and efficiency.
- At the end of the project, dissemination is intended to publicise more generally the project's outputs, the lessons learnt, and the benefits gained. Such dissemination will also aim to build up a constituency of support for the project's follow-up activities.

In order to be effective, the project's dissemination strategy will be clear and specific about the most important and innovative elements of the project. LLM will be selective about the choice of audience (i.e. not try to be all things to all people) and be strategic about its approach to that audience. A scattergun approach – using all possible avenues throughout the life of the project – may hit the right desk at the right time, but a targeted and strategic approach is likely to be more fruitful (and less costly).

A targeted strategy will thus be implemented in LLM, including:

- achieving reputation or a 'name in the field' by using the media, speaking at conferences (invited and uninvited) and writing for journals;
- networking – making and sustaining personal contacts and "selling" the project to other people who could prove to be useful contacts;

- capturing the interest of the local care providers and associations of citizens who will help to get the message across;
- visiting decision-making units such as the DG Health;
- avoiding jargon;
- talking to other projects; and
- being contactable, accessible and creative.

**Responsibilities**

A Communication Manager will be assigned to secure continuity in the communications and dissemination activities. The Communications Manager will be responsible for coordinating the dissemination together with the project coordinators and with input from the consortium. An important task is to evaluate and reassess dissemination strategies as the project progresses.

All members of the consortium will contribute to the dissemination for instance by participating and giving presentations at conferences, holding press conferences, networking and similar activities. Since face to face information is highly effective it is important that everybody involved in the project has good general knowledge of all the aspects of LLM, in order to be a good “ambassador” for the project.

**Target groups**

Specific target groups that are expected to benefit from LLM include:

- National/Regional/Local Public Administrations, strengthening care services for the elderly.
- Private Social-Sanitary Care Services Providers, offering new care services to the elderly.
- Industrial partners, offering new products and services to elderly citizens.
- Public and private insurers, avoiding costs of care for patients with cognitive decline.
- Business investors, gaining access to new investment ventures.
- NGOs, citizens and society, through increased cognitive abilities and self-esteem.
- Universities, extending their research and development portfolio.
- Researchers, increasing their knowledge.

**Dissemination activities**

LLM will create a network for the effective dissemination of its aims and results, facilitated by a variety of activities. Specifically, the project will use the following methods to disseminate its results to the appropriate target groups and to the general public:

- The internet, where a knowledge portal will contain the results of the project and also act as the meeting place for a community of care providers and citizens to discuss. Different access levels will be applied, one for project participants, one for visitors with an interest in the project, and one for the general public.
- One leaflet (2 pages) to present the results oriented to the wider population.
- One booklet (32 pages) to present the results oriented to government officials and policy makers.
- One synthesis report (100-150 pages) to make available all the analytical evidence in English.
- 3-4 issue reports on specific issues that are derived from the analysis.
- 3-4 presentations on specific issues and the general results to use in workshops and conferences.
- Participation in conferences, workshops and seminars, where papers will be presented, and announcements will be made.
- Submissions of articles in scientific publications and journals, as well as to the participant's national press, encouraging the creation of a community that will be kept updated on the project progress, and also provide feedback to guide this progress.
- The construction and management of a database with information on the various interested parties.

- The establishment of a mailing list and the circulation of a newsletter during the course of the project.
- The participation in meetings and events organised by the European Commission.
- The participation in meetings and events organised by national authorities and private entities.

Ad 2: refers to a link from partners or other organisations' websites to the LLM website, or simply displaying of information on their websites.

Ad 7+8: Two different types of press releases can be made, one for general public and one for policy makers.

Ad 10: These refer to meetings of existing constituencies where LLM can be invited.

### **Project workshops**

Workshops will be a key mechanism to enable to build constituencies and raise awareness on the project. There will be two main dissemination workshops intended to exploit personal contacts made through the rest of the different channels use for disseminating LLM and encourage main stakeholders to commit to our cause.

Major workshops will be held in months 10-12 and around month 24. The first workshop will be held in order to present the service, receive feedback from peers, and help with the organisation of the pilots. The second workshop will be held in order to present the first complete results of the pilots and assess their effectiveness. A final piloting case might be decided, and follow up activities will be discussed.

The costs for the organisation of the workshops include identification and invitation of chairpersons, speakers and participants, advertising of the workshop in local and national media, preparation of the workshop documentation, organisation of event venue, renting and use of technical and audio-visual equipment, technical on-site support, registration of participants, local transportation, catering, workshop recording and reporting, special events organization (i.e. dinners), etc.

### **Communication material**

An objective of the LLM project is to take advantage of popular TV channels and popular print magazines to make the service more familiar to end users (older people), and improve their opportunities to participate. The web site as well as other printed materials and public announcements will serve to reach day care and specialised facilities.

### **Web site**

An LLM website will be created, given high priority from the very beginning and serve as the front face of the project. The website will become a core tool for the diffusion of information. As a principle all partners' websites will have a visible link to the website. Then an active work of convincing organisations outside the project to also do so will be undertaken. Furthermore, a proactive online promotional campaign will take place, mainly through the use of search optimisation technologies and methods.

The major international and European conferences during the project duration will be targeted as well as national conferences, using the national members in a country. A good analysis of potential conferences at national, European and international level will take place and a list of conferences will be kept updated during all times in the project's web site.

### **Logo and graphical identity**

A graphical identity is composed of visual elements that aim to represent an organization. The LLM graphical identity will include logo, fonts, colours and templates for presentations and text documents.

### **Templates**

Templates for text documents and presentations will be produced and made downloadable for all members of the project from the website

**Internet Telephony**

Partners will use Internet Telephony, whenever possible in the project. We will also monitor its potential to enable new forms of dissemination as we grow a network of contacts of interested institutions, decision makers, etc.

**News letter**

For the interested public there will be a newsletter or news alert, delivered four times a year. The news letter will, among other relevant issues, contain information on achievements in the project, reports from conferences and announcements of upcoming events. The newsletter / news alert will also motivate its readers to act, i.e. to download a report, to register for a workshop, etc. The news letter will also be published on the web site.

**Mailing lists**

A mailing list for the partners will be created and administrated by the communications manager. All project members will be included in the same list, to make sure that nobody is excluded from valuable information. This is especially important as every project member is an ambassador for the whole project.

**Media**

Press releases for press and audiovisual media will be published at strategic times, in the beginning and end of the project and when major achievements have been made. When appropriate such material will be distributed from the communications manager to provide help for partner intuitions and to make the message reasonably uniform. This work flow does not preclude national and regional tailoring.

When suitable, articles will be published in business and scientific publications. National and local media will also be invited at suitable times in order to spread knowledge about the project to the public.

**Leaflet and poster**

A leaflet with an introduction to the project and contact information will be produced. The leaflet will be also accessible from the web site. A poster with brief information on the project will be produced. As with the leaflet, the poster can be downloaded from the web site.

**Conferences and workshops**

Participating in conferences, seminars and other activities aims at building awareness of the Service among decision makers. In parallel with seminars and workshops, participating in different conferences will be important to promote the project results. Examples of interesting conferences are AAATE, DRH, and ICA. Partners will also collaborate to produce publications (research papers, technical reports, articles, presentations, etc).

**Questions and Answers sheet**

A Questions and Answers sheet will be created intended to be a first class way to expand knowledge about the project. It is straightforward way to answer questions organizations and individuals may have about LLM.

Of all the methods mentioned, for LLM Consortium, the main ones will be personal interactions between the Consortium and the different potential stakeholders, as the most important mean for ensuring effective subsequent dissemination, together with the World Wide Web as a major avenue for dissemination.



**B3.6. Resources to be committed**

	AUTH	UKON	ATHENA	Tero	RALTEC	EIKON	INTRAS	E-Seniors	GSI	IGNA	MKC	TOTAL	PM %
<b>1 Project management</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>5%</b>
1.1 Project management	24			4		4						32	5%
<b>2 Dissemination</b>	<b>26</b>	<b>10</b>	<b>14</b>	<b>11</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>86</b>	<b>13%</b>
2.1 Network of interest	8	6	4	1	6	2	2	1	1		1	32	5%
2.2 Preparation and maintenance of web site	4			4								8	1%
2.3 marketing material	8		6	4								18	3%
2.4 Workshop activities	6	4	4	2	6		2	2	2		2	28	4%
<b>3 Service Adaptation &amp; Customization</b>	<b>14</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>53</b>	<b>8%</b>
3.1 Requirements & Configuration	2	5	2		9				3		3	24	4%
3.2 Technical set-up	10				9							19	3%
3.3 Technical testing and validation	2				6				2			10	2%
<b>4 Deployment &amp; Operation</b>	<b>39</b>	<b>15</b>	<b>13</b>	<b>2</b>	<b>27</b>	<b>8</b>	<b>49</b>	<b>49</b>	<b>26</b>	<b>31</b>	<b>43</b>	<b>302</b>	<b>47%</b>
4.1 Deployment planning (plan)		3	3			8			6		1	21	3%
4.2 Quality of service assurance		2	2						6		1	11	2%
4.3 Technical support and training	6	2	2		6		6	4	3	2	3	34	5%
4.4 Piloting phase	19				16		35	33	7	28	33	171	27%
4.5 Pilot evaluation and service adaptation	8	8	2		5		8	8	2	1	3	45	7%
4.6 Post-implementation review	6		4	2			4	4	2		2	20	3%
<b>5 Planning for sustainability</b>	<b>20</b>	<b>6</b>	<b>10</b>	<b>12</b>	<b>4</b>	<b>36</b>	<b>3</b>	<b>18</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>116</b>	<b>18%</b>
5.1 Service Market Assessment				2		10						12	2%
5.2 Business Strategy & Assessment	2			2		10						14	2%
5.3 Public initiatives for financing	6	6	4	2	2	2	3	8	1	1	1	36	6%
5.4 Private initiatives for financing	6		4	2	2	6		3	2			25	4%
5.5 Commercial alliances	2		2			4		3	2			13	2%
5.6 IPR strategy and management	4			4		4		4				16	2%
<b>6 Legal &amp; Ethical issues</b>	<b>3</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>7</b>	<b>9</b>	<b>0</b>	<b>7</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>54</b>	<b>8%</b>
6.1 Ethical issues guidelines		2	2			2		3	8			17	3%
6.2 Legal issues		4	4		4	4		4	4			24	4%
6.3 Security, data protection and privacy	3				3	3			4			13	2%
<b>PARTNER TOTAL MONTHS</b>	<b>126</b>	<b>42</b>	<b>45</b>	<b>29</b>	<b>74</b>	<b>59</b>	<b>54</b>	<b>77</b>	<b>55</b>	<b>32</b>	<b>50</b>	<b>643</b>	

**Table 15: The break-down of the partners’ personmonths per WP**

Participant No	Short Name	Personnel Effort (months)	Personnel Cost	Subcontracting	Travel & Subsist.	Other Specific Costs	Indirect Costs	Total Eligible Costs	Requested Community Funding
1	AUTH	126	652.176	80.000	18.000	51.150	195.652	996.978	498.489
2	UKON	42	242.508		12.000	8.000	72.752	335.260	167.630
3	ATHENA RC	45	236.880		11.000	3.000	71.064	321.944	160.972
4	Tero	29	147.900		8.000		44.370	200.270	100.135
5	RALTEC	74	333.000	30.000	14.000	24.000	99.900	500.900	250.450
6	EIKON	59	340.430		10.000	4.000	102.129	456.559	228.279
7	INTRAS	54	226.800		8.000	15.000	68.040	317.840	158.920
8	E-Seniors	77	423.500	27.000	9.000	20.000	127.050	606.550	303.275
9	GSI	55	312.785		21.000		93.835	427.620	213.810
10	IGNA	32	153.600		6.000		46.080	205.680	102.840
11	MKC	50	248.000		8.000	20.000	74.400	350.400	175.200
<b>Total</b>		643	3.317.579	137.000	125.000	145.150	995.272	4.720.001	2.360.000

**Table 16: The break-down of the project's budget per partner****Other Costs**

This category includes all the costs related to hardware and software equipment to be purchased by the project partners in order to run the trials, as also all the costs related to the project dissemination.

**Trials equipment**

	Equipment	Expected cost
<b>The Independent Living Component (ILC)</b>		
	e-HOME	See next table
<b>Cognitive Training Component (CTC)</b>		
	BrainFitness Software	Currently software license for use will be free (however we still suggest to retain an amount of 3000)
<b>The Physical Training Component (PTC)</b>		
	Wii Sports Pack+ Wii Fit	400
	Treadmill	3500
	Exercise bike, RECUMBENT BIKES (the best for elderly training)	2500
	Ergometers	900

**HW Costs for eHome-component**

Type of e-Home-Installation		Total cost	RUI (optoinal) <sup>1)</sup>	LUI <sup>2)</sup>	Sensor-Network
eHome-s	single room	€ 3.400,00	€ 500,00	€ 1.500,00	€ 1.400,00
eHome-m	small apartment (1 room, kitschen, bathroom)	€ 4.400,00	€ 500,00	€ 1.500,00	€ 2.400,00
eHome-l	medium sized apartment (3 rooms, kitschen, bathroom)	€ 5.400,00	€ 500,00	€ 1.500,00	€ 3.400,00
additinally necessary	Broadband Access to Internet	depending on local situation			
	UMTS-connection for RUI (optional)	depending on local situation			

Notes:

- 1) RUI .....data mobile-set able to run web-applications, optional (only, if locally required); price depending on regional market situation
- 2) LUI.....can be standard PC, Notebook or Tablet-PC type has to be agreed within consortium: only on standard must be used! (for support reasons)

**Dissemination**

A set of materials will be printed during the project, including:

- the project's brochure, which will be 2 pages on 150 gr paper, folded, and in color. The cost amounts to 0.4-0.5 €/piece (estimated 5000 pieces).
- The project's end report, Printing in A5, 32 pages (28 pages 135 gr + 4 pages 200 gr): 3.5-4.0 €/piece (estimated 500 pieces).

Some minor printing costs for additional brochures and booklets in relation to dissemination events are also foreseen.

**Travel**

Travel costs for project participants have been estimated according to the involvement of each participant in the different work packages and workshops, in relation to the place of meetings and the country of origin of each one. Some additional travel costs were foreseen for participants that need to conduct national travel during the pilots. Finally, some additional travel costs were foreseen for participation in selected European events and conferences.

Partner 9 (GSI) travel costs are higher than the average of the rest partners, especially for monitoring and auditing the pilots across all sites, and envision travel to each location more than once over the course of the pilot execution. This will be in addition to any other project meetings required for all partners.

**Steering Board meetings:** The consortium plans a series of Steering Board meetings which will be the main instrument for the evaluation of the project progress and the means for partner interaction. The participants in these meetings will include the members of the Steering Board and the Workpackage leaders.

The 1st Steering Board meeting will take place in Thessaloniki, where Project Coordinator AUTH is located, and will set the basic project management specifications and rules. The 2nd meeting will regard the progress of the technical integration process of LLM's components into LLM and will therefore take place at Vienna, where WP3 lead partner RALTEC is located. During months 8-9 the Business Strategy should be discussed and therefore partner IDI EIKON will host the relevant 3rd meeting. Paris, where a number of piloting sites organized by partner E-Seniors will be in motion by month 16 will be the setting for the 4th meeting. The fifth meeting will take place

together with a workshop in London, UK, where partner GSI who will also lead the piloting phase will present the results of the pilots. The final Steering Board meeting will take place in Germany where the prospects of the **LLM** service will be investigated in detail and commercial agreements will be sought.

Costs for the organisation of the meetings include renting and organisation of event venue, preparation of documentation, renting and use of technical and audio-visual equipment, interpretations (if needed), local transportation, catering, meeting recording and reporting, visits to pilot facilities, etc. These costs have been included either under subcontracts or other specific costs in the table above, according to how each partner will handle the organisation of the meeting for which the partner is responsible.

**Workshops:** Major workshops will be held around months 10 and 20. The first will be in Athens, to present reports including the integration process of the **LLM** service, the installation of the service to the pilot sites and the training procedures and indicate some preliminary results on the system operation. The second workshop will be in London, to present the results of the regional and other piloting sites and disseminate the work towards public authorities and private companies, in the region with the most implicated users.

The costs for the organisation of the workshops include identification and invitation of chairpersons, speakers and participants, advertising of the workshop in local and national media, preparation of the workshop documentation, organisation of event venue, renting and use of technical and audio-visual equipment, technical on-site support, registration of participants, local transportation, catering, workshop recording and reporting, etc.

A full list of the planned meetings, workshops, and their expected costs follows. Of course this list can be changed and customised according to the project needs through out its lifetime.

Type of meeting	Place of meeting / organiser	Time (month number)	Costs
1 <sup>st</sup> Steering Board meeting	Greece, AUTH	1	5000
2 <sup>nd</sup> Steering Board meeting	Vienna, RALTEC	4-5	5000
3 <sup>rd</sup> Steering Board meeting	Valencia, IDI EIKON	8-9	5000
1 <sup>st</sup> LLM workshop	Athens, ATHENA RC	10	6000
4 <sup>th</sup> Steering Board meeting	Paris, E-Seniors	14-16	5000
5 <sup>th</sup> Steering Board meeting	London, GSI	20	3000
2 <sup>nd</sup> LLM workshop	London, GSI	20	5000
6 <sup>th</sup> Steering Board meeting	Konstanz, UKON	24	5000

**Table 17: List of planned meetings, workshops and their expected costs**

**Travels to and from USA:** LLM cooperation with the US Company (PositScience) cognitive training that will be established will need some specific travels of some partners to US and possibly from the US Company to Europe. Of course the purpose of these travels will be justified and explained in detail, and will occur either for collaboration and close work or for dissemination purposes.

## Subcontracting

### AUTH

<b>Municipality of Ymittos</b>
<p>Municipality of Ymittos (MYM) is a public organization; the part of the Municipality that will be involved in the LLM project pilots is the Agency for Social Policy, a public entity, which is supervised by the Municipality of Ymittos and managed by Council of Board, which consists of local consultants and citizens of the municipality with relevant interest. The pilots will run in the Open Protection Seniors Centre (KAPI). It is housed in a privately owned building and its attendants are people older than 60 years. They participate in several activities (dance, painting lessons, visits to museums, trips, etc.), and they attend lectures on medical or other matters of general interest. They enjoy the services of one of the best physiotherapy centres in Greece and also participate in regular medical examinations. Almost 500 older people are routinely served by two social workers, two nurses - health visitors, two people responsible for cleaning and a physiotherapist.</p> <p>Local key personnel are :</p> <p>Vasiliki Tsiami holds a degree as a social worker. She is the general manager of KAPI and responsible of the activities offered by the centre the last 25 years.</p> <p>Stamatis Kavakakis got his BSc degree on physiotherapy from a Technological Education Institution and he works as physiotherapist the last 23 years.</p> <p>Antonia Kalogeropoulou holds a degree in nursing.</p> <p>MYM will contribute to the project LLM project and will provide support services to <b>AUTH</b> in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.:Workplan:</p> <ul style="list-style-type: none"> <li>(i) Contribution to the deployment planning process. <b>MYM</b> will evaluate the potential impacts on end-users subsequent to the end of the pilot, and determine what mitigating actions may be required to ensure that there are no negative consequences of withdrawal of services from the end-users. (This work will be part of Task 4.1: Deployment planning, contribution to D4.1: Pilot deployment plan). Costs: <b>2000 €</b></li> <li>(ii) Monitoring ongoing pilot activities, in order to allow for consistency across all LLM pilot sites. Contribution to staff training documents and pilot assurance of practical, ethical and legal guidelines. (This work will be part of Task 4.2: Quality of service assurance, contribution to D4.2: Training and Quality of Service Assurance Report). Costs: <b>3000 €</b></li> <li>(iii) Logging and reporting on the Training of users for the piloting site. (This work will be part of Task 4.3: Technical support and training, and a contribution to D4.2: Training and Quality of Service Assurance Report). Costs: <b>1000 €</b></li> <li>(iv) Support in the pilot phases:             <ul style="list-style-type: none"> <li>• Recruiting and randomizing participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration</li> <li>• Training the participants on the usage of the system over one week</li> <li>• Running the LLM service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3)</li> <li>• monitoring the procedure for the entire 8 week period</li> <li>• noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments</li> <li>• holding interviews and handing out questionnaires to acquire the direct opinion of the system's users</li> </ul> <p>(This work will be part of Task 4.4: Piloting phase, contribution to D4.3: Pilot site installation report). Costs: <b>46000 €</b></p> </li> <li>(v) Trial evaluation assessments by having participants complete a number of established questionnaires measuring cognitive performance. In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved. (This work will be part of Task 4.5: Pilot evaluation and</li> </ul>

<p>service adaptation and will contribute to Deliverable 4.4: Intermediate service evaluation and adaptation report and D4.5 Post implementation review). Costs: <b>5000 €</b></p> <p>(vi) Contribution to AUTH towards public initiatives for financing. Immediately after the end of the first piloting iteration and as the LLM consortium will be initiating activities towards approaching public authorities in the field of care services, MYM will assist AUTH to realize this financing through public authorities or public organizations. (This work will be part of Task 5.3: Public initiatives for financing; MYM will contribute to D5.2: LLM Business Plan). Costs: <b>3000 €</b></p>
<p>The subcontractor details are: Municipality of Ymittos Attiki, Greece Contacts Mr Nikitakis, in charge of the Agency for Social Policy, Tel. : 6932956373 Mrs R. Makreli, in charge of the KAPI, Tel.: 6944793859</p>

<b>CHARISSIO Day Care Centre of The Greek Association of Alzheimer Disease and Relative Disorders - (CHARISSIO)</b>
<p>The Greek Association of Alzheimer Disease and Relative Disorders (CHARISSIO) is a non-speculative company that was founded in 1995, by relatives of patients suffering from the Alzheimer Disease as well as by doctors of all specialties and mainly by Neurologists and Psychiatrists and also by other experts (such as psychologists, civil servants, physiotherapists, etc) that deal with the problems caused by this illness and by other senilities. The Association cares not only for people with dementia, but also for all elderly people in need of support and aiming to avoid dementia. A number of more than 80 older people are daily/routinely served by a combination of experts as indicated above. The specific LLM trial will take place within the Day Care Centre called Charissio (an Old People's home too).</p> <p>Local key personnel are : Dr Kounti Fotini, Cognitive Psychologist, General director of Day centre CHARISSIO Theodoros Eclisiarchos, subdirector of CHARISSIO.</p>
<p><b>CHARISSIO</b> will contribute to the project LLM project and will provide support services to AUTH in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.: Workplan:</p> <ul style="list-style-type: none"> <li>(i) Contribution to the deployment planning process. <b>CHARISSIO</b> will evaluate the potential impacts on end-users subsequent to the end of the pilot, and determine what mitigating actions may be required to ensure that there are no negative consequences of withdrawal of services from the end-users. (This work will be part of Task 4.1: Deployment planning, contribution to D4.1: Pilot deployment plan). Costs: <b>1000 €</b></li> <li>(ii) Monitoring ongoing pilot activities, in order to allow for consistency across all LLM pilot sites. Contribution to staff training documents and pilot assurance of practical, ethical and legal guidelines. (This work will be part of Task 4.2: Quality of service assurance, contribution to D4.2: Training and Quality of Service Assurance Report). Costs: <b>1000 €</b></li> <li>(iii) Logging and reporting on the Training of users for the piloting site. (This work will be part of Task 4.3: Technical support and training, and a contribution to D4.2: Training and Quality of Service Assurance Report). Costs: <b>1000 €</b></li> <li>(iv) Support in the pilot phases: <ul style="list-style-type: none"> <li>• Recruiting and randomizing participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration</li> <li>• Training the participants on the usage of the system over one week</li> <li>• Running the LLM service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3)</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>• monitoring the procedure for the entire 8 week period</li> <li>• noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments</li> <li>• holding interviews and handing out questionnaires to acquire the direct opinion of the system's users</li> </ul> <p>(This work will be part of Task 4.4: Piloting phase, contribution to D4.3: Pilot site installation report). Costs: <b>14000 €</b></p> <p>(v) Trial evaluation assessments by having participants complete a number of established questionnaires measuring cognitive performance. In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved. (This work will be part of Task 4.5: Pilot evaluation and service adaptation and will contribute to Deliverable 4.4: Intermediate service evaluation and adaptation report and D4.5 Post implementation review). Costs: <b>2000 €</b></p> <p>(vi) Contribution to AUTH towards private initiatives for financing. Immediately after the end of the first piloting iteration and as the LLM consortium will be initiating activities towards approaching private entities in the field of care services, CHARISSIO will assist AUTH to realize this financing through public authorities or public organizations. (This work will be part of Task 5.3: Public initiatives for financing; CHARISSIO will contribute to D5.2: LLM Business Plan). Costs: <b>1000 €</b></p>
<p>The subcontractor details are:  The Greek Association of Alzheimer Disease and Relative Disorders - Day centre CHARISSIO  Thessaloniki, Greece  Contacts  Dr Kounti Fotini, +30-2310-925802, 810411</p>

## E-Seniors:

<b>East – Paris AGEP network for seniors</b>
<p>The coordinating team of AGEP intervenes with patients in close collaboration with the treating physician and all the professional health and social sector that supports the elderly.  The services offered are as follows:</p> <ul style="list-style-type: none"> <li>• Practical information reserved for patients, their families and professionals: about everything related to the elderly in the East of Paris (11 th, 12 th, 19 th and 20 th districts).</li> <li>• Medical benefits and help: Home visits home following medical prescription to try and meet all the medico-psycho-social needs of patients at home, Interventions in the case of complex situations: people isolated in deep mental trouble, mostly dissocialized and out of medical care,</li> <li>• Achieving memory balance sheets memory in the offices of the AGEP or at home.</li> <li>• Paramedical Services: Mobilizing an occupational therapist for the adaptation of disability to home appliances and the prevention of falls, psychological support to patients and their entourage, Proposal for participation in memory workshops. Talk groups: Informal discussion meeting with the patient and his family. Home visits Home of dieticians for nutritional advices.</li> <li>• Information: Meetings for the great public on issues specific to the health of the elderly, Periodic letter "AGEP ACTU". Tips for prevention and therapeutic education;</li> </ul> <p><b>AGEP network</b> will contribute to the project LLM project and will provide support services to <b>E-SENIORS</b> in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.:Workplan.</p> <p>(i) Evaluation of the deployment planning process, of the potential impacts on end-users. (This work will be part of Task 4.1: Deployment planning, contribution on contribution on D4.1: Pilot deployment plan). Costs: <b>1800 €</b></p> <p>(ii) Monitoring ongoing pilot activities, ensuring consistency across all pilot sites. Contribution on staff training documents and pilot assurance of practical, ethical and legal guidelines.</p>



<p>(This work will be part of Task 4.2: Quality of service assurance, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: <b>1800 €</b></p> <p>(iii) Training users for the piloting site. (This work will be part of Task 4.3: Technical support and training, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: <b>1000 €</b></p> <p>(iv) Support in the pilot phases:</p> <ul style="list-style-type: none"> <li>• Recruiting and randomizing participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration</li> <li>• Training the participants on the usage of the system over one week</li> <li>• Running the LLM service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3)</li> <li>• monitoring the procedure for the entire 8 week period</li> <li>• noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments</li> <li>• holding interviews and handing out questionnaires to acquire the direct opinion of the system's users</li> </ul> <p>(This work will be part of Task 4.4: Piloting phase, contribution to D4.3: Pilot site installation report). Costs: <b>2600 €</b></p> <p>(v) Trial evaluation assessments by having participants complete a number of established questionnaires measuring cognitive performance. In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved. (This work will be part of Task 4.5: Pilot evaluation and service adaptation and will contribute to Deliverable 4.4: Intermediate service evaluation and adaptation report). Costs: <b>1800 €</b></p>	<p>The subcontractor details are:  East – Paris AGEF network for seniors  2, rue Plichon, 75011 PARIS  Dr Marie Pierre TARAVELLA is the referent doctor in this network. She is assistant Professor at Faculté de Médecine Pierre et Marie Curie (Medecine University), also general practitioner and geriatrician doctor.  Tel.: +33 (0) 1 46 36 08 12, Website : <a href="http://www.reseau-agep.org">http://www.reseau-agep.org</a></p>
---	--

<b>OSE (Oeuvre Sociale pour l'Enfance)</b>
<p>OSE is an organization which was created in the beginning of the 20th century Originally its action was mostly for orphan children during the war.</p> <p>Nowadays the organization owns different structures, like 3 day care centers (2 of them for Alzheimer sick people), retirement homes, free health centers, work centers for handicapped people and employs around 500 people. E-Seniors has been working for 2 years in 2 of the day care centers , setting up computer based activities for senior, handicapped and MCI sick people, and will continue next year to set up cognitive and physical stimulation activities in the new center for younger Alzheimer sick people (from 50 years old).</p>
<p><b>OSE</b> will contribute to the project <b>LLM</b> project and will provide support services to <b>E-SENIORS</b> in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.:Workplan.</p> <p>(i) Evaluation of the deployment planning process, of the potential impacts on end-users. (This work will be part of Task 4.1: Deployment planning, contribution on contribution on D4.1: Pilot deployment plan). Costs: <b>1800 €</b></p> <p>(ii) Monitoring ongoing pilot activities, ensuring consistency across all pilot sites. Contribution on staff training documents and pilot assurance of practical, ethical and legal guidelines.</p>

<p>(This work will be part of Task 4.2: Quality of service assurance, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: <b>1800 €</b></p> <p>(iii) Training users for the piloting site. (This work will be part of Task 4.3: Technical support and training, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: <b>1000 €</b></p> <p>(iv) Support in the pilot phases:</p> <ul style="list-style-type: none"> <li>• Recruiting and randomizing participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration</li> <li>• Training the participants on the usage of the system over one week</li> <li>• Running the LLM service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3)</li> <li>• Monitoring the procedure for the entire 8 week period</li> <li>• Noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments</li> <li>• Holding interviews and handing out questionnaires to acquire the direct opinion of the system's users</li> </ul> <p>(This work will be part of Task 4.4: Piloting phase, contribution to D4.3: Pilot site installation report). Costs: <b>2600 €</b></p> <p>(v) Trial evaluation assessments by having participants complete a number of established questionnaires measuring cognitive performance. In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved. (This work will be part of Task 4.5: Pilot evaluation and service adaptation and will contribute to Deliverable 4.4: Intermediate service evaluation and adaptation report). Costs: <b>1800 €</b></p>	<p>The subcontractor details are:</p> <p>OSE (Oeuvre Sociale pour l'Enfance) : Centre Médico Social 25 Boulevard de Picpus 75012 Paris <a href="http://81.28.96.123/~osefrance/?id_1=4&amp;id_2=1&amp;id_3=0">http://81.28.96.123/~osefrance/?id_1=4&amp;id_2=1&amp;id_3=0</a></p> <p>Contact</p> <p>Dr Marc COHEN, in charge of Seniors Center and of the Health Center Paris CMS Centre Medico Social (12th arrondissement) , general practitioner and geriatrician doctor, specialist for psychiatry for seniors</p> <p>Dr Grigori NEKRITCH , specialist in occupational therapy for seniors suffering from memory disorders, with whom we have been working in the 2 last years</p> <p>Tel. : +33 (0) 1 48 87 87 85, Fax : +33 (0) 1 48 87 76 19, Email : <a href="mailto:m.cohen@ose-france.org">m.cohen@ose-france.org</a></p>
---	--

<b>MAPI Les Amandiers Retirement home (Paris 20)</b>
<p>Type of Establishment : Private retirement home. It is part of MEDICA GROUP.</p> <p>Type of residents :</p> <ul style="list-style-type: none"> <li>- Autonomic</li> <li>- Semi Valid</li> <li>- Dépendant</li> <li>- Alzheimer</li> <li>- Parkinson</li> <li>- Desoriented</li> <li>- Intellectual deterioration</li> </ul> <p>Type of accommodation :</p> <ul style="list-style-type: none"> <li>- residential</li> <li>- temporary</li> <li>- couples accepted</li> </ul> <p>Total number of bed (s): 124</p>

## Comfort :

- Urban Environment
- Furniture admitted
- Accessible by public transportation
- Regular animations and activities
- Restaurant for visitors

**Résidence MAPI LES AMANDIERS** will contribute to the project **LLM** project and will provide support services to **E-SENIORS** in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.:Workplan.

- (i) Evaluation of the deployment planning process, of the potential impacts on end-users. (This work will be part of Task 4.1: Deployment planning, contribution on contribution on D4.1: Pilot deployment plan). Costs: **1800 €**
- (ii) Monitoring ongoing pilot activities, ensuring consistency across all pilot sites. Contribution on staff training documents and pilot assurance of practical, ethical and legal guidelines. (This work will be part of Task 4.2: Quality of service assurance, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: **1800 €**
- (iii) Training users for the piloting site. (This work will be part of Task 4.3: Technical support and training, contribution on D4.2: Training and Quality of Service Assurance Report). Costs: **1000 €**
- (iv) Support in the pilot phases:
  - Recruiting and randomising participants according to criteria set in the deployment plan (according to factors like age, medical history, suffering from mild dementia or other cognitive disability etc) over 3 weeks per iteration
  - Training the participants on the usage of the system over one week
  - Running the LLM service, according to the quality assurance reports (results of T4.2) and the training procedure preceding the pilots (T4.3)
  - Monitoring the procedure for the entire 8 week period
  - Noticing problems especially in ease-of-use, general usability, motivation effectiveness and general interest shown to the service by the elderly – for medium and wide scale deployments
  - Holding interviews and handing out questionnaires to acquire the direct opinion of the system's users
 (This work will be part of Task 4.4: Piloting phase, contribution to D4.3: Pilot site installation report). Costs: **2600 €**
- (v) Trial evaluation assessments by having participants complete a number of established questionnaires measuring cognitive performance. In addition, user satisfaction with the service will be measured by surveying users – end users, health care professionals and system administrators involved. (This work will be part of Task 4.5: Pilot evaluation and service adaptation and will contribute to Deliverable 4.4: Intermediate service evaluation and adaptation report). Costs: **1800 €**

The subcontractor details are:

MAPI Les Amandiers Retirement home (Paris 20) – MEDICA France

RESIDENCE MAPI AMANDIERS

5-7, RUE DES CENDRIERS 75020 PARIS

Our contact is: Dr Marie Pierre TARAVELLA is the referent doctor in this institution. She is assistant Professor at Faculté de Médecine Pierre et Marie Curie (Medecine University) also general practitioner and geriatrician doctor

<http://www.lesmaisonsderetraite.fr/maison-de-retraite/residence-mapi-les-amandiers-paris.htm>

Tel.: +33 (0) 1 43 58 90 00, Fax : +33(0) 1 43 58 36 05

**RALTEC**

<b>Institute Integrated Study / Vienna Technology University (ISTU)</b>
<p>ISTU – Institute “integrated study”, forttec – Research Group for Rehabilitation Technology. Established in 1986 forttec forms a leading centre of expertise for Rehabilitation Engineering and Assistive Technology in Austria.. ISTU’s expertise is in R&amp;D of assistive devices for disabled and old people mainly in the areas of alternative and augmentative communication, smart living environments, ambient assisted living, user interface design, mobility support, system evaluation and validation and ethics regarding involvement of vulnerable persons.</p>
<p>Local key personnel: Wolfgang L. Zagler, professor, head of forttec, is working in several fields of Rehabilitation Technologies for more than 30 years. He teaches rehabilitation engineering at Austrian universities and is author or co-author of over hundred scientific publications in the field of assistive technology. Wolfgang Zagler has received several awards for innovations.</p>
<p>ISTU will contribute to the project LLM project and will provide support services to RALTEC in the following tasks, as those described in the Description of Work of the EC Contract, chapter B.3.2.:Workplan.</p> <p>i. ISTU will contribute to the technical setup of the LLM-service by interconnecting the CTC and PTC with eHome solution and providing the missing parts like the driver for the LUI for the CTC Costs: <b>30.000 €</b></p>
<p>The subcontractor details are: Vienna Technology / University Institute Integrated Studies Favoritenstrasse 9-11 A-1040 Vienna Austria Contact: Univ. Prof. Dipl.Ing. Dr Wolfgang L. Zagler Phone: +43 1 58801 42900 , Fax: +43 1 58801 42999, E-mail: zagler@forttec.tuwien.ac.at</p>

### **B3.7. Security, privacy, inclusiveness, interoperability; standards and open-source**

#### **Interoperability**

The LLM solution will be based on the integration of two existing ICT components, one for providing the AAL services and one for the cognitive training. Hence, the interoperability features of the final service depend:

- On the standardized interfaces of the existing components
- Of retaining these features after the merging of the components
- Of defining the integration design on an open architecture which will facilitate the extension of the delivered service with products and services from different sources

For the first prerequisite we have that the eHome solution is based on a wide range of standardized interfaces or industry standards like LAN, WLAN, TCP/IP, SIP, XML, GSM/GPRS/UMTS, Bluetooth, Zigbee, MS Windows and uCLinux. Therefore interconnection and interoperability with other services and to the outer world is guaranteed. On the other hand, the cognitive training component uses the Central Management System (CMS) for the processing of the service, which is actually based on a regular (low-cost) personal computer. This results into being able to execute any software written for its operating system and hence being capable of providing cognitive training through various different software packages.

The integration process will in general terms consist of:

- Digital signal processing from the training equipment
- Personalized training algorithms
- Driver for the eHome Local User Interface for the CMS
- Switch to vary the displays between eHome and the Cognitive Training Component (CTC)

These choices for the integration process have various positive effects on the final system. First of all, they do not compromise in any way existing open standards of the Independent Living and Cognitive Training Component. Therefore, the standard interfaces of eHome remain the same while the CTC may still run any piece of software designed for it, showing its results through the LUI (thanks to the developed driver). Moreover, the fact that we will publish the technical specifications, the integration architecture and the standards used, will accommodate the deployment of new services for the LLM solution. These could include:

- New training software
- Alternative displays for the Training component (with a corresponding driver and change to the switch)
- New compatible training equipment for the Physical Training Component (PTC)

Overall, our work will make a particular effort to simplify our designs and clearly document our integration work, since attracting the attention of technical providers for complementing and building upon our service comprises one of the main dissemination policies and initiatives to insight private interest and create a market around the LLM service.

#### **Proprietary approaches**

As it has already been explained, the LLM service will be initially deployed with the proprietary BrainFitness software. Multiple reasons can be attributed for this choice:

- Developing a new cognitive training software would require R&D effort beyond the scope of a market validation funding scheme

- Choosing a well-acknowledged, high-quality and effective system guarantees the widest possible impact for the end service, which is our primary target
- Partner UKON has already worked on the research aspect and the localization of BrainFitness (translation in German), thus having an expert knowledge on the product and facilitating the localization process for the pilot sites
- Our open standards approach implies that future LLM installations could provide cognitive training in a different way, with various software packages, other than BrainFitness

In conclusion, our work needed to be enhanced by an already market validated solution that would increase the effect and potential impact of the integrated service, while arousing the interest of experts in the field, for which BrainFitness is very well familiar.

## **Security and privacy**

A very important fact is taking care of personal privacy of the people using eHome: no Video and microphones are used for monitoring purposes and all the data sampled during monitoring movements and behaviour of the end user is stored only on the local HCU and is not transferred to the outer world. Only alarms are sent outside, if the system detects a dangerous situation. Therefore, no sensitive data may be under threat due to network broadcasting or external communication.

The LLM Consortium will ensure that fundamental rights and freedoms of natural persons, and in particular their right to privacy with respect to the processing of personal data are protected. The project will conform to the charter of Fundamental Rights of the European Union (article 8, protection of personal data) and the Directive 95/46/EC on data protection. Article 6(1)(b) of this Directive states that personal data must be “collected for specified, explicit and legitimate purposes” and not be further processed in a way that is “incompatible with those purposes”. Further processing of personal data (like the building up of a survey database) for “historical, statistical or scientific purposes” is not considered as incompatible, “provided that Member States provide appropriate safeguards”.

The requirement for appropriate safeguards maintains the principle of balance between the competing rights of the people to keep privacy on their personal data, and of public authorities to collect any specific information which is deemed necessary (in this case) to the interests of economic well-being of the community. As it is well known, the privacy interest is limited by the nature of data in question (if it is generally available to public), and is extinguished when data is “anonymised”, i.e. cannot be traced back to the data subject.

However in this project, while some data may already be of public domain, the same is not true for most of the results of empirical surveys and all the LLM activities. It is then required that the “appropriate safeguards” called for by the above mentioned Directive do take place, in the form of relevant conditions that must be met when processing personal data for this project purposes that the data is not processed in such a way that substantial damage or distress is, or is likely to be, caused to any data subject.

While the above conditions are quite easily met, in view of the very nature of this project, it must also be noted that some other data protection rules will be relaxed, such as the restriction on further processing personal data that is incompatible with the original purpose, on not keeping data longer than necessary for the purpose, and not disclosing the purpose when the data was obtained. It should also be noted that as final data is retained in personally identifiable format, it may be subject to an access request from any data subject and is subject to restrictions on the transfer of data outside the European Economic Area.

## **Inclusiveness**

The service will potentially address all elderly citizens, being maximally inclusive. No groups are excluded on a priori grounds from benefiting from the service, even though for the purposes of documenting the benefits during validation and refinement of the prototype, a set of exclusionary criteria will be applied. Men and women of a wide age range and no special restrictions will be able to use the service and benefit from it.

### **Accessibility to the service may potentially be limited as follows:**

Physical access will be possible to the extent a person is able to sit down and stand up without help, to physically locate her/himself on an exercise bike seat, and to operate the buttons of the remote control. Some degree of physical coordination and control will be required, therefore excluding moderately and severely affected persons with motor impairments. Some fine motor control will be required for the operation of the remote control, but the buttons will be large and easily distinguishable, therefore this factor would only cause the exclusion of severely motor impaired patients such as with Parkinson's disease or bilateral paralysis. Morbidly obese persons, as well as persons unable to walk stably with the help of a cane, would also be excluded. These persons, however, would require supervision and care for their daily activities anyway; therefore the exclusion from this service would not be a result of the special requirements of the service.

Cognitive access will be possible to the extent a person will be able to orient her/himself in space and time, follow simple instructions, and operate a maximally simple and usable remote control. Some degree of intellectual capacity will be required, therefore excluding persons with moderate to severe dementia such as late-stage Alzheimer's disease and other related conditions. The design of the control will be no more complicated than that of a TV set (regarding the main functions only: on/off, channel up/down, volume up/down, certain color-coded options). Therefore, as far as cognitive accessibility is concerned, again no persons will be excluded who would otherwise be able to function independently. If anything, the service will be more accessible than many, if not most, regular daily activities.

Financial access will be possible to the extent that national or private care facilities and health/social insurance organizations will recognize the need to provide the means for prolonged independent living, as currently envisaged at the European level by the ambient assisted living approach. These technological solutions remain beyond the resources of many elderly individuals. While substantial cost reductions are anticipated as systems go into mass production and large-scale markets, for the moment access to the proposed system will be possible for a proportion of the population, either because of own financial means (e.g., savings) or because of membership to a health or care agency encompassing the AAL approach. This situation is no different from that regarding many other medical conditions currently requiring costly intervention and care. Again, it should be emphasized that access to the service will not be restricted especially because of the added components of the service.

It should also be noted that the benefits of this service include increased access to other services and aspect of life that might normally be compromised in the target population due to impaired function. The proposed solution enhances access to cognitive and physical training, by incorporating them into an AAL platform, thus enabling individuals to practice independently. Moreover, the benefits of cognitive and physical training will prolong access to information, transportation, communication, and autonomous living.

### **Ethical and regulatory issues**

The Consortium is very concerned with Ethical and legal issues, a fact that is actively demonstrating by the planning of a separate work package that will investigate and provide guidelines to alleviate such concerns for the future service deployment. The nature itself of the project services bear intrinsically the gathering of Personal Data (gathering, use and storage of

such information), therefore all aspects of the Data Protection Acts will be adhered to with respect to this.

GSI will lead the management of ethical issues. GSI has worked on ethical issues of ambient assisted living (AAL) solutions in several past projects, and will coordinate the consortium to undertake the work required in order to investigate the ethical and legal status quo and reach to conclusions and decisions on the approaches to be followed during the technical integration of the system to adhere to these rules while offering improved care through the use of ICT. The service should adhere to related rules and guidelines, while the clinical trials should be in accordance with current legislation (especially in terms of privacy protection laws). In this respect, full anonymity is going to be used throughout the course of the pilots as well. Monitoring Services (applied for safety in the home for the elderly) are also affected by ethical issues. A balance will be made between safety and intrusion of privacy.

All participants in the project will be fully trained in all aspects of Ethical behaviour and be familiar with the different legislation in the area and ethical guidelines will be established and applied consistently, and will:

- Recognise the primacy of the views, choices of users and respect of their dignity;
- Operate according to universal principles of bioethics (Universal Declaration on Bioethics and Human Rights of UNESCO, 19 Oct. 2005; The Charter of Fundamental rights of the EU, 2000);
- 

Each partner will respect the opinions of the European Group on Ethics in Science and New Technologies, as well as the ethical requirements of applicable national legislation, and where required by such legislation, will seek the approval of the relevant ethics committees prior to the start of activities that raise ethical issues. LLM consortium plans on establishing an external Independent Ethical Board including members from medical, legal and technical faculties. Close cooperation with the board and accordance with its recommendations shall be of critical importance during the development of the ethical guidelines report for the LLM service.

Meanwhile, a legislation survey is going to take place within participating country and within EU directives framework to deliver a report of all relevant laws that should be taken into account during the deployment of our service.



## GLOSSARY

**ADSL:** Asymmetrical Digital Subscriber Line. ADSL is type of DSL that features T1 rates or higher in the downstream (toward the consumer) direction and 64 KBPS or higher in the upstream direction.

**API:** Application Programme Interface.

**ASP** business model: Application Service Provider. A company that offers individuals or enterprises access over the Internet to applications and related services that would otherwise have to be located in their own personal or enterprise computers.

**DSL:** DIGITAL SUBSCRIBER LINE. This modem telecommunications technology enables broadband, digital data to be transmitted over an ordinary telephone line. DSL comes in many varieties, collectively referred to as xDSL.

**EPG:** Electronic Programme Guide. On-screen programme guide offering programme listing and information source. Also provides guide to interactive services

**GSM:** Global System for Mobile Communications. A second-generation cellular system standard set by the European Technical Standards Institute in 1990.

**GUI:** Graphical User Interface

**HCI:** Human-Computer Interaction

**HTTP:** Hypertext Transfer Protocol. Standard for the process of requesting and transferring a page on the World Wide Web. For the transfer to succeed, the page must have been constructed as a hypertext document using the hypertext mark-up language.

**ICT:** Information and Telecommunication Technologies.

**IP:** Internet Protocol. Set of communication standards which control activity on the internet. An IP address is the number assigned to any computer connected to the internet, and is the only way in which information sent through the internet can find its way to that computer. It is a number of the form A.B.C.D where each letter represents a number from 0 to 255, e.g. 193.63.56.222.

**ISP:** Internet Service Provider. Organization with a direct connection to the Internet acting as an intermediary for other users, providing them with an e-mail address and software, access to the world wide web, and often space on web servers for home pages etc.

**ISO:** The International Standards Organisation, the body responsible for setting world technical standards. It is based in Geneva, Switzerland.

**IST:** Information Society Technologies

**IT:** Information Technology

**SaaS:** Software as a Service

**SLA:** Service Level Agreement. A document detailing the rights and obligations contracted.

**SOAP:** Simple Object Access Protocol. Is a protocol for exchanging XML-based messages over computer networks, normally using HTTP/HTTPS. SOAP forms the foundation layer of the web

services protocol stack providing a basic messaging framework upon which abstract layers can be built.

**TCP/IP:** acronym for 'transmission control protocol/internet protocol', the standard set of rules ensuring the proper transfer of information on the internet.

**URL:** Uniform Resource Locator. Unique reference locating a file on the world wide web and other internet resources – the CIP Programme URL, for instance, is:  
[http://ec.europa.eu/information\\_society/activities/ict\\_psp/index\\_en.htm](http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm)

**USB:** Universal Serial Bus connector. Standard for connecting peripherals such as scanners and printer to personal computers simply and quickly.

**VoIP:** Voice over IP communications

**VideoIP:** Video over IP communications

**Web Services:** Are business process interfaces. Each web service is a point of interaction to either give inputs/receive outputs from a business process. The web server provides the web service. They run in the background and wait for clients to connect to them. Basically it frees the programmer of writing code for the web service. They are URL addressable and can be invoked by any browser by just typing the path to the web service. Web services use HTTP protocol to communicate with clients. The open and common standards used by Web Services ensure that any kind of application can interact with a web service.

**W3C:** World Wide Web Consortium

**WAI:** Web Accessibility Initiative

**WCAG:** Web Content Accessibility Guidelines

**XML** = Extensible Mark-up Language. Is a simple, very flexible text format derived from SGML (ISO 8879). Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

## APPENDIX I: PARTNERS DESCRIPTION

### **Partner 1: (COORDINATOR) ARISTOTELIO PANEPISTIMIO THESSALONIKIS / Medical School (AUTH)**

Since 1990, The Lab of Medical Informatics (LOMI) at AUTH has evolved into one of the major research and development centres in the field of Medical Informatics and Biomedical Engineering both in the Greek and European arena. LOMI has been very active in the fields of biomedical processing of brain and heart signals, medical database development, modelling of brain and cardiac electrophysiological processes, and telematics in health-care. Relevant experience also includes: Home care pilot studies, vital parameters human based identification, decision support systems and data mining, Software Agents, medical image processing, Physiological measurements (hypoxia, alertness), Physiological Computing and Interactive Interfaces (evaluation methodologies, emotional intelligence, affective computing), affective and assistive technologies for the disabled and the elderly, as well as, e-learning, collaborative learning and content sharing in medical education. LOMI has participated in a number of European projects such as the ESPRIT II project ISSS (dealing with intelligent alarming and Neural Network applications in processing of cardiovascular signals), the FP5 IST for health projects IST-1999-13352 (CHS) and IST-2001-33369 (PANACEIA-iTV), where pervasive telematics applications for the management of health at home were developed. LOMI also participated in SENSATION, an FP6 IST-IP. The lab has also participated in the e-Ten (e-health) project InterLife and has been the subcontractor for numerous other projects and organisations. Last but not least, another numerous e-learning on health projects have been successfully completed by the lab team members (CrossborderHealth/INTERREG CBC and IntraMEDnet/INTERREG ARCHIMED, WideMEDnet/INTERREG ARCHIMED), as well as a project (AFFECTION) on affective computing and emotional understanding, in collaboration with The RIKEN Brain Science Institute of Japan.

#### **Human resources assigned to the project**

**Panagiotis Bamidis** is an Assistant Professor of Medical Education Informatics in the Lab of Medical Informatics at the Medical School of AUTH. Formerly, he has been the Senior Research Officer at the South East-European Research Centre (SEERC). He has conducted research in the Weizmann Institute of Science (Israel), Research Centre Juelich (Germany), the University of Newcastle and the Open University (UK). He is also a member of organising, scientific and reviewing committees of various international conferences. He is a permanent member of the International Steering Committee of the iSHIMR conferences, a member of the Editorial Board of the Health Informatics Journal, and a reviewer of the IEEE Transactions on Information Technology in BioMedicine, Computer Methods and Programs in BioMedicine and others. His research interests are within Affective and Physiological Computing and HCI, Health Information Management, affective and assistive technologies for the disabled and the elderly and technology enhanced learning in medical education, areas in which he has published over 80 papers in various journals and conference proceedings. He was the Scientific Co-ordinator of 5 national and international grants.

### **Partner 2: (Participant) UNIVERSITAT KONSTANZ (UKON)**

Clinical Psychology and Neuropsychology of the University of Konstanz, Germany, offers one of Europe's most exceptional possibilities for carrying out new projects in the fields of clinical psychology and behavioural neuroscience. Located at the Centre for Psychiatry, Reichenau, different patient groups are treated as out-patients and in-patients at a research ward, depending on the particular research projects. This research ward and its neurophysiology and neuro-imaging laboratories offer a basis for various projects that explore epidemiological, etiological, psychopathological, and therapeutic questions. Patient groups include elderly people with

particular challenges like those after stroke, early dementia and schizophrenia. The geriatric ward of the hospital is located in the house next to this centre that is used for educational purposes as well as for research projects.

The experience of the members of this interdisciplinary group in Clinical Psychology, Psychophysiology and Brain Imaging is documented by 20 years of continuing publications in the field, including text and research books and publication in specific journals such as Biological Psychiatry, BMC Psychiatry etc., and in high-wire journals including Nature, Science, PNAS and PloS Medicine. A 128-, a 256-channel EEG-amplifier and a Whole-Head 148-channel MEG are routinely operated. Functional MRI is available with a 1.5 Tesla Magnet.

At the University of Konstanz, Clinical Psychology is based on the development and application of modern neuroscience with the purpose of understanding and treating disorders of cognition, affect, and behaviour. Our approach focuses on mental illness and dementia as the result of a malfunctioning brain, an aberration that appears first in the dynamics of the brain's activity and its functional organization before macroscopic structural deviations may become obvious. The emphasis of our projects is, thus, the imaging of processes related to behaviourally defined psychological function and dysfunction. Temporal and spatial patterns of neuronal mass discharges can provide access to the rapidly varying neurophysiological substrate of the psychological events under investigation. Insights into patterns and sequences of temporo-spatial brain activation as a function of psychological processes is at the very centre of understanding deviant behavioural and cognitive responses – the research domain of clinical psychology.

In LLM, Konstanz will focus on the evaluation of treatment success and therapy-related changes in the brain using cutting-edge technology and methods of neuroscience, particularly neuroimaging with MEG and fMRI, using standard techniques in which they have longstanding experience as well as new techniques pioneered in Konstanz. Their expertise in neuropsychological assessment will form the core on which the evaluations of this project will be built, and they will also greatly contribute to the design of the training exercises, based on their vast experience and world-class expertise with clinical neurorehabilitation and the investigation of neuroplasticity.

#### **Human resources assigned to the project**

**Thomas Elbert**, Ph.D., Professor of Clinical Psychology and Behavioral Neuroscience and director of the brain imaging unit, has received continuous funding from national and international sources (German Research Society, International Human Frontier Science Program, Stiftung Volkswagenwerk, NATO, McDonnell foundation, GAAC, German-Israeli-Foundation). He is a member of the German Academy of Science (Berlin) and has published over 300 research articles and several books. He is one of the leading experts on neuroplasticity in the brain. He and his collaborators will support the development of perceptual & cognitive trainings for elderly persons based on research results derived from research on neuroplasticity in healthy subjects and neuropsychological patients. Furthermore, he and his research group will scientifically evaluate the success of the training program. Thomas Elbert studied Psychology, Mathematics and Physics at the Universities of Munich and Tübingen (PhD, 1978).

**Iris-Tatjana Kolassa**, Ph.D., Assistant Professor, Clinical Psychology who is specialised in clinical and affective neuroscience with a focus on neuroplasticity and the brain. She did research with newborns and adults at Institute of Child Development and the Centre for Magnetic Resonance Research at the University of Minnesota, USA and is highly experienced in functional brain imaging. Currently, she is leader of a group researching neuroplasticity in the elderly funded by the German Academy of Science (Heidelberg). Iris-Tatjana Kolassa teaches graduate level classes on stress, neuroplasticity, clinical consequences and their reversibility. She studied Psychology in Konstanz, Minneapolis (USA) and Jena (Germany).

**Karl Pröpster**, M.D., Neurologist and Psychiatrist, responsible for treatment and diagnosis of psychiatric patients to be investigated at the research ward.

### **Partner 3: (Participant) ATHENA RESEARCH/ Institute for Language & Speech Processing (ATHENA RC)**

The Institute for Language and Speech Processing (ILSP) was founded in Athens (Greece) in 1991 under the auspices of the General Secretariat of Research and Technology of the Ministry of Development. It now belongs to the Research and Innovation Centre in Information, Communication and Knowledge Technologies ("Athena"). The running aim of ATHENA RC is to be a centre of excellence in basic and applied R&D in the areas of:

- Natural Language Processing
- Speech processing, recognition and synthesis, music and sound processing
- e-learning, distance learning for language, culture and music

ATHENA RC is becoming a pole of attraction for the lively Greek and European industry of language and information technologies. The experience of its researchers, the close relations it holds with key research centres in other European countries and its industrial orientation are basic elements in the profile of ATHENA RC.

ATHENA RC develops technologies on the following axes:

- digital monolingual, multilingual and multimedia corpora and dictionaries, computational lexical databases
- text processing and analysis for information retrieval and knowledge extraction
- multimodal and multilingual information processing and retrieval
- machine translation and translation aid tools
- stand-alone and integrated voice recognition and text-to-speech systems
- assistive technologies for disabled persons
- digital curation and presentation of cultural content
- multimedia e-learning platforms for language and music

ATHENA RC has successfully participated in more than 150 R&D projects. It is currently involved in around 30 national and European projects.

ATHENA RC has demonstrated significant development performance as evidenced by the following:

- a number of patented innovations
- over 35 end-user globally marketed products
- a rich palette of Greek language resources and tools
- quality service and support provision (design, technology integration, consulting)
- the foundation of spin outs exploiting technological outcomes with a strong potential in dynamic market areas (voice enhanced services and appliances, e-learning, e-publishing, media monitoring, etc).

ATHENA RC is one of the Institutes of the newly established Research and Innovation Centre in Information, Communication and Knowledge Technologies "Athena". Its activities are organised in six scientific departments:

- Electronic Lexicography Department
- Department of Language Technology Applications in Office Systems
- Department of Educational Technology
- Department of Speech Technology
- Department of Machine Translation
- Liaison and Technology Transfer Department

ATHENA RC operates a branch office in the Thrace area (northern Greece region)

#### **Human resources assigned to the project**

**Athanassios Protopapas**, Principal Researcher at the Department of Educational Technology, ILSP/Athena, member of the Scientific Consultative Board (SCB) of ILSP. He holds a Physics degree from Patras University (1991), MSc in Engineering (1995) and in Cognitive Science (1993) and PhD in Cognitive Science (1997) from Brown University (USA). He has worked in Greece and the U.S.A. on speech perception, auditory processing, reading, spelling, signal processing algorithms, and computer based training of language skills. His activities include project management, software design and implementation, design and conduct psychoacoustic and psychometric experiments, as well as study, optimization and assessment of algorithms and training methods. Co-ordinator of European projects CIMWOS (automatic archival of multimedia material) and OLP (computer-based speech therapy support). Principal investigator for eMaDys, VLEMA and LAMDA, to develop software for automated screening of students with possible learning disabilities. He serves on the scientific advisory board of PositScience, a US corporation developing and marketing "brain fitness" software to improve cognitive function in old age and reduce or delay the detrimental cognitive effects of aging. He teaches cognitive science, memory and learning, and cognitive modeling at the graduate program on "Basic and Applied Cognitive Science" of Athens University, as well as acoustic and articulatory phonetics at the graduate program "Special Education – Speech Therapy – Counseling" of Athens University.

**Gregory Stainhaouer**, Director of Research, Head of Educational Technology Department at the ILSP/Athena, member of the Scientific Consultative Board (SCB) of ILSP. Dr. Stainhaouer graduated from the Department of Electrical Engineering of the National Technical University of Athens (NTUA) in 1985. He received his PhD degree from the Computer Science Division of NTUA in 1991. Since 1986 he has participated in more than 40 national and European projects as a researcher. He has been the co-ordinator of national and European projects related to educational technology. His activities also include technical co-ordination and software design of electronic systems (optical character recognition, a multimedia data base of the Acropolis Museum, Electronic system of the Research Centre for Modern Greek Dialects, platform for the development of internet sites with cultural and tourist content, platforms for the teaching of Greek language as a mother tongue, as a second/foreign language, teaching of the Greek sign language, teaching of the ancient Greek language, software for the presentation of the history and civilization of the Greek islands) and language education and cultural electronic products. He has served as a member of the Programme Committees of conferences and workshops. He has also served as a reviewer of research proposals and papers. He was member of the Scientific Board of ILSP (2000-2003) and associate member of the Cultural and Educational Technologies Institute (1998-2003). Dr. Stainhaouer is a member of the Technical Chamber of Greece and the IEEE.

**Eleni Efthimiou**, Research Director in the domain of "Natural Language Processing in the are of Assistive Technology" at the ILSP/Athena. In 1982 she graduated from the Philosophical Faculty of the University of Athens and in 1986 she received her Ph.D. (magna cum laude) from the Department of Linguistics of the University of Salzburg (Austria). She habilitated in 1994 with her work on contrastive analysis of the pronominal systems and verb inflection of Modern Greek and German. Dr. Efthimiou has been working as a researcher at ILSP since 1992. She currently heads the Sign Language Technologies Lab and co-ordinates the Assistive Technology Group. In 1999 she founded the ILSP team for basic research and resources collection for the Greek Sign Language (GSL). Ever since, she has dedicated major effort in analysis of GSL and its introduction into various computational environments. Her research activities involve analysis of natural language, optimisation techniques of human-computer interaction and NLP based prototype development. At the SLT Lab, her work focuses on creation of electronic SL resources (corpora, vocabularies and grammars), development of systems for SL synthesis via virtual agent (signing avatar), SL recognition, development of sign language educational and communication tools, as well as implementation of principles of Universal Access for system architecture. Her research experience is gained by involvement in various national and European project. She teaches theoretical and computational linguistics and has supervised numerous dissertations in these areas. She has published 5 books, 4 electronic products and many journal articles, edited 4 books, and she serves on the editorial board of two journals..

## Partner 4: (Participant) Tero Ltd (TERO)

Tero ([www.tero.gr](http://www.tero.gr)) is a specialized consultancy working with organisations and companies that are involved or wishing to participate in Research & Development projects. Tero offers to its partners a combination of experience in technology and business issues, enabling them to develop new products and technologies, new work methods and organizational processes. Tero is also an institutional partner of the Innovation Pole of the Region of Central Macedonia in Greece.

The services of Tero span the full life cycle of a project, from conceptualisation and strategic planning to project implementation and management. Specific services include identification of opportunities and evaluation of project ideas, review and evaluation of research proposals, project management, and business planning.

The main service and contribution of Tero in the LLM project is to identify and assess the social and economic drivers for the deployed technology, to guide dissemination and exploitation activities, and to lead to the development of a service that fully meets consumer standards and demands, while ensuring that solid IPR arrangements are present. Tero will also contribute to an analysis of available PPP models and an assessment of their applicability to the project.

Tero's projects include:

- TESS: Transactional Environmental Decision Support System (FP7 - Environment).
- GEOCOMPASS: GEOgraphical Community Operation for MaP-Based Advanced Services for SMEs (eTEN).
- Collaborative platform for content generation, distribution and exploitation on the internet (Greek PAVET-NE research programme).
- Market research and business planning for two spin-offs of the Aristotle University of Thessaloniki in the fields of Data Mining and speech recognition technologies (Greek PRAXE programme).
- GEM-CON-BIO: Governance and Ecosystems Management for the Conservation of Biodiversity (FP6 - Citizens and Governance).
- OPUS: Optimal Public Procurement Service in the Healthcare Marketplace (FP5-IST).

### Human resources assigned to the project

**Stratos Arampatzis** is the Director of Tero. Stratos has 12 years experience as an e-business and project management consultant. His work involved managing or evaluating EU projects in FP7, FP6, FP5, eContent, and eTEN. He conducted 20 training seminars and workshops in New Member States and Accession Countries, facilitating the participation of organisations from the respective countries in ICT and in other EU funding domains. Stratos holds a Master's Degree in Economics and Policy from Duke University, USA, and a B.Sc. in Biology from the Aristotle University of Thessaloniki. Stratos is fluent in English, and conversant in German and French.

**Nick Baltas** holds a B.S. in Computer Engineering and Informatics from the University of Patras, Greece and a Masters Degree (Hons) in Advanced Computing from Imperial College, London. His main research interests regard parallel and distributed computing and high performance systems. Nick has been involved in many software development projects offering solutions to a variety of IT problems from bio-informatics to performance optimization and from web development to e-Learning and e-Commerce. Since 2007, Nick has been working as a Project Manager at Tero Ltd. He is fluent in English and conversational in German.

## Partner 5: (Participant) CEIT RALTEC gemeinnuetzige GmbH (RALTEC)

The Central European Institute of Technology (CEIT) gemeinnuetzige GmbH ([www.ceit.at](http://www.ceit.at)) is an extra-faculty research and development institute. CEIT was founded in April 2006 by the municipality of Schwechat which also is the owner and the provider of the basic funding. CEIT processes knowledge from the fields of Information and Planning Technologies and passes it on through technology transfer to broader society. CEIT is the main actor of the "Living Lab Schwechat", which is a member of the European Network of Living Labs ([http://www.cdt.ltu.se/main.php/ENOLL2\\_Leaflet\\_Austria\\_LivingLab\\_Schwechat.pdf?fileitem=1511455](http://www.cdt.ltu.se/main.php/ENOLL2_Leaflet_Austria_LivingLab_Schwechat.pdf?fileitem=1511455)) since 2007. CEIT consists of 2 departments CEIT ALANOVA and CEIT RALTEC:

At CEIT-ALANOVA modern technologies for Urban and Regional Planning in connection with Information Society tools and under the guidance of the principles of sustainability and environmental protection (ePlanning) are being developed.

CEIT RALTEC - Rehabilitation and Assisted Living Technologies - focuses on research and development of novel technologies in the area of Ambient Assisted Living (AAL), eHealthcare und eHomecare including dedicated services for older citizens and persons with special needs. The aim of RALTEC's activities is to support elderly people and their carers to live as independently as possible. The researchers at RALTEC have a broad expertise, covering ICT and assistive technologies and also non-technical areas as sociology and ethics. Some of the projects which have been started since 2006 are described below:

- eSHOE: Development of an intelligent shoe sole equipped with integrated sensors to analyze the gait of old persons.
- eHOME: Development of a wireless sensor system for measuring different physical parameters in a old person's home to detect abnormal and dangerous conditions in daily life and to generate automatic alarms in case of dangerous situations.
- development of an intuitive, senior-specific voice-over-IP videotelephone and performing a user-acceptance and usability study
- AAL Living Lab: Implementation of a Living Laboratory for assistive technologies to support old persons.
- Ethical Supervision: Review and support of research projects which are involving vulnerable people.

### Human resources assigned to the project

**Walter Hlauschek**, managing director of CEIT RALTEC, holds a master's degree in electronic engineering from the Vienna University of Technology. He has been working in the area of ICT- and electronics for more than 30 years. His main expertise and experience is in the architecture and concepts of complex circuit and packet based switching systems. Besides his technical skills he has experience in management of R&D organisations, product and project management.

**Paul Panek** holds a master's degree in Communication Engineering. Since 1993 he is working in the field of Rehabilitation Technology in the group of Prof Zagler at Vienna University of Technology. His main areas of interest are man machine interface for multiple impaired persons, alternative and augmentative communication (AAC) for profoundly and learning disabled children, environmental control systems (ECS), self adapting bath room systems for disabled and old persons and the application of telematics in the area of Assistive Technology. Since November 2006 he is employed at CEIT participating in the planning and implementation of a Living Lab for old persons and assistive technologies. He has been involved in coordination of EU funded RTD projects in FP4, FP5 and FP6.

**Josef Diermaier** achieved his master's degree in medical informatics at Vienna University of Technology with summa cum laude. He has got experiences in the application of assistive



technologies, intelligent sensor networks, software engineering, end-user testing und user-oriented R&D. during a scholarship in Spain he got experience in robotic and computer simulation.

**Katharina Neyder** achieved her master's degree in media informatics & informatic management at Vienna University of Technology with summa cum laude. Before joining CEIT as a researcher she was in charge of the Institute for Design & Assessment of Technology and of the department for data base systems and artificial intelligence at Vienna University of Technology. She has got experiences in the areas if assistive technologies, user interaction, usability engineering, user-centred design and participative design methodologies.

## **Partner 6: (Participant) Investigación y Desarrollo Informático, EIKON (EIKON)**

A software house established in 1989 and based in Valencia, Spain, IDI EIKON is a Services Provider Company in the areas of Telecommunication and the Internet. Its core business is the development of advanced IT and Internet-based technologies for specialist markets. As a SME we identified significant opportunities in Europe and the company has a long experience of participation in public-funded European projects. IDI EIKON's business revolves around creativity and innovation. For the company innovation is the lifeblood deal with new opportunities on an ongoing basis and we are constantly presenting ideas with new value to sustain growth. IDI EIKON practices the idea that knowledge generates not just in universities and research centres, but also in a very wide variety of locations within the economy, and notably as a product (learning-by-doing) or of consumption (learning-by-using). Using the latest technologies, our expert developers have extensive experience developing leading-edge software. Our current focus is developing: Internet Solutions in the areas of e-Government, eInclusion and ERP addressed to SMEs. We serve most of our solutions under the "SaaS" model and our solutions can be deployed across different channels: web, mobile devices and digital TV.

From an internal perspective, innovation in IDI EIKON is driven by:

- Senior management responsible that devotes time to investigate the future and to understand the needs of the marketplace, the resources at their disposal and the competitive business environment.
- Working environments that encourage creative solutions.
- Strong support for joint ventures and collaborative efforts that develop and commercialize innovative solutions.
- Good project management for the identification, development and commercialization of innovations.

From an external perspective, IDI EIKON can be considered a KIO, a knowledge intensive organization, since building knowledge is its primary value-adding process.

### **Research & Development**

We are considered a R&D performing SME since we devote a high percentage of our resources (more than 60%) to research and innovation. IDI EIKON has two objectives for Research and Development: supporting the improvement of operational performance and enhancing existing expertise. In the IDI EIKON Roadmap, R&D is a dedicated function, and even without a budget of its own, we give priority to this area, since R&D enhances efficiency in operations through the development of innovations and new methods. Another goal is to be able to rapidly deploy R&D results in practical activities. Making operations strategically oriented are also high priorities.

The strategic development areas for R&D are lifecycle expertise, partnership skills, and information flows and data models that enable fuller exploitation of ICT technologies in all the IDI EIKON's operations.

### **Collaboration with several operators**

The company conducts R&D projects on his own but as the prime objective of IDI EIKON is innovation, a continuous effort is made to cooperate with other organisations, and this has given rise to a considerable number of agreements and contracts with leading companies and public organisations. Strategically, IDI EIKON Solutions is focussed in both industry and public administration markets, being its main research efforts in e-Inclusion, e-Government applications and services, and global security services, although it also offers services in other markets, such as Human Resources and ERP's for enterprises large and SME's. Moreover, IDI EIKON has strongly been committed since 1999 in investing resources in research, development and technological innovation not only at a national, but also at international level, by participating in National and European programmes, which have allowed the company to work jointly with some of the most important technological companies and organisations, leading to IDI EIKON to enter into alliances with universities and research centres, and private and public entities. We participate in projects at national, regional and international level (European projects).

Participation in European projects:

- Eureka-Eurostars: "AACs for ALL": Augmentative and Alternative Communications for ALL (2008-2010)
- CIP: T-Seniority: Expanding the benefits of Information Society to Older People through digital TV channels. (2008-2010)
- Eureka: GGCC: Global GNU Compiler Collection (2006-2008)
- Iberoeka: e3=QoS: Sistema avanzado para el control de calidad de servicio en el uso eficiente de energía eléctrica (2006-2007)
- eTEN project SENIORITY: Integrating e-Services for the Empowerment of Older People (2004-2006).
- Co-ordinator in eTEN project e-SEVESO: digital services for Industrial collective protection (2004-2005)
- Innovation project ESPLANADE: Exploitation of Scenario Planning and Data-searching Expertise (2002-2004).
- Co-ordinator, in the Ten-TELECOM project EURO-Alert: EUROpean network for reAl-time Limitation of EnviRonmental polluTion levels (2002-2003).
- IST project AGENT ACADEMY: A Data Mining Framework for Training Intelligent Agents (2001-2003).
- IST project GLOBDATA: An Efficient Software Tool for Global Data Access (2000-2002).
- e-CONTENT project LOCOMOTIVE: Facilitating Localisation and automating installation procedures for eCustomer-Relationship Management services. (2001).
- Esprit Task 1.33, project: ATLAS: A push Technology Leveraging Action for 'Slingshot' (1999-2000), a technology transfer action.

### **eInclusion & eAccessibility**

Accessibility of technology is an important issue that is growing in significance and relevance in many business domains. Many facets of our society depend upon technology in general, and Information and Communications Technology (ICT) in particular. IDI EIKON is actively involved in the emerging fields of ambient assisted living and other ICT-enabled assistive technologies and applications (ICT-enabled wellness, telecare, homecare and telemedicine services, prevention and management of chronic conditions, portable medical or paramedical monitoring devices, etc.). eInclusion and eAccessability are our two focus in this field and we use the opportunities provided by ICT by applying them to solutions and services for increased societal and political participation, a higher Quality of Life and new ways of independent living.

From our participations in projects we gain insight into the latest technological trends and get to know state-of-the-art ICT technology solutions and contribute to them. Also important is to know well governmental strategies and policies worldwide for addressing the challenges pose by society at any moment. IDI EIKON research is focused on applying Information and

Communication Technologies (ICT) to the fields of eInclusion, eGovernment and eSecurity services. Its main aims are the following:

- To investigate new methodologies and develop solutions designed to make the general public aware of the use of ICTs in promoting safety and security at work, preventing health risks, long-term care attentions and in maintaining and improving quality of life
- To investigate, design and evaluate new ICT models for the health care and social assistance of those with special needs, for use by professional health workers, public administrations, and public and private organisations involved in these activities.

#### **Human resources assigned to the project**

**Miguel Alborg Dominguez**, founding member and Managing director of IDI EIKON. He is an IT executive by occupation and with a passion for trying new things, he is managing a small company but one of the pioneering and more innovative Information and Communications Technology (ICT) firms in Spain. A highly effective and experienced researcher and project manager/team leader- member with substantial related experience. Unique capability to apply analysis tools and techniques to identify problems and their effects and causes. A strong believer in "leading from the front" he is independent and progressive in his thinking, believes in his decisions, and above all is prepared to drive them through. Being an entrepreneur, he is always looking for new opportunities that complement the company's core focus. Believing that the world is increasingly moving towards a knowledge-based economy, he seeks to maximize the potential of ICT as a tool for knowledge enhancement and management. His personal "crossroad" of a "humanist" background and Information Society Technologies, has driven his interests and objectives, to master complex and multi-disciplinary data and information, especially in very complex "human life" problems where conflicts are present and applying to it the new "solving problem" technologies. A present personal advocacy is to raise the awareness of the enabling use of ICT and to enhance the quality and accessibility of solutions for the world of prevention. He has been involved in R&D projects from the early 90's and with European projects from 1998.

**Miguel Alborg Farinós** He is a graduate in Enterprise Management and Administration from Valencia University. He participates in European projects since year 2000 and is in charge of the European commercialization of products/services coming out from projects. Actually shares his responsibilities between the marketing and the management of a newly created company. His business driven profile is complemented with a deep understanding of the latest technologies acquired since his early years at the University, carrying out practices in real working environments.

**Víctor Sánchez**. Technical Engineer in Computer Science of Administration. Senior Analyst-Programmer in European projects lead by IDI. Senior Analyst-Programmer in Java 2 platform, j2me mobile phones and embedded systems, webservices like soap,xml-rpc, wsdl, and in depth use of other technologies like JSP, XML, JAXP, JAXB, ebXML, XHTML. Experience as System Administrator: O.S.: Microsoft; Unix (especially Linux); DB: Oracle, SQL Server, PostgreSQL, PHP; IP networks: remote communications, firewalling, web servers; Experience with Web Services under SOAP and XML-RPC. Knowledge of XML, JSP, EJB, encryption, etc and first notions of P2P having developed some small applications with JXTA. He is current on Internet technologies including HTML and Java, with experience in a structured development environment. He is the technical director of IDI EIKON and is the responsible for testing the impact of the introduction of new technologies in the IDI EIKON developments.

**Josefa Farinós** Co-founder of IDI EIKON company (1989), based in Valencia (Spain). Ms. Farinós has worked in the ICT industry for more than 15 years and has over 5 years of experience in European projects management in which she is involved since 1999. She works in the preparation of proposals involved with the transfer of the company's technology to accelerate its adoption and exploitation at an international level. This work is combined with the conduction of research and analysis on a broad range of new developments and trends in the information society technologies.

## Partner 7: (Participant) FUNDACIÓN INTRAS (INTRAS)

INTRAS is a non-profit organisation founded in August 1994 as the result of the initiative of a group of professionals working in the field of research and intervention with people suffering from social exclusion due to mental health problems. These professionals found in the third sector a way to improve the socio-economic situation and the quality of life of disadvantaged groups.

**INTRAS** stands for **Research and Treatment in Mental Health and Social Services**. Our goal is to develop and promote activities concerning assistance, research, evaluation and dissemination of mental health and other disabilities actions.

INTRAS **main objectives** are:

- To promote and develop **assistance programmes** and activities for our target groups.
- To promote and develop **projects of technological research and innovation** which can be useful for our target groups.
- To promote **psycho-social and professional integration** programmes addressed to disadvantaged people. In this regards, INTRAS favours the employment of people with disabilities and individuals at risk of marginalisation, supporting their professional integration and encouraging the establishment of enterprises which incorporate the employment of these target groups amongst their priorities.
- To improve the quality of research and assistance programmes through **training projects, courses** and the **publication** of documents, books and any other kind of texts concerning these issues.
- To encourage the adoption and effective implementation of **technological progresses** on mental health and other disabilities groups.
- To promote **cooperation and research projects** to boost development in the public health field together with Latin-American countries, as well as to promote and develop projects of technological research and innovation in collaboration with other EU Member States.

INTRAS **main activity** areas are:

- **Projects' management area**
  - National projects
  - International projects
  - Consulting services
- **Socio-sanitary assistance area.**
  - Psycho-social rehabilitation area
  - Social, labour and learning attendance area
  - Disability assistance area.
- **Training and Labour integration area.**
  - Labour integration and orientation services
  - Labour workshops / non formal labour learning
- **Research and development area**
  - Gradior software and cognitive intervention area
  - Socio-sanitary technological developments area

### Fundación INTRAS and the GRADIOR software

The GRADIOR programme is our star product. It is a simply TIC-based tool that makes easier the work of professionals for online rehabilitation and cerebral training of cognitive functions such as attention, memory, perception, calculation....in people with insanity, schizophrenia, cerebral paralysis, mental retard, etc. The GRADIOR programme is a tool with high possibilities for the clinical intervention,,being some of its best capabilities the following:

- It is suitable for a wide range of users, able to adapt to specific needs
- It incorporates new advances (a telematic system) and continuous upgrades (number of available exercises growing each time)
- It allows carrying out a program of cognitive rehabilitation without the daily intervention of a specialist
- It is useful for those therapeutic objectives pretending: to stop the cognitive deterioration and the recovery of cerebral superior functions
- A good interaction between the user and the system has been repeatedly proven

### **Human resources assigned to the project**

**Yolanda Bueno:** Degree in Psychology from the University of Salamanca (1988), PHD student in Clinical Neuropsychology. Head of Cognitive Rehabilitation and Memory Training Department at INTRAS Foundation. During the past 13 years she has conducted research activities in the field of Neuropsychology and is author of several publications (articles and books) about Computer Assisted Cognitive Rehabilitation. Besides, she has taken part in a number of European and national projects as well as clinical trials on Alzheimer Disease. She is the director of the course "Neuropsychological Rehabilitation of Cognitive Deterioration and New Applied Technologies".

**Susana Gil:** Degree in Psychology from the University of Salamanca (2002), PHD student in Clinical Psychology until 2004. During 2005 and 2006, she has been working at the cognitive intervention department of INTRAS. In 2007, she obtained a position at the Psycho-social rehabilitation centre of INTRAS in Zamora and in 2008 she has been named Head of this Centre. She also cooperates with the Public and Catholic Universities of Salamanca, and TAFAD in Zamora, as tutor of students in practice. At the University of Salamanca, she teaches, since 2006, in the Master of Neuropsychology. She has conducted research in the field of Neuropsychology and is co-author of several publications concerning cognitive rehabilitation of the memory.

### **Partner 8: (Participant) E-SENIORS: INITIATION DES SENIORS AUX NTIC ASSOCIATION (E-Seniors)**

The E-SENIORS association is an organization, based in Paris, which offers group courses about New ICTs for seniors in different public places (in different quarters of the town and 2 surrounding departments), as help as home computer assistance.

The aim of our association is to promote access and training for new information and communication technologies for seniors, with the purpose of:

- bridging and shrinking the digital gap between generations;
- caring for elders by fighting against senior isolation;
- opening new horizons to efficiently use free time.

Further development includes:

1. A cyber-tearoom for the elderly: the aim is to reach middle and upper-class seniors for whom no specific training exists at the moment, but everybody is welcome and financial contribution will be adapted to income; offering a warm and friendly place with an attractive choice of activities dedicated to training in new technologies, and especially, for the internet, combined with "classical" activities of a seniors club

2. Offering solutions for people with reduced mobility (elderly people living in their homes or in specialized institutes) with the organization of: purchasing and installation of computer equipment; initial training on the spot; remote communication with the help of audio-visual accessories, for both offering the services of social and administrative support as well as technical support and hotline help

### **Human resources assigned to the project**

**Monique Epstein** is a senior Computer Consultant, Monique has strong expertise and skills in application design, consulting services and project management both in a client/server or internet environment. Starting her employment history as an Analyst/Programmer on mainframe systems, moving on to designing and implementing RDBMS-based information systems, Monique re-oriented her career in 1994 towards multimedia (off and then on-line) application design, working as Project and Team Manager, as well as Consultant for new applications design. Monique has a MA in computer science. She always looks to work with the very latest technology. She speaks German, English, French

**Jean-Michel Damianthe** holds a MA degree in computer science and phonetics. He is a professional musician (classical and computerized music). Has worked as teacher as well for piano/guitar than computer courses English and French

**Leopold Braunstein** is a mathematics professor and a professional writer of books and reviews. He speaks English and french

**Jonathan Jacobs** is a computer engineer and a prize awarded pianist. He speaks French, English, Russian and Hebrew

**Martine Defosse-Quinet** holds a MBA and is a financial engineer.

## **Partner 9: (Participant) Global Security Intelligence (GSI)**

Global Security Intelligence (GSI) is committed to exploring the continuously expanding range of technologies that may be used to enhance an individual's safe and secure experience at home, at work, as they travel, and as they interact and communicate with others. We take a holistic approach to crafting services solutions that perform for the individual, the organization within which they work, the locale and country in which they live, and the highly-mobile international community. GSI was founded in 2005, responding to a need for a more holistic approach to security and safety issues, and to provide for a higher level of independent living. The GSI team has been built based upon engaging individuals with a depth of understanding of current and emerging issues in these areas, on technology solution development and deployment, communication processes, organizational and management issues, as well as elite individual players whose talents in their areas of specialisation provide for highly efficient analysis, planning, development, deployment, and auditing of infrastructure, systems, processes, impacts, and compliance. In addition, GSI extends their network and the depth and breadth of knowledge by contributing to, and engaging with thought leaders, in international bodies committed to examining the impact of these technologies on industry and society, and in contributing to the development of policy. GSI also invests a significant portion of time to performing empirical research, publishing topics of more common interest to a web-based Research Centre ([www.globalseci.com](http://www.globalseci.com)).

**Independent Living Solutions:** In the Independent Living sector, GSI has extended its focus to address the effective uses of ubiquitous, ambient technologies which enable ageing or disabled individuals to live independent and socially active lives, including work with assistive technologies, innovative sensors and surveillance systems, telemedicine solutions, and robotics. This research consultancy has experience in a number of disciplines, including:

- user needs analysis
- technologies for independent living
- market and economic analysis
- ethical and socio-cultural studies
- training

A recent EU-funded project in this area where GSI is engaged in a dialogue and policy roadmapping effort around technologies, ethical, and social inclusion issues is SENIOR (Social Ethical and Privacy Needs in ICT for Older People: A DIALOGUE ROADMAP, Grant agreement no.: 216820). For more information regarding the SENIOR project, refer to [www.seniorproject.eu](http://www.seniorproject.eu)

Security Solutions: GSI's vision of holistic security solutions encompasses the full range of issues that can impact whether and how security technologies will be effectively woven into the fabric of an organisation's infrastructure, its processes, and ultimately, its culture. Our expertise spans a broad range of environments with a diverse set of needs, from correctional facilities to school campuses, from corporate data centres to medical clinics to airports. In addition to the focused needs of individual organizations and corporations, we are also actively engaged in studying and helping to set policy for the use of security systems within a framework that responds to the cultural and ethical needs of individuals, particularly as it relates to issues of privacy. GSI provides expertise in security applications including:

- identity management
- document management
- logical and physical access
- surveillance and video content analysis
- compliance with security and privacy-related regulations

#### **Human resources assigned to the project**

**Kush Wadhwa**, Managing Director. Mr. Wadhwa is the Founder and Managing Director of Global Security Intelligence. He performs strategy consulting, providing holistic advisory services concerning technical, strategic, policy, and markets development to developers and deployers of security systems and independent living solutions. He also is frequently engaged in R&D projects affecting the future direction of technologies in these areas. Prior to founding GSI, Kush has worked in management consulting and finance, and in various roles in high-technology industries, including product and project management, technology development, business development and corporate venturing. He holds Bachelor's degrees from Stevens Institute of Technology in Electrical Engineering and English Literature and an MBA from New York University's Stern School of Business.

**Nancy Baker**, Chief Operating Officer. Ms. Baker is the Chief Operating Office of Global Security Intelligence, providing strategy consulting services, as well as directing the daily activity of GSI's team of consultants. Along with her team, Ms. Baker provides technical and strategic advisory services to developers and deployers of technologies in the security and independent living sectors, addressing a broad range of operational issues related to successful deployments, including policy development, training, process and procedure, privacy and ethics, and regulatory issues. Prior to GSI, Nancy has built and directed teams in technology firms responsible for global ICT infrastructure, knowledge transfer, client support, and quality assurance. She has served in various consulting management and communications-oriented roles in high-technology and services firms, with extensive experience in software product development and implementation. She holds a Bachelor's degree in Business Management/Accounting and Computer Science.

#### **Partner 10: (Participant) GENIKO NOSOKOMEIO ATHINAS IPPOKRATEIO / Health Centre Vyronas (IGNA)**

The Health Centre of Vyronas (HCV) was established by the Greek Ministry of Health and Welfare in 2004. It has been founded in order to provide primary health care services to the community and cover the special needs of elderly people. For this purpose it has been administratively linked to the Ippokration General Hospital of Athens (IGNA), assuming the responsibilities of the primary health care arm a tertiary hospital could not provide. Since it was the first Urban Health Centre in Greece, great concern has been given to various aspects of its

operational activities and the department's efforts have been focused in organizational issues regarding not only high standards of health care services, but also patients' perspectives, opinion and active participation in treatment options along with the implementation of special programmes regarding near patient care, by providing free of charge medical services to the community. The personnel of IGNA consist of doctors, nurses, dentists, social workers, biostatisticians, bioinformaticians, and other health care workers. IGNA has also a broad experience in the academic and research fields since it offers postgraduate and undergraduate education for doctors, nurses, midwives, etc., and has also participated in a European project regarding AAL. Moreover, several epidemiological and clinical studies, as well as preventive/screening interventions have been performed directly in the community. Currently IGNA receives more than 70,000 patient visits annually.

### **Human resources assigned to the project**

**Dr. Anargiros D. Mariolis** was born in Athens (Greece) in 1972. He graduated from the medical school of Athens Kapodistrian State University in 1996. He received his Ph.D. degree from the Medical school of the University of Athens entitled "Measurement and Assessment of the Quality of Life in Patients with Essential Hypertension" in 2001. He was specialized in General Practice/Family Medicine and completed his residency in 2002. He was assigned the administration and management of the Health Centre of Vyronas and served as chairman and Head of department since 2004. He has organized and participated in various educational programmes, medical study groups, clinical trials and activities of Health promotion and Prevention in Primary Care.

**Dr. Alevizos G. Alevizos MD**, was born in Kalamata (Greece) in 1973. He graduated from the medical school of Athens Kapodistrian State University in 2000. He was specialized in General Practice/Family Medicine and completed his residency in 2006. He is Head and responsible of the medical department of the Faculty of Physical Education and Sport Science, National Kapodestrian University of Athens and an active international member of the American Academy of Family Physicians. As a member of the Vyronas workgroup, he has served as a research associate and a clinical and epidemiological trialist and scientific consultant of the Health Centre of Vyronas since 2004. He has a broad experience in Primary Care needs, in bioinformatics and has conducted many studies and clinical trials on patient compliance and patient satisfaction.

### **Partner 11: (Participant) Milton Keynes Council (MKC)**

Milton Keynes Council (MKC) is a Unitary Local Government Authority in the UK offering a full range of local authority services. The Council has around 2400 directly employed staff and a strategic partnering relationship with Mouchel delivering around 18 service areas via an estimated 650 further posts. MKC is a recognized leader and innovator in the fields of telehealth and e-inclusion. The Council is a UK champion (for the South East of England) on Digital Inclusion and a founding member of the DC10 Plus group, which is spearheading digital inclusion initiatives across the UK and joining up with European partners. (The DC 10 Plus group was originally formed from the 10 National Finalists in the UK Digital Challenge competition). In December 2008 the success of the Council's work in these areas was recognized by the EU and the Council became a winner in the EU e-inclusion awards competition (in the Cultural Diversity Category). MKC is closely partnered with the MK NHS Primary Care trust and is creating new organizational structures and service delivery approaches so as to 'join up' and improve the efficiency and cost effectiveness of social care and health service delivery in our area. MKC professional social work and IT staffs know that to improve digital inclusion and provide better support for sustained independent living they have to overcome many barriers and different problems. The MKC philosophy and approach works from this understanding and has prompted us to provide a broad range of practical measures ranging from Telehealth devices and tele-monitoring sensors



provided to vulnerable MK residents (particularly those suffering from Chronic Obstructive Pulmonary Diseases - COPD), through initiatives to loan out personal computers, laptops and other technology devices to the creation of new digital service centres and the formation of innovative business relationships that enables leading software to be installed onto the technology provided. Moreover, MKC are actively tackling the broader societal context by promoting the introduction of new communications technologies (WiMAX wireless communications) into Milton Keynes and elsewhere in the UK and we are particularly working with our various communities reaching those of differing cultures and faiths so as to create a truly inclusive 'atmosphere'. We view the problems and the people we are helping in a holistic and well rounded way, recognizing that they must have a range of support mechanisms, direct physical access to various types of information technologies (hardware, software and services) and a well developed societal context where for example there are good communications networks and effective interaction between the public, voluntary and private sectors.

The Council is continuing to build upon its successful projects and service delivery activities providing telehealth and e-inclusion services. It is experienced in partnership delivery working both within the UK and with European partners. Currently MKC has become a partner in the EU funded Common Well project (involving organisations in Spain, Germany and the Netherlands) and within that project is leading on the development of best practice and ethical approaches in relation to technology enabled service delivery in the fields of social care and independent living. Also the Council has very innovatively created a small company called Connect MK Ltd (wholly owned by the Council) as a vehicle for delivering e-inclusion initiatives and has joined together with various private sector, voluntary sector and academic sector organisations to create the Connect MK Living Lab – which is now a part of the EU supported European Network of Living Labs (ENoLL). Resources drawn from these organisations follow.

### **Human Resources Assigned to the project**

**Steven Jewell** Head of IT and e-Government, Milton Keynes Council, and Chief Executive, ConnectMK Limited will exercise overall project oversight and be the sponsor for the Milton Keynes participant work. Steven will form and coordinate the team comprising of a mixture of Health and IT professionals that will deliver the UK work packages and trials. He will exercise overall budgetary control and resource planning and will liaise closely with GSI resources.

Steven has a BA (Hons) in Business Studies from Middlesex University and an NVQ5 (MCI endorsed) in Management from Henley Management College. Steven has been at Milton Keynes Council since October 2001. Prior to this, he was a senior I.T manager at London Borough of Barnet for 10 years and has worked as an I.T consultant for 5 years dealing with a mixture of public and private sector clients. Steven has a wide-ranging technical and commercial interest in many I.T technologies and holds Microsoft's MCSE. He has led for Milton Keynes Council in the development of its e-inclusion vision and its new e-inclusion services and has been particularly instrumental in generating inward investment to MK for the provision of new WiMAX wireless broadband services to improve digital inclusion. Steven has authored various professional articles.

**Gordon Davies** Chief Executive Officer, Adepteq Ltd is a successful private entrepreneur with over 20 years experience in technology innovation and delivery. Original Intel advisory board member, channel and technology consultant to a number of leading UK companies including FTSE members and local Government. As part of his advisory role with Milton Keynes Council during their Digital Challenge bid, he envisaged the creation of a social licensing program with Microsoft and helped this become a reality. Gordon is an experienced software developer and project manager and will be contracted by MK Council to coordinate the consulting resources from Adepteq to facilitate the MK participant project delivery and project administration – dealing with project progress monitoring, risk assessment and countermeasures and project documentation.