Annexes - Impact of EU-Funded Research and Innovation on ICT for Active and Health Ageing

The Top 25 Most Influential Projects

ANNEXES FINAL REPORT

A study prepared for the European Commission DG Communications Networks, Content & Technology by:

OUTSIGHT

Think out of the Box
This study was carried out for the European Commission by

Authors:
Jon Matthew Switters – Outsight
Laia Pujol Priego - Outsight

Internal identification
Contract number: 30-CE-0835601/00-30
SMART number: 2016/0072

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Catalogue number: KK-05-17-235-EN-N
doi:10.2759/99235
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--- Cut off point to pass through to the In-Depth Analysis Phase
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<td>I-DONT-FALL</td>
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</table>

**Key:**

Impact Area 1: Improved quality of life
Impact Area 2: Increased efficiency of health and long-term care
Impact Area 3: Market growth and expansion of the EU industry
Impact Area 4: Dissemination and engagement opportunities
Impact Area 5: Project sustainability
T1: Sub-total for Expert 1
T2: Sub-total for Expert 2
PA: Preliminary Analysis Score
--- : Cut off point for top 25 projects
Communicating Key results achieved from EU funded research and innovation on ICT for Active and Healthy Ageing under Framework Programme 7, the Competitiveness and Innovation Programme and Horizon 2020

Nº SMART 2016/0072

D2.2: FINAL INCEPTION STUDY REPORT
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1. Executive Summary

As proposed in the original tender prepared by Outsight, A2 will provide a detailed proposal for the methodology to be used during the analysis and identification of the 25 projects that will be selected in agreement with the European Commission. It will also include a proposal for the methodology to carry out the summary of the main lessons learned and recommendations for the future concerning research and innovation for policy makers.

Outsight will highlight the criteria that will be used to select the 25 projects that are most relevant in terms of EU funded research and innovation on ICT for Active and Healthy Ageing under Framework Programme 7, the Competitiveness and Innovation Programme and Horizon 2020.

The selection criteria that will be used in the methodology will focus on the three main areas of impact that were mentioned in the Invitation to Negotiate “Communicating Key results achieved from EU funded research and innovation on ICT for Active and Healthy Ageing under Framework Programme 7, the Competitiveness and Innovation Programme and Horizon 2020”:

1. Improved quality of life.
2. Increased efficiency of health and long-term care.
3. Market growth and expansion of the EU industry.

The draft version of this document was made available to the EC Services prior to the inception meeting which was held on the 4th of May 2017. The comments and conclusions from this meeting were added to the draft report and the result is this document, the D2.2 Final Inception report and 2.3 Inception Meeting Minutes. The methodology presented in this deliverable will be structured in 4 main sections:

- **Establishing a knowledge base for the study**
  - Identification of project knowledge base/ Selection of projects to be used for analysis

- **Methodology for the Preliminary Analysis**
  - Analysis of projects / Selection of 40 most suitable projects for the In-depth analysis process

- **Methodology for the In-depth Analysis**
  - Analysis of 40 projects (selected in Preliminary Analysis phase) / Selection of the 25 most relevant projects

- **Methodology for the Lessons learned analysis**
  - Methodology used to analyse the main lessons learnt in terms of state of the art and recommendations for further research and innovation issues for policy makers.
2. Establishing a Knowledge Base for the Study

Following the delivery of D1.1 Project Work Plan and Risk Management Plan, we are currently in the second step of the overall architecture of work. However, before we can proceed to develop the methodology that will be used for the Preliminary and In-depth Analysis of the projects, we must first determine a sound Knowledge Base for the study.

*Figure 1 Progress - Overall Architecture of Work*
a. Initial database of projects

The project team used, COmmunity Research and Development Information Service the CORDIS to identify all of the EU funded research and innovation on ICT for Active and Healthy Ageing under Framework Programme 7, the Competitiveness and Innovation Programme and Horizon 2020.

We used the “Projects & Results” area of the online database (http://cordis.europa.eu/projects/home_en.html):

In the free text field we used the “Ageing” and selected the three appropriate programmes (as described in the invitation to negotiate):
In total, 421 results were found using these search criteria over the three programmes: Framework Programme 7 (212 projects), the Competitiveness and Innovation Programme (46 projects) and Horizon 2020 (163 projects).

b. Selection criteria used in the Invitation to negotiate

In order to reduce the amount of projects for the Preliminary analysis, it was essential to ensure that the results corresponded to the object of the study. To do this, the criteria specified in the “Our understanding of the objectives” section of Outsight’s technical offer for this tender was used.

Looking at the general objectives of the invitation to negotiate once again, we can divide it into five main points:

“Identify and Consolidate the key findings from the Research and Innovation Projects addressing ICT for Active and Healthy Ageing funded under FP7, the Competitiveness and Innovation Programme (CIP) and the HORIZON 2020 Research and Innovation Programmes.”

1. **Identify and consolidate:** This will be clarified later on in this document through the specific methodology that will be used to select the projects from which to withdraw the key findings. In order to do this, a two-tier selection process will be implemented using a Preliminary Analysis Phase and an In-depth Analysis Phase.

2. **Key findings:** The impact that the project has had within the three areas of impact mentioned above through studying the project’s deliverables, final reports and review reports. Through the analysis of these key findings, the main lessons learned from the projects and recommendations for policy makers will be identified.

3. **ICT for Active and Healthy Ageing:** We understand that only projects that focus on the use of information and communication technologies for Active and Healthy Ageing will be included. Other projects focused solely on the topic of ageing or ICT, such as those focused on understanding why ageing occurs (a strong feature of the FP7 Health programme) will not be included.

4. **FP7, the Competitiveness and Innovation Programme (CIP) and the HORIZON 2020 Research and Innovation Programmes:** Any other calls that may include projects related to active and healthy ageing (E.g. those from the Ambient Assisted Living programme) will not be taken into account.

Furthermore, the invitation to negotiate goes on to state:

“The study methodology is expected to be based on analysis of deliverables, final reports and review reports from at least 50 projects with successful
completion or close to a completion made available to the contractor by the European Commission.”

This additional information calls for a 5th point:

5. **Projects that have been completed or are close to completion:** Those projects with a completion date later than the end of the first trimester of 2018 (E.g. 31st of March 2018) will not be taken into account in this study, due to the difficulty of effectively evaluating the impact of a project that has only been partially executed.

   **c. Application of the selection criteria used in the Invitation to negotiate**

Using the total list of 421 projects, the criteria specified above were used to determine the initial knowledge base. Examples of excluded projects for each selection criteria can be seen below:

- **Selection criteria 3. ICT for Active and Healthy Ageing:** We understand that only projects that focus on the use of information and communication technologies for Active and Healthy Ageing will be included. Other projects focused solely on the topic of ageing or ICT, such as those focused on understanding why ageing occurs (a strong feature of the FP7 Health programme) will not be included.


- **Selection criteria 4. FP7, the Competitiveness and Innovation Programme (CIP) and the HORIZON 2020 Research and Innovation Programmes:** Any other calls that may include projects related to active and healthy ageing (E.g. those from the Ambient Assisted Living programme) will not be taken into account.

  Example out of scope project: *Projects were searched using the three identified programmes and so this search criteria was not implemented.*

- **Selection criteria 5. Projects that have been completed or are close to completion:** Those projects with a completion date later than the end of the first trimester of 2018 will not be taken into
account in this study, due to the difficulty of effectively evaluating the impact of a project that has only been partially executed.

Example out of scope project: MINDMAP, Promoting mental wellbeing in the ageing urban population: Determinants, policies and interventions in European cities, H2020-EU.3.1.1. Programme, End date 31/12/2019

d. Feedback from the Inception Meeting

During the Inception Meeting that was held on the 4th of May 2017, The European Commission Services made the following comments on the criteria used to establish the initial knowledge base to begin the study:

The study team should:
- take into consideration not only Research and Innovation action projects, but also Coordination and Support Actions (CSAs).
- remove any projects that do not belong to the Directorate-General for Communications Networks, Content and Technology, UNIT: Digital Society, Trust and Security.
- cross-check initial knowledge base with previous “best practice” selections carried out in previous publications such as:
  - Research and Innovation in the field of ICT for Health, Wellbeing & Ageing Well: an overview

e. Definition of projects in the scope of the study

Through the application of these search criteria, the initial database of 421 projects was reduced to a total of 58 projects distributed over the three programmes in the following way:
- **Framework Programme 7**: 28 projects
- **Competitiveness and Innovation Programme**: 22 projects
- **Horizon 2020**: 8 projects
Once we have established a sound knowledge base for the study, we can now proceed to define the selection methodology that will be used during both the preliminary analysis phase and the In-depth analysis phase.

The list of selected projects can be found in Annex I. The full list of projects that were considered to be out of scope can be found in Annex II of this report.
3. Methodology for Preliminary Analysis

In this section, we detail the steps that will be taken to carry out a preliminary analysis of the 58 projects that have been identified as part of the knowledge study base. This part of the analysis aims to study the maximum amount of projects possible to ensure that the 50 most suitable projects move on to the In-depth analysis phase.

We aim to extend the number of projects that are analysed within this assignment (Original amount specified as at least 50). Once the information for the projects from the three different programmes has been made available to us, we plan to carry out a preliminary analysis of 58 research and innovation projects. We feel that it is important to extend the analysis to as many projects as possible to as to maximise the scope of the work being carried out and therefore the validity and quality of the results that are generated.

The main objective of the Preliminary Analysis Phase is to identify those projects with sufficient potential (in terms of impact) to progress through to the in-depth analysis phase. Due to the sheer number of projects that will pass through this first phase, an efficient system will be developed.

a. Gathering documentation to carry out preliminary analysis

Firstly, it is essential that the study team has access to the appropriate documentation for the 60 projects comprising the knowledge study base. The study team requested the following information for the 60 projects:

- Final Review Report

With this document for each of the projects, the study team will be able to carry out the Preliminary analysis. This information was provided to the study team on the 16th of May 2017

b. Preliminary analysis criteria

The selection criteria that will be used for this preliminary analysis will focus on readily available information to maintain an efficient evaluation of the main results and potential impact of the project.

During this phase, a quantitative and qualitative approach will be followed. An expert in projects related to active and healthy ageing will carry out an analysis of the 60 projects. A project evaluation sheet will be developed for each of the projects to ensure that the process is documented.

This evaluation sheet will contain the following sections. A scoring system of 1-4 will be used to carry out an overview of the projects according to the different criteria, focusing on the impact areas as stated in the Invitation to
negotiate. The system that will be used for those criteria that will be scored will be the following:

1 – Excellent  
2 – Good  
3 – Acceptable  
4 – Unsatisfactory

This is the scoring system used for the periodic and final reviews of the projects financed under the three programmes subject to study.

*Table 1 Preliminary Analysis Evaluation Sheet*

<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
<th></th>
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<tr>
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<td>Project Name</td>
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</tr>
<tr>
<td>Programme</td>
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<td>Period</td>
<td>Informative</td>
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<td>Informative</td>
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<tr>
<td>Project subject</td>
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<tr>
<td>(to help categorise the</td>
<td>□ Robotics for Ageing Well</td>
</tr>
<tr>
<td>results for the final</td>
<td>□ Innovative solutions for independent living</td>
</tr>
<tr>
<td>publication)</td>
<td>□ Innovating elderly care</td>
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<tr>
<td></td>
<td>□ Better connected through integrated care</td>
</tr>
<tr>
<td></td>
<td>□ Frailty, early detection and intervention</td>
</tr>
<tr>
<td></td>
<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
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<table>
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<tr>
<th>BRIEF DESCRIPTION</th>
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<th>OVERALL PROJECT ASSESSMENT</th>
<th>Score 1-4</th>
</tr>
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<tbody>
<tr>
<td>Overall assessment</td>
<td>Score 1-4</td>
</tr>
</tbody>
</table>

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.
### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>Score 1-4</th>
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<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
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</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>Score 1-4</th>
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</thead>
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<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
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</table>

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<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>Final Score out of 12</th>
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</thead>
</table>

### c. Defining the Top 50 projects

Following the analysis of the 60 projects, each of the projects will have a score out of 12. Using these scores, the top 50 projects will be selected to proceed to the In-depth evaluation stage. In order to achieve a representative sample over the three programmes involved in the study, at least 10 projects from each programme (5 in the case of H2020) will be included in the top 50 projects to undertake the In-depth analysis. The remaining 20 projects will be comprised of the next projects in terms of their score out of 12.

The remaining 25 projects that did not pass this Preliminary Analysis Phase will undergo a secondary review. The aim of this secondary review is to draw out the main lessons learned and recommendations for policy makers for the future research and innovation agenda in ICT for Active and Healthy Ageing.
Figure 2 Preliminary Analysis Process
4. Methodology for the In-depth analysis

In this phase of the project we aim to dig deeper into the results of the projects and highlight those that are most relevant in terms of impact in the three areas that are established in the Invitation to Contract. The main objective of the in-depth analysis phase is to identify the top 25 most relevant projects which have had the most impact.

Here, we will build on the work carried out during the preliminary analysis phase. However, we will analyse the impact of the projects more deeply taking into account the following documentation:

- Final Review Report
- Project deliverables
- Project website

a. Research Vs. Innovation projects

The results of research and innovation projects produce very different impacts. In the Invitation to contract, it states that the impact of both of these types of projects should be measured to select the top 25 projects from all three selected programmes.

It is clear that the three programmes to be addressed in this assignment have very different objectives. The 7 FP aims to fund projects that are more focused on the research side of ICT for AHA whilst the CIP (ICT-PSP) programme aims to generate more close to market solutions (innovation). The more recent HORIZON 2020 has a dual function, combining these two objectives and funding both types of project (Research and Innovation and Innovation projects). Figure 3 summarises these conclusions.

*Figure 3 Research Vs. Innovation Source: Own elaboration.*

In general, there are two types of analysis when looking at impact: An Analysis that is carried out for research projects and an Analysis that is carried out for innovation projects. The large majority of the analysis carried out up until now have been focused on the research side of things, E.g. To what extent has the research had an impact on the community and not on society in general? Examples of these can be seen in the assessment of
European Joint Programming Initiatives\(^1\) or in the UK include with the national research assessments conducted in the UK within the Research Evaluation Framework\(^2\).

Things differ somewhat when carrying out an analysis of an innovation project where the focus tends to be on pilot activities, demonstration sites, user studies, awareness studies and in general activities that prepare for the commercial launch of a product or process. These differences must be taken into account when defining the evaluation criteria to be used and implemented during the selection process and when comparing projects from different programmes).

b. A focus on Impact

The methodology to carry out this in-depth analysis will use EU’s Triple win strategy as an overarching structure to measure the impact of the projects. The Target outcomes for ICT projects related to active and healthy ageing from the different work programmes of the 7\(^{th}\) Framework Programmes, CIP Programme and the Horizon 2020\(^2\) programme will be used to help analyses the different projects within the overarching areas of impact. These target outcomes have been previously identified in Section 2 of the Technical Offer presented by Outsight in August 2016. Figure 4 summarises the different target outcomes and the overarching areas of impact that will be used during this in-depth study.

---


In addition to the structure shown in Figure 4, we will also provide supporting evidence (where available) on how the projects contribute to the thematic areas for indicators proposed in the MAFEIP Platform\(^3\) and that are visualised through the Policy Dashboard on EIPonAHA\(^4\).

The MAFEIP "Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing" was initially developed in response to the EIPonAHA specific monitoring needs. Currently, it can be considered and used as a support to evidence-based decision-making process for all institutions and users in the health and care sector. It aims to estimate the health and economic outcomes of a large variety of social and technological innovations in the health and care sector relative to current care. The policy dashboard aims to provide a visual, intuitive and integrated overview of the data underlying EIPonAHA, mainly through an agile geo-referentiation of the data. One of its focuses are the contextual factors from secondary data sources, including open data and indicators about all the key aspect of AHA, articulated alongside the triple win and covering the potential impact of the Actions Groups involved in the European Innovation Partnership for Active and healthy Ageing:

---

\(^3\) [http://mafeip.eu/about_study/]

\(^4\) [http://www.linkedpolicies.eu/policymaps/eiponaha/]
A1: Prescription and adherence to treatment
A2: Personalised health management: Falls prevention
A3: Prevention of functional decline and frailty
C2: Interoperable independent living solutions
D4: Age friendly buildings, cities and environments

The objective of using the thematic areas of these indicators is not to provide detailed statistical information generated by the project, but to present (where possible) any supporting evidence that the project has contributed to the development of the indicator, therefore highlighting the impact of said project in the EU’s Triple win Strategy.

The thematic areas of these indicators are summarised in Table 2 below.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Thematic areas of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>• Population that perceive their health as good or very good</td>
</tr>
<tr>
<td></td>
<td>• Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td></td>
<td>• Healthy life years at birth</td>
</tr>
<tr>
<td>Sustainability</td>
<td>• Available beds in hospitals per hundred thousand inhabitants</td>
</tr>
<tr>
<td></td>
<td>• Hospital discharges per 100 000 inhabitants</td>
</tr>
<tr>
<td></td>
<td>• In-patient average length of stays</td>
</tr>
<tr>
<td>Innovation</td>
<td>• Intramural R&amp;D expenditure</td>
</tr>
<tr>
<td></td>
<td>• Employment of R&amp;D personnel and researchers in FTE</td>
</tr>
</tbody>
</table>

**d. In-depth Analysis Methodology**

During this phase, a qualitative approach will be followed. Two experts in projects related to active and healthy ageing will carry out a separate analysis of the 50 projects. A project evaluation sheet will be developed for each of the projects to ensure that the process is documented. Each expert will assess the impact of the project in the different areas as specified in the In-depth evaluation sheet (see below). Evidence will be provided to support the scoring in each section.

This evaluation sheet will contain the followings sections. A scoring system of 1-4 will be used to carry out an overview of the projects according to the different criteria, focussing on the impact areas as stated in the Invitation to negotiate. The system that will be used for those criteria that will be scored will be the following:

1 – Excellent
2 – Good
3 – Acceptable
4 – Unsatisfactory
This is the scoring system used for the periodic and final reviews of the projects financed under the three programmes subject to study.

Table 2 In-depth Analysis Evaluation Sheet

<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
<th>Informative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronym</td>
<td>Informative</td>
</tr>
<tr>
<td>Project Name</td>
<td>Informative</td>
</tr>
<tr>
<td>Programme</td>
<td>Informative</td>
</tr>
<tr>
<td>Period</td>
<td>Informative</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>Informative</td>
</tr>
<tr>
<td>Project type</td>
<td>Informative</td>
</tr>
<tr>
<td>Project subject</td>
<td>Informative</td>
</tr>
<tr>
<td>- Robotics for Ageing Well</td>
<td>Informative</td>
</tr>
<tr>
<td>- Innovative solutions for independent living</td>
<td>Informative</td>
</tr>
<tr>
<td>- Innovating elderly care</td>
<td>Informative</td>
</tr>
<tr>
<td>- Better connected through integrated care</td>
<td>Informative</td>
</tr>
<tr>
<td>- Frailty, early detection and intervention</td>
<td>Informative</td>
</tr>
<tr>
<td>- Fall Prevention</td>
<td>Informative</td>
</tr>
<tr>
<td>- Knowledge sharing and standardisation related to ageing well</td>
<td>Informative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>Informative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives of the project</td>
<td>Informative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:</td>
<td></td>
</tr>
</tbody>
</table>

Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>Score 1-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives, including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the reduction of admissions and days spent in care institutions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
<th>Informative (to be considered in the scoring (above))</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the 'MAFEIP Study’ and visualised through the Policy dashboard on EIPonAHA’</td>
<td></td>
</tr>
</tbody>
</table>

5 The programme objectives were detailed in Section 2.2 of our Technical Offer.
6 http://mafeip.eu/about_study/
### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

**Score 1-4**

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

**Informative (to be considered in the scoring (above))**

### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Score 1-4**

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

**Informative (to be considered in the scoring (above))**

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

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8 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
e. Defining the Top 25 projects

Following the evaluation and based on all of the evidence gathered, the two experts will make a recommendation as to whether the project should be proposed to form part of the top 25 projects or not. Each of the projects will have a score out of 32 (Preliminary analysis score + In-depth analysis score). The average of the scores from the two experts will be used to provide a final score for that individual project. The two experts will meet to compare results. An illustrative example of project scoring can be seen below:

**Project A**

<table>
<thead>
<tr>
<th>Preliminary analysis</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-depth analysis Expert 1</td>
<td>16</td>
</tr>
<tr>
<td>In-depth analysis Expert 2</td>
<td>18</td>
</tr>
</tbody>
</table>

**Average In-depth analysis score**: 17
Using these scores, the top 25 projects will be selected. In order to achieve a representative sample over the three programmes involved in the study, at least 5 projects from each programme will be included in the top 25 most relevant projects.

The remaining 25 projects that did not pass this In-depth Analysis Phase will undergo a secondary review. The aim of this secondary review is to draw out the main lessons learned and recommendations for policy makers for the future research and innovation agenda in ICT for Active and Healthy Ageing.

Figure 5 In-depth Analysis Process
5. Methodology for the Lessons Learnt analysis

In this section, we will define the methodology that will be used to provide the report on the main lessons learned based on the final review reports in terms of state of the art and recommendations for further research and innovation issues for policy makers. This part of the study goes hand in hand with the analysis (both preliminary and in-depth) that will carried out to identify top 25 most relevant projects in the impact areas that have been previously identified.

In order to provide a document that truly encompasses the main lessons learned from the three main programmes (Framework Programme 7, Competitiveness and Innovation Programme, Horizon 2020), it is essential that the Lessons learned and Recommendations are studied even from those projects that do not make the final. Often, the most interesting lessons learned and recommendations come from those projects that encounter problems or fail in some way or another.

a. Preliminary Analysis Phase

Following the preliminary analysis, the remaining 25 projects that did not pass this Phase (E.g. those projects that received the lowest score out of 25) will undergo a secondary review. The aim of this secondary review is to draw out the main lessons learned and recommendations for policy makers for the future research and innovation agenda in ICT for Active and Healthy Ageing. These conclusions will be included in a draft document that will be further developed during the In-depth analysis phase.

b. In-depth Analysis Phase

Following the In-depth analysis, the remaining 25 projects that did not pass this Phase will undergo a secondary review. The aim of this secondary review is to draw out the main lessons learned and recommendations for policy makers for the future research and innovation agenda in ICT for Active and Healthy Ageing. These conclusions will be added to the draft document that will be further developed during the In-depth analysis phase. Finally, a secondary review of the top 25 projects selected will also be carried, to ensure that we have covered all possible main lesson learnt and recommendations.
c. Pooling of main findings

Once the analysis phases have concluded, the information that has been gathered through both phases will be analysed to ensure that there are no contradictory lessons learnt or recommendations. The main lessons learnt and recommendations will be included in D5.1: Draft Report on key findings and recommendations for the future concerning research and innovation for policy makers, which will be shared with the European Commission Services.

d. Development of the final report

Finally, after having received the comments from the European Commission Services on D5.1: Draft Report on key findings and recommendations for the future concerning research and innovation for policy makers, a final version of the deliverable will be developed D5.2: Final Report on key findings and recommendations for the future concerning research and innovation for policy makers.
6. References

Publications

- Technical Review Reports for the 60 projects that comprise the initial knowledge base.

Websites

- https://ec.europa.eu/eip/ageing/home_en
- http://mafeip.eu/about_study/
### Annex V – Preliminary Analysis Evaluation Sheets (Rejected projects)

#### PRELIMINARY ANALYSIS EVALUATION SHEET

<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acronym</strong></td>
<td>CAALYX-MV</td>
</tr>
<tr>
<td><strong>Project Name</strong></td>
<td>Complete Ambient Assisted Living Experiment – Market Validation</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>02/2011 – 01/2014 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>1 955 000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>
| **Project subject (to help categorise the results for the final publication)** | □ Robotics for Ageing Well  
□ Innovating elderly care  
□ Better connected through integrated care  
□ Frailty, early detection and intervention  
□ Fall Prevention  
□ Knowledge sharing and standardisation related to ageing well |

<table>
<thead>
<tr>
<th><strong>BRIEF DESCRIPTION</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief description of the project</strong></td>
<td>The CAALYX-MV system consists in a wearable light device able to measure specific vital signs of the elder, as well as to detect falls and to communicate autonomously in real time with his/her caregiver in case of an emergency, wherever they are. The emergency information can be directed to the personal caretaker and/or to the 112 Emergency Service. The emergency information will provide the geographic position and health information of the elder in a sensible way for the caretaker or emergency service. The incorporation of largely non-intrusive sensors for fall detection and geo-positioning is expected to address many of the concerns of the elderly about adopting technology. The system will be tested and validated in three pilot sites (in Spain, Italy and the Netherlands), and will obtain reliable assessment by gathering real end users’ feedback.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OBJECTIVES</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives of the project</strong></td>
<td>The objective of Caalyx-MV is to widely validate an innovative and efficient ICT-based solution focused on improving the quality of life of the elderly. This is to be achieved through prolonging the time they can safely remain autonomous and independent at home through monitoring and controlling their social and health status and by providing them with tools and services to support their daily home activities in terms of comfort, security, energy efficiency and communication.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OVERALL PROJECT ASSESSMENT</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall assessment according to review documentation.</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Assessment according to main</strong></td>
<td>The project was suspended on 09/07/2012, and</td>
</tr>
</tbody>
</table>
The project was terminated on 28/11/2012 by the Commission due to the failure to provide ethical approvals during the suspension period. The final review on 18 February 2013 in Brussels aimed at evaluating delayed deliverables of the first reporting period and at clarifying the resources claimed (mainly personnel efforts per task) per partner for the relevant part (01/02/2012 to 09/07/2012) of the second reporting period.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>1</th>
<th>The project fails in providing relevant results and contributions that could positively impact on the European elderly population, because it fails in providing the pilots and market validation expected for Caalyx system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plans for the use and exploitation of results</td>
<td>1</td>
<td>N/S</td>
</tr>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 3 | |

1
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>CLEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Clinical Leading Environment for the Assessment and validation of Rehabilitation Protocols for home care</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>09/2008 – 02/2012 (42 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 740 000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- **Innovating elderly care**
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**

The CLEAR project proposes the implementation of e-rehabilitation services in 4 countries, with the ambition to scale it up after project completion and shown feasibility, to a European platform, likely to contribute substantially to the harmonization of e-health services in EU. The rationale behind the project is the HABILIS EUROPE concept, which aims at the establishment of a network of companies under a legal corporate entity, providing an expandable set of rehab-services across the whole EU, with significant potential to enhance the penetration of e-health services and optimization of healthcare resources.

## OBJECTIVES

**Objectives of the project**

The CLEAR project, based on technological mature applications developed mainly within the H-CAD (IST -V Framework) and e-Ten Hellodoc projects, will provide the platform for the development of “home treatment protocols”. These will be highly customizable by the healthcare professionals, who will be continuously involved in the system design and testing. The project plans to carry out 4 pilot tests in 4 countries (IT, ES, NL and PL) on home protocols and therapies developed on 4 types of pathologies usually affecting the elderly: neurological, orthopaedic, pneumonial disorders and chronic pain. The evaluation will be focused on the technical, organisational and legal feasibility of the service. Special attention will be paid to a systematic improvement and upgrade of the system based on the feedback of the users (both clinicians and patients).
**OVERALL PROJECT ASSESSMENT**

<table>
<thead>
<tr>
<th>Overall assessment according to review documentation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.</td>
</tr>
</tbody>
</table>

3

There is evidence of improvements of the status of the Spanish and the Polish pilot sites, compared to the situation faced in previous periods.

- The work on HTA is considered of high quality and very useful for the project.
- The work reported during the review, indicates some evidence of effective therapy delivery through the CLEAR approach. This is promising and supports the overall project goals.
- So far, the project has managed to involve sufficient number of users (patients, professionals etc) in order to support the project's case and provide some statistical data to support the project results.
- The project reported a continues update of the Habilis platform based on the usability testing finding. This is very important because the platform is growing along with the experience gained from usability testing.

The project lowights are:

- During the review the project presented an overview of the overall project exploitation plan. Although very well presented and prepared presentation, the exploitation vision has a central focus on local regions, while the project should enhance its offering towards a more global EU scope.
- During the review there were strong indications that the consortium does not have a homogeneous vision for the future. This might put in risk the future of the project results.

**OVERVIEW OF PROJECT IMPACT**

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.</td>
</tr>
</tbody>
</table>

3

The aim of the project is to provide an important contribution to the standardisation of tele-rehabilitation. A successful outcome of the clinical trial might indeed be a first step. However, there is differentiation that the project needs to address: the assessment of the therapy itself and the assessment of technology that supports the delivery of the therapy. The project needs to focus of the assessment of technology and perform the clinical tests accordingly. A lot of effort was made to statistically prove that the
intervention was better than conventional therapy. However statistical significance does not necessarily mean that a health care system should adopt it. The question here is in how far this significance has an impact on for example the re-integration in society.

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td>A business plan was available in the previous reporting period, though the final business plan will highly depend on the results of the clinical trial and the validation. The business structure that was presented during the review, was very interesting and very well designed, though for the time being too optimistic. The exploitation plans presented are more focused on regional exploitation rather than a broader scope. During the review it was evident that RCR intends to develop its own platform, however there is intention to integrate it in the Habilis platform. In general the partners do not present a strong overall exploitation focus and there is evidence of fragmented exploitation plans within the consortium, but this issue will be addressed in the forthcoming period and the result will be reported in the final report on exploitation. It was already mentioned in a former review, that the consortium needs to make a clear distinction between the therapy (content) and the way this is brought to the client (patient). There is analogy with the teaching and learning platforms, and the consortium may benefit by exploring how these platforms moved from the offline to the online process.</td>
</tr>
</tbody>
</table>

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 9 |
### General Project Information

<table>
<thead>
<tr>
<th>Acronym</th>
<th>CommonWell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Common Platform Services for Ageing Well in Europe CommonWell</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>10/2008 – 01/2012 (40 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 680 000</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>
| Project subject (to help categorise the results for the final publication) | □ Robotics for Ageing Well  
□ Innovative solutions for independent living  
□ Innovating elderly care  
X Better connected through integrated care  
□ Frailty, early detection and intervention  
□ Fall Prevention  
□ Knowledge sharing and standardisation related to ageing well |

### Brief Description

**Brief description of the project**

12 partners are cooperating in the CommonWell project, aiming to deliver ICT-enabled health and social care services in four Member States of the European Union. The integrated services are to support the effective management of chronic disease, and to address issues which affect independence, such as reduced agility, vision or hearing, in order to significantly improve the quality of life for older people and their families.

A total of 400 users across four locations in Europe will receive the newly integrated services for at least twelve months. The results of evaluating the pilot operation will be used to extend service provision and promote the wider uptake of this model of care across Europe.

### Objectives

**Objectives of the project**

The project will integrate and evaluate ICT-enabled healthcare and social care services capable of significantly improving the quality of life of older people and their families. The CommonWell service integrates on common open platforms services previously provided by multiple organisations on separate proprietary platforms. Owners and providers of the service will be Local Authorities, public, charity and not-for-profit social care and healthcare service providers in EU regions. The service infrastructure will be implemented and maintained by Europe’s leading provider of home service platforms, Tunstall, supported by new entrant into European eHealth provision, HomMed. While meeting the needs of older people and public policy objectives, these organisations have the capability to build and sustain service infrastructure across Europe.

### Overall Project Assessment

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project.

2

In summary, the highlights of the project include:
The consortium has managed to perform the evaluation of the system at all four pilot sites. Launching a project on ICT in support of the integration of social care with healthcare was challenging and the project has achieved this, in particular with the pilots of Milton Keynes and of Veldhoven. The pilots of Bielefeld and Andalucía, although with less impressive achievements, have also provided useful experience about the issues at stake.

- Despite limitations on particular pilot sites and the overall EU applicability of the selected approach, project has successfully achieved an acceptable level of the overall goal.
- In the case of Milton Keynes, the project has achieved full integration of social care with healthcare. This pilot site constitutes a best practice example of the project.

In summary, the lowlights of the project include:

- The indicator of 100 users per pilot has not been achieved in the case of the pilots of Veldhoven and Milton Keynes, mainly due to drop off. However, with respect to the pilot of Milton Keynes this has not limited the outcome from the evaluation process on those sites.
- As reported during the review, during the evaluation there has been weak cooperation of health sector in one of the pilot sites (Bielefeld), which did not enable in depth evaluation of the integrated services for this pilot site. It is acknowledged that this was unexpected at the beginning of the project and despite the project extension it has not been possible to address this issue.
- Although useful information has been extracted and the overall lessons learnt are valuable, and despite the fact that the overall evaluation was professional, there have been inconsistencies between the evaluations performed at each pilot site, mainly due to particularities at specific sites.

OVERVIEW OF PROJECT IMPACT

| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. |
| 2 |

The key outcome point that emerged from the project, is that the social care entities are more willing to enter integration compared to the their health care counterparts. This finding has been also supported by the CBA performed by the project, which provides the reasons for this differentiation between social care and health care decision makers. Furthermore, the CBA...
provides some kind of documentation (although limited), based on which the overall benefit for the community is evident. However, it is quite a difficult task to bring decision makers into discussion and convince them to convey this message of common benefit to their top management structure (at regional or federal level), mainly because in several cases these entities face conflicting budgetary issues. The most convincing method is that of presenting to top decision makers the best practice example achieved in Milton Keynes.

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 6 |

The exploitation plans as described in the related deliverable are rather generic and do not present specific focus. During the review it was reported that exploitation activities are already in place. During the review actual and tangible exploitation activities have been reported at least by the main industrial partner of the consortium. Since this is the completion of the project, it is expected that at least the corresponding deliverable is updated with the latest exploitation results.
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>CompanionABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Integrated Cognitive Assistive and Domotic Companion Robotic Systems for Ability and Security</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>FP7</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>01/2008 – 06/2012 (54 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>7,799,997</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
<td>X Robotics for Ageing Well</td>
</tr>
<tr>
<td></td>
<td>□ Innovative solutions for independent living</td>
</tr>
<tr>
<td></td>
<td>□ Innovating elderly care</td>
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<tr>
<td></td>
<td>□ Better connected through integrated care</td>
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<tr>
<td></td>
<td>□ Frailty, early detection and intervention</td>
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<tr>
<td></td>
<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

## BRIEF DESCRIPTION

**Brief description of the project**
CompanionAble addresses the issues of social inclusion and homecare of persons suffering from chronic cognitive disabilities prevalent among the elderly, a rapidly increasing population group. Those people need support of carers and are at risk of social exclusion, yet this problem not well addressed by ICT technology, but would lead to a social and economical pressure for staying at home as long as possible.

## OBJECTIVES

**Objectives of the project**
The main unique selling point of the CompanionAble project lies in the synergetic combination of the strengths of a mobile robotic companion with the advantages of a stationary smart home, since neither of those approaches alone can accomplish the demanding tasks to be solved. Positive effects of both individual solutions shall be combined to demonstrate how the synergies between a stationary smart home solution and an embodied mobile robot companion can make the care and the care person's interaction with her assistive system significantly better.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

2

The project objectives have been largely achieved, albeit at a lower level than expected. The technical difficulties which the project experienced throughout its duration meant that it had to modify some of its plans (modifications which were endorsed at the various successive reviews, including the interim reviews called for to minimize risks), and in the end a six-months extension was required in order to be able to finish the work and carry out some real user trials.
with the latest robot prototype in an intelligent home setting. However only 6 elderly people were involved (including some MCD patients), but no such trials were conducted at the real home of some users (as had been planned in the DoW), with the exception of one trial conducted with the previous release of the prototype. Progress was made on specific technical fields (e.g. 2D & 3D environment perception, obstacle avoidance and trajectory planning, robot controller etc.) that in the specific application domain is considered to contribute to the state of the art in the field.

**OVERVIEW OF PROJECT IMPACT**

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>The project will lay grounds for future work in the area of AAL and robotics. Good but not breakthrough impact may be expected mainly in terms of technical and possibly commercial aspects. The social impact via innovative solutions in persons’ own homes has not been given sufficient attention.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td>Plans are appropriate. The consortium demonstrated a clear commitment towards dissemination although scientific publications in referred journals have received less attention. dissemination &amp; community integration The theoretical approach to the business plan is well suited to the project. The Business Plan Propositions correspond to the general needs but it is unclear how far the CompanionAble project has gone in ensuring stability, usability, and feasibility, and how far from the market are products/services. The consortium has identified difficulties in exploiting the integrated CompanionAble system and has taken some steps to advance possible marketing strategies. For the moment, however, exploitation by different partners of some interesting components or services developed during the project, which are parts of the CompanionAble solution, seem to be a more realistic immediate option to be pursued. In view of exploitation, there is considerable room for personalization which partners could pursue in the future.</td>
</tr>
</tbody>
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**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE** 6
**GENERAL PROJECT INFORMATION**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>CONFIDENCE</th>
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<tr>
<td>Project Name</td>
<td>Ubiquitous Care System to Support Independent Living</td>
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<tr>
<td>Programme</td>
<td>FP7</td>
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<tr>
<td>Period</td>
<td>02/2008 – 08/2011 (42 months)</td>
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<tr>
<td>EU Funding contribution</td>
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<tr>
<td>Project type</td>
<td>Collaborative Project</td>
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</table>

<table>
<thead>
<tr>
<th>Project subject (to help categorise the results for the final publication)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Robotics for Ageing Well</td>
</tr>
<tr>
<td>☑ Innovative solutions for independent living</td>
</tr>
<tr>
<td>☐ Innovating elderly care</td>
</tr>
<tr>
<td>☐ Better connected through integrated care</td>
</tr>
<tr>
<td>☐ Frailty, early detection and intervention</td>
</tr>
<tr>
<td>☐ Fall Prevention</td>
</tr>
<tr>
<td>☐ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

**BRIEF DESCRIPTION**

**Brief description of the project**

The principal output of CONFIDENCE is a prototype of an innovative alarm system for fall detection and prevention, targeting elderly users living independently at home. The CONFIDENCE system consists of four subsystems: localisation subsystem, reconstruction subsystem, interpretation subsystem and system interface subsystem.

**OBJECTIVES**

**Objectives of the project**

The main objective CONFIDENCE was the development and integration of innovative technologies to develop a system helping to detect and to prevent falls. The focus of the project was on fall accidents related to a health problem in elderly people. The project had clear intentions to build a commercially viable system and to exploit the results of the project; however substantial further RTD work is necessary for the commercialisation of the prototype.

**OVERALL PROJECT ASSESSMENT**

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

2 The consortium was able to complete the project in accordance to the last version of the workplan and extended time schedule. The reconstruction and interpretation subsystem is considered to be the main achievement of the CONFIDENCE project. This subsystem is able to detect falls and other abnormal situations using position data of some tags. This is an added value to the Ubisense system used in the project. The original objective to build a commercially viable system for the detection of falls within the elderly group has not been achieved. Substantial further RTD work is necessary for the commercialisation of the prototype.
Overall the project was not able to develop a system at affordable costs for users or public purchasers. The prototype system was validated in WP9; however, this was done with a very limited number of users and not in a real user home environment, but in a rather controllable residential setting. In fact, only 2 users were involved in the validation of the final version of the prototype. It was not possible to make comparisons to existing systems on the market. Requests in that sense to other manufacturers/distributors were not answered (contact was made but there was no interest and direct response from these competitors).

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT</th>
</tr>
</thead>
</table>

**Scientific, technical, commercial, social or environmental impact related to the AHA Triple win**

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

---

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

---

2

The project was not successful in developing a near to market product with real business and commercial potential. The project was strongly RTD oriented and it was after all not sufficiently user oriented as expected for a project within the FP7 e-Inclusion programme, which is specifically aiming at improving life conditions for people with special needs and elderly. The project had from the beginning strong ambitions, and it was rather technology oriented; the project has produced significant technical progress and a breakthrough in the 3rd period for the performance of the reconstruction and interpretation subsystem.

---

2

A substantial number of dissemination activities were initiated in the last period: e.g. promoting the project in newspapers, radio, web page, direct meetings, conferences, workshops, articles in journals and books. The development of a working prototype of the CONFIDENCE indoor system and demonstrating it are the main achievements for the project. However, plans for further developments and exploitation of the system or subsystems are vague.

Despite the honest assessment of business potential, the conclusion is unfortunately that the short-term business potential is low. The analysis of the financial (cost assessment) and business projections lead to the conclusion that a competitive system cannot be marketed. Conclusion: bringing to the market a novel system for fall detection was one of the essential objectives of the project, and this was not
achieved successfully. Future work in this direction might be promising. However, the consortium itself recognises that another 3 years would be necessary for further RTD to develop a marketable product/system. This seems to be a realistic approach. Negatively, the market on fall detection and prevention systems is changing very rapidly and competition is strong. Future exploitation of this project – the CONFIDENCE system or subsystems – is envisaged, but the plans are not sufficiently concrete.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 6 |
## PRELIMINARY ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>DREAMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>ELDeRly-friEndly Alarm handling and MonitorING</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>05/2008 – 06/2012 (48 months)</td>
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<tr>
<td>EU Funding contribution</td>
<td>2 769 996</td>
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<td>Project type</td>
<td>Pilot Action Type B</td>
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</table>

### Project subject (to help categorise the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

DREAMING intends to pilot new, economically sustainable home assistance and inclusion services able to extend the independent living of elderly citizens in their homes and break their loneliness. The system guarantees to elders health and safety monitoring and assistance in their homes through a privacy respecting and user-friendly technology (health and environmental sensors, TV based videoconferencing). Alarm and alerts are received and handled by a Contact Centre or by health and social professionals on duty, supported by a powerful DSS, which selects the most suitable action and possibly dispatch the appropriate resources (fire brigade, ambulance, GP on duty, nurse, social worker, etc.). The DREAMING solution will be piloted in Denmark, Estonia, Germany, Italy, Spain and Sweden.

### OBJECTIVES

The pilots are aimed at verifying the impact of the service on the quality of life of elderly people, their formal and informal caregivers and their relatives, on economic and clinical indicators, its financial sustainability and the satisfaction of users. This will help to refine the DREAMING business case in view of a large-scale deployment. DREAMING is based on state-of-the-art technologies which are available off the shelf. This allows a fast set-up of the pilot sites and enables trials long enough (30 months) to gather sufficient experimental data to strengthen the business case and plan the subsequent deployment phase.

### OVERALL PROJECT ASSESSMENT

The project has been a success in that all countries have implemented much of the technology and all have delivered results. The project is also likely to be the first to report the results of an RCT for such a complex intervention. The project made substantial progress towards...
finalizing its goals. It has demonstrated and highlighted crucial issues that need to be addressed to achieve full impact in a challenging domain. These points were demonstrated throughout the various deliverables. In order to be useful they need to be available in a 'lessons-learned' and guidelines document. The pilot trials are providing very interesting results. Since these results, i.e., the raw data are still being analysed, they cannot yet be conclusive in the statistical/technical sense of proving the effect of the treatment/intervention. The presentation of the currently available results is mostly from the point of view of the client/end-user, the results that are especially effective for achieving impact in the stakeholders environment are somewhat neglected.

The deliverables available for the review are well written, but they suffer from redundancy and are at a superficial level. In addition there are as yet no firm conclusions from the statistical analysis of the RCT, and there is still a significant lack of other deliverables so it will be a few months yet before the project can be considered completed. The deliverables of implementation guidelines and future deployment are particularly in need of significant additional work too, as neither currently addresses the key issues that someone implementing telehealth or telecare might want to learn from the project’s achievements. A final report documenting the whole project achievements and lessons learned is still to be produced.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>The results of this project, when available, should give a significant boost to the economic attractiveness and deployability of telehealth and telecare. There are few good RCTs where care has been taken to ensure that the technology is properly deployed. It is therefore extremely important that the result, implementation guidelines, lessons learned and deployment plan are publicised as soon as possible. As mentioned at previous reviews, the consortium must still find the appropriate mechanisms to transfer the knowledge to the world if they want to reach the expected impact and really believe in further deployments. The consortium plans to present the result in scientific papers, arguing that usually it has an impact on decision makers. Partners also plan to publish a book, however no sufficient details were provided regarding the...</td>
</tr>
</tbody>
</table>
objectives, the content and the target of such a publication. Before putting effort on this, it is recommended that they focus on the writing of a convincing deployment plan and final report, including lessons learnt and guidelines for future deployments.

| Plans for the use and exploitation of results | 1 |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. | No – they need significantly more work, as covered in the recommendations, above. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 5 |
## PRELIMINARY ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>ENRICHME</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Enabling Robot and assisted living environment for Independent Care and Health Monitoring of the Elderly</td>
</tr>
<tr>
<td>Programme</td>
<td>H2020</td>
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<td>Period</td>
<td>03/2015 – 02/2018 (36 months)</td>
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<td>EU Funding contribution</td>
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<td>Project type</td>
<td>Research and Innovation Action</td>
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### Project subject (to help categorise the results for the final publication)

- [ ] Innovative solutions for independent living
- [x] Robotics for Ageing Well
- [ ] Innovating elderly care
- [ ] Better connected through integrated care
- [ ] Frailty, early detection and intervention
- [ ] Fall Prevention
- [ ] Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

ENRICHME tackles the progressive decline of cognitive capacity in the ageing population proposing an integrated platform for Ambient Assisted Living (AAL) with a mobile service robot for long-term human monitoring and interaction, which helps the elderly to remain independent and active for longer. The system will contribute and build on recent advances in mobile service robotics and AAL, exploiting new non-invasive techniques for physiological and activity monitoring, as well as adaptive Human-Robot Interaction (HRI), to provide services in support to mental fitness and social inclusion. The system will enable caregivers and medical staff to identify evolving trends of cognitive impairments and to detect immediate emergencies.

### OBJECTIVES

**Objectives of the project**

ENRICHME will use new qualitative models for rich yet compact representations of daily life activities. It will also identify humans in order to provide personalized services for elderly living with other persons. Novel context-aware HRI will provide tools for cognitive stimulation and social inclusion, which improve over time by learning from and adapting to the state of the user. A professional infrastructure of networked care will widen the social sphere of intervention in support of elderly and caregivers. ENRICHME includes multi-disciplinary research in geriatrics, gerontology and gerotechnology, enabling further studies in social sciences and neuropsychology.
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

2

Overall the project has achieved results in the work packages towards meeting the project objectives with different degrees of progress, but as also indicated by the periodic report, headway towards overall project objectives is substantially limited. This is in part due to the structure of the project plan, in which clear progress towards the majority of project objectives is only to be apparent after the completion of the project, but also due to shortcomings in interim objectives with “relevant” links to the main objectives. The project objectives for the review period have been only partially achieved, and the project as a whole has been making overall unsatisfactory progress in relation to the DoA due to the insufficient level of integration demonstrated during the review live demo as well as relevant Deliverables.

The Consortium has evidenced only partial achievement of their innovation plans. The work carried out follows the plan detailed in the DoA to deliver innovation to the markets only partially. Specifically, the Consortium has prototyped a robot and planned testing activities; but has fallen short of evidencing its innovations. The project has the potential to achieve some impact by involvement in media and academic dissemination activities. There are no journal publications at this state. One of the project’s key objectives is developing and evaluating the impact of new solutions in service robotics for assisted living environments to support older people with MCI. However, no evidence of achieving this objective and subsequently achieving this impact is provided.

A preliminary exploitation plan has been drafted although lacks specificity. No systematic approach to IP identification and protection was satisfactorily evidenced.

6
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
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<tr>
<td>Project Name</td>
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<td>Programme</td>
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| Project subject (to help categorise the results for the final publication) | □ Robotics for Ageing Well Innovative solutions for independent living  
□ Innovating elderly care  
□ Better connected through integrated care  
X Frailty, early detection and intervention  
□ Fall Prevention  
□ Knowledge sharing and standardisation related to ageing well |

## BRIEF DESCRIPTION

**Brief description of the project**  
GUIDE develops a toolbox of adaptive, multi-modal user interfaces (UIs) that target the accessibility requirements of elderly users in their home environment, making use of TV set-top boxes as processing and connectivity platform beside the common PC platform. With its software, hardware and documented knowledge, this toolbox will put developers of ICT applications in the position to easier implement truly accessible applications using the most recent user interface technologies with reduced development effort.

## OBJECTIVES

**Objectives of the project**  
The toolbox provides the technology of advanced multi-modal UI components as well as the adaptation mechanisms necessary to make UI components interoperable with legacy and novel applications, including the capability to self-adapt to user needs. Following a user-centred approach, user studies investigate optimum combinations of UIs and their adaptation in selected ICT applications for all relevant individual accessibility requirements. The scope of disabilities covers a majority of the ageing population that suffer mild visual, auditory, speech and motor impairments. Because the project targets support tools for application development rather than a specific application, a user model is developed that represents the results of the user studies in a generalized way by "virtual user" profiles.

## OVERALL PROJECT ASSESSMENT
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

The consortium has developed a first functional prototype of the GUIDE open source framework for user interface adaptation which works on Connected TV and set top box platforms. The Framework core performs run-time UI adaptation based on user profiles. A functional prototype of the multi-modal integration and adaptation approach has been implemented – this was at the heart of the GUIDE Framework concept. The GUIDE simulator has been improved, now including features for users with hearing impairments, and is available on their website for public evaluation. Useful work has taken place within the VUMS cluster on user modelling.

The quality of the reports produced is generally good, and the consortium took on board earlier remarks about the need for more concise reports. Non functional properties need to be better considered (e.g., latency, feedback, usability of the UIs, usability of the framework with regard to the cost/benefit ratio).

The quality of some of the demonstrations / prototypes shown during the project review meeting was disappointing – further details and recommendations for improvement are given later in this report.

There is a need to go beyond technological demonstrations, and to sharpen the critical analysis (e.g., integration of the context of use, elicitation of methodological principles, genericity and applicability of the approach).

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

This project has the potential to significantly improve the usability of digital TV devices, especially connected TVs, but much still needs to be done to persuade major manufacturers of the importance of the project and to adopt the solutions provided by the project within their standard TV ranges. Big efforts are being made in this direction, but concrete cooperation plans or commitments from the stakeholders are still lacking. A well-defined procedure of how to attract potential users and customers should be added to the exploitation plan.

The scientific impact will depend on publication. It is crucial to target top conferences and journals, and to clearly analyse the innovation brought by the project with regard to competitors.
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 9 |

The plans for the use of foreground IPR are obviously still in their initial phase and flexible, but the report suggests that these appear acceptable and are still very relevant. Precise plans are still missing, and the exploitation plan needs to show how potential users and customers can be brought in. It is necessary to pay the due attention to these topics in the last year of the project even though much of the resources planned for WP8 has been expended.
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>HOBBIT</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
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<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
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<td>EU Funding contribution</td>
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### Project subject (to help categorise the results for the final publication)

- X Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**

HOBBIT zooms in on the interaction between robot and owner/user with a new, more user-centred concept called “Mutual Care". It allows and entices people to “take care” of the robot like a partner, so they can develop real feelings and affections toward it. For people it is easier to accept assistance from a robot when they themselves can also assist the machine. In close cooperation with institutional caregivers, acceptance and usability of the robots will be measured and improved.

## OBJECTIVES

**Objectives of the project**

In contrast to current approaches, "HOBBIT, the mutual care robot", will offer practical and tangible benefits for the user with a target price tag considerably below present solutions. Through an interface designed specifically for elderly users, HOBBIT will be able to follow a user and guide a user through the home, assist with getting up and offer alert functions, it will be able to learn user-defined objects and be able to retrieve them. Connection to other AAL equipment is foreseen. With this, HOBBIT will offer the benefit to remain longer in the private home environment, which will justify the expenses. We will insure that the concept of HOBBIT seeds a new robotic industry segment for "ageing well" in the European Union.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

*Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.*

2

The consortium was able to set up a platform to be tested in real life by 18 elderly at their homes for 3 weeks each. Due to technical limitations, testing the concept of mutual care was limited and therefore demonstration of the validity of the concept failed. The contribution of HOBBIT to state of the art lies only in the PT2 trial’s length and number of people involved and lessons
deriving from this experience. Project results are rated low. Consortium was asked to deliver within 3 weeks after the review a detailed document listing positive and negative lessons learnt throughout Hobbit project in order to share consortium experience with projects aiming at developing similar solutions. This “public” document should for example include a protocol on how to introduce a robot in an elderly home and its learning curve.

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific, technical, social or environmental impact related to the AHA Triple win</td>
<td>Scientific impact is not proven. Commercial impact is rated low; there is no evidence that the system developed will be brought to the market. The delivered innovation does not seem to have an impact on the improvement of the strength of the competitiveness and growth of related companies.</td>
</tr>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>1</td>
</tr>
<tr>
<td>Plans for the use and exploitation of results</td>
<td>The exploitation plan is unrealistic, many details are still missing. It would not justify the needed investments in this project/product.</td>
</tr>
<tr>
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### GENERAL PROJECT INFORMATION

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<td>Project Name</td>
<td>Health monitoring and sOcial integration environMEnt for Supporting WidE ExTension of independent life at HOME</td>
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<td>Programme</td>
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**Project subject (to help categorise the results for the final publication)**

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

HOME SWEET HOME brings together a set of services which, combined, allow extending the independent life of elderly people. HOME SWEET HOME (HSH) is trialling a new, economically sustainable home assistance service which extends elders independent living. HSH intends to achieve this by providing a comprehensive set of services which support elders in their daily activities and allows carers to remotely assess their ability to stay independent. HSH privileges features which the elders themselves can use and limits the need for other people to interfere with their private life, unless the system detects a clear need. The project measures the impact of monitoring, cognitive training and e-Inclusion services on the quality of life of the elderly, on the cost of social and healthcare delivered to them, and on a number of social indicators.

### OBJECTIVES

**Objectives of the project**

HOME SWEET HOME (HSH) will trial a new, economically sustainable home assistance service which extends elders independent living. HSH intends to achieve this by providing a comprehensive set of services which support elders in their daily activities and allows carers to remotely assess their ability to stay independent. While systems of this kind inevitably represent an intrusion in the elders' private life, HSH privileges features which can be used by the elders themselves and limits to a bare minimum the need for other people to interfere with their private life unless a clear need is detected by the system. It comprises the following services: Monitoring and Alarm Handling, elInclusion, Domotic, Daily Scheduler, Navigation and Mental Faculty Maintaining.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

1

The experts acknowledge the work that has been
Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

Completed during the life of the project; there are important aspects that have gone very well, perhaps most notably the qualitative study of users’ and carers’ reactions to the use of technology. However, the results have clear shortcomings with respect to the DoW (e.g. a business plan has not been properly addressed). Also, the weak project management has been confirmed by the approach of the consortium to the final deliverables for the last review. The project has achieved its objective of finalising the four pilot studies, and completing the final assessment of both intervention and control samples. But, in spite of running an RCT working for two years in 4 different countries, the results achieved have not been as expected, as described later.

It is important to recognise that the project has not followed much of the advice of the EC reviewers, for example, to identify potential risks that later on materialised and could have been avoided with better risk management. The project has also continued to act, wrongly in the eyes of these reviewers, as if its service-provider participants are in some way isolated from the economic pressures and to not to provide more suitable equipment (state of the art) in terms of both cost and effectiveness. Whilst researching the market for such equipment thoroughly, the project has nevertheless refused either to cost up fully a prototype of a modern HSH installation, or demonstrate its commercial attractiveness; the critical deliverable 3.14 has not been submitted in an acceptable form. The project also failed to think through its implementation fully before ordering equipment, with the result that the window-opening controls and the electronic locks both proved unusable in the homes of the selected users.

OVERVIEW OF PROJECT IMPACT

| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win | 1 |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. | As there have been little positive findings from the project, it is tempting to conclude that the project will likely have little wider impact. The results of the project are a bit disappointing since few results have been obtained. Little or no benefits have been felt from the users, there is no economic and no overall impact on QoL. Also, as the technology at some point became a bit outdated a lesson to be learned is “how to do a better selection already at the start of a project”. |
| Plans for the use and exploitation | 1 |
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

The critical deliverable D3.14 is unacceptable. This is just a collection of possibilities without any concrete plans. No application or exploitation plans have arisen from the results.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 3 |
# General Project Information

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<tr>
<th>Acronym</th>
<th>ISISEMD</th>
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<tr>
<td>Project Name</td>
<td>Intelligent System for independent living and self-care of seniors with cognitive problems or mild dementia</td>
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<td>Programme</td>
<td>CIP</td>
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<td>EU Funding contribution</td>
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**Project subject (to help categorise the results for the final publication):**
- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## Brief Description

**Brief description of the project:**
The aim of the ISISEMD project is to provide a pilot of innovative intelligent set of scalable services that will support the independent living of elderly people in general and in particular the group of elderly with cognitive problems or mild dementia and at the same time to support the formal and informal caregivers in their daily interaction with the elderly. The services will improve the elderly ability for self-care by support for their basic daily activities in way that prevents health risks in their homes. The services will also strengthen the daily interaction with their social sphere - partners and relatives, friends and caregivers, giving them the feeling of safety and preventing their social isolation. Last but not least, their cognitive training and activation will be strengthened.

## Objectives

**Objectives of the project:**
To prove wide applicability in Europe, the pilot will be validated and tested in realistic conditions for 12-month period in four Member States regions which have extensive experience from existing telehomecare services for elderly. The pilot set of services will integrate: a) several partial services, b) already tested prototype, and c) completed R&D work. The operation will be evaluated with three target end-user groups - elderly, formal and informal caregivers, addressing thus the diverse requirements of these groups. The pilot service will contain 3 different service bundles (basic services, intermediate and high level) that allow for escalation of the service provided to the end-users based on their needs and providing different pricing schemes.

## Overall Project Assessment

**Overall assessment according to review documentation.**
Assessment according to main scientific/technological achievements of the project, 2

The ISISEMD project has focused on an important aspect of AAL – support to the mild cognitive...
<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
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<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>The project has provided some evidence that mild dementia can be compensated by OCT-based technology and services – with a high degree of satisfaction especially within the primary user group and informal carers. It could have an impact if a flexible service model is offered with respect to a better knowledge of the idiosyncrasies of different European Healthy Systems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
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</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td>The project’s Memorandum of understanding should provide the basis for the exploitation; however, there is a need for a more elaborate assessment of market prospects and how the consortium would configure services into a coherent and sustainable model. The memorandum is only the beginning.</td>
</tr>
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| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 6 |
### GENERAL PROJECT INFORMATION

<table>
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<tr>
<th>Acronym</th>
<th>MIRACULOUS-LIFE</th>
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<tr>
<td>Project Name</td>
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<td>Programme</td>
<td>FP7</td>
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<td>Period</td>
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**Project subject (to help categorise the results for the final publication):**

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project:**

This project designed, developed and evaluated an innovative usercentric technological solution - the 'Virtual Support Partner' – a digital persona attending to a senior’s daily activities and safety needs, while the senior goes about his normal daily life. A crucial asset of the Virtual Support Partner is its capacity for behavioural and emotional understanding: It is able to fuse facial expressions, intonation, gestures and other contextual information of the user’s environment to provide empathic responses and services. As such, it can support daily activities, in a human-like way. This in turn stimulates and motivates older people to stay active.

### OBJECTIVES

**Objectives of the project:**

The VSP will provide implicit daily activities support which is based on behaviour and emotional understanding and appropriate respond exhibiting distinctive emotions, deliver in a human like way simulating in essence the interaction with a real life partner. Specifically, the VSP fuses together user's facial expressions, voice intonation, gestures and other contextual information of the user's environment and provides intelligent responses and delivery of services through an Avatar-based interface exhibiting empathic respond through face emotions and voice intonations. Through an intelligent dialogue, and the use of different ICT services for elder home daily activities support and safety, the VSP stimulates and motivates the elder to act.

### OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.

**Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable):**

2

The project has achieved most of its objectives and milestones for the period but deviations in the plan and scope of the trials have occurred which has led to a decrease on the quality of work for some objectives and on the potential impact of the project with regard to what was
| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU's Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry. |

2

Due to the difficulties and the downscaling of the ambitions of this project the impact will only be partially reached in comparison of what was promised in the DoA. The most successful part of the project is probably the development of Co-Net that will strengthen the competitiveness of Citard. Also, the emotion recognition will probably support the growth of Noldus. In the first case, a product-like prototype has been shown at the review consisting of a mobile app that implemented the Co-Net component. Also, clear plans to improve and exploit this component have been provided in the corresponding deliverable. For the emotion recognition, it has been also explained the plans to independently exploit the value. Other parts are not advancing the state of the art and the prototype as a whole will most certainly not be able to enter the market due to the fact that the integration was only partially successful and could not be used for the field trials. Due to the trials limitation and the downscaling of the ambitions of this project, only partial results have been delivered contributing to the expected impacts in comparison with what was promised in the DoW. The scientific impact is also limited which is also derivable from the fact that only a very limited number of high-ranked publications have been presented.

| Plans for the use and exploitation of results |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |

2

Plan for exploitation was one of the weak points in the first period but following the panel recommendations it has been improved to a greater extent in the last period.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE |
| 6 |
**PRELIMINARY ANALYSIS EVALUATION SHEET**

### GENERAL PROJECT INFORMATION

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<thead>
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<th><strong>Acronym</strong></th>
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<td><strong>Project Name</strong></td>
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#### Project subject

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

The NEXES project aims at deploying four specific integrated care programs targeting prevalent chronic disorders: - Well being and rehabilitation (W) - Enhanced Care support of unplanned hospitalisations (EC) - Home hospitalisation & early discharge (HH) - Support of diagnostic and/or therapeutic procedures (S) They have been selected considering the promising outcomes generated during previous small-scale randomized controlled trials. A major strength of the project is the accumulated knowledge within the consortium ensuring the future success of the proposed services addressing:- Co-morbidity challenge - Articulation of healthcare and community services - Organizational and educational issues - Modularity, scalability and interoperability of the ICT platform - Identification of business models ensuring service sustainability.

### OBJECTIVES

**Objectives of the project**

The project aim is to ensure immediate successful deployment of ICT-enabled integrated care programs supporting healthier and independent living. Nexes aims at the extensive deployment and sustainability of validated integrated care services, by:

- Deploying four integrated care programs for chronic patients based on structured interventions addressing prevention, healthcare and social support.
- Innovate in services that: a) adopt an integrated approach that includes profound organizational changes, b) face the co-morbidity challenge, and, c) use of ICT as modular and scalable tools supporting interoperability among actors.
- Validate the deployed programmes in large scale RCT studies.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.** 3
The original goal of NEXES was to use the Linkcare platform to validate services offered in all three sites. The project slowly abandoned these intentions and moved to an approach that adapted to local limitations and used three systems instead of one. With a new business strategy and a new alliance with suppliers, it has been possible to develop the necessary middlewares, identify the standards and the additional functionalities still needed, such as customer relationship management, collaborative work support tools, patient health folder, videoconferencing, eMobility integration etc ... However, that meant that field trials were run on systems that were not comparable, did not provide services in a way that was comparable, and did not help resolve issues of interoperability. NEXES can hardly be seen as an integrated project; it is more an overall archetype which has been discussed in three different settings, leading to three different projects, with results which are barely comparable. The challenges have not led to the transformation of the initial concept into something marketable, in line with the requirements of a Pilot B project. Therefore there is still a void as to what the project has come up with in the end, both in terms of process and product. The business model is still embryonic, with only general principles are discussed. The deployment intentions are vague and inadequate, and do not appear to engage the whole consortium.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

2

The project’s main interest has been to advance clinical understanding about ICS. The project has also developed insights into local structural and operational barriers to be overcome in order to move ahead with ICS. Given the very strong interaction of NEXES with regional (Barcelona) and national (Norway) health deployment plans, one can consider that NEXES has had an impact on the policy it supports. In Greece, it has also opened new channels of thinking. The project’s contribution to the ICT part of PSP was underplayed. Such insights as are offered are instinctively valid, but they are very “local”. Although the deliverables discuss usefulness, sustainability, scalability, and usability the arguments tend not to be supported by demonstrable results from the validation trials.

Plans for the use and exploitation

1
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

Exploitation plans are not yet adequately formulated. The deliverable 6.2.2 is a generic discussion of the nature of business planning in the healthcare sector in general. Detailed exploitation intentions must be clearly set out for all the partners.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 6 |
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
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<td>X Innovative solutions for independent living</td>
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<td></td>
<td>□ Robotics for Ageing Well</td>
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<td></td>
<td>□ Innovating elderly care</td>
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<td></td>
<td>□ Better connected through integrated care</td>
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<td></td>
<td>□ Frailty, early detection and intervention</td>
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<tr>
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<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
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### BRIEF DESCRIPTION

**PhysioDom–HDIM** proposes an ICT platform that offers on a large territory a new service – Home Dietary Intake Monitoring based on readings and monitoring of weight, lean/fat ratio and physical activity, complemented with an intervention structure and strategy – the Home Diet Coaching. PhysioDom–HDIM is an innovative ICT solution that enhances living conditions for senior citizens, as well as improving the efficiency and integration health and social care systems.

### OBJECTIVES

PhysioDom-HDIM is an innovative solution that improves living conditions for elderly persons as well as integration and efficiency for health care and social care systems.

PhysioDom-HDIM is based on a system that is up and running since several years and has shown good results and acceptance by the users. Ever more research confirm the central role of an adequate diet and a reasonable level of physical exercise for health and wellbeing. To address this issue a new key component will be added to the PhysioDom system: A lifestyle coaching system called HDIM (Home Dietary Intake Monitoring). This system will suggest diet and physical exercise levels in accordance with the individual situation of each end user, and monitor the compliance of these recommendations.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives: **3**

This document is aligned with recommendations R1, R2 and R4 issued as part of the review.

R1 - Mapping of pathways is now a lot clearer,
and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

and an effort has been made to describe how different roles are involved in providing a nutrition service;

R2 - Minimum system performance is still not identified here, but the specification is clearer. Test report are shown but the functional specification is not included in this document. It isn’t clear what was the progress achieved with the home hub, the system performance expectations and what was the progress in development of the home hub that led to a deployable version.

R4 - Lack of escalation: There is an escalation plan described for each site as well as a way to collect feedback from pilot sites. This should allow the product team to continuously improve the product throughout the pilot.

There has been a significant effort to ensure pilot site readiness. There is a clear effort to monitor acceptability of the product at each pilot site.

### OVERVIEW OF PROJECT IMPACT

<table>
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<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
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<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
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<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
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### TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

| 9 |
## PRELIMINARY ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

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<th>Acronym</th>
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<td>Programme</td>
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<tr>
<td>Period</td>
<td>02/2010 – 04/2013 (36 months)</td>
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<td>EU Funding contribution</td>
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<td>Project type</td>
<td>Collaborative Project</td>
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**Project subject (to help categorise the results for the final publication)**
- X Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

The project focuses on the development and prototyping of remotely-controlled, semi-autonomous robotic solutions in domestic environments to support elderly people. In particular, the SRS project will demonstrate an innovative, practical and efficient system called "shadow robot" for personalised home care.

### OBJECTIVES

**Objectives of the project**

SRS solutions are designed to enable a robot to act as a shadow of its controller. For example, elderly parents can have a robot as a shadow of their children or carers. In this case, adult children or carers can help them remotely and physically with tasks such as getting up or going to bed, doing the laundry and setting up ICT equipment etc. as if the children or carers were resident in the house. This objective will be realised through the following SRS innovations:
1. A new intent-based remote control mechanism to enable the robots to be tele-operated over a real-world communication network robustly.
2. An adaptive automation mechanism to enable a highly efficient task execution for remotely controlled service robots.
3. A new robotic self-learning mechanism to enable the robots to learn from their experience.
4. A safety-oriented framework derived through extensive usability and user acceptance studies that enable service robots to be effectively deployed into home care applications.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies.

3 From a scientific point of view, project has conducted an in depth and very valuable users' ethnographic study which helped structure the list for high, medium and low priority features.
(whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

Overall it conducted a deep end-users” needs and expectation assessment which will be valuable for all future projects aiming at developing robot for elderly home care. From a technological point of view, the main achievement consists in the almost complete development of an innovative, practical and efficient "shadow robot” for personalised home care. The project demonstrated successfully the concept of remote operation control of the robot for elderly home. The self-learning mechanism allows the robot / SRS system to learn new objects. The safety oriented SRS control framework is developed, but needs further enhancements and research. Quality of the scientific results is good and relevant although the project does not show major technical breakthrough.

OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
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<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.</td>
<td>Scientific impact is good. Several elements of the project can contribute to the further development of robotic in European home such as the deep understanding through ethnographic research of the practical constraints of elderly home, the various tests performed by the various stakeholders such as elderly, family caregivers, professional caregivers, remote operators etc. It is thus very likely that there will be a useful scientific result from the testing and code pieces of the SRS system that the scientific partners, and perhaps partners outside the SRS consortium, could exploit for future research. Technical impact is good. Further research is needed in many areas to reach the objective of a real usability of a multi-role shadow robot for independent living. Societal impact is poor. It is quite unlikely – given the poor exploitation plan – that there will be a direct impact on elderly care services or quality of life for the elderly in the near future (within the next 8-10 years) as a result of SRS. Nor will there be any significant impact on commercial players or in the marketplace as a result of the work done. Economic impact is poor. The exploitation plan is questionable. The idea of using a broker to promote the IPR generated in the project does not describe the cost and the benefit for the broker to promote the exploitation of the results. The plan seems very idealistic and lack of effective actions. Neither exploitable IPR nor the ways it can be exploited are described clearly. There is a lack of background.</td>
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<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
</tr>
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<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>Use of results is not clear. Proposed plan to exploit the results seems very idealistic.</td>
</tr>
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<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
</tr>
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<tbody>
<tr>
<td>6</td>
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</tbody>
</table>
PRELIMINARY ANALYSIS EVALUATION SHEET

GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>USEFIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Unobtrusive Smart Environments for Independent Living</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>11/2011 – 02/2015 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3,376,999</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

BRIEF DESCRIPTION

Brief description of the project

USEFIL provides advanced but affordable in-home monitoring and web communication solutions that are unobtrusive. It addresses the gap between state of the art technological research and the practical needs of elderly people. USEFIL uses low cost "off-the-shelf” technology to develop immediately applicable services that assist the elderly in maintaining their independence and daily activities. Installation of the USEFIL system will not require retrofitting in a person’s residence and will be almost invisible once installed.

OBJECTIVES

Objectives of the project

The USEFIL project aims to address the gap between technological research advances and the practical needs of elderly people by developing advanced but affordable in-home unobtrusive monitoring and web communication solutions. More specifically, USEFIL intends to use low cost "off-the-shelf” technology to develop immediately applicable services that will assist the elderly in maintaining their independence and daily activities.

OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.

2

The project has concluded its extended timeframe. The extension period was necessary to salvage the project but it did not substantially contribute to raising the quality of the project outputs. Technical problems encountered impacted the performance and validation. Integration remained a weak point. The technological achievements have not been attained at the expected level. The consortium faced many technical problems such as
malfunctions of hardware devices, lack of performance in real-time data capture during the integration and evaluation phase. Due to the strong technical limitations, the results of trials are not convincing since only limited functionalities were available and the technical preconditions were not given. Moreover, users' feedback regarding usability is overall not positive and clinical assessment is not conclusive. These findings and the meanings of the results were not carefully analyzed in order to draw substantive lessons of the project. As consequence, there is little hard evidence that can be found in the business plan.

**OVERVIEW OF PROJECT IMPACT**

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU's Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>The project failed in demonstrating a convincing trial result and the platform is far from running properly. Users’ feedback regarding usability is poor. No way ahead as demonstrated by the consortium to resolve this situation within/after the end of the project. The overall impact in terms of scientific value is medium, in terms of social impact and in terms of innovation low. The European added Value is equally low.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td>The market analysis (D8.9) and the exploitation plan (D8.10) are still at a very early stage and are not promising. Market research and analysis of competitors, demand estimation, pricing policies, cost and revenues modelling remain an open issue. The exploitation strategies of the individual partners are on a very general level only and denote intentions rather than decisions. The review team understands that with regards to the system is not yet mature enough for exploitation but it appreciates the commitment of some partners to continue activities both to further develop the system and exploit those components which are mature. However, some exploitable results on an individual level have been achieved, which includes certainly some innovation, however synergies with regard to exploitation are low. Missing hereby is a concept how the consortium/individual partner tackles the life cycle topic with COTS element being an inherent part of the solution. Some IPR issues remain open. NCSR has several reservations about AUTH and Maccabi claims.</td>
</tr>
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</table>

**TOTAL PRELIMINARY ANALYSIS EV. SCORE**

4
PRELIMINARY ANALYSIS EVALUATION SHEET

GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>VM</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Vital Mind</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>01/2008 – 03/2013 (30 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
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<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
<tr>
<td>Project subject (to help categorise the results for the final publication)</td>
<td>□ Robotics for Ageing Well □ Innovative solutions for independent living □ Innovating elderly care □ Better connected through integrated care X Frailty, early detection and intervention □ Fall Prevention □ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

BRIEF DESCRIPTION

Brief description of the project

This project will use cognitive psychology, the television medium and advanced interactive Information Computer Technology (ICT) to enable older adults to actively and autonomously participate in mind fitness activities while sitting in front of their TV set. The research question of whether cognitive training will prove more beneficial if trained in de-contextualized, contextualized settings or in both settings will be verified using randomized, double-blind methodology.

OBJECTIVES

Objectives of the project

This home-based tool would be inexpensive and easy to use for healthy or handicapped individuals. The project fits in propitiously with recent developments: DTV is planned for deployment in Europe and the Digital Terrestrial Broadcasting (DVB-T), which will use MHP STB technology including the DVB-C, DVB-S and the IPTV, is planned to replace the Analog Broadcasting by 2010. New advancement in USB Memory Flash Cards (“Disk on Key”) and the MHP STB having a USB port will provide new alternatives for delivery of content to the TV. Vital Mind also proposes innovative developments in the detection of hand movements, non-speech (vocal) as well as in the use of the iTV remote control so as to enable and facilitate the user's autonomous participation in the cognitive training program.

OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

2

At the end of the project, it can be said that the project has made a valid first step towards making available cognitive training through the TV medium. The Consortium has developed two cognitive training programs for normal users and for older people subject to Mild Cognitive Impairment (MCI), comprising 11 assessment tasks and 14 training tasks. In addition, three
Interactive activities were developed: Physical exercises, Family Tree and Family Scene Composer that were used as alternative training to the cognitive training. However, some challenging questions were not really answered: for instance, the objective of testing the effectiveness of the VM cognitive training on people with MCI has not been reached in a satisfactory way: the relevant project results reported under WP7 deliverables are not supported by objective and verifiable evidence.

Although the evaluation results of the project indicate improvement of cognitive abilities after the use of the VM cognitive training by “normal” elderly, such improvement has not been sufficiently quantified. It is still unclear if the impact of the VM is greater than that related to general mentally stimulating activities. More extensive testing and verification, with the involvement of medical staff, would be necessary to fully support the claim of improvement of cognitive abilities.

No useful conclusions can be drawn in relation to how the VM cognitive training may affect elderly individuals’ quality of life.

### OVERVIEW OF PROJECT IMPACT

**Scientific, technical, commercial, social or environmental impact related to the AHA Triple win**

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

2

The potential impact of the project outcomes, notably the cognitive training, is high, however, more evidence must be produced about the performance of the cognitive training. From a technical point of view, the project undoubtedly demonstrated that delivery of cognitive training services through the TV medium by set top boxes is possible and practical, however, many more steps would be required before the project results can be fully deployed. Although there has been some work with set top box makers it is not clear that the work of the Vital Mind project will influence the wider market in the longer term.

There is a danger that the project results will be overtaken by developments in the computer gaming world.

### Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

2

As already commented, there is no concrete IPR strategy identifying background and foreground ownership. A good quality market survey has been conducted and the Consortium seems to be well aware of the relevant market, however, the exploitation plans of the individual beneficiaries and the project as a whole are vague and no Consortium member seems
committed to taking the VM results forward. Doubts remain about whether the TV, STB and computer games manufacturers will take up the outcomes from the Vital Mind project. There is a strong likelihood that these manufacturers will continue to go their own ways, and perhaps the best thing that the VM group could do is to continue to try to convince the CE manufacturers that there is a good business case for them to incorporate the various cognitive and physical games and applications developed for elderly people into their mainstream products.

<p>| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 6 |</p>
<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
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<tbody>
<tr>
<td><strong>Acronym</strong></td>
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<tr>
<td><strong>Programme</strong></td>
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<tr>
<td><strong>Period</strong></td>
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<tr>
<td><strong>EU Funding contribution</strong></td>
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<tr>
<td><strong>Project type</strong></td>
</tr>
<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
</tr>
<tr>
<td>☐ Robotics for Ageing Well</td>
</tr>
<tr>
<td>☐ Innovating elderly care</td>
</tr>
<tr>
<td>☐ Frailty, early detection and intervention</td>
</tr>
<tr>
<td>☐ Knowledge sharing and standardisation related to ageing well</td>
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</tbody>
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<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION</th>
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<tbody>
<tr>
<td><strong>Brief description of the project</strong></td>
</tr>
<tr>
<td>WISEL's main goal is to develop an unobtrusive, self-learning and wearable prevention and warning system to decrease the incidence of falls in the elderly population. The idea is that elderly people put a specifically designed insole in their shoes, which monitors their walking pattern. This way the system may detect changes in gait and balance in the daily environment of the older person, which helps predict the likelihood of falling. Thanks to a wireless system and chips built into the insole, data captured by the movements of the foot are sent to a mobile device or computer, so that the doctor, caregiver, nurse or administrator can follow the evolution of the patient, to assess if he correctly follows the rehabilitation programme or if he returns to bad habits that increase the risk of falling. If this occurs, an alert is sent immediately to the responsible caregiver. Thus the system provides security to the elderly and reduces their fear of falling, directly improving their quality of life.</td>
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<table>
<thead>
<tr>
<th>OBJECTIVES</th>
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<tbody>
<tr>
<td><strong>Objectives of the project</strong></td>
</tr>
<tr>
<td>The main goal of WISEL is to develop a flexible research tool to collect and analyze gait data from real users and correlate parameters related with the risk of falls from the elderly population. The global objective of the project is to provide a tool to continuous and remotely monitor gait and fall risk in the elderly and collect information on long term gait data for researchers in this field. This tool will consist of a combination of a flexible software platform together with wearable insole device collecting data related with gait. Risk of falls will be calculated as a new Fall Risk Index based on multiple gait parameters and gait pattern recognition. WISEL will allow quantifying activity, assessing the quality of gait under real life conditions and will enable researchers to evaluate and monitor fall risk in elderly patients, in the home and community environment, mostly reflecting everyday life behavior. The system can be used as a research or rehabilitation tool and enable the recording of fall events to better recognize and correlate...</td>
</tr>
</tbody>
</table>
fall-associated gait patterns and increased fall risk.

OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.
Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

2
Due to the continuous problems in the development of the insoles during the interim review in month 20, the reviewers’ team suggested a reorientation of the project goal towards a research tool.
- The good methodological approach in several areas, as the user centric approach, validation processes and electronic development and testing. For instance:
  o The hardware development has made significant achievements and has been able to overcome many difficulties, it is remarkable to see how they achieved the short range low power telecommunications, the power management by inductive coupling, the flexible PCBs, the EC and EMC compliance of design, even if the main goal has not been clearly achieved (a consolidated insole).
  o The validation studies are well described and performed professionally, like the assessment of feasibility of use in the home environment as well as feedback from participants related to acceptance and usability.
  o Data collected in the lab was also used to collect patterns of gait in older adults under different conditions and compared to that obtained by an instrumented walkway (GaitRite) to ensure data collected is valid and comparable to the gold standard.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win
Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

2
The impact could be mostly on the scientific community. The gait analysis and risk tools appear very interesting.
In the long run, after further modifications, the insoles have also a future for a wider use in the home environment of elderly.
Questionnaires used to assess the interest from research activities (institutes and projects) show an interest in this approach of WISEL. There is willingness to exchange information and even to share data, however this has not yet materialized.
The deliverable on impact analysis show a lot of potential impact, however a lot of the proposed impacts have still to be proven. The insoles are a key element of the project and its feasibility has not been demonstrated convincingly (concerning a durable version).
The tests executed during the project are too
small and too short to give confidence. The impact in medical application is not proven and the process to proceed to acceptance in the medical domain is underestimated. The necessary industrialization efforts are also underestimated.

| Plans for the use and exploitation of results | 1 |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. | The consortium made great efforts to Document this aspect. However it is not fully convincing. There are many options but none of them is sufficiently elaborated to be implemented or fully credible. The use of the results in short term will be more scientific, contacts with other projects are in place. The use of the GAT as analysis tool for GaIT data is not really sufficiently explored, although several options of the full system or part of the system for commercial use have been investigated and are described in the exploitation plan. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 5 |
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>ACCOMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Acceptable robotiCs COMPanions for AgeiNg Years</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>10/2011 – 10/2014 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3,653,929</td>
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<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
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</table>

#### Project subject (to help categorise the results for the final publication)

- **X** Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

---

### BRIEF DESCRIPTION

**Brief description of the project**

ACCOMPANY provides a robotic companion as part of an intelligent environment. It helps older people to live independently at home by providing physical, cognitive and social assistance in everyday home tasks. ACCOMPANY contributes to the re-enablement of the user by assisting him or her to carry out tasks independently. Services to the user will be delivered through socially interactive, acceptable and empathic interaction, building on computational models of social cognition and interaction. With Care-O-bot® 3, a state of the art service robot platform, user requirements and user acceptance of the robot will be assessed. User study results will be fed back to make the technology better suit user demands and preferences.

---

### OBJECTIVES

**Objectives of the project**

The proposed ACCOMPANY system will consist of a robotic companion as part of an intelligent environment, providing services to elderly users in a motivating and socially acceptable manner to facilitate independent living at home. The ACCOMPANY system will provide physical, cognitive and social assistance in everyday home tasks, and will contribute to the re-enablement of the user, i.e. assist the user in being able to carry out certain tasks on his/her own. Services to the user will be delivered through socially interactive, acceptable and empathic interaction, building on computational models of robot social cognition and interaction. The envisaged relationship of the user with the robot is that of a co-learner – robot and user providing mutual assistance for the user not to be dominated by the technology, but to be empowered, physically, cognitively and socially.
**Overall assessment according to review documentation.**

*Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.*

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<tbody>
<tr>
<td>The ACCOMPANY project has made a journey of integrative scientific discovery, learning about problems and challenges in the field of personal service robotics. In the three years of project duration, the Consortium has successfully achieved their goal of exploring, implementing, integrating and evaluating innovative concepts and technologies for the realization of usable and acceptable personal care robots accompanying elderly users in their homes.</td>
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**OVERVIEW OF PROJECT IMPACT**

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<tbody>
<tr>
<td>Scientific impact of the project is evident from the very impressive record of scientific publications. Scientific and technical innovations include the development of memory architecture for learning and adaptation, new forms of socially aware human robot interaction, empathetic interaction, and demonstration of viable activity monitoring. Among other innovations demonstrated within the project, the new computational memory architecture and the “teach-me” and “show-me” functionalities, as well as the concepts for implementation of social and emphatic interaction, are expected to have a very large impact in science and technology, leading to new research and development approaches for robot-human interaction. There is excellent potential for societal impact from the development of an economically viable industry for personal care robots that can contribute to the autonomy and quality of life for ageing persons. The project sets an example for interdisciplinary research, integrating social aspects and an in-depth ethical study alongside the technical developments. Some of these technologies can accelerate the development of exploitable solutions, namely the ability to walk along the user, classify activity, and provide memory aid.</td>
</tr>
</tbody>
</table>

**Plans for the use and exploitation of results**

*Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.*

<table>
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<tbody>
<tr>
<td>The potential for use of intellectual property developed in the project is excellent. Beyond the economic model, the Consortium has also delivered a technology exploitation plan. This document highlights on one hand the plans of the individual participants for using the knowledge and results generated within the project. On the other hand, the document integrates a global project exploitation section describing short-term, medium-term and long-term exploitation prospective based on the three specific added values identified.</td>
</tr>
</tbody>
</table>
Exploitation plans point an effective route to development of an industry for personal care robots.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>12</th>
</tr>
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</table>

**OVERVIEW OF PROJECT IMPACT IN KEY AREAS**

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

*This will be evaluated taking into account the programme objectives*[^10] including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study[^11] and visualised through the Policy dashboard on EIPonAHA[^12].

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

<table>
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<tbody>
<tr>
<td><strong>Increased quality for life for elderly people and their carers</strong></td>
</tr>
<tr>
<td>- The project has demonstrated substantial progress in raising the technology readiness level of Personal Care Robots, and has helped to clarify a number of technological and social challenges that must be met in order to improve the quality of life of ageing EU citizens with personal care robots.</td>
</tr>
<tr>
<td><strong>Increased personal independence of the elderly</strong></td>
</tr>
<tr>
<td>- The successful achievement of the project goals constitutes a key milestone towards a long-term vision of emphatic, socially acceptable, co-learning robotic home companions for elderly users, supporting re-ablement and facilitating independent living.</td>
</tr>
<tr>
<td><strong>Concepts for the detection of ageing-related risks</strong></td>
</tr>
<tr>
<td>- N/A</td>
</tr>
<tr>
<td><strong>The Reduction of admissions and days spent in care institutions.</strong></td>
</tr>
<tr>
<td>- Population that perceive their health as good or very good</td>
</tr>
<tr>
<td>- Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td>- Healthy life years at birth</td>
</tr>
<tr>
<td>N/A</td>
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</table>

### Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

*This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products*

<table>
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<tbody>
<tr>
<td><strong>Increased efficiency of care systems</strong></td>
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<tr>
<td>- N/A</td>
</tr>
<tr>
<td><strong>Creation of ICT products and services for ageing well</strong></td>
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<tr>
<td>- N/A</td>
</tr>
<tr>
<td><strong>Facilitate wide implementation of sustainable</strong></td>
</tr>
</tbody>
</table>

[^10]: The programme objectives were detailed in Section 2.2 of our Technical Offer.
[^11]: http://mafeip.eu/about_study/
[^12]: http://www.linkedpolicies.eu/policymaps/eiponaha/
and services for ageing well; Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry **Score 1-4**

How the project has made an impact regarding Market growth and expansion of the EU industry
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

4
- New markets for independent and active living products and services through a set of open standards and integrated platforms
- N/A

- Improved competitiveness of EU industry
  - Several key components, such as the tactile case for tablet computers ("squeeze-me"), or the platform for activity classification are at an advanced maturity level, and have potential for commercial exploitation.
  - Other links with the EU industry include:
    - User and industrial forums/workshops as well as a series of interviews with industry experts in the field and a series of focus groups. Expert interviews are featured in the economic model deliverable (D7.3) while focus group input provided valuable insights to WP1 and WP6, as well as input into economic values and potential exploitation routes.
    - The consortium established and had the support of an industrial advisory board throughout the

13 http://mafeip.eu/about_study/
14 http://www.linkedpolicies.eu/policymaps/eiponaha/
Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

4. Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.

- The dissemination of results during the project has been exemplary, including both scientific publications, and effective use of modern communication technologies.
- Dissemination was performed through different dissemination channels (website, leaflet, twitter and promotional videos), engagement with the public (including “Open House” events, press, radio and TV contributions), and dissemination in scientific and professional publications and events. The consortium has amassed a very impressive record of scientific publications.
- In addition, ACCOMPANY took part in user and industrial forums/workshops as well as a series of interviews with industry experts in the field and a series of focus groups. Expert interviews are featured in the economic model deliverable (D7.3) while focus group input provided valuable insights to WP1 and WP6, as well as input into economic values and potential exploitation routes. Finally, the project established and had the support of an industrial advisory board throughout the project. This input has also enriched the
- Social Media: Twitter account and website are still available, although no activity can be seen since mid 2015. This may be due to the fact that the consortium is no longer working under the ACCOMPANY project name.
- High download rate of project deliverables: Over 1,100 for some deliverables. Total amount of downloads as of Dissemination report date: 4,150
- Accompany partners have also participated in over 150 dissemination opportunities.
- Articles in key media outlets such as the Daily Mail in the UK: [http://www.dailymail.co.uk/sciencetech/article-2942888/Is-age-robotic-BUTLERS-180-000-AI-helper-responds-commands-bring-drinks-open-doors.html](http://www.dailymail.co.uk/sciencetech/article-2942888/Is-age-robotic-BUTLERS-180-000-AI-helper-responds-commands-bring-drinks-open-doors.html)
- Youtube video of the Project describing the main features of the Care-o-bot: [http://bit.ly/1sHPGB](http://bit.ly/1sHPGB)
- 57 scientific publications.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Potential users, including ageing persons, formal caregivers and informal caregivers, have been intensively involved throughout the project for the definition of user needs and scenarios, as well as for evaluation of acceptability and usage of project results. This has provided information that has been used to construct an economic model and business case development.

<table>
<thead>
<tr>
<th>PROJECT SUSTAINABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>continued impact from</strong></td>
</tr>
<tr>
<td><strong>the project today</strong></td>
</tr>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
</tr>
<tr>
<td>Supporting Evidence</td>
</tr>
</tbody>
</table>

- Are the outputs from the project still being used today?
  - A major theme of the project has been "making the complex simple". The consortium has sought to integrate the personal care robot into a smart home environment providing easy to use tools to construct and personalize complex robot behaviors in a robot independent manner, that can potentially be re-used in future projects.
  - The future might see many of the technology and economic implementation aspects being solved by using possibly alternative and emerging technologies. However, the global approach resulting from this project, which integrates social
and emphatic interaction, robot learning and adaptive interaction, and comprehensive environment and activity monitoring techniques, and considers also ethical aspects and different roles of the robot, will continue being relevant for future developments in the medium and long term.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - Concerning coordination with other programmes and ICT projects, there was a joint effort with Aliz-E and the Robot-ERA to organize a summer school on human interaction and assistive technologies. Cross-project relations and interaction with other projects and initiatives in the 7th Framework Programme continued throughout the third year of the project, specifically interactions with the AAlliance2 and RobotEra projects, where joint workshops were organized at the EURobotics forum in Rovereto, Italy.
  - Also, the project was heavily involved in IEEE ROMAN2014 conference where CogLaboration and CogWatch EU project joined with demonstrations and presentations. The project also collaborated with GIRAFFE using their robot to support the ethics studies.

### BEST PRACTICES

**Best practices that the project has developed**

- One of the most remarkable results, clearly beyond the state of the art, involves an innovative computer memory model, including semantic and perceptual memory designed to allow teaching the robot what to do, and episodic memory supplemented with a visualization tool.
- Another particularly novel result is the social and emphatic interaction design, involving perceptual crossing, emphatic behaviour and a context aware planner for proxemics behaviour.
  - The Empathic mask communicates a view of the robot’s perception of the world modified through an expressive mask that communicates a sense of emotional reaction by the robot. This has been demonstrated to be very effective in engaging users in social interaction with the robot.
  - Another innovation has been the “Squeeze Me” tablet interface, which
allows users to modulate robot behaviour through the degree of tactile force that is applied as a tablet interface is held. A complete redesign of the squeeze-me hardware has resulted in a very usable device with excellent potential for exploitation.

- The final implementation and test of the context aware planner incorporating rules of human proxemics took place in this reporting year. This planner adapts the manner in which the robot approaches humans according to the current task thus providing socially appropriate movement. The proxemic behaviour used in this planner can be adapted to individual user preferences.

**FINAL EVALUATION COMMENTS**

<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
<th>The ACCOMPANY project has obviously made great progress in raising the technology readiness level of Personal Care Robots, and has helped to clarify a number of technological and social challenges that must be met in order to improve the quality of life of ageing EU citizens with personal care robots. The work carried out within the project, will not only help other EU projects related to Robotics for Ageing well, but will also help the CARE-O-BOT find its place in the market as a state of the art useful device to help improve the quality of life of ageing citizens in Europe.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL IN-DEPTH EVALUATION SCORE</strong></td>
<td>17</td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td>29/32</td>
</tr>
</tbody>
</table>
## IN-DEPTH ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>ALFRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Personal Interactive Assistant for Independent Living and Active Ageing</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>10/2013 – 10/2016 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3,423,572</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- X Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

ALFRED will foster independent living and active ageing, integrating interactive services for elderly people and for carers. It will prevail age-related physical and cognitive impairments through the effective use of ICT and the better coordination of care processes. In order to achieve those objectives, the project will create a virtual, interactive assistant for elderly people. This assistant will be realized as a mobile device running on day-to-day Android smartphones allowing a wide impact of the project results. ALFRED will be fully voice-controlled and combine latest scientific research results from mobile development, data management, context aware services, speech recognition and personal data management, combined with activities from behavioural and social science.

### OBJECTIVES

**Objectives of the project**

ALFRED’s objective is to develop a mobile, personalized assistant for elderly people, which helps them stay independent, coordinate with carers and foster their social contacts. ALFRED is a mobile, personalized Butler, created using cutting edge technologies such as advanced speech interaction, so you can talk directly to him. ALFRED will be very easy to use and will provide ‘context-sensitive services related to social inclusion, care, physical exercise and cognitive games.’
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

Good progress (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations).

The technology content of the ICT developed was in fact satisfactory since a demonstration of a set of functionalities was given during review meeting. Panel was especially satisfied with the ALFREDO marketplace app and the contact synchronization app that had an attractive design targeted at the elderlies.

It has to be noted here though that Pilots in ESE and NFE were only partially targeted to user’s needs since the choice of experimental set-up was driven by technological requirements. The pilot in CHA was targeted to user needs but only for a specific physical disability. Overall, the methodology to evaluate the utilization and acceptance of the proposed ALFRED applications was sound but the validation itself as far as the specific impact that ALFRED had on the life and wellbeing of users was not at all satisfactory.

The Panel considers that the technology objectives were reached. As will be further analysed below, though, the choices of action implementation, especially in the pilots, has lowered the impact that the work done has on the fulfillment of the user and usage related objectives.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care, 3) market growth and expansion of the EU industry.

The Impact was mainly in the technology field but the Consortium also had the ambition to support elderly person in several aspects of its life. No significant commercial, social, or environmental impact has yet taken place or is foreseeable at this stage. Of course, scientific publications have been produced by respective partners during project runtime (e.g. two books on Serious Gaming). Definitely, quite some knowledge has been gained or created also by industrial and medical partners in their respective work packages (e.g. software architecture).

The project is unlikely to have any impact beyond the individual technologies developed by each partner unless a very strong further development is done by the Consortium on their own.

In conclusion, technological impact was the most successful one, not as high as it was expected by reading the DoW but of a good level. Impact for the users remained potential since the data collected did not prove the expected benefits. Social impact as far as cost reduction was not demonstrated and probably was really too much
<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td>It seems that each partner will mostly use further their own foreground. For the sake of clarity it is added here that the research and education institutions can clearly use the results for their proper activities. The plan to use the foreground is still appropriate since European and world societies are ageing and elderly support, prevention and help are growing needs. Consortium updated its exploitation plan in D9.1.2 in a quite reasonable way. Nevertheless, there are shortcomings, as indicated in the comments to D9.1.2, given in section 2 paragraph c. In brief, there is the need of a substantial work on the voice interface, on user’s input to better define specifications and field test to fine tune the product. Since time to market can be of more than a year there may be the need of financial resources. During this refinement, process is also important to keep in touch and receive inputs from the target institutions as identified in D9.1.2. The panel appreciated the plans for a start-up (D9.1.2). Estimated costs per year were provided but no revenue stream options or scenarios/assumptions for a potential break-even point were presented (e.g. fail/ok/succeed). This is a drawback of the plan since this information may be paramount to potential investors or other of stakeholders interested on a start-up.</td>
</tr>
</tbody>
</table>

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 8

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

**Impact area 1: Improved quality of life**

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>2</th>
</tr>
</thead>
</table>
| *This will be evaluated taking into account the programme objectives*\(^{15}\) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care | *Increased quality for life for elderly people and their carers*  
- The methodology to evaluate the utilization and acceptance of the proposed ALFRED applications was sound but the validation itself as far as |

\(^{15}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.
the specific impact that ALFRED had on
the quality of life and wellbeing of users
was not at all satisfactory.
- The choice of the Apps and services to
  include in the tests was not effective to
reach the validation of the social
impacts of the project with the strength
that could have been reached with other
choices. This drawback was also noticed
by the elder that participated in the
pilots (ESE and NFE), since their
expectations were higher before
initiating the tests than after.
- No evidence was given that ALFRED re-
  integrated elderly people into social
activities.
- Health benefits were demonstrated with
  the Back Trainer but not at all with the
other health related applications
  
• Increased personal independence of the
  elderly
  - With regards to increasing personal
  independence, prolonging active
  participation in society and integrating
care processes for the ageing
  population: The technology was
developed as were the five serious
games included in the DoW. The pilot
validation data showed that the tested
Apps and serious game were in part
appreciated (satisfaction levels were not
as high as expected and very much
dependent on the situation) but the
tested system in the NFE and ESE pilots
was not user centered.

• Concepts for the detection of ageing-related
  risks
• The Reduction of admissions and days spent
  in care institutions.
  o Population that perceive their
  health as good or very good
  o Population having a long-standing illness or
    health problem
  o Healthy life years at birth
  - With regards to Reduced admissions and
days spent in care institutions, improved
disease management and treatment at
the point of need: The latter was
partially reached with the tests done
with the Back Trainer in CHA. The
technology to support better

Supporting indicators & Evidence
The analysis will be supported (where possible) by
the thematic areas of the indicators developed as
part of the MAFEIP Study16 and visualised through
the Policy dashboard on EIPonAHA17
- Population that perceive their health as good or
  very good
- Population having a long-standing illness or
  health problem
- Healthy life years at birth

16 http://mafeip.eu/about_study/
17 http://www.linkedpolicies.eu/policymaps/eiponaha/
communication of monitored health parameters was implemented but there is no evidence on the reduction of admissions and days spent in care institutions.

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

2

Increased efficiency of care systems
- Whilst it should be stated that this was not the primary objective of this project, the impact on the health system costs and on the elder everyday life was not sufficiently documented with the tests performed in the pilots.
- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay

3

New markets for independent and active living products and services through a set of open standards and integrated platforms
- With regards to an increased degree of interoperability and standardisation in the developed solutions: The technology for data storage was implemented as stated in the DoW. The developers’ environment is operational and can be seen as a good contribution to interoperability.
  - The Developer’s Community (https://github.com/ALFREDProject) is still accessible; however, there seems to only be one person in the community. The last interaction can be seen from October 2016, the date

18 http://mafeip.eu/about_study/
19 http://www.linkedpolicies.eu/policymaps/eiponaha/
when the project finished. No further interaction can be seen.

- **Improved competitiveness of EU industry**
  - N/A

- **Strengthened global position of EU industry in service robotics for ageing well**
  - Exploitation results were also presented for the individual organizations. Overall, the main impact was an increased knowledge and increased potential to develop further knowledge, which is understandable for the research organizations. Ascora, reported a significant impact on their current activities due to the personalization algorithms; TIE on the use of the datawarehouse tool to improve one of their new products; TALK also indicated the intention to use results in future products but was not specific on this issue. Real and direct market impact is still far off.

- **Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**
  - According to the review report, plans for a start-up were included in the Deliverable D9.1.2 to ensure the continuation of the work in the future. Whilst estimated costs per year were provided, no revenue stream options or scenarios/assumptions for a potential break-even point were presented (e.g. fail/ok/succeed). This is a drawback of the plan since this information may be paramount to potential investors or other of stakeholders interested on a start-up.

- **Creating a longer term RTD agenda**
  - N/A

- **Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**
  - With regards to a reinforced European academic and industrial knowledge base: There were no significant breakthroughs however the knowledge base in both academy and industry was increased.

- **Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.**
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

3

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Dissemination actions were carried out according to the DoW. Some of them were specifically targeted. It was documented the technological interest in ALFRED. During project execution, there were also interviews with managers of potential clients, and two of the partners (NFE, ESE) are in the market target sector.
  - The ALFRED dissemination strategy focused on three main domains where dissemination activities take place: the social domain, the industrial domain and the scientific domain.
  - As can be seen from the Deliverable 9.4.5 Dissemination Report, dissemination activities were carried out through the following channels:
    - Project Website
    - Developers website
    - Media Coverage in:
      - 37 different channels in the social domain.
      - 22 different channels in the industrial domain.
      - 10 scientific papers, 12 talks and 3 online articles.
    - Social Media
    - Conferences and Journals
    - Other Eventssuch as:
      - 34 different events and conferences in the social domain.
      - 16 different events and conferences in the industrial domain.
    - Clustering and collaboration activities
  - As shown in the comparison between the dissemination activities and the KPIs (D9.4.5), the performed activities fulfil all planned goals of the dissemination activities completely, surpassing almost every KPI, and stating the success of the ALFRED dissemination strategy.
  - The project website is still up and running with clearly presented information about the project’s results: http://alfred.eu/index.html. The last
news item was posted in November of 2016, shortly after the project end. There is no evidence of more interaction since this date.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - With regards to the participation of potential users and other stakeholders: During the review meeting, there was a presentation from a representative from a nursing home who indicated her interest in acquiring ALFRED services when the product will be ready. Additional interviews with managers of nursing homes were reported. Furthermore, the Deliverables 9.2.1-9.2.5 include the collection of communications and advice from the external Advisory Board.
  - However, the review panel did highlight that with stronger and proper Impact and sufficient validation would have triggered the possibility and, from a market point of view, the need to involve more stakeholders, like policy makers and Telcom service providers, for example.

<table>
<thead>
<tr>
<th>PROJECT SUSTAINABILITY</th>
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</thead>
<tbody>
<tr>
<td><strong>Continued impact from the project today</strong></td>
</tr>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
</tr>
</tbody>
</table>

- **Are the outputs from the project still being used today?**

  Whilst the Deliverables related to the exploitation plans were not publicly available on the project website, the study team, using the information available, has made the following conclusions:
  - The Consortium presented letters from partners stating the interest on the improvement and continuation of activities related to the ALFRED project after project’s end.
  - Regarding interaction with other European and national projects. The information is reported in Deliverables 9.7.1-9.7.3:
    - 16 collaboration with other European projects.
    - 6 collaboration with European networks.
    - 5 participation in conferences organized by other initiatives.
    - 5 participation in workshops.
    - 3 participation in exhibitions.
    - 4 meetings with other

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
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</thead>
<tbody>
<tr>
<td>2</td>
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</tbody>
</table>

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    - 6 collaboration with European networks.
    - 5 participation in conferences organized by other initiatives.
    - 5 participation in workshops.
    - 3 participation in exhibitions.
    - 4 meetings with other
initiatives.

- The main results of this interaction can be seen were in project dissemination. The Review Panel highlighted Panel that the goal of this interaction is the interaction itself.
- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - No synergies have been reported beyond co-organization of events.

### BEST PRACTICES

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Developers environment presented for ALFREDO and the specific results of the Back trainer were the two results that contributed the most to the state of the art.</td>
</tr>
</tbody>
</table>

### FINAL EVALUATION COMMENTS

<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project focused too much of its activities on the fulfillment of technological objectives, leaving user related ones just barely satisfied. This choice affected negatively project’s impact. However, the idea and concept behind the project, along with the technological development can be seen as being very interesting and successful.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>20/32</td>
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</table>
**GENERAL PROJECT INFORMATION**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>BEYOND SILOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Learning from integrated eCare practice and promoting deployment in European regions</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>02/2014 – 02/2017 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 735 997</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication)**

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

**BRIEF DESCRIPTION**

**Brief description of the project**

BeyondSilos enables delivery of integrated care to older Europeans to support them to live independently within the community by providing the ICT tools necessary to join up care pathways across organisations, in particular between social and health service providers. A key area of integration is providing cross-sectoral teams with common access to client data, including those coming from home platforms providing monitoring of physiological and environmental parameters and tools for improving self-care.

**OBJECTIVES**

**Objectives of the project**

The ICT platform will enable regionally customised integrated care models based on common care pathways aligned with the SmartCare Pilot A currently in the implementation phase. Pathways will be supported by workflow tools activating the most appropriate resources across the entire spectrum of services available for older people, including informal care, thus increasing support for older people to manage both acute and long-term situations, including chronic conditions and increasing frailty. The ICT platform will be based, whenever possible, on open standards and multivendor interoperability and collaboration will be strongly encouraged.

**OVERALL PROJECT ASSESSMENT**

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

The project has been finalized and main conclusions were presented and discussed at a conference in Barcelona which took place in March 2017, in conjunction with the CareWell project. The level of system pathway integration in all sites has been satisfactorily met in most sites, although some sites have had a low number of users and various sites had a very low number
OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.

Results of the project-level quantitative evaluation have shown a low evidence of a beneficial outcome for the intervention group, compared to usual care (see section 5.a). At methodological level, tools such as the IT building blocks, the pathways design, the adapted MAST tool, the integration matrix and the RAIL tool may have helped to develop long term pathways and short term pathways that delivered some positive results at local level. The adapted MAST tool seems not to be fully applicable for such trials, so tools and indicators to measure the efficacy of integrated care still need to be further designed and validated. The MAFEIP tool is one of the tools that will need to be validated.

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

One of the key features on the BeyondSilos Consortium design was to choose pilot sites that were at of integrated care. This has clearly fostered an improvement within the pilots where previously almost nothing was happening, and somehow forced the most advanced ones into improving a service model which could already be considered at the state of the art. By implementing the BeyondSilos services, all seven sites have devoted more specific attention to improving home care services, placing them as a priority for the new organisation of innovative valuable care settings for long-term conditions. This is particularly true for heart failure, but also for diabetes, COPM, stroke and fractures, especially when associated with social needs.

Most IT-based tools are not open source and remain of limited access to the public. The objective to build up an open knowledge base has not been fulfilled, although Report D5.2 is describing via the RAIL tool lessons learned.

More emphasis needs to be put at EU level on defining methods and specifications to better validate integrated care services supported by IT-based tools. Efforts should also be put in defining stricter specifications for entering such trials, including minimum quality of data, strict inclusion criteria, a generous sample size, and a shared EHR platform.

The value of carrying out such intervention at EU level has proven to be less relevant as local conditions are very determinative in the delivery of health and social care across Europe. Main benefits from a EU-wide implementation are...
common lessons learned, such as the role of nurses as the core of integrated care, the EHR as 2nd cornerstone and foster the collaboration and communication among stakeholders. Consultancy support may be offered upon demand and the web will be maintained for several years, in order to upload any new scientific and general publication.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives including

Increased quality for life for elderly people and their carers, Increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

3 Increased quality for life for elderly people and their carers

- By implementing the BeyondSilos services, all seven sites have devoted more specific attention to improving home care services, placing them as a priority for the new organisation of innovative valuable care settings for long-term conditions.
- The professionals involved in the project all agreed on that the new ICT supported service had a beneficial effect on the care provided. In all sites, the self-perceived level of integration improved as a result of the project.
- Some sites have proven that at least at qualitative level people in the intervention group felt better attended than people receiving usual care.
- Results of the project-level quantitative evaluation have shown a low evidence of a beneficial outcome for the intervention group, compared to usual care.
- At methodological level, tools such as the IT building blocks, the pathways design, the adapted MAST tool, the integration matrix and the RAIL tool may have helped to develop long term pathways and short term pathways that delivered some positive results at local level.

However:

- The adapted MAST tool seems not to be fully applicable for such trials, so tools and indicators to measure the efficacy of integrated care still need to be further designed and validated. The MAFEIP tool is one of the tools that will need to be validated.
- While trials such as BS pilot trial target elders

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20 The programme objectives were detailed in Section 2.2 of our Technical Offer.
21 http://mafeip.eu/about_study/
22 http://www.linkedpolicies.eu/policymaps/eiponaha/
with chronic diseases, in cases where their health condition is much deteriorated, IT support tools and/or integrated care services may not have enough impact to significantly improve their health condition.

- It could not be proven whether telemonitoring of vital parameters facilitates the good control of the clinical conditions at home, the empowerment of the patients, updates of therapies by doctors, and better connections between GPs and specialists.

- Increased personal independence of the elderly
  - N/A

- Concepts for the detection of ageing-related risks
  - N/A

- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth
  - At the end, the quantitative outcome measures that were compared between integrated care and usual care didn’t show significant differences, in the following KPI:
    - Total number of admission to hospital
    - Total number of days in hospital
    - Total number of unplanned admission
    - Total number of days of unplanned admission in hospital
    - Annual contact rate (health and social care providers)

- Although the first admission to hospital occurred earlier for the IC group, unadjusted analyses suggested that their annual admission rate and annual length of hospital stay were significantly lower than for the UC group.

- The IC group had a lower readmission rate to hospital within 30 days even though they had a longer follow-up period.

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of care systems

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and
common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEP Study and visualised through the Policy dashboard on EIPonAHA.
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

Social records, while others included triage systems, decision support and scheduling, training platform, behaviour monitoring, vital sign monitoring, among others. Still, more effort should be put on evaluating the reasons for such negative outcome, in order to increase the learning effect of the E²-based intervention.
- The majority of BeyondSilos services achieve an overall positive socio-economic return, meaning that overall service-related benefits outweigh overall service-related costs, including monetary, resource and intangible costs and benefits.

• Creation of ICT products and services for ageing well
  - ICT solutions have been demonstrated to facilitate and improve access to and sharing of data highly relevant for better care, real time communication between all care actors and care recipients; support for a more safe and comfortable life at home.

• Facilitate wide implementation of sustainable innovation services
  - Main benefits from a EU-wide implementation are common lessons learned, such as the role of nurses as the core of integrated care, the EHR as 2nd cornerstone and foster the collaboration and communication among stakeholders.

• Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100,000 inhabitants
  - In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

• New markets for independent and active living products and services through a set of open standards and integrated platforms
  - Most IT-based tools are not open source and remain of limited access to the public. The objective to build up an open knowledge base has not been fulfilled, although Report D5.2 is describing via the RAIL tool lessons learned.

• Improved competitiveness of EU industry
  - N/A

• Strengthened global position of EU industry in service robotics for ageing well
  - N/A

• Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- N/A
- Creating a longer term RTD agenda
- N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - The contribution can be considered as beyond state of the art as it remains a challenge at EU level to merge social and health care and offer a person-centred care.
  - The project failed to deliver enough scientific publications during project lifespan and will have to produce this in a reasonable timespan after the project.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

**DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION**

3
- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Although the dissemination and exploitation activities were quite impressive and successful on regional level the link to a European integrated care was impossible to achieve. The differences on legal and cultural level seems to be too great to propose a common approach.
  - The Final Conference was organised in conjunction with the Care Well project. Both projects target the main user group, elderly people with multiple chronic conditions and a high degree of frailty. While CareWell is focused on vertical integration at health care level among different levels of care, BS is focused on horizontal integration. At the Conference, one key discussion point was how to finance value-added care. The transferability of the integrated care pathways was also discussed, but it became evident that each region has to find own tools and legacy systems that meet its needs. A good sample of posters was shown at the Conference, representing local experiences with its results.
  - Next to regular teleconferences among partners, all partners met regularly during

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23 http://mafeip.eu/about_study/
24 http://www.linkedpolicies.eu/policymaps/eiponaha/
specific events such as the EIP Aha seminar in Brussels, or other related events.
- A sustainable business model is not self-evident for each of the different stakeholders involved in the delivery of BeyondSilos services, at least not at every site under the assumption of unchanged framework conditions... Under the current service model, costs and benefits are not equally distributed across the individual stakeholders involved in service provision, meaning that benefit shifts may represent a hurdle for economically sustainable operation of the BeyondSilos model at some sites.
- The project website (http://www.beyondsilos.eu/home/) details information on the project along with project results.
- Social media: The project has a very strong Twitter account with over 329 followers and 579 published tweets.
- Other dissemination activities included:
  o BeyondSilos partners presented the project at 16 events.
  o The project has been informed on a regular basis about potential publication opportunities; publications and newspaper articles have already been issued.
  o The consortium is well represented in the EIP on AHA; several partners are very active in the B3 Action Group on integrated care. The project is closely cooperating and coordinating efforts with several other initiatives such as CareWell and SmartCare.
  o The comprehensive training roadmap was updated. Two mentoring workshops took place during the third year.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - In some sites have had a low number of users and various sites had a very low number of social care professionals and informal caregivers enrolled.
  - All pilot sites have attained an integration of patients, carers, social and health care entities. Various target users are involved: the health and the social care professionals, the informal carers, voluntary care provider organisations, and contact centre operators who will handle the alarms generated.
  - The evaluation cohort consisted of 1108 patients, plus 165 health care staff, 92 social care staff and 54 caregivers. The mean age of the intervention group was 82 years.
More than 37,800 contacts with health and social care professionals were recorded. The analysis showed that receiving integrated care was associated with a higher annual contact rate with health and social care professionals.

### PROJECT SUSTAINABILITY

#### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

2

- **Are the outputs from the project still being used today?**
  - During the Review Year 3 meeting it became also evident that not all regions have the same visions as regards sustainability and transferability of the intervention.
  - The regional sustainability plans are primarily based upon letters of intent in most regions, and the project seems to have failed in offering the evidence for regions to continue investing in such deployment, as some regions openly admitted.
  - The sustainability is still a shortcoming in the project. Apart from the effort in the socio-economic impact analysis, there are not a real sustainability plan. Looks like that after the project few regions will use the platform.
  - Business case modelling was done at local level since each site has a different network of stakeholders and a different legacy and governance system. A crucial factor for sustainability seems to be the time savings for professionals. Another important detail is whether IT tools are regarded as cost or as investment. Hence, no general conclusion can be drawn as regards the continuity and sustainability of the service in the pilot sites.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - A specific Synergy dimension has been initiated and promoted between 3 CIP projects: Smart Care, Beyond Silos and Care Well whilst keeping the 3 projects separate at legal and budgetary levels. This synergy dimension aims at maximizing EU added value, but also to optimize knowledge and experience sharing between the 3 projects on topics of common interest.
  - Beyond this synergy dimension further contacts have also been established with the European Innovation Partnership B3 Action Group (focusing on Integrated Care) whenever required.
  - The benefits of the collaboration and the
Lessons learned between BS, CareWell and SmartCare were not obvious enough although we recognise considerable efforts were made to work together but it did not lead to optimization, cost reduction or joint scientific publishable know how.

**BEST PRACTICES**

| Best practices that the project has developed | • BeyondSilos aims at further spreading ICT-enabled, joined-up health and social care for older people by developing, piloting and evaluating integrated services based on two generic pathways in a multicentric approach, making extensive use of knowledge and experience gained among early adopters of integrated eCare in Europe. Third sector organisations and family/informal carers, where appropriate, are included in the information loop in order to facilitate service users to self-care and live independently. |

**FINAL EVALUATION COMMENTS**

| Final comments regarding the in-depth evaluation | From the review of the Project deliverables and review material, it seems that the Beyond Silos Project had very good objectives, however that it failed to deliver on these objectives and that the Project fell short in many different aspects, primarily providing sufficient evidence of the impact of the use of integrated services to significantly improve the health conditions of elderly people. |

| TOTAL IN-DEPTH EVALUATION SCORE | 13 |
| TOTAL SCORE | 22/32 |
**IN-DEPTH ANALYSIS EVALUATION SHEET**

**GENERAL PROJECT INFORMATION**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>CARER+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Ageing well in the community and at home: developing digital competencies of care workers to improve the quality of life of older people</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>04/2012 – 03/2015 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>1 905 122</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication)**

- [ ] Robotics for Ageing Well
- [x] Innovative solutions for independent living
- [ ] Innovating elderly care
- [ ] Better connected through integrated care
- [ ] Frailty, early detection and intervention
- [ ] Fall Prevention
- [ ] Knowledge sharing and standardisation related to ageing well

**BRIEF DESCRIPTION**

Brief description of the project

The Carer+ project identified the ICT competences of care workers and informal carers (the “Digital Competence Framework”) and developed these by designing and implementing a set of learning paths and educational resources for mobile and work-based learning that responded to major challenges to their professionalisation: isolation, access to technology, flexibility of study modes, lack of support and motivation, formal accreditation, recognition of prior experience, and scalability.

**OBJECTIVES**

Objectives of the project

The objectives of the Carer+ project is to develop the digital competencies of care workers so as to enable those persons to provide better quality of care to the lives of elderly recipients. Establishing a competency framework for ICT skills linked to training programs, learning resources and certification facilities will ensure the caregiver profession would gain improved status and public awareness. This would ultimately lead to better quality of care in accordance with European recognised qualifications.

**OVERALL PROJECT ASSESSMENT**

Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

Having overcome initial challenges, management has been able to move forward in a productive way and meet most of their objectives. However, within this review period there are other consortium changes which appear to be currently addressed, or are in negotiation with the commission (which seems to be holding back participation).
Additionally, with the technology partner UBIQUIET leaving the consortium, there was a loss of one of the technologies to be used in the pilots. While, the consortium conducted a survey and identified some other technical scenarios that could be implemented, such as NFC technology that is available in many modern Android tablets, these changes were unfortunately not addressed in the deliverables. These delays raise concerns as they could endanger project delivery.

Generally, deliverables and work completed in active work packages are of high quality. Additionally, the project attracted external entities to collaborate in the pilot, thus increasing the number of participants and testers of the Competence Framework and Training Material. This broader, more external audience may also review the project from a different perspective than that of consortium members. Also, the additional deliverables provided were consistent with the general project quality.

### OVERVIEW OF PROJECT IMPACT

| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win | 2 |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. | \n| Plans for the use and exploitation of results | 3 |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. | \n
### TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

8

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

| Impact area 1: Improved quality of life | 3 |
| How the project has made an impact regarding Improved quality of life | \n| This will be evaluated taking into account | \n| • Increased quality for life for elderly people and their carers |
the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

- The objectives of the Carer+ project is to develop the digital competencies of care workers so as to enable those persons to provide better quality of care to the lives of elderly recipients. Establishing a competency framework for ICT skills linked to training programs, learning resources and certification facilities will ensure the caregiver profession would gain improved status and public awareness. This would ultimately lead to better quality of care in accordance with European recognised qualifications.

- Increased personal independence of the elderly
  - N/A
- Concepts for the detection of ageing-related risks
  - N/A
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

**Impact area 2: Increased efficiency of health and long-term care**

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
<td></td>
</tr>
</tbody>
</table>

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

**Impact area 3: Market growth and expansion of the EU industry**

| Score 1-4 |
|---|---|
| How the project has made an impact regarding Market growth and expansion of the EU industry | 2 |

- New markets for independent and active living

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25 The programme objectives were detailed in Section 2.2 of our Technical Offer.
26 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strenthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study[^28] and visualised through the Policy dashboard on EIPonAHA[^29].

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

## DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

### Notable efforts with regards to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

### Supporting Evidence

3. **Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.**
   - Project website ([http://www.carerplus.eu/](http://www.carerplus.eu/)) is very detailed and is very professional providing a great deal of information about the project.
   - Social media: The Project has a twitter account with 179 tweets and 175 followers (last activity May 2015); The project also has a Facebook account with 251 followers (last activity November 2016); The project also has a Linked In group.

3. **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
   - The project attracted external entities to collaborate in the pilot, thus increasing the number of participants and testers of the Competence Framework and Training Material. This broader, more external audience may also review the project from a different perspective than that of consortium members.
   - The consortium has showed proof that there is...

[^28]: http://mafeip.eu/about_study/
[^29]: http://www.linkedpolicies.eu/policymaps/eiponaha/
a strong interest of potential users and other stakeholders quite involved for participation in the project.

**PROJECT SUSTAINABILITY**

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>4</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
</table>
| *Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).* | **4** | - There are defiantly plans for the use of the results of the consortium as a whole for both individual and group beneficiaries. Although, sustainability remains an issue in this project the consortium believes that with the many additional organisation interested in participating that they will be able to move forward with the solid sustainability program they have created.  
- According to the project coordinator, a number of activities have also been carried out following the project close:  
  - Integration of the digital competence framework of the Carer+ training programme in the French diploma of life assistant (level V, included in the French National Qualification Framework). These French professional diplomas for care workers can be funded by the collective training taxes applicable to this French labour sector. If the current trends continue, it is expected that around 4000 people will obtain these French professional diplomas integrating Carer+ digital competence framework.  
  - Creation of a specialisation diploma on digital competences included in the Spanish Catalogue of professional qualifications. A training program of a new specialty in digital skills, linked to the Professional Certificate "Social and health care to people at home" has been developed on the basis of Carer+ project in the Basque Country. This is the first training specialty developed in the Comunidad Autónoma del País Vasco, and has been included in the Basque training specialties register as well as in the National Register.  
  - Inclusion in already existing training programs:  
    - The Italian partner, IRS (Istituto per la Ricerca Sociale), decided to continue the experimentation of the CARER+ training programme for one year after the end date of the project including... |

**Supporting Evidence**
more training resources contextualised at local level, in cooperation with the local stakeholders. For example, materials on how to use tele-care tools, an integration on time management tools, and other resources which can be helpful in the local context.

- The Spanish partner IN (Iniciativas Innovadoras), with another local partner, Grupo SSI, adapted CARER + competence framework to the reality of the Basque Country carers through Digicare project, funded by the Basque Government Program Saiotek 2013. Grupo SSI and Lanbide (Basque public employment service) worked together on the design of a new professional profile of home care workers, and then from that professional profile, on a training program of a new specialty in digital skills, linked to the Professional Certificate “Social and health care to people at home” from June 2014 to February 2015. This is the first training specialty developed in the Comunidad Autónoma del País Vasco, and has been included in the Basque training specialties register as well as in the National Register, as mentioned above.

- The website of the project is still available (http://www.carerplus.eu/), giving access to all the deliverables of the project, mainly the training programme resources, available free of charge and in 6 languages (English, French, Spanish, Italian, Romanian and Latvian). More than 45,000 visits have been received until now and several organisations have asked the training programme files (from Ireland, Italy or Hungary).

- Two external organisations were involved as external pilot partners: two associations, one from Belgium and another from Portugal, with which a collaboration agreement was signed.

- The project has been presented on the occasion of different events, such as the meeting of the interest group of the European parliament on carers organised on October 2014, the final conference of DELAROSE project in September 2015, the Second European Summit on Digital Innovation for Active and Healthy
Ageing organised in December 2016, the final conference of TRACK project in June 2017, and in the framework of different meetings and events of the EFFE (European Federation for Family Employment and Home Care).

- There has been a continued collaboration with Grupo SSI in the framework of the EFFE as regards new project proposals for the professional profile of domestic housekeeper, under an Erasmus+ Sector Skills Alliance project, called PRODOME (Professionalising domestic housekeepers). The idea is to develop as well a training programme for these professionals, including innovative competences, such as digital or green skills.

- With regards the other options, on the basis of the Carer+ grant agreement, all the deliverables were compulsory public, available free of charge and with an open license. This means that no patents, business or commercialisation purposes were possible.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - N/A

### BEST PRACTICES

**Best practices that the project has developed**

- The portal of the European Portal for the professionalization of care workers is up and running. It is of high quality and it is quite easy to use.
- The development of a certification process for digital competences for Social carers and then to link the process with Carer+ Digital competence Framework has been achieved and the quality of the handbook for certification is of high quality.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The Project has established the European Portal for the professionalisation of care workers and the development of a certification process for digital competences. However, according to the website, there seems to be limited continued activity after 2015, suggesting that the results of other project have not lasted over time and reducing what could have been a very large impact across Europe in terms of the professionalization of care workers for the elderly.

### TOTAL IN-DEPTH EVALUATION SCORE

14

### TOTAL SCORE

22/32
### IN-DEPTH ANALYSIS EVALUATION SHEET

#### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>CAREWELL</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Multi-level integration for patients with complex needs</td>
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<tr>
<td>Programme</td>
<td>CIP</td>
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<tr>
<td>Period</td>
<td>02/2014 – 02/2017 (36 months)</td>
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<td>EU Funding contribution</td>
<td>2 926 000</td>
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<td>Project type</td>
<td>Pilot Action Type B</td>
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</tbody>
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#### Project subject (to help categorise the results for the final publication)
- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

#### BRIEF DESCRIPTION

**Brief description of the project**
CareWell will enable the delivery of integrated healthcare to frail elderly patients through comprehensive multidisciplinary programmes. ICTs will facilitate the coordination and communication of healthcare professionals and support patient centered delivery of care at home. The project supports the integration of care in six European Regions.

#### OBJECTIVES

**Objectives of the project**
CareWell will enable the delivery of integrated healthcare to frail elderly patients in a pilot setting through comprehensive multidisciplinary integrated care programmes where the role of ICTs can foster the coordination and patient centered delivery care. Carewell will focus on complex, multi-morbid elderly patients, who the patients most in need of health and social care resources (35% the total cost of Health Care System) and more complex interventions due to their frailty and comorbidities (health and social care coordination, monitoring, self-management of the patient and informal care giver).

#### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

The project, which integrates primary care with hospital care, is managing to achieve good engagement from health care professionals. The two care pathways cut across organisational boundaries and ensure that healthcare resources are more efficiently and effectively used. Information sharing complies with European and national regulations relating to consent and privacy. The ICT platform is based, wherever possible, on open standards and multi-vendor interoperability. During the second year of the
project, the respective services were successfully
developed further.
The synergy with the Beyond Silos and Smartcare
projects is progressing as all the three projects
agreed to use the same approaches with regard
to data collection (MAST framework, integrated
database), enabling them to put together all
information available.

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</td>
</tr>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>The project has been expected to have a significant impact not only on the regions of the deployment sites, but also from an overall European perspective. In fact, the CareWell project can exert a significant social and economic impact. Combining and jointly analysing the data collected in CareWell and the two other integrative projects and the scaling up in some of the participating regions provide, a sound empirical evidence for the cost-benefit evaluations needed to convince regional and national policy-makers about the benefits of ICT-supported integrative care. In view of its general and specific objectives and the results already achieved the CareWell integrated pathways for healthcare will substantially increase the knowledge about sustainable integrated health and social care and are well suited to be transferred to other European regions.</td>
</tr>
</tbody>
</table>

| Plans for the use and exploitation of results |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |
| 3 |
| If a survey of lessons learned is produced, it will show the pathway how to introduce the integrated care services supported by ICT in other regions avoiding the difficulties experienced by the innovators in the pilot sites. The concrete methods elaborated by the consortium like the RAIL tool, ASSIST tool or Predictive modelling framework have potential to be used in other regions and under different circumstances. Besides, together with the two parallel projects Beyond Silos and SmartCare all projects are filling a joint database with the data obtained which will represent a valuable resource for future studies and in-depth data examination. All involved sites are planning to exploit and use the results further. In some cases, they will serve as a basis for scaling up the services for a broader community. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE |
| 11 |
## OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives including increased quality of life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants

### Impact area 3: Increased quality of life for elderly people and their carers

- The project described realistic findings including the fact that integrated care did not reduce costs, but has increased quality of life for older people included in the study. The results from the cost-benefit analyses showed that the tools and services were to the benefit of patients.

- In all deployment sites, patients valued the new services positively regarding resources spent and benefits received.

### Impact area 4: Increased personal independence of the elderly

N/A

### Impact area 5: Concepts for the detection of ageing-related risks

N/A

### Impact area 6: The Reduction of admissions and days spent in care institutions

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 7: Increased efficiency of care systems

- The project, which integrates primary care with hospital care, is managing to achieve good engagement from health care professionals. The two care pathways cut across organisational boundaries and ensure that healthcare resources are more efficiently and effectively used.

- A further objective was to optimise the efficiency of health care services, contribute to long-term sustainability of regional healthcare systems, provide evidence for a replicable plan for pan-European deployment of integrated care services and create a critical mass for large-scale EU-wide deployment and delivery of integrated care that can be transferred to other cohorts of the population with other health and social care needs.

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30 The programme objectives were detailed in Section 2.2 of our Technical Offer.

31 http://mafeip.eu/about_study/

32 http://www.linkedpolicies.eu/policymaps/eiponaHA/
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

- The project has managed to optimise the efficiency and the effectiveness of the healthcare services delivered to complex multimorbid patients aged 65+ through use of integrated care programmes.
- The project has also established a basis for future work on creating an approach to delivering integrated care for complex multimorbid patients aged 65+ that can be transferred to other cohorts of the population with other health and social care needs.

**Creation of ICT products and services for ageing well**
- The objective of the CAREWELL project was the provision of integrated care for frail older people who have complex health and social care needs due to their complex multiple chronic conditions. The project has achieved this objective successfully through two ICT supported pathways: 1) integrated care coordination and 2) patient empowerment and home support.
- Furthermore, CareWell also aimed to provide integrated care for frail elderly patients through ICT enabled healthcare services coordination, patient monitoring, patients' self-management and informal caregivers’ involvement.

**Facilitate wide implementation of sustainable innovation services**
- Through the empirical evidence gained and the scaling up in some of the participating regions, the CareWell project can exert a significant social and economic impact both on the regions where implemented and on the overall European debate.
- The project has contributed to the long-term sustainability of regional healthcare systems in Europe.
- The project has also provided evidence for a replicable plan for the pan-European deployment of integrated care services.
- The project has also established a basis for future work to create a critical mass for the large scale, European-wide deployment of ICT-enabled integrated service models, relying on the support of public entities and their capabilities to achieve EU-wide operation of a commonly defined ICT integration infrastructure.

**Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- Regarding the number of hospitalisations, there were no
significant differences between the patients included in the integrated service provision and the control group.
- **In-patient average length of stay**
- However, the length of stay in hospital was shorter among those in the intervention group.
- The identification of financial benefits plus general conclusions from the pilot sites by predictive modelling was an essential outcome to support policy-makers and commissioning professionals in making decisions about integration.
- The ICT platforms and communication channels enabled social and health care coordination and information sharing across organisational boundaries, avoided duplication of efforts and inefficient use of healthcare resources, and improved treatment compliance as well as self-care and self-management.

**Impact area 3: Market growth and expansion of the EU industry**  
**Score 1-4**

How the project has made an impact regarding Market growth and expansion of the EU industry  
*This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.*

<table>
<thead>
<tr>
<th>3</th>
<th><strong>New markets for independent and active living products and services through a set of open standards and integrated platforms</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Information sharing complies with European and national regulations relating to consent and privacy. The ICT platform is based, wherever possible, on open standards and multi-vendor interoperability.</td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th><strong>Improved competitiveness of EU industry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- The project has created a basis to provide a forum for innovative European ICT industries to showcase their services that support integrated care delivery solutions in the future.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Strengthened global position of EU industry in service robotics for ageing well</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- N/A</td>
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</table>

<table>
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<tr>
<th></th>
<th><strong>Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- N/A</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Creating a longer term RTD agenda</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- N/A</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- The results achieved will substantially increase the knowledge about sustainable integrated health and social care and are well suited to be transferred to other European regions.</td>
<td></td>
</tr>
</tbody>
</table>

Supporting indicators & Evidence  
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study³³ and visualised through the Policy dashboard on EIPonAHA³⁴
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

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³³ [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
In view of its general and specific objectives and the results already achieved, the CareWell integrated pathways for healthcare will substantially increase the knowledge about sustainable integrated health and social care and are well suited to be transferred to other European regions.

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
- The concrete methods elaborated by the consortium like the RAIL tool, ASSIST tool or Predictive modelling framework have helped to evaluate the work being carried out and make comparisons between results in different pilot locations and even between different projects.

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
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</thead>
<tbody>
<tr>
<td>Notable efforts with regard to the dissemination of the project results</td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- All pilot sites have addressed their policymakers of both local and national levels. Furthermore, the project was and will be presented at a series of national and international conferences such as the International Conference on Integrated Care 2016.</td>
</tr>
<tr>
<td>- The brochure “Guidance for implementing integrated care in policy and practice” represents a valuable tool for stakeholders who want to take over the CareWell model of ICT supported integrated care.</td>
</tr>
<tr>
<td>- Fact sheets for each site were produced, videos were created for each one of the sites, but also explaining to the general public the advantages of care integration, and the project was presented at a series of national and international conferences.</td>
</tr>
<tr>
<td>- The project undertook a significant effort in the dissemination of results, both through presence at conferences (such as the IFIC in Barcelona), or through open publishing of project results through a well-maintained website and social media channels. The major achievements in the area of dissemination include:</td>
</tr>
<tr>
<td>- Maintaining the integrated eCare website between CareWell, BeyondSilos and SmartCare, <a href="http://www.integrated-ecare.eu">www.integrated-ecare.eu</a>, providing a</td>
</tr>
</tbody>
</table>
concerted forum to interested stakeholders.
  o The circulation of an Internal Dissemination Newsletter informing partners of dissemination opportunities.
  o Participating in approximately 50 public events, including several high profile international conferences.
  o Receiving extensive coverage in online and print publications, as well as TV coverage.
  o Strengthening synergies with BeyondSilos, SmartCare and the EIP for AHA, both online and through public events.
  o Co-organising the joint final conference on integrated care, together with the BeyondSilos project.
  o TV coverage of the project has also occurred in Croatia and Poland following project press conferences.
- The project website (http://carewell-project.eu/norm/home/) is very professional and clear. It provides a section on the different project deliverables, factsheets, info about the pilots etc.
- Social media: The project twitter account was last updated in April 2017 and has 300 followers.
- According to the project coordinator, the following communication activities took place following the end of the project:
  o Winner of the ICIC17 IFIC Integrated Care Best Paper Award
  o Oral and poster presentation in the International Conference in Integrated Care 2017
  o Oral presentation in the National Congress on chronic patients
  o Candidate for the Award of the Spanish Society of Primary Care Managers to innovative practices.
  o Candidate for the XIV Award of Best Practices in Advanced Management (Euskalit)
  o Candidate for the II Award of regional Best Practices
  o Candidate to the Award of Exchange of good practices in digital transformation

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Moreover, the project which integrates primary care with hospital care, has achieved good engagement from health care professionals.
All pilot sites have addressed their policy-makers on both local and national levels and focus on conveying to them the new ICT based integrated health and social care services as well as their concrete benefits.

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

4. **Are the outputs from the project still being used today?**
   - A Data Sharing Agreement has been circulated within the Consortium and will be sent out for signature. Even if only some of the partners sign it, the Agreement will allow the further analysis of data, at least for some of the deployment sites provided further sources of funding are identified to finance its cost.
   - According to the project coordinator, there is no collaboration between all the partners even if most of them do collaborate in initiatives such as the EIPonAHA or gave established bilateral collaboration. Some of them, to our knowledge, have submitted new proposals together. Considering that the Project was not meant to develop new products and that the Consortium was made up mainly of public authorities, business spin-offs, applications for patents and successful commercialisation of results all fall outside the scope of the Project. Having said that, HIM SA and empirica have included CareWell in their list of successful projects.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The synergy with the Beyond Silos and Smartcare projects is progressing as all the three projects agreed to use the same approaches with regard to data collection (MAST framework, integrated database), enabling them to put together all information available. The coordinators have met, a common webinar on change management was held, Veneto and Low Silesia regions participate in the production of a common glossary, and an umbrella website www.integrated-ecare.eu was created for the three projects. In addition, the projects contributed jointly at several occasions to the European Partnership for Active and Healthy Ageing.
  - In collaboration with these projects, CareWell has established a wiki on integrated care: www.wiki.integrated-ecare.eu. It has also consolidated the learnings from implementing
integrated care across the projects under a set of guidelines “Guidelines for CareWell Uptake” and an “Integrated Care Glossary”, representing important steps towards a common terminology in the area of newly organized services for frail elderly and suited to be used by interested teams to implement regional integrated care programmes.

- Five of Carewell’s pilot sites successfully applied as EIP reference sites.

### BEST PRACTICES

**Best practices that the project has developed**

- The brochure “Guidance for implementing integrated care in policy and practice” represents a valuable tool for stakeholders who want to take over the CareWell model of ICT supported integrated care.
- The synergy with the BeyondSilos and Smartcare projects has been paramount to generating such a big impact.
- According to the project coordinator, CareWell was rated as “Excellent” by the Reviewers during the final review. In 2016 it won the CNIS 2016 Award for the “Most Innovative European Project”. The partners keep presenting it in the conference in which they speak because it is a reason of pride for all of them.
- The main purpose of CareWell was pump priming the deployment of Technology Enabled Care in the participating regions and to promote it in other EU regions. CareWell has reached this target in most of the regions.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

It demonstrated convincingly that social aspects must be the focus and that technology, if implemented adequately and if needs of all stakeholders involved are taken into account, can help increase older persons’ autonomy and quality of life, relief the work load of family and professional caregivers, and improve coordination of work and communication among all persons affected.

The project has been expected to have a significant impact not only on the regions of the deployment sites but also from an overall European perspective. In fact, the CareWell project can exert a significant social and economic impact. Combining and jointly analysing the data collected in CareWell and the two other integrative projects and the scaling up in some of the participating regions provide a sound empirical evidence for the cost-benefit evaluations needed to convince regional and national policy-makers about the benefits of ICT-supported integrative care.

**TOTAL IN-DEPTH EVALUATION SCORE**

18
| TOTAL SCORE | 29/32 |
# GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>DALI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Devices for Assisted Living</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>11/2011 – 11/2014 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3.022.000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
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</table>

## Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

# BRIEF DESCRIPTION

**Brief description of the project**

The DALI project will develop a robotic cognitive walker (c-Walker) that can be taken to, or picked up at, the place to be visited, gently guiding the person around the building safely. The device takes corrective actions when the user comes across the type of busy area, obstacle or incident they want to avoid. ‘The c-Walker is aimed at providing physical and cognitive support to older adults. It can give them confidence in public environments,’ explained Luigi Palopoli, professor at Italy’s Trento University who coordinated DALI (Devices for Assisted Living).

# OBJECTIVES

**Objectives of the project**

The main technological objective of the DALI project is to design and prototype the c-Walker, a cognitive navigation prosthesis for seniors of a reasonable cost, which offers a physical, emotional and cognitive support in complex and stressful operating context (shopping mall or airports).

# OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

The objectives specified in DoW have been attained, from the formal point of view. However, outcomes are achieved at a lower level of ambition than expected. The milestones have been attained.

There are some relevant technical/technological achievements, and the obtained technical results are in general of high scientific quality.

The project makes also some theoretical progresses beyond the state of art; e.g., the basic SFM model for path planning has been extended by inclusion of unexpected changes in the direction of the motion. A novel approach has been proposed on contextual data (such as...
<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
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</thead>
<tbody>
<tr>
<td><strong>OVERVIEW OF PROJECT IMPACT</strong></td>
</tr>
<tr>
<td><strong>2</strong></td>
</tr>
<tr>
<td><strong>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy:</strong> 1) <strong>Improved quality of life</strong>, 2) <strong>Increased efficiency of health and long term care</strong>, 3) <strong>Market growth and expansion of the EU industry.</strong>*</td>
</tr>
<tr>
<td><strong>The scientific, technical, commercial, social or environmental impact of the project (where applicable) within the three key impact areas of the EU’s Triple Win Strategy:</strong></td>
</tr>
<tr>
<td><strong>The overall impact of the project on the end users, the elderly is modest.</strong> It may be concluded that the project has achieved impact on technical/technological aspects, and it has provided some lessons learnt for the future development of products and services. It has achieved modest impact regarding the potential for commercialization. The relevant outputs are a set of components, rather than a product, the c-Walker. The impact of the dissemination activities was satisfactory in this period, including project website, press conferences, workshops organization, technical and clinical conferences presentations, and several publications in international peer reviewed high ranked journals (4 submissions for the Y3). An application for patent (real world printed OCR) is deposited by Siemens Austria (within Austria only). Scientific impact has been obtained with several presentations in conferences of excellent level; four journal publications are already submitted. The project was highly technically and research oriented and has made scientific progress in some aspects beyond the state of art. The expected commercial and social impacts of the project are low.</td>
</tr>
<tr>
<td>Plans for the use and exploitation of results</td>
</tr>
<tr>
<td><strong>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</strong></td>
</tr>
<tr>
<td><strong>2</strong></td>
</tr>
<tr>
<td>The exploitation is still in very preliminary stage as the links with potential markets such as airports and hospitals are not well established; academic usage of the project prototype by the neuro cognitive mobility community is not considered. The c-Walker does not appear to be commercially viable. However, the project contributes to the development of the concept of social robotics by the inclusion of the social rules in man-machine interactions, and there is some potential in the technological achievements the meet the expectations of the corresponding FP7 call. The prototype does not appear to have much of a commercial future, but components are marketable. A detailed plan for exploitation is presented,</td>
</tr>
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</table>
including specific information for each type of stakeholder to the project. However, only the individual applications (DALi OEM) may have an effective exploitation in the near future.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 7

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives including Increased quality for life for elderly people and their carers, Increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

1. Increased quality for life for elderly people and their carers
   - The overall impact of the project on the end users, the elderly is modest.
   - The system as a whole is not perceived as usable by the potential clients that were targeted: shopping centres, hospitals, airports and the price is prohibitive for individuals, even if they would find the solution attractive, which does not appear to be the case.
   - However, only the individual applications (DALi OEM) may have an effective exploitation in the near future.
   - Due to a lack of longer-term trials, and only functional tests and Tea Parties being conducted, the assessment of the impact is relatively modest from the user perspective.
   - Social and commercial impacts are closely related to device acceptance; the effort should have also been made in the design of c-Walker as an appealing shopping trolley to avoid the feeling of self-perceived inadequacy and/or social stigmatization.

2. Increased personal independence of the elderly
   - Regarding an increased quality for life for elderly people and their carers and increased personal independence of the elderly: As can be seen on its webpage, the project promised a “very significant” impact in this area. Emphasising that “The user can in our view get out of his domestic walls and do his/her own shopping activity or take an airplane”.

3. Concepts for the detection of ageing-related

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35 The programme objectives were detailed in Section 2.2 of our Technical Offer.
36 http://mafeip.eu/about_study/
37 http://www.linkedpolicies.eu/policymaps/eiponaha/
### Impact area 1: The Reduction of admissions and days spent in care institutions

- **Population that perceive their health as good or very good**
- **Population having a long-standing illness or health problem**
- **Healthy life years at birth**

### Impact area 2: Increased efficiency of health and long-term care

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
</tr>
</tbody>
</table>

#### Supporting indicators & Evidence

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  

#### Supporting indicators & Evidence

<table>
<thead>
<tr>
<th>Score 1-4</th>
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</thead>
<tbody>
<tr>
<td>New markets for independent and active living products and services through a set of open standards and integrated platforms</td>
</tr>
</tbody>
</table>
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

### Supporting indicators & Evidence

- **Increased efficiency of care systems**
  - N/A
- **Creation of ICT products and services for ageing well**
  - N/A
- **Facilitate wide implementation of sustainable innovation services**
  - N/A
- **Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100,000 inhabitants
  - In-patient average length of stay

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38 http://mafeip.eu/about_study/
39 http://www.linkedpolicies.eu/policymaps/eiponaha/
significant effort will be placed on the software integration. We expect an important outcome in the architectural paradigm for the integration of assisted living devices at the operating system and middleware level. One of the possible outcomes is the definition of open interfaces that will simplify the integration of different types of components.” Furthermore, “a substantial scientific improvement on the state of the art in the following areas: 1) sensing technology, 2) cognitive engine, 3) human machine interface. “

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - However, the project contributes to the development of the concept of social robotics by the inclusion of the social rules in man-machine interactions, and there is some potential in the technological achievements the meet the expectations of the corresponding FP7 call.
  - The relevant outputs are a set of components, rather than a product, the c-Walker. The c-Walker does not appear to be commercially viable.
  - It may be concluded that the project has achieved impact on technical/technological aspects, and it has provided some lessons learnt for the future development of products and services. It has achieved modest impact regarding the potential for commercialization.
  - Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
    - Intramural R&D expenditure
    - R&D personnel and researchers in FTE
  - N/A

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION
Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

3

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - The impact of the dissemination activities was satisfactory, including project website, press conferences, workshops organization, technical and clinical conferences presentations, and several publications in international peer reviewed high ranked journals (4 submissions for the Y3). An application for patent (real world printed OCR) is deposited by Siemens Austria (within Austria only).
  - Good use of social media channels with:
    o Twitter account (@DaliProject), 247 tweets, 147 followers.
    o Facebook account (Dali_Project), 90 likes.
    o Youtube Channel, 10 videos, total of 4,120 views.
    o Google + account, various different publications.
  - The project website (http://www.ict-dali.eu/dali/index.html) presents the results clearly and is still accessible. The last news uploaded onto the website is from November 2014, shortly after the end of the project.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Different Spanish stakeholders and some Italian stakeholders are involved in project dissemination. However, the stakeholders from other partner countries do not participate. Moreover, the project did not establish a contact with commercial walker companies, which could be interested in c-Walkers results further development and exploitation.

PROJECT SUSTAINABILITY

Continued impact from the project today

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

Supporting Evidence

2

- Are the outputs from the project still being used today?
  - The expected commercial and social impacts of the project are low.
  - The business model is still unclear and the user acceptance tests together with exploitation to core stakeholders are not very useful for arguing a strong business case.
  - The exploitation of the solution did not
really attract the targeted stakeholders. The exploitation plans are still not convincingly addressed to the potential stakeholders. The Visual Tools (SME, Spain) plans to exploits in 2015 the heat map component in intelligent camera; the C-Walkers prototype interests the Toledo Hospital for paraplegic rehabilitation. INDRA (Spain) exploits c-walkers for internal purposes. Siemens is interested in exploitation of localisation modules and OCR in airports (Vienna airport). However, there is no one partner, which will take the prototype to assistive technology market.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The links with potential markets such as airports and hospitals are not well established; academic usage of the project prototype by neuro cognitive mobility community is not considered.
  - Collaborations were established, and their main benefit was for dissemination purposes and some transfer of knowledge. No tangible future prospects for cooperation building on this one are reported. Not convinced why it is impossible to work with equivalent EU laboratories.
  - The interactions with other related FP7 projects are not reported for the period under review (Y3).

**BEST PRACTICES**

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project makes also some theoretical progresses beyond the state of art; e.g., the basic SFM model for path planning has been extended by inclusion of unexpected changes in the direction of the motion. A novel approach has been proposed on contextual data (such as environmental or human physiological data) acquisition via multimodal sensors and these data exploitation for a complex task (with social rules) assistance.</td>
</tr>
</tbody>
</table>

**FINAL EVALUATION COMMENTS**

<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>It may be concluded that the project has achieved impact on technical/technological aspects, and it has provided some lessons learnt for the future development of products and services. It has achieved modest impact regarding the potential for commercialization. The relevant</td>
</tr>
</tbody>
</table>
outputs are a set of components, rather than a product, the c-Walker. The c-Walker does not appear to be commercially viable. However, the project contributes to the development of the concept of social robotics by the inclusion of the social rules in man-machine interactions, and there is some potential in the technological achievements the meet the expectations of the corresponding FP7 call.

| TOTAL IN-DEPTH EVALUATION SCORE | 11 |
| TOTAL SCORE                    | 18/32 |
**IN-DEPTH ANALYSIS EVALUATION SHEET**

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>DEM@CARE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Dementia Ambient Care: Multi-Sensing Monitoring for Intelligent Remote Management and Decision Support</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>FP7</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>11/2011 – 11/2015 (48 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>7,300,000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

The project aspires to contribute to the timely diagnosis, assessment, maintenance and promotion of self-independence of people with dementia, by deepening the understanding of how the disease affects their everyday life and behavior. It implements a multi-parametric closed-loop remote management solution that affords adaptive feedback to the person with dementia, while at the same time including clinicians into the remote follow-up, enabling them to maintain a comprehensive view of the health status and progress of the affected person.

### OBJECTIVES

The objective of Dem@Care is the development of a complete system providing personal health services to people with dementia, as well as medical professionals and caregivers, by using a multitude of sensors, for context-aware, multi-parametric monitoring of lifestyle, ambient environment, and health parameters. Multi-sensor data analysis, combined with intelligent decision-making mechanisms, will allow an accurate representation of the person's current status and will provide the appropriate feedback, both to the person and the associated caregivers, enhancing the standard clinical workflow.

### OVERALL PROJECT ASSESSMENT

From a scientific and technological perspective of view, the consortium made significant efforts and successfully delivered the aspired results. The technological objectives as per the DoW were achieved with high quality. The S&T impact has been very intense, since the project has progressed beyond SotA in various domains, and the consortium has documented these impacts through the vast plethora of publications in conferences and journals.
The consortium partners further improved and evolved wearable and environmental sensor technology, the quality of their algorithms for visual perception, as well as the emotion recognition accuracy from emotional speech. The consortium also demonstrated improvements on the activity recognition algorithms from wearable videos, both in terms of scalability (execution time) and accuracy. Finally, it is said that long-term goal of Dem@care was to enable people with dementia to remain living at home for 10% longer, and this is too optimistic currently. Further tests should be performed in order to have a more real data about its potential impact. Nevertheless, the project has excelled in different areas within budget and has the potential to have great impact in the research and care for PwD.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>3</td>
</tr>
</tbody>
</table>

Scientific and academic impact has been very intense, since the project has progressed beyond SotA in various domains, and the consortium has documented these impacts through the vast plethora of publications in conferences and journals. With regards to the societal / health impact, there certainly is potential but it remains to be validated. @Lab seems to have significant impact in diagnosis and monitoring early stages of dementia, facilitating differentiation between healthy, MCI and AD participants with relatively high accuracy rates. However, the impact is not yet convincing regarding @NH and @H, which has some preliminary qualitative indications on benefiting the carers and the patients, yet further trials are required in order to better define its potential impact. Nevertheless, preliminary results are in good direction. With regards to the commercial impact, this remains to be elaborated and pursued.

### Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

<table>
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<tr>
<th>3</th>
</tr>
</thead>
</table>

The consortium has managed to achieve some significant concrete exploitation results which include the foundation of two spin offs (Memorizon and Second Regards) and the development of joint exploitation initiatives between pairs of partners (e.g. between CERTH and LTU and between IBM and CHUN), as well as cooperation with enterprises external to the consortium (i.e. cooperation between CERTH and DigiHealth Sense). However, the consortium seems less confident to commercially exploit its three main assets, namely @Lab, @NH and @H. maybe a more ambitious overview would have helped to enlarge the exploitation possibilities. Exploitation plans mainly for @Lab, which seems to
be the leading exploitable asset of the consortium, as well as for the @NH and the @H are either not well defined or not well documented. The consortium does not seem to wish to pursue a commercialization opportunity, but rather respond to it should it arrive. Licensing and IPR issues have not been properly handled, and the consortium should not expect to resolve these issues after a commercialisation opportunity knocks on its door. However, the exploitation potential of DemaWare and of @NH seems to be high, and the consortium is urged to pursue it.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

4

• Increased quality for life for elderly people and their carers
  - The impact is not yet convincing regarding @NH and @H, which has some preliminary qualitative indications on benefiting the carers and the patients, yet further trials are required in order to better define its potential impact. Nevertheless, preliminary results are in good direction.
  - The @Home pilots rely on substantial staff support and the possibility that this rather than the system is influencing the well-being of the person with dementia and the carer needs more thought.

• Increased personal independence of the elderly
  - It is said that long-term goal of Dem@care was to enable people with dementia to remain living at home for 10% longer, and this is too optimistic currently.
  - Further tests should be performed in order to have a more real data about its potential impact.
  - Nevertheless, the project has excelled in different areas within budget and has the potential to have great impact in the research and care for PwD.

• Concepts for the detection of ageing-related risks
  - @Lab seems to have significant impact in diagnosis and monitoring early stages of dementia, facilitating differentiation between healthy, MCI and AD participants with relatively high accuracy rates.
  - The Lab protocol, combined with the data analytics

40 The programme objectives were detailed in Section 2.2 of our Technical Offer.
41 http://mafeip.eu/about_study/
42 http://www.linkedpolicies.eu/policymaps/eiponaha/
and intelligent fusion and decision-making mechanisms of Dem@Care makes it feasible to differentiate between healthy, MCI and AD participants with relatively high accuracy rates reaching approximately 82% accuracy in distinguishing participants in the 3 afore mentioned groups correlating well with existing neuropsychological measures such as FUCAS, FRSSD, and MMSE.

- However, considering @Lab as a test for diagnosis of dementia is perhaps too optimistic and needs to be further proved.

- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry.

- New markets for independent and active living products and services through a set of open standards and integrated platforms
- Improved competitiveness of EU industry

The consortium has managed to achieve some significant concrete exploitation results which include the foundation of two spin offs (Memorizon
### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Strengthened global position of EU industry in service robotics for ageing well**
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
- Creating a longer term RTD agenda
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Notable efforts with regard to the dissemination of the project results**
- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

**Supporting Evidence**

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study⁴³ and visualised through the Policy dashboard on EIPonAHA⁴⁴</td>
<td>N/A</td>
</tr>
<tr>
<td>- Intramural R&amp;D expenditure</td>
<td>N/A</td>
</tr>
<tr>
<td>- R&amp;D personnel and researchers in FTE</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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43 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
### Social media
- The project also has a Facebook page with 171 likes and the final publication from May 2016; Twitter account with 323 tweets and 92 followers and the last tweet from May 2016; Youtube channel with 11 subscribers.

### Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
- PwD, caregivers and clinicians have been involved within the context of the pilot trials, nevertheless this involvement (especially with regards to patients with dementia) should have been more intense and should have taken place earlier in the project, as had been communicated to the consortium partners since the second review.

### PROJECT SUSTAINABILITY

#### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

#### Are the outputs from the project still being used today?
- However, the consortium seems less confident to commercially exploit its three main assets, namely @Lab, @NH and @H. Maybe a more ambitious overview would have helped to enlarge the exploitation possibilities.
- Exploitation plans mainly for @Lab, which seems to be the leading exploitable asset of the consortium, as well as for the @NH and the @H are either not well defined or not well documented.
- The consortium does not seem to wish to pursue a commercialization opportunity, but rather respond to it should it arrive.
- However, the exploitation potential of DemaWare and of @NH seems to be high, and the consortium is urged to pursue it.
- Following the project there were a number of spin-offs:
  - LTU: Memorizon AB (https://www.memorizon.com)
  - CERTH: Carealia (http://www.carealia.gr)
  - INRIA: EKINNOX (http://www.ekinnox.com/wordpress/en/home/)

There was also continued collaboration between:
- CERTH and LTU: continued experiments and published articles (see above), exchange of know-how and technology to potential collaboration of respective spin-offs.
- CERTH, INRIA and CHUN: Research Funding Proposals e.g. "EASILiv@Home: Enhancing And Supporting Independent Living at Home" at SC1-PM-15-2017
- Article: A French-Greek cross-site comparison study of the use of automatic video analyses for the assessment of autonomy in dementia patients, Karakostas, A., König, A., Crispim-Junior, C.,


- Research Funding Proposals e.g. "ELDERCARE" at SC1-PM-15-2017

- CERTH and DCU: Article on home healthcare support findings from Dem@Care submitted to a special issue of The Gerontologist journal

Furthermore, according to the project coordinator:

- CERTH continues to expand research on Dem@Care’s results and tools to new areas:
  - New clinical applications of the platform to diabetes monitoring and care, in collaboration with MindWork (http://www.mind-work.gr/)
  - New commercial applications of the platform to drug adherence monitoring, in collaboration with apc (AidPlusCare - http://www.aidpluscare.com/en/)
  - Expansion to the well-being and active-ageing domain with stress, mood and mental state monitoring applications, clinical trials of physical and cognitive behavioral treatment interventions, such as meditation, in collaboration with Alzheimer's Hellas (http://www.alzheimer-hellas.gr) and Buddha Libre (http://buddhalibre.gr)

- DCU continues to use the initial work on periodicity detection in lifelogs in several application areas in collaboration with Arizona State University.

- UBX continues studies in recognition of objects from egocentric cameras with applications in vision-assisted neuroprosthesis and fall sensing in
- Parkinson’s. (Supported by Interdisciplinary grant of CNRS)
- CHUN continues investigating on the use of automatic speech analysis and speech recognition in clinical practice for the assessment of cognitive impairment in collaboration with the German Center for Artificial Intelligence (DFKI) and the start-up Ki-elements (https://ki-elements.de/)
- INRIA continues investigating on the use of automatic video analysis and monitoring of older people with Nice hospital for national and local projects and with Toyota company for Ambient Assisted Living.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The partners made significant steps with regards to establishing synergies with other projects and the results have been documented.
  - Dem@Care has clustered with Haivisio to ensure visibility, awareness and dissemination of results in lots of interested stakeholders.
  - It also became a member of the AFEINNOVNET network the overarching goal of which is to set up a large EU wide community of local and regional authorities and other relevant EU stakeholders who want to work together to find smart and innovative evidence based solutions to support active and healthy ageing and develop age-friendly environments across the EU.
  - Dem@Care also established partnership with the H2020 project Uncap, which deals with ubiquitous care for ageing people with mild cognitive impairments, the objectives and the settings of which are very similar to Dem@Care.
  - Significant attention should be given to the fact that ontology standardization efforts continued during the fourth year, with the consortium partners publishing to the LOV (Linked Open Vocabularies) community (http://lov.okfn.org/dataset/lov/) the Domain Context Descriptor ontology, which has been developed to formally describe the high-level context pertinent to ADLs.

<table>
<thead>
<tr>
<th>BEST PRACTICES</th>
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<tbody>
<tr>
<td><strong>Best practices that the project has developed</strong></td>
</tr>
<tr>
<td><strong>Technical:</strong> The technical WPs have significantly contributed towards the progression beyond the SotA, in the wearable and environmental sensor technology, visual perception and emotion recognition accuracy from speech, which has been endorsed by the academic</td>
</tr>
</tbody>
</table>
Clinical: The outcomes from the @Lab are promising in terms of defining a parallel test for diagnosis and monitoring of early stages of dementia.

Ethical: Legal and ethical issues are key aspects when managing personal health data. The project has done a big effort to improve security of data and acceptability from the user perspective. This is going to be a relevant aspect in short- and mid-term interventions where ICT and health are linked, and questions should be clarified from legal and ethical points of view.

The project has won a variety of awards:
- Hellenic Entrepreneurship Award 2016, Top 10 Finalists, as Carealia (Dem@Care spin-off)
- National Bank of Greece (NBG) Business Seeds 2017, Top 20 Finalists, as Carealia (Dem@Care spin-off)
- Best paper award for S. Andreadis, T. G. Stavropoulos, G. Meditskos and I. Kompatsiaris, “Dem@ Home: Ambient Intelligence for Clinical Support of People Living with Dementia”, Proc. 1st Workshop on Semantic Web Technologies in Pervasive and Mobile Environments (SEMPER2016), at the Extended Semantic Web Conference (ESWC2016), 29th May 2016, Heraklion, Greece

**FINAL EVALUATION COMMENTS**

**Final comments regarding the in-depth evaluation**

The DEm@Care Project made a lot of progress, particularly in advancing the state of the art of the diagnosis and monitoring early stages of dementia. The review is very strict on all levels and perhaps dampens a little the overall impact of the project. However, it is clear that the project lacked a little more extra work in certain areas to fulfill the potentially huge impact it could have had (E.g. enable people with dementia to remain living at home for 10% longer).

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>26/32</td>
</tr>
</tbody>
</table>
IN-DEPTH ANALYSIS EVALUATION SHEET

GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>DOREMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Decrease of cOgnitive decline, malnutRition and sedEntariness by elderly empowerment in lifestyle Management and social Inclusion</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>11/2013 – 11/2016 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2,939,997</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

BRIEF DESCRIPTION

Brief description of the project

The DOREMI project focused on three main aspects related to frailty in older people: Unhealthy nutrition; Sedentariness AND Cognitive decline. These aspects are at the basis of the DOREMI environment: A context-aware and smart system able to learn and reason about the users, their intentions, preferences and aims. The system is able to provide feedback and propose solutions to improve their lifestyle. The specialist will be able to select and assign a personalised lifestyle protocol that will be associated to a set of game typologies (cognitive games, social games or exercise games).

At home, seniors will be able to select the game scenario which best corresponds to their personal preferences and habits. Subsequently, the system will follow a monitor-learn loop to understand how the senior evolves according to the compliance of the assigned protocol.

OBJECTIVES

Objectives of the project

The project vision is aimed at developing a systemic solution for elderly, able to prolong the functional and cognitive capacity by empowering, stimulating and unobtrusively monitoring the daily activities according to well defined "Active Ageing" lifestyle protocols. The project joins the concept of prevention centered on the elderly, characterized by a unified vision of being elderly today, namely, a promotion of the health by a constructive interaction between mind, body and social engagement. To fulfill these goals, food intake measurements and personalised metabolic control, exergames associated to social interaction stimulation, and cognitive training programs will be proposed to an elderly population enrolled during a pilot study. The project combines multidisciplinary research areas in serious games, social networking, Wireless Sensor Network, activity recognition and contextualization, behavioral pattern analysis.

OVERALL PROJECT ASSESSMENT
**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**OVERVIEW OF PROJECT IMPACT**

**Scientific, technical, commercial, social or environmental impact related to the AHA Triple win**

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.

**DOREMI project does not provide a holistic viable commercial solution and we think that there are parts of the project that could be more beneficial than others. It is difficult to foresee the impact for the entire DOREMI system. We feel that it is unlikely that a full DOREMI system is commercialised. Therefore, it is difficult to predict economic, social or environmental impact. Updated exploitation plan has provided some suggestions. However, we feel they are far from reality. It is more likely that the project impact is more related to separate building blocks (Exergames, Bracelet) of the project rather than the entire DOREMI system. Dependency of the DOREMI system to open source blocks such as HOMER developed previously by AIT will make it less attractive for commercialisation of the entire system. Our advice is to develop individual exploitation strategy for some of the innovative building blocks of the DOREMI system.**

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

**It is insufficiently clear if the outcome of the project will be representative for the large group of elderly with MCI. Also, the feasibility of commercialization by suggested different stakeholders of the total DOREMI system is therefore unclear. Updated exploitation plan is presented and it is a**
very comprehensive report. The report has demonstrated very good understanding of the current state of paly with all options available to DOREMI team. However, considering the fact that this area of research is evolving so rapidly, it is very unlikely that the five-year exploitation plan will be viable. We are inclined to think that some elements of the project including RTLS, Gamification and Activity Recognition are more useful and they should be dealt with separately.

### TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

| Score | 7 |

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

- **How the project has made an impact regarding Improved quality of life**
  
  This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

- **Supporting indicators & Evidence**
  
  The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
  
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

#### Impact area 2: Increased quality for life for elderly people and their carers

- Different elements of the project including RTLS, Gamification and Activity Recognition are novel and they have demonstrated significant impact. However, overall impact of a fully integrated system as planned has not been demonstrated.
  
  - Trial led to the demonstration of the feasibility of a DOREMI system running in standard homes addressing together sedentariness, malnutrition and cognitive decline. Nevertheless, length of trial and number of participants allowed only to draw conclusion on the short-term impact of the solution.
  
  - In both test sites, the DOREMI population saw an overall increase in physical activity, a significant improvement in hemodynamic (decrease in blood pressure at a six-minute walking test) and in tests scores for increased short physical performance. Changes in dietary habits have also produced remarkable effects on blood markers and somatometric parameters.

- **Increased personal independence of the elderly**
  
  - N/A

- **Concepts for the detection of ageing-related risks**
  
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  
  - Population that perceive their health as good or very good

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45 The programme objectives were detailed in Section 2.2 of our Technical Offer.
46 http://mafeip.eu/about_study/
47 http://www.linkedpolicies.eu/policymaps/eiponaha/
Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

2

• Increased efficiency of care systems
  - N/A
• Creation of ICT products and services for ageing well
  - N/A
• Facilitate wide implementation of sustainable innovation services
  - N/A
• Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

2

• New markets for independent and active living products and services through a set of open standards and integrated platforms
  - The project is fully integrated with three main clusters of activities namely Games development, sensors development and monitoring, and user assessments. However, it is still unclear whether a holistic solution is presented.
  - The dependency of the DOREMI system to open source blocks such as HOMER developed previously by AIT will make it less attractive for commercialisation of the entire system. Our advice is to develop individual exploitation strategy for some of the innovative building blocks of the DOREMI system.
  - We are inclined to think that some elements of the project including RTLS, Gamification and Activity Recognition are more useful and they should be dealt with separately.
• Improved competitiveness of EU industry
  - N/A
• Strengthened global position of EU industry in

48 http://mafeip.eu/about_study/
49 http://www.linkedpolicies.eu/policymaps/eipona/
## Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
- N/A

## Creating a longer term RTD agenda
- N/A

## Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
- N/A

## Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
- Intramural R&D expenditure
- R&D personnel and researchers in FTE
- N/A

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
<thead>
<tr>
<th>Notable efforts with regard to the dissemination of the project results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
</tbody>
</table>

### Supporting Evidence

**3**

- **Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.**
  - Overall project dissemination is also acceptable. Project partners have published many papers in academic conferences and the project final conference, which took place in Brussels on 25 October 2016 was a clear overview of the integration of practical measures, developed by DOREMI, against malnutrition, sedentariness, and cognitive decline. A very useful project overview video has been created.
  - The Project website (http://www.doremi-fp7.eu/) provides detailed information about the project activities and results.
  - Social media: The project has a twitter account (323 tweets and 148 followers); a Facebook page with 51 likes; and a Flickr account although the link is not working on the website. The last publications are from the end of 2016/beginning of 2017.
  - According to the project coordinator, following the project end, representatives from the project participated at Conferences/Congress on Frailty in older adults, publications.
- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - Most of activities reported in this period are related to project Trial. The project trial has been conducted in the UK and Italy with 32 volunteers. There was a robust process in place and the project team has managed to capitalise
on results obtained from these trials.
- Good involvement of all relevant stakeholders but government commitment seems crucial but not promising in a short and midterm commercialisation.

**PROJECT SUSTAINABILITY**

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2 Are the outputs from the project still being used today?</th>
</tr>
</thead>
</table>
| Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant) | - The DOREMI project does not provide a holistic viable commercial solution and we think that there are parts of the project that could be more beneficial than others. It is difficult to foresee the impact for the entire DOREMI system. We feel that it is unlikely that a full DOREMI system is commercialised. Therefore, it is difficult to predict economic, social or environmental impact. Updated exploitation plan has provided some suggestions. However, we feel they are far from reality.
- It is more likely that the project impact is more related to separate building blocks ((Exergames, Bracelet) of the project rather than the entire DOREMI system.
- The consortium wanted a quick market introduction after the project completion in Italy, Spain and United Kingdom, but this is not the case for the whole DOREMI system. The objective of providing a global solution within 5 years is not credible: consortium does not provide reasons for such a term, nor the origin of needed financial resources and within this period, market environment will have changed outdated DOREMI approach and technologies.
- The high cost per user which is a key element for future exploitation and this doesn’t seem very promising.
- Whilst the consortium doesn’t have commercialisation plans as of yet, there are plans for applying a subset of the DOREMI system to a real-life situation in Pisa, Italy. The Pisa Municipality started a project where a subset of the DOREMI system will be used to monitor the behaviour of elderly people and to improve their mobility thanks to the exergame.
- Equally, some subsets of the DOREMI system are ready to get to the market: ‘We consider the possible exploitation of the social and gamified environment, the monitoring environment and the context-aware smart system,’ Prof Parodi says. The reference market for DOREMI technologies includes hospitals, social care providers, end users, local authorities, insurance companies, general practitioners and social housing.
- According to the project coordinator, a new | 

Supporting Evidence
proposal will be funded through a Tuscany Region grant for using DOREMI modules in co-housing solutions. Three partners, IFC, ISTI and UNIPI will join the project, which will last three years.

- Furthermore, Imaginary partner is developing cognitive games produced within DOREMI project for commercialization purposes.
- Finally, IFC is coordinating a new H2020 project on atherosclerosis (SMARTool). We plan to adopt a multicomprehensive approach to the topic, like the one used in DOREMI, to search for a new score on frailty in cardiovascular disease.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - An updated exploitation plan has presented a list of relevant projects and they are critically evaluated to identify similarities/ differences with DOREMI system.

### BEST PRACTICES

| Best practices that the project has developed | Different elements of the project including RTLS, Gamification and Activity Recognition are novel and they have demonstrated significant impact. |

### FINAL EVALUATION COMMENTS

| Final comments regarding the in-depth evaluation | The product as it was initially conceived in the DOA is not feasible, however, it is clear that there are elements of the product that could be successful in the market in the future. |

### TOTAL IN-DEPTH EVALUATION SCORE

12

### TOTAL SCORE

19/32
## IN-DEPTH ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>eWALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>eWall for Active Long Living</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>11/2013 – 11/2016 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>5,980,000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
<tr>
<td>Project subject (to help categorise the results for the final publication)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Robotics for Ageing Well</td>
</tr>
<tr>
<td></td>
<td>X Innovative solutions for independent living</td>
</tr>
<tr>
<td></td>
<td>□ Innovating elderly care</td>
</tr>
<tr>
<td></td>
<td>□ Better connected through integrated care</td>
</tr>
<tr>
<td></td>
<td>□ Frailty, early detection and intervention</td>
</tr>
<tr>
<td></td>
<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

### BRIEF DESCRIPTION

**Brief description of the project**

eWALL is a platform based on the integration of an interactive screen with a home sensing infrastructure that provides a Caring Home environment for older users with COPD, MCI and frailty conditions.

### OBJECTIVES

**Objectives of the project**

Its main objectives are to both prolong the independent living of its users via a variety of monitoring and assistive services and notify caregivers and healthcare professionals.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**3**

The main achievement of the project is the development of the eWall platform and its proof of concept testing in four settings with 48 patients for 1 month each (average 24 days).

The integration of all components and orchestration of services using state of the art technologies is a technological challenge and a technical contribution in itself. Some of the developments in specific modules can be beyond the state of the art and therefore represent a scientific/technological contribution, that is the case of the face tracking algorithm (identifying faces in an image, even with multiple persons present and landmarks in each face) and the algorithm for activity coaching (methodology for personalization of goals in activity coaching).
that is automatic and self-learning).

The project made a very good contribution in the eWall system and architecture. The progress in the applications is good and reasonable. The prototyped applications were developed in frame of time and resources of a research project. However, the expected level of support to real users with MCI, COPD or ARI, is still not reached. Because of the nature of complexity and intelligence needed for reaching this objective, the eWall platform is a good base and the applications are a first step in the development of real services on top of the platform.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

3

The project has had a moderate technical, commercial and social impact. The approach followed has yielded an open platform that can be easily expanded and support different services for the ageing population as well as for people living with chronic disease, providing users with the necessary support and/or assistance to stay healthy, active, and independent. In fact, the final number of features that were either developed or customized for eWALL over the course of the project is impressive and speaks for the commendable level of flexibility and integration achieved.

Of particular good value is the level of personalization enabled by several intelligent eWALL components. In particular, the “My Settings” service brick and application grants users a higher level of control over the system and enables them to correct eventual errors of automatic setup concerning alarms, notifications, etc. These advancements may pave the way to a much more effective approach to AAL and eHealth technologies – i.e. an approach that doesn’t just respects but feeds on users’ input to dispatch services tailored to their real life, everyday needs and expectations.

Overall the eWALL platform with its software components is a very powerful environment to enable complex networked services and applications. The prototyped applications and reasoners are still too limited to fulfil real user needs, but they show the possibilities of the eWall platform.

Unfortunately, since many applications were not tested during the final trials, and since such demos were carried out for a limited period of time by a relatively small group of users, the impact of the platform addressing independent living, autonomy, and social inclusion needs could not be conclusively evinced. This is a limitation...
that somewhat lessens the overall value of eWALL within the AAL and eHealth marketplaces.

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The exploitation route envisaged by the project is to publish the platform components as open source and invite other players in the market to develop applications or even hardware (sensors, actuators) that run on top of the platform or communicate with it. The idea itself is good: needs of ageing people and those living with chronic disease and their carers are varied and evolving, and an open platform that integrates interoperable components from different providers that work together to provide relevant services could be the answer to these needs. However, to make an impact with this approach, the project would need to mobilise a much bigger stakeholder group and be able to launch the platform with at least one “killer application” that could pave the way for further adoption, and involve at least some of the health care providers involved in the project as pioneering clients. A start-up Innovation Solution Sprl, together with some of the key researchers in the consortium will lead the commercialization the platform. A number of partners have already started to exploit the project results by either using them in other projects or by integrating them in their operations. All these efforts confirm a commitment to foster the achieved results of eWALL beyond the planned project activities. The individual ad-hoc sensors developed in the project might deserve independent exploitation plans.</td>
</tr>
</tbody>
</table>

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

| 9 |

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>How the project has made an impact regarding Improved quality of life</td>
</tr>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers</td>
</tr>
</tbody>
</table>

- Increased quality for life for elderly people and their carers |

50 The programme objectives were detailed in Section 2.2 of our Technical Offer.
Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^5\) and visualised through the Policy dashboard on EIPonAHA\(^5\)

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

support different services for the ageing population as well as for people living with chronic disease, providing users with the necessary support and/or assistance to stay healthy, active, and independent.

- In response to the 2nd year review, the Consortium invested resources to improve the intelligence of the system to promote healthy and active living behaviour in a way that is both mindful of the users’ health risks and respectful of their autonomy, privacy, and dignity.
  - New fusioners have been implemented collecting data from external sources, and new life style reasoners analyzing user’s daily activities and status have been developed.
  - New service bricks have been developed to deliver new functionality. eWALL main screen reached final stage. Developed new applications targeting ARI and MCI users.
- A Caregiver Web application has also been developed to enable caregivers receive notifications and alarms, set personal thresholds for such notifications.

- Increased personal independence of the elderly
  - Unfortunately, since many applications were not tested during the final trials, and since such demos were carried out for a limited period of time by a relatively small group of users, the impact of the platform addressing independent living, autonomy, and social inclusion needs could not be conclusively evinced. This is a limitation that somewhat lessens the overall value of eWALL within the AAL and eHealth marketplaces.
  - In D8.1 the Consortium has indicated that amnestic MCI users are eWALL ideal target group. Although many services were not tested during final demos, several functionalities could benefit multi-domain amnestic and non-amnestic MCI users in many areas of cognitive support and independent living.

- Concepts for the detection of ageing-related risks
  - N/A

- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

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51 http://mafeip.eu/about_study/
52 http://www.linkedpolicies.eu/policymaps/eiponaha/

153
## Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
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<tbody>
<tr>
<td>-</td>
<td>Available beds in hospitals per hundred thousand inhabitants</td>
</tr>
<tr>
<td>-</td>
<td>Hospital discharges per 100,000 inhabitants</td>
</tr>
<tr>
<td>-</td>
<td>In-patient average length of stay</td>
</tr>
</tbody>
</table>

### 2
- **Increased efficiency of care systems**
  - N/A
- **Creation of ICT products and services for ageing well**
  - Of particular good value is the level of personalization enabled by several intelligent eWALL components. In particular, the “My Settings” service brick and application grants users a higher level of control over the system and enables them to correct eventual errors of automatic setup concerning alarms, notifications, etc.
  - These advancements may pave the way to a much more effective approach to AAL and eHealth technologies – i.e. an approach that doesn’t just respects but feeds on users’ input to dispatch services tailored to their real life, everyday needs and expectations.
- **Facilitate wide implementation of sustainable innovation services**
  - N/A
- **Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100,000 inhabitants
  - In-patient average length of stay

## Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the

### 4
- **New markets for independent and active living products and services through a set of open standards and integrated platforms**
  - The integration of all components and orchestration of services using state of the art technologies is a technological challenge and a technical contribution in itself.
  - The approach followed has yielded an open platform that can be easily expanded and support different services for the ageing population as well as for people living with chronic disease, providing users with the necessary support and/or assistance to stay healthy, active, and independent.
  - In fact, the final number of features that were either developed or customized for eWALL over the course of the project is impressive and speaks for the commendable level of flexibility and integration achieved.
indicators developed as part of the MAFEIP Study\(^5\) and visualised through the Policy dashboard on EIPonAHA\(^5\):
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- The software developed for the project has been published as open source, as a route to exploitation, with the rationale that this will promote the participation of other companies in developing software for the product and therefore improve its competitiveness. This is an interesting approach although it’s not clear that the critical mass necessary to fire this kind of collaboration will be achieved. In order for external developers to be able to use the source code provided, a further effort in documentation would be needed.
- The methodology and the platform for software development and integration have been a key asset for the project, enabling the collaboration among partners in software development, and allowing for timely deployment of new releases and hot deployment of services.
- The eWALL Platform is a complex and suitable base for the targeted applications. It uses state of the art technologies and is well documented.

- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - The project results will moderately contribute to build evidence on the value of AAL solutions and grow the AAL market.
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - A start-up Innovation Solution Sprl, together with some of the key researchers in the consortium will lead the commercialization the platform.
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - Some of the developments in specific modules can be beyond the state of the art and therefore represent a scientific/technological contribution, that is the case of the face tracking algorithm (identifying faces in an image, even with multiple persons present and landmarks in each face) and the algorithm for activity coaching (methodology for personalization of goals in activity coaching, that is automatic and self-learning).
  - The introduced storytelling, interactive “intelligent” conversation between eWall (Robin agent) and the user is a very interesting...
concept and might be the right way forward, although it is in an initial stage and needs further research.
- A new face tracking system has been implemented. The system is built around a Kalman tracker that employs face detection measurements.
  - Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
    - Intramural R&D expenditure
    - R&D personnel and researchers in FTE
    - N/A

**DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION**

Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

3

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Dissemination has been good at the scientific and technical level.
  - The Consortium has carried out a variety of dissemination activities, especially focused towards the European and international ICT community.
  - The consortium has reported a good record of publications, among which a discrete number is related to the advancements achieved by eWALL as a platform.
  - A special session on eWall was held in a conference in India and several scientific publications and congress contributions have been produced.
  - The eWall project website is very impressive and is extremely well presented (http://ewallproject.eu/).
  - Social Media: The project has a blog with the last contribution made 8 months ago; The project also has a Facebook page with 129 likes and the last publication in January 2017; The Twitter account has 139 followers and the last tweet was made at the end of 2016.
  - However, more effort should have been devoted to dissemination to potential users and prescribers (healthcare professionals), as well as engaging with formal patient groups, government and industrial bodies.
  - Especially troubling is the fact that all communications have been carried out only in English, thus severely compromising public awareness from other countries, including those where the final demos were carried out.
- Potential users and other stakeholders (outside the...
The consortium has improved the involvement of primary target users with COPD; and people with MCI/ARU, their relatives and professional carers. A number of partners have also involved local associations of seniors and organize workshops to recruit participants for the final demos. However, a stronger user involvement at the early stages of the project would have been useful and would have helped to avoid mistakes made.

Despite recurring recommendations over the course of the past three years, it appears that the Consortium did not engage with any formal patients group related to any of the three main pathologies identified (i.e. COPD, MCI, ARI); nor any contact was made with government or public bodies (e.g. local or international public health or health ministries) or policy makers.

Limited information was provided to describe whether other relevant stakeholders (e.g. companies manufacturing solutions for active ageing, healthcare providers, medical organizations, investors, AAL agencies) were engaged during the course of the project.

The project has contributed to different standardization bodies: ITU-T, Continua, ETSI Smart BAN and CEN TC 251:

- **eWALL has consistently work toward achieving Continua Health Alliance compatibility and certification of a number of components**

- **In 2015, eWALL joined the SMART BAN ETSI Technical Committee in charge of the development of standards for a dedicated BAN radio technology. The eWALL activities within ETSI are focused on radio channel modelling to enable efficient and reliable transmission of vital data within a smart body area network (S-BAN). Initial proposals for integrating VLC transmission technologies into the AAL scenario were also presented to the Committee.**

- **Several CEN TC 251 standardization activities were undertaken, resulting in the election of an eWALL representative as convenor of CEN TC 251 WG I who presented a proposal for a European privacy standard (“Standardization request by European Commission for Data Protection by Design for development of eHealth products and services”).**
involving relevant stakeholders such as care authorities, standardization organizations and potential end-users. Part of these activities were also devoted to help professionals (system administrators, technical experts, physiotherapists, etc.) develop the necessary competences and skills to both implement support and develop the eWall system. In total, in 2016 the Consortium organized 10 training workshops in various EU locations.

### PROJECT SUSTAINABILITY

#### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Are the outputs from the project still being used today?</strong></td>
<td></td>
</tr>
<tr>
<td>- A number of partners have already started to exploit the project results by either using them in other projects or by integrating them in their operations. All these efforts confirm a commitment to foster the achieved results of eWALL beyond the planned project activities.</td>
<td></td>
</tr>
<tr>
<td>- The overall impression is that the issues raised during pilots are mostly manageable and may provide a good basis for exploitation purposes in other projects or start-up ventures.</td>
<td></td>
</tr>
<tr>
<td>- CloudCare2U is based on the eWALL open-source code. eWALL is a successful EC-funded project that delivered more than 50 installations in subjects -COPD/MCI patients and seniors with frailty conditions. The subjects provided feedback following a validation framework applied in the project and indicated the technical efficacy of eWALL, as well as the increase of the QoL. CloudCare2U will be commercially available in 2017 Q1 (<a href="http://innovationsprint.eu/cloudcare2u/">http://innovationsprint.eu/cloudcare2u/</a>).</td>
<td></td>
</tr>
<tr>
<td>- <strong>Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</strong></td>
<td></td>
</tr>
<tr>
<td>- The project has adequate links with other R&amp;D programmes. Most partners are already involved in other research projects.</td>
<td></td>
</tr>
<tr>
<td>- The project has designed an interface to interoperate with the platform developed by the Large Sale Project epSOS</td>
<td></td>
</tr>
<tr>
<td>- There is a link with the European Telecommunication Standardization Institute (ETSI) and a potential project related to “Privacy-by-Design” in eHealth could be started in cooperation with this body.</td>
<td></td>
</tr>
<tr>
<td>- A link with Continua Health Alliance has been established, as one of the project partners', CTIF/AAU, has joined Continua Alliance as a university member. Continua standard</td>
<td></td>
</tr>
<tr>
<td>BEST PRACTICES</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td><strong>Best practices that the project has developed</strong></td>
<td></td>
</tr>
<tr>
<td>- The main achievement of the project is the development of the eWall platform and its proof of concept testing in four settings with 48 patients for 1 month each (average 24 days).</td>
<td></td>
</tr>
<tr>
<td>- The integration of all components and orchestration of services using state of the art technologies is a technological challenge and a technical contribution in itself.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final comments regarding the in-depth evaluation</strong></td>
</tr>
<tr>
<td>Whilst there are some obvious problems and challenges within this project, it has been extremely successfully in laying the foundation for future projects and spin-offs that will successfully have an impact on prolonging independent living of its users via a variety of monitoring and assistive services and notify caregivers and healthcare professionals.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TOTAL IN-DEPTH EVALUATION SCORE</strong></th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td>25/32</td>
</tr>
</tbody>
</table>
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronym</td>
<td>FARSEEING</td>
</tr>
<tr>
<td>Project Name</td>
<td>Fall Repository for the design of Smart and sElf-adaptive Environments prolonging INdependent livinG</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>01/2012 – 04/2015 (39 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3.489.000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>
| Project subject (to help categorise the results for the final publication) | □ Robotics for Ageing Well  
□ Innovative solutions for independent living  
□ Innovating elderly care  
□ Better connected through integrated care  
□ Frailty, early detection and intervention  
□ Fall Prevention  
□ Knowledge sharing and standardisation related to ageing well |

### BRIEF DESCRIPTION

**Brief description of the project**

FARSEEING aims to provide an information basis for research and therapy development for fall prediction, prevention and support, by building the world’s largest fall repository. This database will facilitate the collection, analysis and processing of behavioural and physiological data related to falls, daily activity and physiological factors. The data will be collected using smartphones, and wearable and environmental sensors providing self-adaptive responses.

### OBJECTIVES

**Objectives of the project**

The FARSEEING project aims to provide groundbreaking results for health promotion, fall prevention and technical development. Falls in older persons are common, often leading to institutionalisation and loss of independence. FARSEEING aims to promote better prediction, prevention and support of older persons, by long-term analysis of behavioural and physiological data collected using Smartphones, wearable and environmental sensors: leading to self-adaptive responses. FARSEEING aims to build the world’s largest fall repository. This will include samples of both high functioning community-dwelling elders and high-risk groups of fallers.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>The FARSEEING fall repository, the world’s largest fall repository of sensors signals, is a distinctive achievement of this project and may be considered as a major breakthrough in scientific and clinical knowledge in the area. It enables researchers to study, for the first time, the etiology of a fall based on enough objectively measured data and in association with most...</td>
</tr>
</tbody>
</table>
relevant biomarkers. In particular, the availability of valid real-world fall data allowed FARSEEING to achieve substantial ICT-related improvements in the areas of fall prevention and fall detection by designing and validating novel algorithms, and subsequently intervention strategies and service models.

Additionally, the FARSEEING architecture allows automated collection, storage, and processing of mobility and falls data using a variety of "home-made" innovative solutions such as smartphones, wearable, and environmental sensing units, home automation devices, information systems, interfaces, and telemedical services.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.</td>
</tr>
</tbody>
</table>

| It sets new standards for the future development and evaluation of fall-related interventions and lays a necessary foundation for further socioeconomic impact. In the review period there are 23 scientific papers that are either published, to be published or being produced as a result of the project, the Farseeing database represents a world first in terms of making real-world fall data available and a range of technical products has reached various stage of development. No significant commercial or social impacts have been achieved and this now depends entirely on the successful exploitation of the IPR developed by the project. |

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quite adequate exploitation plans per partner are elaborated, and a start-up company has also created as a direct result of the project and is meant to contribute to the exploitation of project results. The exploitation and use of foreground appears, in short term more, realistic in further research and teaching activities than commercial product development and marketing. A few extension projects and plans are already foreseen. A great deal of thought and work has gone into the use of the results of Farseeing as detailed in D9.6. In summary, FARSEEING exploitable results (FERs) have been identified (grouped into 27) as foreground of the project and are hence candidates for exploitation. Through a consultation process these were ranked on the basis of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- commercially promising;</td>
</tr>
<tr>
<td>- close alignment with FARSEEING’s amended DoW;</td>
</tr>
<tr>
<td>- simplest implementation (in other words, relevant and not requiring a large effort);</td>
</tr>
</tbody>
</table>
A total of 13 FERs were not prioritised including the 3 telemedicine service models, 2 telemedical service backend solutions, 4 smartphone FERs, social interfaces, complexity metrics, virtual reality based exergame and exercise guidance. Competitor analysis. Many face significant difficulties in terms of competitors, cost of MDR compliance or stage of development.

The Partners have set up an Advisory Board to deal with future dissemination and exploitation issues, head up by the Coordinator and composed by the current members of the Scientific and Management Board and agreed a Joint Ownership and Exploitation Agreement. mHealth Tech, a spin off from the University of Bologna, has formally expressed its interest towards the exploitation of some of the FARSEEING products. Owners are planning to make the fall detection algorithms openly available to the online community either by publishing the details of the algorithms in an Open Access journal or by releasing the algorithm publicly available through an online community such as Github.

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 11 |
| OVERVIEW OF PROJECT IMPACT IN KEY AREAS | |

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

| Impact area 1: Improved quality of life |
| How the project has made an impact regarding Improved quality of life |
| This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions. |

| Supporting indicators & Evidence |
| The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA. |
| - Population that perceive their health as good or very good |
| - Population having a long-standing illness or health problem |
| - Healthy life years at birth |

| 4 |
| 4 |
| How the project has made an impact regarding Improved quality of life |
| This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions. |

| How the project has made an impact regarding Improved quality of life |
| This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions. |

- Increased quality for life for elderly people and their carers |
  - N/A |

- Increased personal independence of the elderly |
  - The FARSEEING project has made independent living a realistic option even for high risk subjects, while taking their opinions and expectations into account thanks to real life testing. The project offers a 360 degree perspective on how to prevent, detect and manage falls in various environments. |

- Concepts for the detection of ageing-related risks |
  - The project has successfully achieved significant progress in key research issues such as infrastructure building for |

55 The programme objectives were detailed in Section 2.2 of our Technical Offer.  
56 http://mafeip.eu/about_study/  
57 http://www.linkedpolicies.eu/policymaps/eiponaha/
real-life falls data collection, storage and analysis, establishing the longitudinal risk factors for falls, methods for designing and implementing telemedical intervention models to monitor, prevent and predict falls as well as methods to promote healthy active ageing.
- Up to the end of March 2015, a total of 405 real fall event recordings have been reported to the project from different sources and a total of 200 have been processed according to the standard fall verification procedure established by the project to identify the reported fall in the signal data. The data verification process is on-going but the initial project goals (recording 200 real-life falls) are exceeded.
- Development of a predictive model of mobility, disability and risk of falls in elderly people.

- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth
- A complex intervention programme as method of delivering personalized and tailored at-home interventions to restore complexity fluctuations of older adults’ activity states and thereby reducing fall risk and rates.

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

3
- Increased efficiency of care systems
  - N/A
- Creation of ICT products and services for ageing well
  - The FARSEEING architecture allows automated collection, storage and processing of mobility and falls data using a variety of “home-made” innovative solutions such as smartphones, wearable and environmental sensing units, home automation devices, information systems, interfaces, and telemedical services.
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common
visions between relevant key stakeholders and Cooperation and longer-term research deployment.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay
  - N/A

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

1. **New markets for independent and active living products and services through a set of open standards and integrated platforms**
   - There is a Data Sharing Policy to allow 3rd party access to the FARSEEING fall repository.
   - The owners of the IPR for PFER 4 Owners are planning to make the fall detection algorithms openly available to the online community either by publishing the details of the algorithms in an Open Access journal or by releasing the algorithm publicly available through an online community such as Github.

2. **Improved competitiveness of EU industry**
   - N/A

3. **Strengthened global position of EU industry in service robotics for ageing well**
   - Development of new service models to support management of the different aspects of falls.

4. **Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**
   - A spin-off company of the University of Bologna has been founded, mHealth Technologies srl, that has been operating since July 2014.

5. **Creating a longer term RTD agenda**
   - N/A

6. **Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**
   - The taxonomy of technologies or “common language”, made available as an on-line tool that provides a core way of assessing technologies for the purposes of systematic review, meta-analysis and evidence synthesis.

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58 http://mafeip.eu/about_study/
59 http://www.linkedpolicies.eu/policymaps/eiponaha/
- New knowledge and recommendations regarding older adults’ use of technologies.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
- Development and publication of a fall phase model.
- Development of publication of a fall risk model and the FARSEEING Falls Risk Assessment Tool for clinicians.

<table>
<thead>
<tr>
<th>DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES &amp; STAKEHOLDER PARTICIPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notable efforts with regard to the dissemination of the project results</strong></td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Supporting Evidence</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>4</strong></td>
</tr>
<tr>
<td>- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- The project shows significant dissemination efforts, including several quality scientific publications. Only in the final review period there were 23 scientific papers that were either published, to be published or being produced as a result of the project.</td>
</tr>
<tr>
<td>- The organisation of the first European Union Falls Festival EUFF2015. The achievements of the project final conference, i.e. the first European Union Falls Festival are satisfactorily reflected in D8.6. and have also been made publicly available via the FARSEEING website as well as the ProFouND thematic network, the EIPAHA and via the EUFF’s own website.</td>
</tr>
<tr>
<td>- The project was represented at 28 major scientific events and gave 78 presentations/posters.</td>
</tr>
<tr>
<td>- In terms of public awareness, the 4th and 5th FARSEEING newsletters were published and stakeholders approached and registered on the website. 15 presentations and meetings aimed at the public were held and 19 publicly aimed articles or programmes including BBC Radio Manchester, which reached an audience of 210,000 and an article in Medical Express Magazine, which achieved 515,629 unique views.</td>
</tr>
<tr>
<td>- The project website (<a href="http://farseeingresearch.eu/">http://farseeingresearch.eu/</a>): is still being updated (last post 31st of May)</td>
</tr>
</tbody>
</table>
2017), discussing the existence of a PHD using FARSEEING Technologies. The website also has a forum although it does not appear to have any content. It also has a public deliverables section which includes the main public deliverables from the project in a downloadable PDF format.

- Social media: The Facebook page has 149 followers and was last updated on June 29th 2017. The project also has a twitter account, although it does not appear to be active.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - The potential users of the project have been widely involved in different activities, from concept inception to its field trial and validation. For example, at M39 physical activity data of more than 2,800 persons were measured (about 2,400 in high-risk geriatric rehabilitation patients, about 400 in community dwelling older subjects). The number of reported fall events during these measurements reached 526 from which 405 were successfully recorded with sensor devices.

### PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>4</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>27 FARSEEING Exploitable Results (FERs) identified at several stages of the project as promising and potentially exploitable were aggregated into 10 Prioritized FARSEEING Exploitable Results (PFERs) qualifying as commercially promising for an early exploitation, soon after the project end.</td>
<td></td>
</tr>
</tbody>
</table>

- A spin-off company of the University of Bologna has been founded, mHealth Technologies srl, that has been operating since July 2014. It will be acting as an “external exploiter” of the project results after having sealed proper exploitation agreements with the owner(s) of such products. They also were semi-finalists for the innovation radar prize.

- The methodical approach to identify, aggregate and prioritise exploitable results has successfully driven not only post-project socio-economic impact
planning but also meeting key project general objectives as initially set for the project.
- RBMF will guarantee the sustainability of the fall repository 10 years beyond the project and the data access in line with the Data Sharing Policy. A meta-database Advisory Board has further been established to control the maintenance of the fall repository as well as to guarantee the compliance with ethical and data protection standards.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The consortium shows adequate interaction with other related projects and programmes such as concertation and clustering activities with other projects (FP7, CIP-PSP, Thematic Networks) and initiatives such as the EIP-AHA.

### BEST PRACTICES

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
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</thead>
<tbody>
<tr>
<td>• The FARSEEING fall repository, the world’s largest fall repository of sensors signals, is a distinctive achievement of this project and may be considered as a major breakthrough in scientific and clinical knowledge in the area.</td>
</tr>
<tr>
<td>• The availability of valid real-world fall data allowed FARSEEING to achieve substantial ICT-related improvements in the areas of fall prevention and fall detection by designing and validating novel algorithms, and subsequently intervention strategies and service models.</td>
</tr>
<tr>
<td>• The 10 Preferred Farseeing Exploitable Results identified were: Data and Repository, Wearable sensors, Stand-alone application for instrumenting functional tests, Fall detection algorithms, smartphone based fall detection, smarthome solutions, Algorithms for long-term gait analysis, Smartshoes, Taxonomy of technologies and its web based tool, Fall Risk Model.</td>
</tr>
<tr>
<td>• The FARSEEING database represents a world first in terms of making real world fall data available, the Taxonomy of technologies shows every sign of becoming a new standard.</td>
</tr>
<tr>
<td>• The wearables sensors perform well and their only disadvantage is that the battery life is shorter than competing products. The</td>
</tr>
</tbody>
</table>
Stand-alone application for instrumenting functional tests has also proved its effectiveness.

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final comments regarding the in-depth evaluation</td>
</tr>
</tbody>
</table>

The FARSEEING project aimed to develop a predictive model of mobility and risk of falls in elderly individuals by introducing and exploiting some unique features offered by pervasive but unobtrusive ICT solutions. Through a comprehensive approach mixing high-risk strategies and population-based policies, the project has successfully achieved significant progress in key research issues such as infrastructure building for real-life falls data collection, storage and analysis, establishing the longitudinal risk factors for falls, methods for designing and implementing telemedical intervention models to monitor, prevent and predict falls as well as methods to promote healthy active ageing.

The positive assessment takes in particular into account numerous achievements of the project in multiple areas and in particular developing and sustaining the world largest real-life fall repository.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
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<tbody>
<tr>
<td>19</td>
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<table>
<thead>
<tr>
<th>TOTAL SCORE</th>
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<tbody>
<tr>
<td>30/32</td>
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</tbody>
</table>
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>FATE</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Fall Detector for the Elder</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>03/2012 – 05/2015 (39 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 205 000</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)
- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

The ultimate goal of FATE - FALL DeTector for the Elderly project is to widely validate an innovative and efficient ICT-based solution focused on improving the elder's quality of life by an accurate detection of falls in ageing people, both at home and outdoors. This will be done by implementing an accurate, portable and usable fall detector that runs a complex and specific algorithm to accurately detect falls, and a robust and reliable telecommunications layer based in ZigBee and Bluetooth technologies, capable of sending alarms when the user is both inside and outside the home.

### OBJECTIVES

**Objectives of the project**

FATE "Fall Detector for the Elder" is a project with a very well identified objective: the correct detection of the falls occurring with elderly people. Apart of the identification of the falls, FATE complementary main objectives are the contribution to the reduction of the fear of falling and the prevention of the long lie syndrome. The FATE system will be able to detect falls both at home and outside. The system consists on a highly sensitive fall detector based in accelerometers running a specific detection algorithm, with sensitivity of 98.88% and specificity of near 100% in fall detection.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

The FATE consortium is to be congratulated on successful completion of the project. Securing sufficient users to provide dependable results was undoubtedly a major challenge for the partners given the complex nature of the FATE system and the time lag inherent in the crossover study design. This success is even more impressive for the trials and tribulations that the project has encountered in its life, resulting in the...
granting of a short extension by the EC as milestones slipped and necessitating interim reviews. In the final stage of the project the reviewers welcomed the responses to their recommendations which overall had been accepted.

The pilot results, at face value, suggest the sensitivity and specificity of the fall detector is good but not necessarily best in class. Given the reluctance of suppliers in this market to publish data on the effectiveness of their products it is difficult to establish benchmarks to rate the fall detector against. Evidence was presented to suggest that the FATE system reduces fear of falling and improves balance & gait (Tinetti’s Scale), as both are positively correlated with reduction in actual falls, and in a user’s ability to continue to live independently (Barthel’s Index). However, the project team during the final review did suggest that these secondary results need to be treated with caution. The results of the pilot that included the iWalker did not suggest that this intervention had any significant impact on the core objectives of the project but did have some standalone benefits.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

2

The project’s impact on the existing telecare market, in terms of reduced cost of care, improving quality of care, extending the time people can remain independent and efficiency of personalized/tailored fall management solutions is not convincingly proven. The outcome of the pilot suggests that rather than focus on the existing telecare market there will be a consumer focus. The impact on the existing telecare market will therefore be minimal. The consumer device space is a highly competitive market. The team’s thinking on wholesale price does not suggest that this will have a big impact on the consumer market unless a strategic partnership with an established partner who has ready routes to market is made.

This is crowded market where innovations are occurring frequently – clearly Sense4Care Angel4 might have an impact although it remains to be seen how much.

One of the occasions for evaluating the potential impact of the project was the final workshop. However, no conclusions on interest by other parties e.g. industry or lessons learned on potential impact creation have been provided.

Even at the end of the project, it is still difficult to believe that the system has much commercial future. FATE will face great difficulties when
going to the market if it does not provide a truly competitive proposition to match existing offers and solutions. The market is already rather saturated with traditional hardware and software solutions. However, there is a service market waiting for innovative solutions, but this was not sufficiently explored.

Plans for the use and exploitation of results
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3
The potential exploitation of results by UPC is clearly laid out as is the investment required. Many of the project partners were part of the project for learning and development purposes rather than for commercial gain. The importance of agreeing IPR and possible commercialisation collaboration early on has been stressed by the reviewers so that there are no surprises at the end of project. There proof that falls detectors and cognitive training can reduce fear of falling, which is known to be linked to actual incidence of falls, should be explored in the peer reviewed academic paper requested. Statistical robustness is essential if the results are to hold.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE
7

OVERVIEW OF PROJECT IMPACT IN KEY AREAS
Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life
This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

3
• Increased quality for life for elderly people and their carers
  - There proof that falls detectors and cognitive training can reduce fear of falling, which is known to be linked to actual incidence of falls, should be explored in the peer reviewed academic paper requested. Statistical robustness is essential if the results are to hold.
• Increased personal independence of the elderly
  - Evidence was presented to suggest that the FATE system reduces fear of falling and improves balance & gait (Tinetti’s Scale), as both are positively correlated with reduction in actual falls, and in a user’s ability to continue to live independently (Barthel’s Index).
  - However, the project team during the final review did suggest that these secondary results need to be treated with caution. The results of the pilot that included the iWalker did not

60 The programme objectives were detailed in Section 2.2 of our Technical Offer.
61 http://mafeip.eu/about_study/
62 http://www.linkedpolicies.eu/policymaps/eiponaha/
suggest that this intervention had any significant impact on the core objectives of the project but did have some standalone benefits.
- The project stated an impressive sensitivity (95.5%) and specificity (99.6%). It should be noted that this excluded the significant impact on alert rates due to system misuse by users, due mainly to the complexity and poor usability of the original system. We require further statistical justification for the results in order to assure ourselves that a peer reviewed journal would accept a summary paper.

<table>
<thead>
<tr>
<th>Impact area 2: Increased efficiency of health and long-term care</th>
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</thead>
<tbody>
<tr>
<td>How the project has made an impact regarding Increased efficiency of health and long-term care</td>
</tr>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
</tr>
<tr>
<td>Supporting indicators &amp; Evidence</td>
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<tr>
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<tr>
<td>- Available beds in hospitals per hundred thousand inhabitants</td>
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<tr>
<td>- Hospital discharges per 100 000 inhabitants</td>
</tr>
<tr>
<td>- In-patient average length of stay</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>• Increased efficiency of care systems</td>
</tr>
<tr>
<td>- The project’s impact on the existing telecare market, in terms of reduced cost of care, improving quality of care, extending the time people are able to remain independent and efficiency of personalised/tailored fall management solutions is not convincingly proven.</td>
</tr>
<tr>
<td>• Creation of ICT products and services for ageing well</td>
</tr>
<tr>
<td>- N/A</td>
</tr>
<tr>
<td>• Facilitate wide implementation of sustainable innovation services</td>
</tr>
<tr>
<td>- N/A</td>
</tr>
<tr>
<td>• Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
</tr>
<tr>
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<tr>
<td>- In-patient average length of stay</td>
</tr>
</tbody>
</table>

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry  
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU

3

• New markets for independent and active living products and services through a set of open standards and integrated platforms |
- N/A

• Improved competitiveness of EU industry |
- Even at the end of the project, it is still difficult to believe that the system has much
industry in service robotics for ageing well,
Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing,
Creating a longer term RTD agenda,
Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA,
Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study[63] and visualised through the Policy dashboard on EIPonAHA[64]
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

<table>
<thead>
<tr>
<th>DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES &amp; STAKEHOLDER PARTICIPATION</th>
</tr>
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<tbody>
<tr>
<td>Notable efforts with regard to the dissemination of the project results Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
</tbody>
</table>

3
- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.

commercial future, FATE will face great difficulties when going to the market if it does not provide a truly competitive proposition to match existing offers and solutions. The market is already rather saturated with traditional hardware and software solutions. However, there is a service market waiting for innovative solutions, but this was not sufficiently explored.

- Strengthened global position of EU industry in service robotics for ageing well - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - Within the framework of the FATE project, a start-up company has been created, Sense4Care S.L., to which UPC has transferred the exploitation rights corresponding to the fall detector algorithm used in the FATE system.
- Creating a longer term RTD agenda - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - The contribution to the state of the art for the original FATE system is not great. The system as tested was too complex to have any practical application. In all sites other than FSL over 50% of alerts were due to ‘user error’.
  - ‘The detector currently being commercialised is an evolution of the sensor that we used and tested in FATE,’ explains Cabestany. ‘The main difference between the current device and the prototype used in FATE is the simplified user interface. The feedback we received from users participating in the pilots enabled us to fine tune this interface in order to keep it as simple as possible.’
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  o Intramural R&D expenditure
  o R&D personnel and researchers in FTE
  - N/A

63 http://mafeip.eu/about_study/
64 http://www.linkedpolicies.eu/policymaps/eiponaha/
<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
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<tbody>
<tr>
<td>- Dissemination has been continued and overall the project can present a long list of activities and publications.</td>
</tr>
<tr>
<td>- A final FATE workshop was organised, albeit with low attendance rates. The general objectives were to raise awareness about the project and to communicate the results and findings to interested parties.</td>
</tr>
<tr>
<td>- Another objective was to create a “market demand” for FATE. The key concern with this work package was that only one scientific paper was published when six were planned.</td>
</tr>
<tr>
<td>- Significant effort has been expended on this, so it is mildly disappointing that more FATE news has not reached blogs like <a href="http://www.telecareaware.com">www.telecareaware.com</a>. Only 17 people from outside the project, all Spanish, attended the final conference despite extensive publicity including via MWC Barcelona.</td>
</tr>
<tr>
<td>- Social media: Twitter usage has been improved though is still fairly minimal – no analysis has been done of followers, which might have delivered (and indeed might still deliver) to useful commercial leads. The account has 158 followers and has made 338 tweets.</td>
</tr>
<tr>
<td>- Website (<a href="http://www.project-fate.eu/">http://www.project-fate.eu/</a>), newsletters and conference are good.</td>
</tr>
<tr>
<td>- Scientific publications are behind expectations.</td>
</tr>
<tr>
<td>- The Industry interest group was never created and there was a lack lessons learned from the final FATE workshop.</td>
</tr>
<tr>
<td>- A video was created by the Reuters agency and distributed to a worldwide audience about the major features of the FATE project. The reference to this video can be found at: <a href="https://ec.europa.eu/digital-agenda/en/news/reuters-video-report-eu-funded-researchproject-fate-fall-detector-elderly-speeds-emergency">https://ec.europa.eu/digital-agenda/en/news/reuters-video-report-eu-funded-researchproject-fate-fall-detector-elderly-speeds-emergency</a></td>
</tr>
<tr>
<td>- The company that will bring to the market the fall detector derived from that used in the FATE project was present with a dedicated booth at the European Summit on 15 Competitiveness and innovation Framework Programme CIP-ICT-PSP-2011-5 297178 Fall Detector for the Elder Innovation for Active &amp; Healthy Ageing that was held in Brussels on March 9-10, 2015.</td>
</tr>
<tr>
<td>- News related to the FATE project has appeared in the major TV, journal and radio channels in Spain.</td>
</tr>
<tr>
<td>- The FATE project has been present in major events related to eHealth and ageing.</td>
</tr>
<tr>
<td>- A specific FATE workshop was organised in Barcelona on May 2015.</td>
</tr>
</tbody>
</table>

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
- 226 participants have been involved in the project of which 91 users were in the pilot also testing the iWalker in FSL/Italy.
- End-users and service organisations were well involved from the start of the project and in the pilots. However, the needs and demands from the social service stakeholders, have not “steered” the project sufficiently. The technical approach in the project was not really convincing from the start of the project and not sufficiently flexible and driven from a competitive point of view.
- There have been many networking opportunities and many potential distributors and vendors have been contacted about the new sensor. Engagement with consumer customers has still to be enhanced if a marketing of the FATE system is to have any impact.
- Evidence of involvement of patient groups outside those involved in the trial is slim.

### PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>4. Are the outputs from the project still being used today?</td>
</tr>
</tbody>
</table>

- One of the occasions for evaluating the potential impact of the project was the final workshop. However, no conclusions on interest by other parties e.g. industry or lessons learned on potential impact creation have been provided.
- As of yet there have been no solid commercial agreements put in place but some distributors and OEMs are examining prototypes. Partnering is key to success and we wish Sense4Care good luck with the product that has its origins in FATE.
- Due to the excellent results obtained in the 2014-2015’s European pilot where the fall detection system has been tested with 200 patients, Sense4Care Company has decided to exploit the commercial rights of FATE Project and put on the market a new product to cover the demand of this kind of devices.
- The Sense4Care fall detector, called “Angel4” is a standalone device that works without the common telecare services charges, becoming the most innovative sensor that allows a direct communication with the user’s caregiver or relatives through standard mobile phones.
- This solution represents a significant money saving for those people who require a casual or a 24h’ monitoring because of their risk of falling when they are alone at home or outdoors.
- Another possibility for bringing the fall detector
to the market is the integration of the fall detection algorithm into third-party products under a licensing agreement. MLGtech in Israel is currently exploring this possibility after the first pre-production unit evaluation.

- Ultimately though, Cabestany says that the main added value of the sensor - and what he believes is its unique selling point - is that the embedded algorithm is capable of detecting falls with incredible accuracy and with a very low false positive ratio. In fact, the effectiveness is higher than 95%. The product is currently being sold in Belgium, Germany, Italy, the Netherlands, Poland, Slovenia, Spain, Sweden and the UK, along with Canada, Guatemala, Hong Kong and Switzerland.

Regarding the i-Walker device, two possibilities are currently under evaluation:

- B2B exploitation revenues from:
  o Service usage transferred/sold to care service provisioning organizations, based on a pay-per-use (i.e. rehabilitation session) cost model
  o Partly from governments that will subsidize the use of the service (by public organizations) and partly from other streams and organizations (e.g. private health organizations and care services providers). In such a case the i-Walker services will be provided as a service and UPC act as an Application Service Provider.
  o Cost sharing among public/private social and health care service provisioning and end users.
  o The device and the software are provided under a cession agreement free of charge. Approximately each user training session would be charged 2€ (including i-Walker use and configuration, data recording, transfer, postprocessing and displaying).

- Indirect exploitation: The i-Walker as a robotics device has the confluence of various technologies that can be separately sold as components to be integrated in any rollator frame with minimum mechanical modifications. These components susceptible to be sold are:
  o Motor, electronics and control.
  o Handlerbars and electronics.

- Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
There was a clear link with the iWalke - “I don’t fall project”. Synergies with other projects have not been put forward.
- There was no specific linking with other programmes and projects in the EC or AAL. There should have been more activity on this given previous prompts.

**BEST PRACTICES**

| Best practices that the project has developed | • A spin-off (Sense4Care) was created to exploit the commercial rights of the FATE Project and put on the market a new product to cover the demand of this kind of devices.  
• The Sense4Care fall detector, called "Angel4" is a standalone device that works without the common telecare services charges, becoming the most innovative sensor that allows a direct communication with the user’s caregiver or relatives through standard mobile phones. |

**FINAL EVALUATION COMMENTS**

| Final comments regarding the in-depth evaluation | The FATE Project struggled throughout its execution failing to keep up with the demands of the European Commission and experiencing some flaws in the original design of the fall detection system. However, when looking at the results at the end of the project, it has been successful in launching a product successfully to market using the feedback and information gained during the project. |

**TOTAL IN-DEPTH EVALUATION SCORE** | 15 |

**TOTAL SCORE** | 22/32 |
<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
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<tbody>
<tr>
<td>Acronym</td>
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<tr>
<td>Project Name</td>
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<tr>
<td>Programme</td>
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<tr>
<td>Period</td>
</tr>
<tr>
<td>EU Funding contribution</td>
</tr>
<tr>
<td>Project type</td>
</tr>
<tr>
<td>Project subject (to help categorise the results for the final publication)</td>
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<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION</th>
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<td>Brief description of the project</td>
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<table>
<thead>
<tr>
<th>OBJECTIVES</th>
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</table>

OVERALL PROJECT ASSESSMENT
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

The consortium developed and provided the open (which is remarkable and positive) Florence AAL services platform that addresses the functionality described in the initial project and proposal and the related description of work. The platform is based on state-of-the-art technology / mainly Off-the-Shelf components and provides extensibility for the integration of additional services in the domain of coaching, social inclusion and Safety for AAL.

Using this platform the consortium has developed and tested a set of proof-of-concept AAL services and has used these for testing both from a technical but also an end-user acceptance and benefit for the care giver and cared for point of view. User testing was conducted with the robot and some home domain equipment in five apartments with senior citizens in the Netherlands. These types of trials/evaluations with people in a real home setting are not common with robot prototypes and are noticeable as such. The evaluation protocol was however comparably light.

The work confirmed the demand for a platform that provides the targeted services at reasonable cost and showed an example of how these can be provided. It carried out a number of dissemination activities in order to reach a larger interested target group and produce future impact through re-use and adaptation of the platform. Nevertheless, the impact (e.g. measured by uptake of the platform and its hardware) appear to be limited.

The quality of the scientific results is good and relevant. Although the project does not show major technical breakthrough, one should insist on the originality of the approach consisting in using off the shelf components (robots, sensors, devices). Technical results are sufficient.

Due to the approach to use and integrate existing technological building blocks there are only

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Scientific impact in a sense that fundamentally new things are explored is limited since the services developed rely on state of the art technology. The originality and specific benefit of the project lies in the usage of off the shelf components (robots, sensors, devices). Technical results are sufficient.

Due to the approach to use and integrate existing technological building blocks there are only
limited differentiating factors. Nevertheless, it is good that approaches and results are transferable to other platforms. Due to the research character of the project activities and outcomes and the difficulties to put systems as investigated to the market fast and on a broad basis, the "mainstream uptake" on the results is so far only limited.

As for Economic impact the project describes its potential impact in the exploitation plan. This document contains a large study on possible exploitation. Several robot manufacturers were contacted. The document shows however that the exploitation at short term of the results of the project is difficult. A detailed market assessment is provided based on the real data provided by the International Federation of Robotics (IFR).

Societal impact not applicable

### Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

The submitted exploitation plan is in line with the recommendations of the 2nd period review. It also contains a good analysis of the actual market situation and potential market strategies. The implications and potentials of the usage of foreground IP have been discussed and some scenarios about the consortium approach for doing so have been described. An important effort has been made on the exploitation plan. This document presents some interesting perspectives relying on the real data obtained from IFR (International Federation of Robotics). Overall the exploitable foreground is well described in the final report. Ownership is also well defined.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>8</th>
</tr>
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</table>

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**2**

- **Increased quality for life for elderly people and their carers**
  - Using this platform, the consortium has developed and tested a set of proof-of-concept AAL services and has used these for testing both from a technical but also an end-user acceptance and benefit for the caregiver and cared for point of view.
  - The primary AAL services envisaged and

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65 The programme objectives were detailed in Section 2.2 of our Technical Offer.
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study66 and visualised through the Policy dashboard on EIPonAHA67.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

- Increased efficiency of care systems
- The consortium developed and provided the open standards and integrated platforms for coaching and supporting the elderly in their daily life, services for social inclusion by giving access to social networks and services to enhance the safety and security of the elderly, living independently.
- Increased personal independence of the elderly
- Concepts for the detection of ageing-related risks
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

How the project has made an impact regarding Marketing growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living.

- New markets for independent and active living products and services through a set of open standards and integrated platforms
- The consortium developed and provided the open standards and integrated platforms.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

- New markets for independent and active living

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66 http://mafeip.eu/about_study/
67 http://www.linkedpolicies.eu/policymaps/eiponaha/
products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models. (which is remarkable and positive) Florence AAL services platform that addresses the functionality described in the initial project and proposal and the related description of work.
- The robotic platform is based on the ROS open and standard software.
- Elements developed in different work packages (context management, decision making, services, robots) are interconnected. The efficiency of the integration relies on the home domain server and on a home domain gateway from NEC. This gateway enables interoperability of all devices (robot, activity measurement sensors, alert devices).

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study68 and visualised through the Policy dashboard on EIPonAHA69
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - The quality of the scientific results is good and relevant. Although the project does not show major technical breakthrough, one should insist on the originality of the approach consisting in using off the shelf and low cost devices (Turtlebot robot, device for activity monitoring (blood pressure measurement, alert triggering), low cost camera, Kinect, etc.) for the applications.
  - The platform is based on state-of-the-art technology / mainly Off-the-Shelf components and provides extensibility for the integration of additional services in the domain of coaching, social inclusion and Safety for AAL.
  - With respect to reliability and stability of the robotic system and the functionalities for the end-user the demonstrated solution appears to have a Proof of Concept / Research character and would not be ready for immediate or short-term deployment in real usage environments.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

68 http://mafeip.eu/about_study/
69 http://www.linkedpolicies.eu/policymaps/eiponaха/
### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Notable efforts with regard to the dissemination of the project results**

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
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<tbody>
<tr>
<td>2. Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- The attention and strategy for dissemination have been improved and the dissemination activities have increased significantly:</td>
</tr>
<tr>
<td>o papers have been submitted and presented on conferences</td>
</tr>
<tr>
<td>o the project website has been updated and press releases have been launched. (<a href="http://www.hitech-projects.com/euprojects/florence/index.html">http://www.hitech-projects.com/euprojects/florence/index.html</a>)</td>
</tr>
<tr>
<td>o Several demonstrations of the system were organised.</td>
</tr>
<tr>
<td>- Also, the dissemination towards the robotic area has been improved, e.g. with a paper on the European Robotics Forum. A limited reach to potential adaptors and key stakeholders for larger uptake has to be mentioned as a shortcoming.</td>
</tr>
<tr>
<td>3. Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
<tr>
<td>- Overall there was sufficient involvement and participation of end-users in the project. Especially, the consortium has made sufficient effort to involve potential users and stakeholders in the final period. The system has been tested with end-users in living laboratory facilities and in real home environments. Care givers have also been involved. The exploitation plan summarizes the various contacts established with stakeholder for exploitation.</td>
</tr>
</tbody>
</table>

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
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<tbody>
<tr>
<td>2. Are the outputs from the project still being used today?</td>
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<td>- Due to the research character of the project activities and outcomes and the difficulties to put systems as investigated to the market fast and on a broad basis, the &quot;mainstream uptake&quot; on the results is so far only limited.</td>
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<td>- As for Economic impact the project describes its potential impact in the exploitation plan. This document contains a large study on possible exploitation. Several robot manufacturers were contacted. The document shows however that the exploitation at short term of the results of the project is difficult. A detailed market assessment is provided based on the real data provided by the International Federation of Robotics (IFR).</td>
</tr>
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</table>
Several robot manufacturers were contacted. The document indicates that the exploitation at short term of the results of the project is difficult. A detailed market assessment is provided based on the real data provided by the International Federation of Robotics (IFR). Interesting part is the interoperability with the Tunstall - a major player in Europe - and the UMO platforms.

- **Consortiums interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The consortium collected and analysed information about other EU projects and initiatives in the area, even though explicit cooperation was limited. The same applies for standardisation activities.
  - Following up on recommendations given in former reviews, there were activities to interact and liaise with other European projects in the area. The consortium did a successful dissemination in the robotics community. Interesting links were established with other initiatives or projects.

**BEST PRACTICES**

| Best practices that the project has developed | The consortium overall demonstrates how service or companion robots can be exploited from a business perspective. The report gives an insight for interested parties how to create a market for service robots. However, it remains uncertain that the project can go to the market in relatively short term. |

**FINAL EVALUATION COMMENTS**

| Final comments regarding the in-depth evaluation | The Florence Project has overcome difficulties to successfully come to a conclusion. However, it seems that the impact of the project activities is limited both in terms of scientific impact and general impact on the market. Furthermore, no evidence can be found that work has continued after the project end, suggesting that the knowledge generated during the project has been of little use for future projects and initiatives. |

| TOTAL IN-DEPTH EVALUATION SCORE | 10 |
| TOTAL SCORE | 18/32 |
**IN-DEPTH ANALYSIS EVALUATION SHEET**

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>GIRAFFPLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Combing social interaction and long-term monitoring for promoting independent living</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>FP7</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>01/2012 – 01/2015 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>3,042,000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
<td>X Robotics for Ageing Well Innovative solutions for independent living</td>
</tr>
<tr>
<td></td>
<td>□ Innovating elderly care</td>
</tr>
<tr>
<td></td>
<td>□ Better connected through integrated care</td>
</tr>
<tr>
<td></td>
<td>□ Frailty, early detection and intervention</td>
</tr>
<tr>
<td></td>
<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

### BRIEF DESCRIPTION

**Brief description of the project**

GIRAFF+ develops a system for early detection and adaptive support to people’s changing needs related to ageing. The Giraff+-system consists of a network of home sensors that measure e.g. blood pressure and temperature, or detect e.g. whether somebody occupies a chair, falls down or moves inside a room. The data from these sensors are interpreted by an intelligent system in terms of activities (e.g. the person is going to bed) and health and wellbeing (e.g. the person is tired or well rested). Alarms or reminders to the person or his/her caregivers can be triggered, and the generated data can be analysed over time by a health professional. Part of the system is a telepresence robot, Giraff, which can be moved around in the home remotely via the internet, e.g. by a caregiver. The Giraff is effectively a mobile communication platform, with video camera, display, microphone and speakers, which helps the user to maintain his/her social contacts.

### OBJECTIVES

**Objectives of the project**

The main objectives of the GIRAFF+ project include:

- To develop a networked system in the home consisting of environmental and physiological sensors.
- To develop intelligent services which can extract high level activities based on sensor data and provide a robust system.
- To provide services such as alarms which via the Giraff will allow healthcare professionals and family to enable timely involvement.
- By 2014 test the system in a real homes around Europe and include user feedback in all steps of the system design.

### OVERALL PROJECT ASSESSMENT
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

| 4 | This is a very well run and interesting project that has successfully achieved all of its major objectives and deliveries. The GiraffPLUS project has presented interesting work covering many different and ambitious strands including robotics, monitoring and human robot interaction. Work in developing the goal of prolonging independent living is both relevant and necessary today. The GiraffPLUS environment has been demonstrated within a number of real life scenarios and as noted after the 2nd review it is this ‘real life’ demonstration and testing that is a major strength of the project. This project has demonstrated a good balance between achievable ambitions and realised results via its deployment in 15 test sites running in the last year in three countries. |

| OVERVIEW OF PROJECT IMPACT |
| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. |
| 4 | The project has significant potential for impact in the future and the exploitation strategy is excellent with approaches being made to secure venture capital to commercialise the major outputs of the work. The business development activities have significantly matured since the last review. The industrial partners have demonstrated a commitment to realising a tangible commercial and social impact, with plans in progress to take this to the next stage as a commercially available system. The successful conclusion of the project will support the creation of the next-generation integrated solutions for remote supervision and it therefore may strongly impact the European social care system. |

| Plans for the use and exploitation of results |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |
| 4 | The results of the research results have been used extensively in the establishment and evaluation of the 15 test sites. The results are now being capitalised upon in both the exploitation and dissemination plans. The project has significant potential for impact in the future and the exploitation strategy is excellent with approaches being made to secure venture capital to commercialise the major outputs of the work. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 12 |

| OVERVIEW OF PROJECT IMPACT IN KEY AREAS |
Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

*This will be evaluated taking into account the programme objectives* including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.</td>
<td></td>
</tr>
<tr>
<td>- Population that perceive their health as good or very good</td>
<td></td>
</tr>
<tr>
<td>- Population having a long-standing illness or health problem</td>
<td></td>
</tr>
<tr>
<td>- Healthy life years at birth</td>
<td></td>
</tr>
</tbody>
</table>

- **Increased quality for life for elderly people and their carers**
  - The use of the robot platform has been good for the social elements of elderly care as it facilitated direct communication and social engagement.
  - A significant highlight was a visit to a flat with the GiraffPlus system installed and the opportunity to meet Anna, one of the primary users. This visit clearly demonstrated that the system had real functionality.

- **Increased personal independence of the elderly**
  - The demonstration during the review meeting showed a nice balance of functionality and usability – without becoming tempted to get too complex and hence affect these key elements of a successful real-world implementation. Furthermore, The GiraffPLUS robot extremely well suited for everyday deployment in human-oriented environments, without introducing excessive complexity into the solution.

- **Concepts for the detection of ageing-related risks**
  - Whilst the sensors deployed are relatively simplistic (pressure sensor on chairs, door sensor, presence sensor, electricity sensor), they provide robustness and managed complexity for real world use cases.

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

*This will be evaluated taking into account the programme objectives* in Section 2.2 of our Technical Offer.

- **Increased efficiency of care systems**
  - The successful conclusion of the project will support the creation of the next-generation integrated solutions for

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70 The programme objectives were detailed in Section 2.2 of our Technical Offer.  
71 http://mafeip.eu/about_study/  
72 http://www.linkedpolicies.eu/policymaps/eiponaha/
programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

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</tr>
<tr>
<td>- Hospital discharges per 100,000 inhabitants</td>
</tr>
<tr>
<td>- In-patient average length of stay</td>
</tr>
</tbody>
</table>

### Impact area 3: Market growth and expansion of the EU industry

**Score 1-4**

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

**4**

- **New markets for independent and active living products and services through a set of open standards and integrated platforms**
  - The project has tended to extend and integrate the design of primarily existing technologies, but this does not diminish its success in doing this and in implementing evolving versions of the solution in real-world long-term environments.
  - A final OSGi-based version has been released for desktops. In addition, a final mobile Android version has also been released for mobile devices on Google Play. The project has adhered to, and contributed to, international standards for sensor networks, through involvement in the OSGi Residential Group (OSGi Alliance). Furthermore, the diversity of the test sites has stimulated development of the previously mentioned “plug-and-play” approach to simplify on-request configuration of the system for individual use cases.

- **Improved competitiveness of EU industry**
  - N/A

- **Strengthened global position of EU industry in service robotics for ageing well**
  - An opportunity has arisen which is currently being evaluated for funding by a consortium from Toronto, Canada for both the US (primarily) and also EU

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73 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
markets as a complete GiraffPLUS solution for tele-health care. It has been positioned as a software and service cloud-based solution with a monthly subscription-based model being considered.

- **Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**
  - The project has significant potential for impact in the future and the exploitation strategy is excellent with approaches being made to secure venture capital to commercialise the major outputs of the work.

- **Creating a longer term RTD agenda**
  - N/A

- **Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**
  - N/A

- **Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.**
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
<thead>
<tr>
<th>Notable efforts with regard to the dissemination of the project results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td><strong>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</strong></td>
</tr>
<tr>
<td>- Regarding overall dissemination activities: Work within WP7 has focused on the general dissemination of the project information activity in this area has shown a significant ramp up in activity and an excellent external profile has been developed in both the scientific and popular media.</td>
</tr>
<tr>
<td>- Regarding key dissemination metrics: The project exceeded the planned expectations for key metrics (hits per month, publications per year), the Nonna Lea video (94-year-old participant) being a good example, which helped with increasing the profile of the project worldwide.</td>
</tr>
<tr>
<td>- The project website (<a href="http://www.giraffplus.eu/">http://www.giraffplus.eu/</a>) was last updated in April 2015, 4 months after the end of the project. It is still available.</td>
</tr>
</tbody>
</table>
## PROJECT SUSTAINABILITY

### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

<table>
<thead>
<tr>
<th>3</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent progress has been made in this area with negotiations for venture capital to commercialise the system in progress.</td>
</tr>
<tr>
<td></td>
<td>Options were being discussed and evaluated to secure additional funding from Canada.</td>
</tr>
<tr>
<td></td>
<td>Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</td>
</tr>
<tr>
<td></td>
<td>Good formalised links have been maintained with several similar FP7 projects to allow the exchange of best practice.</td>
</tr>
<tr>
<td></td>
<td>Close links have continued with the Robot Era project through mutual collaborators.</td>
</tr>
</tbody>
</table>

### Supporting Evidence

- Regarding social media:
  - Twitter: The last tweet was in September 2015 and they currently have 236 followers and 267 tweets. The project was also cited as the “Greatest digital story of 2014” by @DigitalAgendaEU.
  - Youtube channel: There are 4 videos uploaded with 25 subscribers.
- Facebook: The last publication was in May 2015. They currently have 197 people following their Facebook page although it has not been updated recently.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

- Regarding the involvement of potential users and other stakeholders: There has been a high level of engagement throughout the project with stakeholders from both the user and healthcare communities. The selection of users has continued to improve since the first review with a more formalised process being adopted. User feedback has been utilised in a much more coherent and efficient manner with users involved in both system improvements and troubleshooting.

### BEST PRACTICES
### Best practices that the project has developed

- Real life demonstration and testing is a major strength of this project. See the Nonna Lea Youtube video: https://www.youtube.com/watch?v=pqnjC1UeCeQ
- Work has been completed on the use of context recognition to analyse the sensory outputs of the system, which, has delivered some of the best scientific novelty in the project.

### FINAL EVALUATION COMMENTS

<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The GiraffPLUS project has presented interesting work covering many different and ambitious strands including robotics, monitoring and human robot interaction. Work in developing the goal of prolonging independent living is both relevant and necessary today.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>27/32</td>
</tr>
</tbody>
</table>
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>GROW ME UP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>GROW ME UP</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>H2020</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>02/2015 – 01/2018 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 790 430</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Research and Innovation Action</td>
</tr>
<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - Innovative solutions for independent living
  - Robotics for Ageing Well  
  - Innovating elderly care  
  - Better connected through integrated care  
  - Frailty, early detection and intervention
  - Fall Prevention  
  - Knowledge sharing and standardisation related to ageing well |

## BRIEF DESCRIPTION

**Brief description of the project**
GrowMeUp will provide an affordable service robotic system able to learn the older persons needs and habits over time and enhance (‘grow up’/scale up) its functionality to compensate for the elder’s degradation of abilities, to support, encourage and engage the older persons to stay longer active, independent and socially involved, in carrying out their daily life at home.

## OBJECTIVES

**Objectives of the project**
GrowMeUp’s main aim is to increase the years of independent and active living, and the quality of life of older persons (age of 65+) with light physical or mental health problems who live alone at home and can find pleasure and relief in getting support or stimulation to carry out their daily activities over the ageing process.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**3**

The project has progressed in its objectives via progress in multiple work packages. Some deviations are reported due to technical and hardware issues in project prototype which has impacted on some of the deliverables and milestones 3 and 4 delivery.  
The project has demonstrated achievement of some of its scientific and technological goals, namely the user requirement elicitation and cloud knowledge base, while the demonstrated progress in HCI and behaviour analysis which depends on sensor networks and action/object identification has been more limited. Progress in the dialogue management is reasonable.WP4 has
specified the CoRoBo-Net and defined the Home Daily Activity services but the link between user requirement and system specification should be further clarified. System integration into prototype 2 has faced issues due to hardware and technical issues, which has required development of a third prototype within the project life time. This has resulted in the delays for the pre-trials which impacts on achieving project objectives around user assessment. The work on dissemination has progressed satisfactorily with some good publications achieved however, the exploitation planning of the project requires additional focus to gather in time the required support for developing a business plan and exploitation strategy based on user and market studies.

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</td>
</tr>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care, 3) market growth and expansion of the EU industry.</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>The current impact of the project is achieved by scientific publications and using social media and public dissemination channels. Other project impact such as services and products in the market depend on successful evaluation of the project developments as well as a robust exploitation plan. This is to be substantiated in the next period. The project persists to follow the work plan given in the DoA with minor deviations. In principle, the foreseeable impacts according to the corresponding Work Programme are being attained.</td>
</tr>
</tbody>
</table>

| Plans for the use and exploitation of results |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |
| 2 |
| The rough exploitation plan and IPR handling status within the project corresponds well to the DoA. Further refinement towards detailed impact and exploitation plan is subject to project ongoing activities. More detailed version of the exploitation/commercialization/impact plan is required. |

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact area 1: Improved quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>How the project has made an impact regarding</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>• Increased quality for life for elderly people and their</td>
</tr>
</tbody>
</table>
Improved quality of life
This will be evaluated taking into account the programme objectives\(^7\) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

- Increased quality for life for elderly people and their carers
- Increased personal independence of the elderly
- Concepts for the detection of ageing-related risks
- The Reduction of admissions and days spent in care institutions

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^7\) and visualised through the Policy dashboard on EIPonAHA\(^7\)
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care
This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

2 Increased efficiency of care systems
- The discussion show that the target solution still shall bring costs savings via using the GrowMeUp technology.
- The main objective is to create yet more efficient system, profiting from smart networking with other ones, users and caregivers, making the solution more flexible, cheaper, affordable and smarter in comparison to previously implemented approaches.

- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants

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\(^7\) The programme objectives were detailed in Section 2.2 of our Technical Offer.
\(^7\) [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
\(^7\) [http://www.linkedpolicies.eu/policymaps/eiponaha/](http://www.linkedpolicies.eu/policymaps/eiponaha/)
<table>
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<tr>
<th>Impact area 3: Market growth and expansion of the EU industry</th>
<th>Score 1-4</th>
</tr>
</thead>
</table>

**Inhabitants**
- In-patient average length of stay

How the project has made an impact regarding Market growth and expansion of the EU industry

*This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.*

<table>
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<tr>
<th>3</th>
<th>New markets for independent and active living products and services through a set of open standards and integrated platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The project employs cloud-based approach expecting to bring up new features and the solution flexibility allowing better market opportunities of the hereby designed and developed robotic home-care system. The core expected win in the project concept focuses creating high flexibility at reasonably low price of the end-user solution (the care-giving robots).</td>
</tr>
<tr>
<td></td>
<td>- The hereby applied approach provides new user features to the system by sharing a common space at the cloud, allowing efficient information and knowledge sharing between users, caregivers and other involved entities, mass storage features, performance evaluations, etc.</td>
</tr>
</tbody>
</table>

**Supporting indicators & Evidence**

*The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA*

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

**Intramural R&D expenditure**

- N/A

**R&D personnel and researchers in FTE**

- N/A

78 http://mafeip.eu/about_study/
79 http://www.linkedpolicies.eu/policymaps/eiponaha/
and defined the Home Daily Activity services but the link between user requirement and system specification should be further clarified.

- **Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.**
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
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<th>Notable efforts with regard to the dissemination of the project results</th>
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<tbody>
<tr>
<td>Support Evidence</td>
<td><strong>4</strong></td>
</tr>
<tr>
<td>- To that end, the project involves the organization and execution of pilots and related evaluation and assessment to prove the high usefulness of the system. Two real-world environmental settings are considered through the operation and evaluation of two pilots at Zuyderland (Netherlands) and Caritas (Portugal). Both pilots involve the careful selection of use cases and older persons who fulfil the GrowMeUp target group</td>
<td></td>
</tr>
<tr>
<td>- The work on dissemination has progressed satisfactorily with some good publications.</td>
<td></td>
</tr>
<tr>
<td>- Very intensive presentation of the project goals at various public events has been performed. Scientific dissemination has been improved (mainly through publications related to WP1, 3, and 4). For the reported published journal papers, please highlight Open Access or Green Open Access publications.</td>
<td></td>
</tr>
<tr>
<td>- Multiple dissemination channels have been identified at the onset, with measurable expectations that are tested against achievement in the period. These include web, social media, videos, workshop and so on, that provide a good and diverse set of communication routes.</td>
<td></td>
</tr>
<tr>
<td>- Project website: The project website (<a href="http://www.growmeup.eu/">http://www.growmeup.eu/</a>) clearly details the project activities and has a modern and easy to use appearance. The public deliverables are clearly available. A private section is also available for the intranet.</td>
<td></td>
</tr>
<tr>
<td>- Social media: the project has accounts on twitter (11 followers, 302 tweets); a LinkedIn Group with 51 members; a Youtube Channel with 11 subscribers and various project videos.</td>
<td></td>
</tr>
<tr>
<td>- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
<td></td>
</tr>
</tbody>
</table>

**Supporting Evidence**
requirements, which will provide developments validation, on both the hardware and the software side.

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

<table>
<thead>
<tr>
<th>3</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>The exploitation planning of the project requires additional focus to gather in time the required support for developing a business plan and exploitation strategy based on user and market studies.</td>
</tr>
<tr>
<td>-</td>
<td>Exploitation and, mainly, business strategies are not yet sufficiently developed. Even, there are estimates for pay-back of a robot after use for 2 years, RaaS approach still lacks serious financial analysis, competitor mapping etc.</td>
</tr>
</tbody>
</table>

**Supporting Evidence**

- All participants in the GrowMeUp interdisciplinary consortium (Figure 1) collaborate in complementary national and international networks, including EU funded projects. These will provide a platform for the continuous exchange of cutting-edge results and novel ideas in these research areas. Moreover, members of the consortium have bilateral collaborations with (non-) European research groups and companies. This illustrates that the present project will be embedded in a broad research network of on-going collaborations on topics of high relevance to the project.

### BEST PRACTICES

**Best practices that the project has developed**

- The projects’ own contribution stands primarily in development and implanting of high level functionalities, while building on recent technologies but creating a new quality.
- The project’s four key innovations include:
  - Cloud Technologies
  - Behavior and Emotional Understanding
  - Intelligent Dialoguing aims
  - Personalized care aims

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The project has made good progress in reaching its objectives and is set to achieve its goals following the user testing. The key innovations (mentioned above) could provide an affordable solution that increases the
years of independence, active living and the quality of life of older persons with light physical or mental health problems who live alone at home.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>23/32</td>
</tr>
<tr>
<td>Acronym</td>
<td>HERMES</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Project Name</td>
<td>Cognitive Care and Guidance for Active Ageing</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>01/2008 – 03/2011 (39 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2,820,000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
<tr>
<td>Project subject (to help categorise the results for the final publication)</td>
<td>Robotics for Ageing Well, Innovative solutions for independent living, Innovating elderly care, Better connected through integrated care, Frailty, early detection and intervention, Fall Prevention, Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

**BRIEF DESCRIPTION**

HERMES provides an innovative integrated approach to cognitive care covering the domain of cognitive support and training. This is achieved through an advanced, integrated, assistive technology that combines the functional skills of the older person to reduce age-related decline of cognitive capabilities and assist the user where necessary. Based on intelligent audio and visual processing and reasoning, the project results in a combination of a home-based and mobile device to support the user's cognitive state and prevent cognitive decline.

**OBJECTIVES**

HERMES assesses the following five core objectives associated with the five main areas of cognitive support, care and wellbeing:

- Advanced activity reminding to assist the user in performing everyday tasks and to support independent living. Modeled after human associative memory, activities are automatically deduced from the captured information using advanced speech recognition and processing algorithms.
- Facilitation of episodic memory through the capture of content in audio and image including when, where, who, and what of a moment, including additional contextual information.
- Cognitive training through games with important moments.
- Conversation support on the grounds of interactive reminiscence based on the recordings of important moments.
- Mobility support to address the needs of the user outside of the house with cognitive support when and where needed.

**OVERALL PROJECT ASSESSMENT**

The project attained significant scientific/technological achievements with good quality results that contributed to the state of the art. Its work represents a substantial step.
plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

forward in relevant areas of research. However, the relation towards the domain of elderly with light impairments is not convincing. The assessment of the whole system would need a longer testing period to acquire real data. The main objectives that were achieved with good results are:

• Advanced capture of content and contextual information in daily life moments that serve as a basis for facilitation of episodic memory
• Provision of personalised reminders to assist the user’s memory in performing everyday tasks, making it easier for a user to remain independent
• Using interactive reminiscences to link a person’s experiences from the past with present day life
• Provision of mobility support to assist users when outside, aiding the purpose of their journey and giving confidence that they can find their own way home.

The results regarding content acquisition and information indexing, e.g., speech recognition and transcription, location and emotion identification, summarization of video and synchronization of speech, are of high scientific quality. The methodology regarding conducting the user trials is good and could be used as example for other projects. However, the execution of these user trials is rather lightweight regarding data collection methods, statistics and results. That is, the project cannot claim that it supports people with memory failures based on these results.

The achievements of the project are also hampered by developments in the market and the evolution of the elderly population. On the one hand, the choice of technologies and particularly the mobile platform to be deprecated jeopardizes the impact of some technical components. While understandable since the decision was made at the beginning of the project, some technological shifts could have been detected and handled sooner. On the other hand, within a few years the 65+ generations will be quite familiar with Internet and computer applications like calendars, shopping lists etc.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care

3

The Scientific and technical impact of the project is promising. Although the impact on elderly people could be important, it is not yet clear how this could be achieved. The project has demonstrated that the Hermes techniques could be extremely useful throughout Europe, but the impact of the project has so far been necessarily
3) Market growth and expansion of the EU industry. very limited, affecting only a limited number of users. Despite producing a very good and detailed exploitation plan the project has yet to make a convincing case for the commercial exploitation of its work. It could be that the longer-term value of the project will prove to be more in the integration of a complex context-aware system that could be useful for the general population, and not just for elderly people.

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
</tr>
</tbody>
</table>

3 Plans are detailed and appropriate. They are still relevant, but concerns remain about the further exploitation for the elderly market, that will be required if the project is to fulfil its potential in the longer term.

**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE**

| 9 |

**OVERVIEW OF PROJECT IMPACT IN KEY AREAS**

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

<table>
<thead>
<tr>
<th>Impact area 1: Improved quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>How the project has made an impact regarding Improved quality of life</td>
</tr>
<tr>
<td>This will be evaluated taking into account the programme objectives including Increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.</td>
</tr>
</tbody>
</table>

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

2

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increased quality for life for elderly people and their carers</strong></td>
</tr>
<tr>
<td>- The Scientific and technical impact of the project is promising. Although the impact on elderly people could be important, it is not yet clear how this could be achieved.</td>
</tr>
<tr>
<td>- Overall the objectives were accomplished with minor deviations.</td>
</tr>
<tr>
<td>- The results of the trials are not fully convincing regarding the effect of using the HERMES system on the cognitive functioning of the users and to what extent they are supported by coping with their memory problems.</td>
</tr>
</tbody>
</table>

| **Increased personal independence of the elderly** |
| - The project could have significant impact on the video and audio processing technologies developed, and possibly with the integration of components to support elderly people in remaining independent, but regarding this market - only if ways are found of disseminating the results more widely. |

| **Concepts for the detection of ageing-related risks** |
| - N/A |

| **The Reduction of admissions and days spent in care institutions.** |
| - Population that perceive their health as good or very good |

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80 The programme objectives were detailed in Section 2.2 of our Technical Offer.
81 http://mafeip.eu/about_study/
82 http://www.linkedpolicies.eu/policymaps/eiponaha/
### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

*This will be evaluated taking into account the programme objectives including increased efficiency of care systems, creation of ICT products and services for ageing well, facilitate wide implementation of sustainable innovation services, efficiency through consensus and common visions between relevant key stakeholders and cooperation and longer-term research deployment.*

| 2 | **Increased efficiency of care systems**  
- N/A  
**Creation of ICT products and services for ageing well**  
- N/A  
**Facilitate wide implementation of sustainable innovation services**  
- N/A  
**Efficiency through consensus and common visions between relevant key stakeholders and cooperation and longer-term research deployment.**  
- Available beds in hospitals per hundred thousand inhabitants  
- Hospital discharges per 100 000 inhabitants  
- In-patient average length of stay |
|---|---|

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

#### How the project has made an impact regarding Market growth and expansion of the EU industry

*This will be evaluated taking into account the programme objectives including new markets for independent and active living products and services through a set of open standards and integrated platforms, improved competitiveness of EU industry, strengthened global position of EU industry in service robotics for ageing well, lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, creating a longer term RTD agenda, reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, facilitating the emergence of an evaluation culture in ICT for AHA and scalable business and financing models.*

| 2 | **New markets for independent and active living products and services through a set of open standards and integrated platforms**  
- N/A  
**Improved competitiveness of EU industry**  
- N/A  
**Strengthened global position of EU industry in service robotics for ageing well**  
- N/A  
**Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**  
- N/A  
**Creating a longer term RTD agenda**  
- N/A  
**Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**  
- The project attained significant scientific/technological achievements with good quality results that contributed to the state of the art. Its work represents a substantial step |
|---|---|

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Intramural R&D expenditure

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83 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
84 [http://www.linkedpolicies.eu/policymaps/eipona](http://www.linkedpolicies.eu/policymaps/eipona/)
- R&D personnel and researchers in FTE forward in relevant areas of research.
- The project has moved forward the state of the art in some areas, notably in the use of video and audio processing components, and to a lesser extent in application design and cognitive exercises. But it must be noted that there has also been general progress in these areas outside of the project.
  - Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
    - Intramural R&D expenditure
    - R&D personnel and researchers in FTE
    - N/A

**DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION**

Notable efforts with regard to the dissemination of the project results

*Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).*

Supporting Evidence

2

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Most of the dissemination is geared towards the academic and research environment. Good dissemination work so far, but persuading governments, health authorities and private health service providers will remain a difficult and ongoing task.
  - The project website ([http://www.fp7-hermes.eu/](http://www.fp7-hermes.eu/)) details the project results and conclusions in a clear and accessible manner. The latest news item is from May 2011, suggesting that the project is no longer being updated.
  - Social Media: No activity on social media can be seen. This is quite normal given the dates in which this project was carried out.
  - The results of the HERMES project were presented at various events and submitted various different scientific papers.
  - The project also produced a poster, leaflet and a brochure.
- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - The trials so far have been very limited to only modest numbers of users and more work needs to be done with more users to establish the viability of extending the work to a wider range of people and European countries over a longer period of time.
  - Potential users and stakeholders have been involved via the user trials and the partner organizations. However, the number of users involved was limited. There is a need for these trials to be replicated in other areas with larger
samples of more diversified users, with more robust system implementations and usage over a more extended period. Clearly the project nature (installation even in its minimal arrangement) made it rather difficult to achieve that within the project’s timeframe. Since, according to the results of the user trials, healthy elderly didn’t feel like using the system, positioning it will be challenging, as it might even have to compete with existing commercial solutions. Issues like maintenance, gradual installments, and possibilities for other Apps etc. could be considered.

### PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>Are the outputs from the project still being used today?</td>
</tr>
<tr>
<td>Supporting Evidence</td>
<td>- Despite producing a very good and detailed exploitation plan the project has yet to make a convincing case for the commercial exploitation of its work. It could be that the longer-term value of the project will prove to be more in the integration of a complex context-aware system that could be useful for the general population, and not just for elderly people.</td>
</tr>
</tbody>
</table>

### BEST PRACTICES

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
<th>The main objectives that were achieved with good results are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Advanced capture of content and contextual information in daily life moments that serve as a basis for facilitation of episodic memory</td>
</tr>
<tr>
<td></td>
<td>- Provision of personalised reminders to assist the user’s memory in performing everyday tasks, making it easier for a user to remain independent</td>
</tr>
<tr>
<td></td>
<td>- Using interactive reminiscences to link a person’s experiences from the past with present day life</td>
</tr>
<tr>
<td></td>
<td>- Provision of mobility support to assist users when outside, aiding the purpose of their journey and giving confidence that they can find their own way home</td>
</tr>
</tbody>
</table>

### FINAL EVALUATION COMMENTS

| Final comments regarding the in-depth evaluation | Whilst it seems that the Project made a substantial contribution to the state of the art in art in some areas, |
notably in the use of video and audio processing components, the lack of effective execution of the user trials and weak exploitation plans means that the impact of the project has not be as strong as it could have been.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>19/32</td>
</tr>
<tr>
<td>GENERAL PROJECT INFORMATION</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--</td>
</tr>
<tr>
<td><strong>Acronym</strong></td>
<td>I-DONT-FALL</td>
</tr>
<tr>
<td><strong>Project Name</strong></td>
<td>Integrated prevention and Detection sOlutioNs Tailored to the population and Risk Factors associated with FALLs</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>04/2012 – 09/2015 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 633 995</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
<tr>
<td><strong>Project subject</strong></td>
<td>Robotics for Ageing Well</td>
</tr>
<tr>
<td></td>
<td>Innovative solutions for independent living</td>
</tr>
<tr>
<td></td>
<td>Innovating elderly care</td>
</tr>
<tr>
<td></td>
<td>Better connected through integrated care</td>
</tr>
<tr>
<td></td>
<td>Frailty, early detection and intervention</td>
</tr>
<tr>
<td></td>
<td>Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief description of the project</strong></td>
<td>The I-DONT-FALL project will test integrated and fall management solutions, while allowing the tailoring of fall technological solutions to the specific needs, root causes, risk factors and cultural factors associated with fall incidents.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives of the project</strong></td>
<td>The main goal of the I-DONT-FALL project is to deploy, pilot and evaluate a range of innovative ICT solutions for fall detection and prevention management. The platform will be flexibly configured to the needs of specific target groups and risk factors associated with fall incidents. Based on the I-DONT-FALL integrated platform: (a) End-users will enjoy tailored fall technological solutions, while (b) Medical experts and health professionals will be offered a wide range of tools, enabling them to customize fall solutions to the end-users’ needs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERALL PROJECT ASSESSMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall assessment according to review documentation.</strong></td>
<td>3</td>
</tr>
<tr>
<td>Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.</td>
<td>The project has performed well to undertake and deliver a large multi-country RCT of 500 patients, in seven pilot sites in four countries without exceeding expected dropout rates – given the age, of over 90, of some of the participants, maintaining the dropout rate at an acceptable level was a great achievement. The project has sought and been granted two 3-month extensions, which were warranted given the project delay and the re-planning activities required following the withdrawal and</td>
</tr>
</tbody>
</table>
introduction of new project members. All the deliverables have been submitted and are of good quality. The coordination of the project, the reallocation of resources and the maintaining of commitment by all partners – who had an evident close working relationship – was very good. The period reports, which are well structured and informative. Risks that occurred during the implementation have been very well offset by adequate mitigation measures. It is suggested that the Commission considers I DON'T FALL project as an example of best practice in recruiting and maintaining elderly people in trials under EU funded projects. It is also suggested that the clinical partner prepares a methodological paper for the benefit of other projects on the key success factors for motivating large numbers of elderly persons in trials. This aspect of the project has a high dissemination potential, coupled with the demonstrated key clinical and social benefits for elderly patients.

OVERVIEW OF PROJECT IMPACT

| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win | 3 |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. | |

| Plans for the use and exploitation of results | 3 |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. | |

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

| How the project has made an impact regarding Improved quality of life | 4 |
| • Increased quality for life for elderly people and their carers | |
This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care
This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
- Available beds in hospitals per hundred thousand inhabitants

2
- Increased efficiency of care systems
  - N/A
- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay

85 The programme objectives were detailed in Section 2.2 of our Technical Offer.
86 http://mafeip.eu/about_study/
87 http://www.linkedpolicies.eu/policymaps/eiponaha/
## Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

### How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

| 3 | - New markets for independent and active living products and services through a set of open standards and integrated platforms  
   - The technology components used in the project demonstrated potential, but have experienced significant issues with integration, stability and maturity, with a question over the robustness of the integrated platform to commercialise successfully.  
- Improved competitiveness of EU industry  
   - N/A  
- Strengthened global position of EU industry in service robotics for ageing well  
   - N/A  
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing  
   - N/A  
- Creating a longer term RTD agenda  
   - N/A  
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA  
   - The project has provided evidence of scientific/medical benefits and thus has potential for having scientific impact through publications.  
   - The highlights of the project are the medical and scientific evidence that constitutes an excellent launching ground for exploitation.  
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.  
   - Intramural R&D expenditure  
   - R&D personnel and researchers in FTE |

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
</table>
| The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study88 and visualised through the Policy dashboard on EIPonAHA89.  
- Intramural R&D expenditure  
- R&D personnel and researchers in FTE |

### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

| 3 | - Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.  
   - The project has disseminated well and interacted with peers in the field. |

---

88 http://mafeip.eu/about_study/  
89 http://www.linkedpolicies.eu/policymaps/eiponaha/
| Supporting Evidence | - Dissemination has been acceptable rather than exceptional. Workshop held in early 2015 was a good event and raised awareness with European peers and colleagues. The project continues having a high dissemination potential following the end of the project. The Commission could encourage this by inviting speakers in particular regarding recruitment and engagement of elderly people in trials.  
  - The project website ([http://www.idontfall.eu/](http://www.idontfall.eu/)) is decent and presents the project’s results and deliverables in a clear manner.  
  - Social media: There is no evidence on the website that the project has taken advantage of the social media channels to effectively disseminate project results.  
  - Once clinical validity has been demonstrated, the next step is to develop these tools further and to identify pathways towards commercialisation. A key benefit of the project has been its focus on achieving a deeper understanding of end user needs through careful market analyses. These have provided partners with guidance on how they can most effectively move towards effective commercialisation, following completion of the three-and-a-half-year project in September 2015.  
  - Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).  
  - The project has performed well to undertake and deliver a large multi-country RCT of 500 patients, in seven pilot sites in four countries without exceeding expected dropout rates – given the age, of over 90, of some of the participants, maintaining the dropout rate at an acceptable level was a great achievement.  
  - The project is winding up and is a state of transition, it is difficult to assess the external involvement, though 70 external questionnaires were completed which was a positive activity. |

**PROJECT SUSTAINABILITY**

| Supporting Evidence | 3 Are the outputs from the project still being used today?  
  - Commercial impact is expected but many factors are operating and direct evidence is difficult to provide.  
  - Regarding the long-term impact success, there appears to be willingness from the industry partners to progress and commercialise the IDF platform, which is to be commended.  
  - ‘Some clinical sites involved in the project have already put in places services based on I-DONT-FALL solutions,’ says Melideo. ‘Those having |
most penetration so far appear to be solutions based on cognitive rehabilitation, which are currently being used at four partner clinics: Fondazione Santa Lucia in Italy, Frontida and Municipality of Kifissia in Greece and Sermas in Spain. It is important to note however that most potential customers of I-DONT-FALL solutions are public institutions, and for the moment at least, no public tenders have been launched.’

- An outline ‘Memorandum of Understanding’ with fellow project partner Universitat Politècnica de Catalunya (UPC) and sister university IBEC in Barcelona has also been established to further develop the iWALKER in order to specifically address rehabilitation, brain injury and elderly care market segments. This will be achieved by offering a range of modular versions of iWALKER that address different needs of the market.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The project is liaising with the ProFunD Network and has been present at various European Innovation Partnership on Active & Health Ageing (EIP-AHA A2 – Falls Prevention) events.
  - The previous EC-funded Sociable project continues to be regularly referenced. There is little evident engagement with other projects – for example, the EU-fundedn FATE project was focusing on an improved fall detector algorithm, shared a participant and shared the use of the iWalker, albeit for a different purpose, although there was no mention made.

### BEST PRACTICES

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
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</thead>
</table>

- It is suggested that the Commission considers I DON’T FALL project as an example of best practice in recruiting and maintaining elderly people in trials under EU funded projects.
- ‘Some of the key innovations we are most proud of include a cognitive rehabilitation platform; a robotic rollator – the iWalker – to support patients in physical rehabilitation; a wearable inertial unit to track gait and detect falls and a mobile android-based device connected to the iWalker that sends data to an electronic medical record,’ says project coordinator Matteo Melideo from Engineering Ingegneria Informatica SpA in Italy. 'We also tested a remote monitoring fall detection system on 24 patients, which demonstrated promising results from a technical point-of-
<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final comments regarding</strong></td>
<td>It is clear that this Project has been exemplary in the recruitment and motivation of users in clinical trials. It also seems that the IDF platform has a great deal of potential. However, the efforts going into the commercialization of the platform itself seem to be a little less efficient. There is no evidence that any of the partners have been able to proceed with an effective commercialization strategy.</td>
</tr>
<tr>
<td><strong>TOTAL IN-DEPTH EVALUATION SCORE</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td>24/32</td>
</tr>
</tbody>
</table>
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>IN LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>INdependent Living support Functions for the Elderly</td>
</tr>
<tr>
<td>Programme</td>
<td>H2020</td>
</tr>
<tr>
<td>Period</td>
<td>02/2015 – 01/2018 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3 383 841,25</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

### Project subject (to help categorise the results for the final publication)

- Innovative solutions for independent living
- Robotics for Ageing Well
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**

Building on existing knowledge and tested AAL technology/services IN LIFE will offer 19 different services, which will be further optimised and adapted to the particular needs and wants of various elderly groups, including mild cognitive impairment (MCI), early dementia and cognitive impairment with co morbid conditions, plus formal and informal caregivers. These interoperable services will be integrated into an open, cloud-based, reference architecture to be tested in 6 Europe-wide pilots in Greece, Netherlands, Slovenia, Spain, Sweden, and UK, with over 1200 elderly with cognitive impairments, 600 formal and informal caregivers, and 60 other stakeholders. Attention will be paid to issues concerning multilingual and multicultural environments. Building on existing knowledge and tested AAL technology/services IN LIFE will offer 19 different services, which will be further optimised and adapted to the particular needs and wants of various elderly groups, including mild cognitive impairment (MCI), early dementia and cognitive impairment with co morbid conditions, plus formal and informal caregivers.

## OBJECTIVES

**Objectives of the project**

IN LIFE aims to prolong and support independent living for elderly with cognitive impairments, through interoperable, open, personalised and seamless ICT services that support home activities, communication, health maintenance, travel, mobility and socialization, with novel, scalable and viable business models, based on feedback from large-scale, multi-country pilots.
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

In general, the work done is aligned with the DoA, and the expected results of the work-packages have been achieved, with some minor delays in achieving milestones and deliverables as planned. A lot of effort is spent on the developing some of the components to the platform, and securing the integration is possible. Other components are based on existing work, and only minor modification has been applied to adapt the components for integrations. None of the components make a significant contribution to state of the art, but the objective of the project also focuses more on the integration. However, the synergies between the different components enabled through integration is rather limited. The objectives of the project is still relevant, but the consortium should work more with user acceptance, as not even experienced test-users have had a strong interest in looking in to the details on the online platform. The objectives are achievable within the time and resources available to the project. The work carried out has the goal of delivering innovation to the markets in order to strength the competitiveness and growth of related companies. The main innovation observed relates to the cloud-based reference architecture for integrating services for elderly with cognitive impairment.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

The work carried out follows the plan described in the DoA with the goal of delivering innovation to the markets in order to strength the competitiveness and growth of related companies. The main innovation observed at the moment relates to the cloud-based reference architecture for integrating services for elderly with cognitive impairment. However, the innovation might suffer from the lack of innovation in the individual modules being integrated. Some of the modules may be challenged by other competitive apps on the market with high user acceptance and with new features. It will be a struggle for the consortium to keep all modules up to date with best practice for that module. Since the proposal will develop business models based on the project results, which will also include innovations, it is of outmost importance that the consortium regulates IPR issues before the second year of the project. That said, the consortium was encouraged to prepare an Annex to deliverable 8.1 (Business Plans) which will include IPR.
Directory that was described on pg. 27-28 of DoA, but was not planned to be part of any deliverable. The consortium acknowledged this remark and reported that the IPR Directory is being developed and will be reported in the final WP8 deliverable, which is expected to be of a high quality. In addition, after the 1st project review, the consortium was also encouraged to devote time and resources to regulate IPR relevant issues even before developing business plans since IPR issues can significantly influence the content of the business plan, the revenue streams, ROI, etc. The consortium acknowledged this remark and reported that it has addressed this issue by building key data to identify the key exploitable resources and the IPR where applicable. This information will also feed into the final WP8 deliverable, which is expected to be of a high quality. In terms of developing the business plans, the consortium was also encouraged after the 1st project review, to take into account several important aspects. After the 2nd project review and updated deliverables in WP8, it is evident that the consortium has taken into account all aspects and that it has intention to develop business plans based on different modules, according to the countries and tools in question. The consortium is performing well in this aspect and is encouraged to devote time to presenting an overview of benefits for different types of users for each of the tools and the platform in general. Once gathered, this information can be used for dissemination and marketing purposes. Reaching a critical mass of users will still be the largest challenge for the project to be successful, as the consortium need to keep all modules up to date and most attractive to the users, otherwise they will select other apps, which cannot be integrated. And from the demonstrations during the second review meeting the synergies between the different modules were rather limited – almost just a common data storage.

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</strong></td>
</tr>
</tbody>
</table>

4

The project has presented a good plan and targets for the dissemination actions and events for the 3rd year of the implementation. The expectations are high in terms of the quantitative outputs, but also the quality of the information disseminated should be valorised. The project has increased the number of conference presentation to 22 compared to 8 in the first year. There was one additional journal publication and 12 articles in non-scientific journals. Six press conferences organised by IN
LIFE partners. The project has implemented a significant number of face-to-face events – 22 in total, which is a good approach. The consortium is suggested to re-arrange the visibility of the tools on the IN LIFE project web-site per category: independent living, driving, etc., in the same way as categories are created on the IN LIFE service platform.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives90 including:

- Increased quality for life for elderly people and their carers
- Increased personal independence of the elderly
- Concepts for the detection of ageing-related risks
- Reduction of admissions and days spent in care institutions

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study91 and visualised through the Policy dashboard on EIPonAHA92:

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

3

- Increased quality for life for elderly people and their carers
  - Further developments of the Travel support module and integration of three services (driving assessment, simplified and elderly-focused MLS navigation support, and a public transport support navigation and assistance). The three applications were successfully tested on the PC, iOS device and an Android smart phone.
  - Further developments of the Socialisation and Communication support module based on the findings from the workshops on user communication needs conducted during the 1st year of the project. Two new tools were developed: CIRCA and CIRCUS, with the support for multilingual and multicultural support.
  - Further developments of the Carers support module with the tools supporting tele-consultation; carers monitoring, supervision, scheduling and reminding; patient management and complaints monitoring; and virtual training.

- Increased personal independence of the elderly
  - The project’s main objective is to prolong and support the independent living of seniors with cognitive impairments, through interoperable, open, personalised and seamless ICT solutions that support home activities, communication, health maintenance, travel, mobility and socialisation tasks, with novel, scalable and viable business models, based on feedback from large-scale and multi-country pilot applications.
  - Further developments of the Independent living support module including testing and validation.

90 The programme objectives were detailed in Section 2.2 of our Technical Offer.
91 http://mafeip.eu/about_study/
92 http://www.linkedpolicies.eu/policymaps/eiponaha/
on pilot sites, integration on the IN LIFE service platform and translation to English. Examples of independent living tools are the pre-programmed daily function based on NFC technology, web-based exercise module, activity monitoring and fall detection.

- The range of services that may help an independent living of these individual, include medical/health services, home & quality of living services, and autonomous mobility services.

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
<th>2</th>
</tr>
</thead>
</table>
| This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment. | **Increased efficiency of care systems**
- N/A
**Creation of ICT products and services for ageing well**
- N/A
**Facilitate wide implementation of sustainable innovation services**
- N/A
**Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100,000 inhabitants
  - In-patient average length of stay

### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Market growth and expansion of the EU industry</th>
<th>3</th>
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</table>
| This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT | **New markets for independent and active living products and services through a set of open standards and integrated platforms**
- A lot of effort has been spent on developing some of the components for the platform, and securing the integration is possible.
- The main innovation observed relates to the cloud-based reference architecture for integrating services for elderly with cognitive...
innovative products and services for independent living and active ageing,
Creating a longer term RTD agenda,
Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA,
Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**Supporting indicators & Evidence**
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- However, the innovation might suffer from the lack of innovation in the individual modules being integrated. Some of the modules may be challenged by other competitive apps on the market with high user acceptance and with new features.

- **Improved competitiveness of EU industry**
- The work carried out has the goal of delivering innovation to the markets in order to strengthen the competitiveness and growth of related companies.
- However, no disruptive technologies has changed the external conditions for scientific objectives of the project.
- The possibility to enhance innovation capacity, create new markets opportunities, strengthen competitiveness and growth of companies, need further confirmation.

- **Strengthened global position of EU industry in service robotics for ageing well**
- N/A

- **Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**
- IN LIFE may help to develop viable business models, scenarios and opportunities for Industry and SMEs with consideration for Best Practices and recommendations, although this needs to be confirmed.
- The work carried out will have an impact on SMEs since some of the project partners are also SMEs and will be involved in the development of project outputs to a different extent. In addition, the impact is also related to potential of commercialisation of project outputs. This refers to the:
  - Partner 8: Roessingh Research and Development BV (RRD)
  - Partner 12: MLS Multimedia S.A. (MLS)
  - Partner 15: VIRTUALWARE 2007 (VW)
  - Partner 18: BYTE Computer SA (BYTE)
  - Partner 19: Sheffcare Ltd.
  - Partner 20: Doktor 24 d.o.o. (DOKTOR24)
- Moreover, as presented during the 1st review, the project will offer, after its end, the opportunities to other SMEs to offer their new tools (other than 19 tools implemented during the lifetime of the project) through the open, cloud based reference architecture developed in the project. In addition, the project intends to develop a new standard and modify the existing one.

93 http://mafeip.eu/about_study/
94 http://www.linkedpolicies.eu/policymaps/eiponaha/
Exploitation results are identified for SMEs as well, but there is not enough material provided to make a full assessment of the long-term impact. However, the “theme” of the initial business model is the willingness to pay for health, which is well aligned with high impact for SMEs.

- Creating a longer term RTD agenda
  - IN LIFE project may have an impact on policy making since it has potentiality to improve care process, and to support independent living in a wide area, including medical/health services, home and quality of living services, and autonomous mobility services.
  - The work carried out by the project will contribute towards European policy objectives and strategies in active ageing field because the pilot results will lead to conclusions on the efficiency and benefits of the ICT supported tools in active ageing sector. In that sense they will broaden the spectrum of tools that can be used by other practitioners or elderly.

- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - N/A

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Notable efforts with regard to the dissemination of the project results**

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

**Supporting Evidence**

<table>
<thead>
<tr>
<th>3</th>
<th>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Regarding dissemination activities, the project has carried out the following:</td>
<td></td>
</tr>
<tr>
<td>o The project has increased the number of conference presentation to 22 compared to 8 in the first year.</td>
<td></td>
</tr>
<tr>
<td>o There was one additional journal publication and 12 articles in non-scientific journals.</td>
<td></td>
</tr>
<tr>
<td>o Six press conferences organised by IN LIFE partners.</td>
<td></td>
</tr>
<tr>
<td>o The project has implemented significant number of face-to-face events – 22 in total, which is a good approach.</td>
<td></td>
</tr>
<tr>
<td>o Webinars and face-to-face trainings</td>
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</tr>
</tbody>
</table>
were organised and delivered according to the DoA.
- In terms of the training developments, several training manuals were developed: user manual for services to be tested by elderly, user manual for services to be tested by caregivers, and user manuals for services to be used by developers.
- The project website ([http://www.inlife-project.eu/](http://www.inlife-project.eu/)) includes information about the project and the results.
- Social media: The project has a very active twitter account with 142 followers and 299 tweets.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - Baseline assessments on the six pilot sites. In total 1218 users participated in all six countries.

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

| 3 | **Are the outputs from the project still being used today?**  
- Further developments of the business models, RoI and exploitation. The project delivered a profound analysis of potential business models that could be implemented for the sustainability of the platform. Moreover, the proposal is clearly addressing country specific issues and tool-related specific aspects when developing models, even for each country separately. A SWOT analysis and templates has been developed to collection input from end-users at all pilot-sites.  
- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**  
  - There is currently limited information on this issue. |

### BEST PRACTICES

**Best practices that the project has developed**

- The main innovation observed relates to the cloud-based reference architecture for integrating services for elderly with cognitive impairment.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The project has a great deal of potential to prolong and support the independent living of seniors with cognitive impairments, through interoperable, open, personalised and seamless ICT solutions. However, it is still very early
in the project to make consolidated statements based on evidence from the pilot sites. Some of these sites have just performed the baseline assessments (e.g., Netherlands, Greece, UK, Slovenia), therefore it is still early to make conclusions whether pilots are demonstrating innovative results as described in the DoA. The impact for SMEs within the European industry also has a great deal of potential.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>23/32</td>
</tr>
</tbody>
</table>
**IN-DEPTH ANALYSIS EVALUATION SHEET**

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>INCA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>INclusive INtroduction of INtegrated CAre (IN3CA)</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>01/2014 – 06/2016 (30 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 548 000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication):**

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

INCA aims to propose a model that promotes higher coordination of socio-sanitary services while reducing costs, improving patient experience and achieving greater efficiency from health delivery systems. The inclusive approach of INCA can help to remove technological barriers for patients’ engagement and leverage integrated care programmes in Member States. This would lead to operational deployment of novel organizational models and care pathways for integrated care. The initiative contributes to the current state-of-the-art in Chronic Disease Management, aspiring to integrate or facilitate the integration of social programs beyond the clinical vision of the care chain provision.

### OBJECTIVES

**Objectives of the project**

The aim of INCA is to improve outcomes for patients; creating access to better integrated socio-sanitary care e-Services (integration of health care, social care, long-term and self-care in any kind of health/living conditions) outside of hospitals; reducing unnecessary hospital admissions and enabling effective working of professionals across provider boundaries (silos).

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if

| **3** | The integration of the healthcare and social care systems is still facing a challenge due to the systemic silo structures because of different professional cultures and funding schemes. INCA contributes to better exploit the ICT potential and close the gap between these silos, |
applicable), contribution to the state of the art, use of resources, impact.

bringing together different services, organisations and parts of care provision. INCA just aims to overcome silos creating a virtual integration in a wise and pragmatic way in order to leverage the benefits of ICTs, even when other barriers still remain. INCA does take into account the development of other ongoing projects (epSOS, EXPAND, SEED, SMARTCARE, Trillium Bridge) and especially the way opened by the project epSOS (LSP) towards interoperable healthcare in Europe that INCA, within its own vision, wants to take a step further. INCA will use the eServices of SEED project (Pilot B coordinated by IDI EIKON).

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

INCA pilots impact more than 125,000 users and directly engage with 1,550 active users.

Sustainability and Market Potential

The main target groups of the project are:

- Users/Patients (elder people with chronic conditions); Patients Associations; Informal Carers (including family, volunteers, neighbors etc); NGOs
- Health Professionals (doctors, nurses, administrative and managerial personnel at Hospitals departments, decision makers);
- Municipality Services in charge of Health and Social Services Policies (Social Services personnel, especially Social Workers and those responsible of implementing wellbeing policies among citizens);
- ICT Informatics and Services Providers (working for Healthcare institutions) and Policy makers

Manises Hospital management team has already decided that Manises - Quart pilot will be fully expanded to all 14 centres within the Health Area Manises. In addition, there is the possibility to extend the use of INCA for dementia patients and for palliative care (even if in this review were not presented).

In Murcia a very good link and interconnection between the stakeholders develop the scalability potential:

- Regional Ministry of Health and Social Policy of Region of Murcia,
- Murcia Region Health Services (Servicio Murciano de Salud, SMS)
- Foundation for Healthcare Training and Research of Region of Murcia (Fundación para la Formación e Investigación Sanitarias - FFIS)

The success in Valencia and Murcia could be a
good driver for impacting all over Spain. Other possible agreements in Cyprus are at a good level of maturity with INTERFUSION as partner in the INCA/ADSUM+ Alliance.

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 11

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Increased quality for life for elderly people and their carers

- The analysis of cost-effectiveness of the software tool INCA/ADSUM+ shows that INCA stands out as a potential winner in what refers to aspects as Patient Satisfaction or the patients’ self-assessed QoL, meaning that is more effective and less costly that the control group treatment.
- Manises Hospital/Quart de Poblet: The Cost-benefit analysis (CBA) foresight in the DoW was so replaced with a Cost-utility analysis (CUA) that have evidenced an annual cost reduction of 360 euro per patients and a good performance in terms of Quality of Life (QOL) and of Patient satisfaction.
- MURCIA – Servicio Murciano de Salud: The Cost utility analysis made on 77/82 patients with HF or diabetes in INCA care vs 62/72 in control groups demonstrated a good level of Patient satisfaction and Quality of life and an annual cost reduction of 129 euro per patient.
- CYPRUS – Paphos District: The Patient satisfaction and quality of life evaluated on 78 vs 66 patients has demonstrated that INCA is effective and less costly (the annual savings for patient are 214 euro).
- LATVIA – Ventspils: The patient satisfaction and quality of life of the ~82-84 patients vs ~70/64 have demonstrated a good increase.
  - The pilot in Latvia is not sustainable due to

95 The programme objectives were detailed in Section 2.2 of our Technical Offer.
96 http://mafeip.eu/about_study/
97 http://www.linkedpolicies.eu/policymaps/eiponaha/
the nature of the health and social system in Latvia that incentivizes hospitals for every treatment that they provide and not for treatment that can be avoided through proactive measures. It was not possible to test the system integration due to upcoming reform of eHealth system in Latvia.

- Focusing more on quality of life than financial gain.
- **Increased personal independence of the elderly**
  - N/A
- **Concepts for the detection of ageing-related risks**
- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth
  - Impressive reduction of re-hospitalizations after INCA deployment and operation (even if not necessarily demonstrating that INCA is the only driver of change).

### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

*This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.*

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

**Increased efficiency of care systems**

- **Manises Hospital/Quart de Poblet:**
  - Care Homogenization
  - GPs Work load: efficiency on care delivery
  - Performance is being tracked: the pilot’s login per role demonstrated that the more frequent users were the nurses and the social workers (good level of integration and empowerment of the social and care managers).

- **MURCIA – Servicio Murciano de Salud:**
  - Full Vertical Integration of Care.
  - First-ever Horizontal Integration of Care.
  - For this pilot INCA is a system “dominant”"; more effective and less costly.
  - Performance is being tracked: the pilot’s login per role demonstrated that the more frequent users were the caregivers (good level of training and education).

- **CYPRUS – Paphos District:**
  - First-ever Horizontal Integration of Care.
  - The shift of workload from specialist approach (for fee) to primary care (not...
for fee) as foresight by the pathway implemented possibly explains the high patient satisfaction.

- The pilot’s login per role demonstrated that the more frequent users are the helpdesk user of the social center.
- Good satisfaction of doctors, that find that ICP simplifies the workload (actually it’s better than a paper based approach). Data recording and registration has evolved (before was paper-based).

**CROATIA – Rejeca:**
- The pilot in Croatia is only a proof of concept allowing Croatian Health Insurance Fund to take qualified decisions in the public procurement process. Adoption of this tool would require some legislative changes. Integrated care is one of the focal points of the new Government in Croatia.

- **Creation of ICT products and services for ageing well**
  - N/A
- **Facilitate wide implementation of sustainable innovation services**
  - Manises Hospital/Quart de Poblet: Reference model at regional level and good sustainability plan.
  - Based on the cost-utility analysis, the consortium effort to scaling-up in Spain and Cyprus is proved also by the signed MoU between industrial partners (IDI EIKON, KENUS, INTERFUSION).
  - The success in Valencia and Murcia could be a good driver for impacting all over Spain.
- **Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay
- INCA is an ICT tool, named AdsuM+, addressed to Hospitals, Healthcare Departments, Clinics, Social Services Departments dealing with chronic / elder patients and aiming to improve the care provision processes and the roles of and relationships between the different actors.
  - INCA contributes to better exploit the ICT potential and close the gap between these silos, bringing together different services, organisations and parts of care provision. INCA just aims to overcome silos creating a virtual integration in a wise and pragmatic way in order to leverage the benefits of ICTs, even
when other barriers still remain.

- MANISES Hospital (Spain): HF stays (-28%), cardiology encounters (-22%), Hospital stays (-37%), Readmission after 30 days (-39%), Readmission after 6 months (-17%), Readmission after 1 year (-6%), emergencies (-29%).

- MURCIA (Spain):
  o Results for HF: Hospital admissions (-15%), Hospital stays (-23%), emergencies (-33%), Primary Care encounters (+43% with the same resources), Patients satisfaction (+24%)
  o Results for DM: Hospital admissions (-15%), Hospital stays (-19%), emergencies (-35%), Primary Care encounters (+52% with the same resources), Patients satisfaction (+25%).

- GEROSKIPOU (Cyprus): Results: Hospital admissions (-23%), Hospital stays (-19%), visits to the SCC Doctor (+32%), visits to the cardiology (-54%), Patients satisfaction (+18%)

- RIJEKA (Croatia): Difficult to calculate the real data starting from the actual data set. (Hospital admissions (-2.17%), MHD Hospital stays (-10.3%), MHD readmissions after 6 months (-5%), Providers satisfaction (+22%).

- Ventspils (Latvia): Results: Hospital admissions (-20%), cardiology encounters (-15%), Hospital stays (-1%), Readmission after 30 days (-8%), Readmission after 1 year (-6%), emergencies (-27%).

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

2

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - In Spain and Latvia pilots are eminently clinical; whilst in Croatia and Cyprus have a more social focus. Spanish partners are running INCA pilots using a private cloud-based infrastructure while non-Spanish partners, are running INCA pilots through a public cloud-computing solution.
  - Manises Hospital/Quart de Poblet: IT integration and interoperability (lack of full interoperability with others IT tools already in use).

- Improved competitiveness of EU industry
  o A MoU was signed between the industrial partners (IDI EIKON, KENUS and INTERFUSION) that lay out the foundation for a joint commercialization of the project results.

- Strengthened global position of EU industry in service robotics for ageing well
<table>
<thead>
<tr>
<th>Study98 and visualised through the Policy dashboard on EIPonAHA99</th>
</tr>
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<tbody>
<tr>
<td>- Intramural R&amp;D expenditure</td>
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<tr>
<td>- R&amp;D personnel and researchers in FTE</td>
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<tr>
<td><strong>robotics for ageing well</strong></td>
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<tr>
<td>- N/A</td>
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<tr>
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<tr>
<td>- N/A</td>
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### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the project results

**Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.**

- Regarding dissemination activities
  - Presentations at conferences >10
  - Press released and online articles >10
  - From the scientific publication point of view, there is not much evidence.

- The project website (www.in3ca.eu) is active and updated, translated into the project partners’ languages. The site is used intensively according with Google analytics. The project web site statistics for the third period of the project:
  - The website is very clearly structured and has a full list of the available public deliverables. Although some of the deliverables are not available.
  - Pages views: 17,769
  - Users: 2990
  - Returning visitor: 22.70%; New visitor: 77.30%
  - Pages / Visit: 4,64; %; Bounce rate: 13.86%

- Social media: Facebook, Twitter, Linkedin. The Facebook page has 133 followers and the Twitter account has 93 followers. The INCA Twitter account remains active as of June 2017.

- Developed and updated dissemination materials and tools (banners, brochures, posters etc).

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98 http://mafeip.eu/about_study/

99 http://www.linkedpolicies.eu/policymaps/eiponaha/
3 Newsletters, Press releases > 20; Face-to-face meetings > 40; Presentations at Conferences, info days > 10; 3 Exhibitions.

Social Media:
- The main dissemination events include:
  - The second project workshop was held under the European Innovation Partnership for Active and Healthy Ageing (EIP-AHA) session with the title “The INCA project – a workshop” at Zagreb, Croatia (20 May 2016); INCA Workshop audience was over 50 people. The workshop was organised in collaboration with partners from other three projects that are presenting their vision from their countries (Greece, Slovenia, Luxembourg).
  - eHealth Week 2016 (8-10 June 2016, Amsterdam, Netherland) – INCA was represented by the Croatian partner CHIF.
  - eHealth Summer Week (27-30 June 2016, Lisbon, Portugal).
  - “City Renaissance in Digital Age” Major Cities of Europe Annual Conference in Florence (Croatian partners participated).

Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
- The main target groups of the project are:
  - Users/Patients (elder people with chronic conditions); Patients Associations; Informal Carers (including family, volunteers, neighbors etc); NGOs
  - Health Professionals (doctors, nurses, administrative and managerial personnel at Hospitals departments, decision makers);
  - Municipality Services in charge of Health and Social Services Policies (Social Services personnel, especially Social Workers and those responsible of implementing wellbeing policies among citizens);
  - ICT Informatics and Services Providers (working for Healthcare institutions) and Policy makers
- The project made an effort to engage other stakeholders:
  - The consortium made efforts to engage stakeholders in Spain, Croatia and Cyprus. The second project workshop was organized in Croatia.
  - There is a lot of interest between
various stakeholders (Slovenia, Luxembourg, Croatia during the 2nd review) but no contracts or agreements signed, yet.
- Other possible partners, mainly in Spain (Roche, Generalitat Valenciana, Madrid etc.), have been presented and was showed a wide political interest of the Valencia stakeholders.

- Number of stakeholders involved in the different pilots:
  - MANISES Hospital (Spain): Planned users: 500 (vs 279 actually involved)
  - MURCIA (Spain): Planned users: 500 (Not really clear the real number of patients involved)
    - 250 diabetics (DM)
    - 250 heart failure (HF)
    - 105 professionals
  - GEROSKIPOU (Cyprus): planned users: 150 (180 actual)
  - RIJEKA (Croatia): Planned users: 200 (10 healthcare professionals are using INCA platform; 250 patients)
  - Ventspils (Latvia): Planned users: 200

**PROJECT SUSTAINABILITY**

**Continued impact from the project today**

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

**Sustainability and Market Potential**

- 3 out of 5 pilots already decided to sustain services.
- Success cases are key to “sell” the model to higher level PA, and still there are strong dependencies on political priorities.

- MURCIA – Servicio Murciano de Salud:
  - The project will be adopted by Murcia Region being interoperable with the regional HER
  - Full interoperability with Official EHRs for the Region is in place, paving the way for sustainability and inclusion of INCA along provider’s daily use tools.
  - Sustainable breakeven point is reached after 8 months; cost reduction 18889274 Euro/year; INCA adoption cost 88000 euro.
  - Sustainability demonstrated: INCA will continue after the project ends with expenses fully carried by SMS-Murcia’ own budget.

- MANISES Hospital (Spain): Extension to Smart-
Healthy Cities.
  - Product cost considering Heart Failure (HF): 78000 Eur; INCA is sustainable breaking even after 10 months and producing net returns afterwards; cost reduction 216475 Euro/year; INCA adoption cost 88000 euro.
  - Sustainability demonstrated: Manises hospital Public Private Partnership- INCA Service continuation after project ends decision has been already taken for Manises-Quart Pilot.
  - INCA, named Agenda ECA at Manises Hospital, is now a strategic corporate service at the organization’s portfolio and a unique value preposition in front of Valencia Region Health Ministry.
  - INCA is already expanded to Manises Health Area entire territory.
  - INCA is already expanded to Palliative Care ICP and Mental Illnesses referrals with Social Services, and ICPs for COPD and Diabetes are close to be launched.
  - INCA number of users (providers and patients) is expected to be 8 times bigger by M30 than it was when pilot started on M12 (500 users).

- GEROSKIPOU (Cyprus): Sustainability is demonstrated: the service will continue after the project ends. A new Medical Centre will be built (starting mid 2016). Interests shown also from private hospitals (Agios Georgios Hospital) and also from public municipalities. The model can be replicated for other social care centers from Cyprus.
  - Sustainable breakeven point is reached in less 3 years; cost reduction 27200 Euro/year; INCA adoption cost 50000 euro.
  - Sustainability demonstrated: Geroskipou plans to implement INCA as a core solution in the new Medical Centre to serve the residents of the whole Paphos District.
  - INCA pilot in Geroskipou aim is the improvement of Quality of Life for the citizens and not to generate any income from the service. Sponsors will assist with donations. Additionally, there is private investors’ involvement.

- Ventspils (Latvia):
  - Sustainability is not demonstrated: Possibilities of system integrations was not possible to test due to upcoming reform of eHealth system in Latvia (new joint e-health system will be available in 2016 –
- Health financing 2015 - 3.05% from GDP (currently lowest in Europe)
- The health budget is planned based on the number of patient admissions to the hospital of the previous year. Hospitals are interested to provide the service for the person patients in person.

- Rijeka (Croatia):
  - INCA adoption cost 35000 euro.
  - In the Croatian pilot Sustainability is not the main goal. The focus is on a proof of concept that allows the Croatian Health insurance Fund to take a qualified decision in a foreseen public procurement process.
  - Adoption of this tool would require some legislative changes. Integrated care is one of the focal points of the new Government.

- Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
  - The partners tried to use MAFEIP tool (a web-based statistical simulation tool for Monitoring and Assessment Framework for EIP-AHA) and their feedback to the European Commission related to their tests might be valuable for future developments of MAFEIP tool.
  - INCA does take into account the development of other ongoing projects (epSOS, EXPAND, SEED, SMARTCARE, Trillium Bridge) and especially the way opened by the project epSOS (LSP) towards interoperable healthcare in Europe that INCA, within its own vision, wants to take a step further. INCA will use the eServices of SEED project (Pilot B coordinated by IDI EIKON).

BEST PRACTICES

- The deployment and launch of five pilots in four different EU nations is the core of this project.

FINAL EVALUATION COMMENTS

- The pilots carried out in Spain and in Cyprus have been extremely successful with strong possibility that they will be sustainable in the future. Furthermore, the INCA pilots impact more than 125,000 users and directly engage with 1,550 active users.
- Sustainability and Market Potential
  - 3 out of 5 pilots already decided to sustain services
  - Success cases are key to “sell” the model to higher level PA, and still there are strong dependencies on political priorities.
<table>
<thead>
<tr>
<th><strong>TOTAL IN-DEPTH EVALUATION SCORE</strong></th>
<th>17</th>
</tr>
</thead>
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<tr>
<td><strong>TOTAL SCORE</strong></td>
<td>28/32</td>
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IN-DEPTH ANALYSIS EVALUATION SHEET

GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>inCASA</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Integrated Network for Completely Assisted Senior citizen’s Autonomy</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>04/2010 – 06/2013 (39 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 140 000</td>
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<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
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<table>
<thead>
<tr>
<th>Project subject (to help categorise the results for the final publication)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Robotics for Ageing Well</td>
</tr>
<tr>
<td>□ Innovative solutions for independent living</td>
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<tr>
<td>□ Innovating elderly care</td>
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<tr>
<td>X Better connected through integrated care</td>
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<tr>
<td>□ Frailty, early detection and intervention</td>
</tr>
<tr>
<td>□ Fall Prevention</td>
</tr>
<tr>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
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BRIEF DESCRIPTION

Brief description of the project

The “Integrated Network for Completely Assisted Senior citizen’s Autonomy (inCASA)” project deals with citizen-centric technologies and public/private services network, to help and protect independent elderly people, prolonging the time they can live well in their own home by increasing their autonomy and self-confidence.

OBJECTIVES

Objectives of the project

The aim of INCA is to validate and to start a pragmatic Initial Deployment in Europe, of inclusive friendly and engaging multi-channel “patient-centric” communication care Networks of integrated socio-sanitary care e-Services (integration of the whole personalised care chain provision of health care, social care, long-term and self-care in any kind of health/living conditions) among Public, Private and Third sector stakeholders and served from “the cloud”.

OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

Overall, the project has achieved most of its objectives significantly to catch up with the overall delay and to recover within each test site. The commitment of the project partners has improved, and pilot activities carried out during the trialing phase have been satisfactory as results from the outcomes of the evaluation.

As said, most of the objectives have been achieved, and efforts have been evident in particular with regard to the work conducted to:
- Harmonise the project pilots and conduct the related evaluation and validation activities
- Better integrate health and social care components and features of the inCASA solution
- Design, plan and prepare business models and exploitation strategy (including the definition of potential public private partnership)

**OVERVIEW OF PROJECT IMPACT**

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

3

The project has gained knowledge and lesson learned that should be conveyed to both future activities of the consortium itself and to other ongoing initiatives. The practical experiences and lessons learnt, supported by evidence from the trials are one of the major contributions of the project. This information could be of use to policy makers as it presents a real-life example of the integration of services.

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3

The business and deployment plans of the commercial partners are detailed, well structured, convincing and promising. However, they are highly dependent on external factors out of the control of the project consortium.

**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE**

9

**OVERVIEW OF PROJECT IMPACT IN KEY AREAS**

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

**Impact area 1: Improved quality of life**

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives\(^{100}\) including increased quality for life for elderly people and their carers, improved personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

3

- **Increased quality for life for elderly people and their carers**
  - The pilots have presented outcomes that indicate how integrating services can improve the quality of life of patients who are frail and vulnerable. Moreover, the pilots show how reorganising existing pathways and delivering care closer to home may improve clinical outcomes and target care effectively and safely. Each pilot has also reported a strong awareness amongst the professionals and organisations involved of the importance of joint working between healthcare and social care.
  - Patient perception was measured using the

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100 The programme objectives were detailed in Section 2.2 of our Technical Offer.

101 http://mafeip.eu/about_study/

102 http://www.linkedpolicies.eu/policymaps/eiponaha/
as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

SUTAQ questionnaire which was adopted by the Whole System demonstrator program in the UK:

- 40% of patients said that the service had increased their access to health or social care professionals. However, 36% remained undecided and 24% felt that it had not.
- 86% felt that the kit had not invaded their privacy.
- 56% felt the service had made them more actively involved in their health care.
- 88% felt that the kits could or should be recommended to others.
- 65% felt that it was not a replacement for usual care, with only 13% saying that it could be.
- 52% said that it was not as suitable as regular face to face care.

Pilots reported that the majority of their patients/end users who took part felt that the service and technology provided enhanced care that was over and above what they consider to be their normal care.

We note that there was slight improvement in quality of life in all aspects after the inCASA monitoring. The SF-36 v2 questionnaire scoring was compared from a user starting the pilot to concluding the pilot and we compared over the principal components. Significant variation can be seen in the following parameters:

- Role-Physical (RP) = +8.85% (primarily correlates to PCS)
- General Health (GH) = +8.16% (mixed correlation to both PCS/MCS)
- Social Functioning (SF) = +7.33%(mixed correlation to both PCS/MCS)
- Role-Emotional (RE) = +12.57% (primarily correlates to MCS)

From the above findings, we can infer that the inCASA services used by KGHNI patients had a positive effect on their emotional stability due to their increased sense of security and because they progressively developed a more proactive stance regarding their self-treatment of heart failure. This effectively led them to experience fewer difficulties in their daily activities and also, to a lesser extent, to self-evaluate their health in better terms. These findings also closely correlate with the fact that patients reported an improved social functionality. All the above factors contributed to an increased quality of life for our patients especially regarding their emotional handling of their
- As a general conclusion, all Professionals were enthusiastic about the inCASA service as it was something new and interesting for them to work on a health and care integrated solution and to closely cooperate with the other involved Units of the hospital.

- **Increased personal independence of the elderly**
  - N/A

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

*This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.*

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  
*Score 1-4*

#### How the project has made an impact regarding Market growth and expansion of the EU industry

*This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for...*

#### Supporting indicators & Evidence

2

- **New markets for independent and active living products and services through a set of open standards and integrated platforms**
  - There are still some gaps between the integration between health and social care and the actual implementation of the systems/service at each user test site.
  - The process illustrated by the project and tested within inCASA, involves a wide range of
independent living and active ageing, creating a longer term RTD agenda, reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, facilitating the emergence of an evaluation culture in ICT for AHA and scalable business and financing models.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the project results
Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

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</thead>
<tbody>
<tr>
<td>• Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- The Project website (<a href="http://www.incasa-project.eu/news.php">http://www.incasa-project.eu/news.php</a>) is up to date and is populated with relevant information about the project activities; good attention has been paid to the presentation of dissemination activities in particular for the events organized at national level.</td>
</tr>
<tr>
<td>• Potential users and other stakeholders (outside the consortium) are suitably involved.</td>
</tr>
</tbody>
</table>

103 http://mafeip.eu/about_study/
104 http://www.linkedpolicies.eu/policymaps/eiponaha/
consortium) are suitably involved (if applicable).
- The overall target of 200 end users to be involved in the pilots (defined during one of the review meetings) has been reached and the dissemination and transferability test has been carried out in Denmark.
- However, discussions with public authorities, local bodies and health and social care operators could have been more effectively planned.

## PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>2</td>
<td>The business and deployment plans of the commercial partners are detailed, well structured, convincing and promising. However, they are highly dependent on external factors out of the control of the project consortium.</td>
</tr>
<tr>
<td>Supporting Evidence</td>
<td></td>
<td>- The information provided in regard to business modelling demonstrates the partners’ strong commitment to the exploitation of results. The potential success of this work is supported by early exploitation activities (e.g. Piemonte region which are very encouraging.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- As described in the inCASA business plan, markets will be addressed by industrial partners starting from the counties where they are based: Italy, Spain and Denmark.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Regarding Spain, the initiative will be driven by the experience of FHC Calahorra, and extended to the regions and driven by Telefonica.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Regarding Denmark, the initiative will be driven by the experience of Skive exploitation desk and driven by IN-JET together with CNET.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Regarding Italy, apart from the enhancement of the ATC pilot, Santer will enhance the project in the aspect of the smart ageing initiatives that the government is setting up in order to support the participation to Horizon2020. As mentioned before, the OPLON project (OPportunities for healthy and active LONgevity) has been approved as a “flag” project in the domain of “smart ageing”7, and inCASA represents, in terms of building blocks, the main background knowledge brought to the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Following this line of action, the participation to the EIP-AHA initiatives has been announced, together with the main endorsing partners (Emilia Romagna region), as reference sites for Italy on the topic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Other common dissemination actions are in discussion with other EC projects on the same topic (e.g: CommonWell and United4Health).</td>
</tr>
</tbody>
</table>
**Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**

- It seems that quite good work has been carried out with regard to the interaction with Renewing Health. There is less evidence of interaction with other EU projects in the area of integrated care and other related programmes.
- In addition, interaction with standardisation bodies, also in the light of potential and benefits to be carried out in the area of interoperability have not been evident.
- Strong emphasis on the use of integration standards was highlighted by the project. This was a key success factor in order to introduce the solution in so different contexts, both in terms of co-operation with pre-existing systems, than in term of use of specific solution components.

**BEST PRACTICES**

| Best practices that the project has developed | The practical experiences and lessons learnt, supported by evidence from the trials are one of the major contributions of the project. |

**FINAL EVALUATION COMMENTS**

| Final comments regarding the in-depth evaluation | The Project has made significant progress in terms of establishing a clearer understanding of the potential benefits of integrated service delivery for service provider organisations, and a concrete starting point for the future development of more closely integrated healthcare and social care systems across Europe. |

**TOTAL IN-DEPTH EVALUATION SCORE** | 12 |

**TOTAL SCORE** | 21/32 |
### IN-DEPTH ANALYSIS EVALUATION SHEET

#### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>INDEPENDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>ICT Enabled Service Integration for Independent Living</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>01/2010 – 05/2013 (41 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 625 000</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

#### BRIEF DESCRIPTION

**Brief description of the project**

INDEPENDENT develops and pilots an integrated set of ICT-enabled services dealing with a range of threats to independent living common to older people. Through innovative usage of ICT, current “silos” in service delivery are broken up to allow for cooperation across relevant care sectors and participation of family members.

#### OBJECTIVES

**Objectives of the project**

The INDEPENDENT project will define, deliver and pilot a digital infrastructure supporting coordinated cross-sector delivery of timely support to prevent older people from slipping out of safe independent living, maintaining quality of life. The infrastructure enables support services to overcome limitations of sectoral telehealth and telecare and empowers informal carers and the voluntary/third sector to participate in delivery of support, thus radically improving efficiency.

#### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**2**

The project managed to achieve significant results in some of the pilot sites (eTrikala and Dublin) which could act as show cases for future activities, while in other pilot sites (Andalucia and Milton Keynes) the results achieved are considered as appropriate for the project objectives, while in some other pilot sites (Hull and Geldorp) the achievements are considered as bellow the initial expectations.

- The project devoted efforts towards CBA, with very interesting results. An overall project achievement is that the project managed to...
demonstrate that in some cases the integration of health and social services have been mature enough with respect to assessing their socio economic impact and this integration could be beneficial also in pure economic terms. However, the data, the hypothesis and assumptions taken into consideration in the calculation of the CBA of each service, should be more analytical and detailed. The project needs to provide all the details on the pilot operation data (e.g. traffic and activity data, false alarms etc), methodology, assumptions etc. in order to enhance the credibility of the analysis and improve the expected impact.

One of the main issues has been the identification of common findings and common messages throughout the course of the project. Towards providing European added value, the project has been based on the use of a common conceptual framework for the services process and provision, sites rollout, technical architecture and a common evaluation framework.

**OVERVIEW OF PROJECT IMPACT**

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
</tr>
</tbody>
</table>

3

One has to consider in advance that the impact would strongly depend on the fast changing economic and social environment in EU. However, the project needs to deliver the maximum even in these conditions.

- Significance of results. Most achieved results are of significance for the current European landscape scheme and very much valuable to contribute to building evidence based European added value for the integrated health and social care services. Overall, the pilots seem to have made a serious job, performed by real stakeholders working side by side with real end users.

- Scalability and sustainability. Sustainability for some of the sites seems at risk (Geldrop, Hull); others have been committed already in maintaining or replicating the solution (Andalucía, Dublin, Milton Keynes) (this is pending for eTrikala).

Nevertheless, scalability of results is still an issue, but seems more promising when there is an industry that has developed a market product (e.g. Milton Keynes). It has been underlined that the economic climat does not help and this has to be recognised.

- Information about cost and benefit is lacking the actual evidence that would bring the credibility of the analysis at a level appropriate for a major decision of the concept adaption by most of the decision makers.
Given the summary of the facts as above, and given that the project will perform the updates recommended for key project deliverables (see recommendations section), it is considered that the overall impact of the project in the related domain can be important. The minimum impact expected is that at least the project could serve that it has delivered evidence of the actual value of the ICT based integrated health and social services.

### Plans for the use and exploitation of results
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>7</th>
</tr>
</thead>
</table>

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS
Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### 2

- **Increased quality for life for elderly people and their carers**
  - Most achieved results are of significance for the current European landscape scheme and very much valuable to contribute to building evidence based European added value for the integrated health and social care services. Overall, the pilots seem to have made a serious job, performed by real stakeholders working side by side with real end users.
  - The minimum impact expected is that at least the project could serve that it has delivered evidence of the actual value of the ICT based integrated health and social services.

- **Increased personal independence of the elderly**
  - N/A

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or

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105 The programme objectives were detailed in Section 2.2 of our Technical Offer.
106 http://mafeip.eu/about_study/
107 http://www.linkedpolicies.eu/policymaps/eiponaha/
Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems. Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1–4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

2

• New markets for independent and active living products and services through a set of open standards and integrated platforms
  - N/A
• Improved competitiveness of EU industry
  - N/A
• Strengthened global position of EU industry in service robotics for ageing well
  - N/A
• Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
• Creating a longer term RTD agenda
  - N/A
• Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - N/A
• Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

108 http://mafeip.eu/about_study/
109 http://www.linkedpolicies.eu/policymaps/eiponaha/
Towards providing European added value, the project has been based on the use of a common conceptual framework for the services process and provision, sites rollout, technical architecture, and a common evaluation framework.

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Notable efforts with regard to the dissemination of the project results**

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

**Supporting Evidence**

- The project website ([http://independent-project.eu/home/?S=1](http://independent-project.eu/home/?S=1)) is basic but provides information on the project results and achievements.
- Social media: The project has a Twitter account with 121 followers.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Overall yes, although there have been minor exceptions in specific cases (e.g., Geldrop) (the carer has not been involved to the extent that would have been expected (this is also an issue of the initial IT service design and the precede procedure of the analysis of user requirements).)

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

**Supporting Evidence**

- According to the Coordinator of the project, no joint activities were pursued by the project consortium as a whole after the ending of the project. To my knowledge, project outcomes were occasionally presented/referenced by individual partners at workshops and conferences.
- According to the Coordinator, the solutions developed and piloted during the project were mainstreamed at some of the participating pilot sites. Also, some of the technology providers involved in the consortium had developed concrete plans for commercialising pilot solutions after the ending of the project. We do however not have any information available on whether or not these plans have been successfully implemented in the meanwhile. Further to this, empirica has relied upon project outcomes for successfully developing and implementing new projects.
Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
- Yes, with CommonWell, as contractually requested and also with EIP on AHA and the AAL forum. Especially in the last the contribution was of major importance.

**BEST PRACTICES**

| Best practices that the project has developed | An overall project achievement is that the project managed to demonstrate that in some cases the integration of health and social services have been mature enough with respect to assessing their socio-economic impact and this integration could be beneficial also in pure economic terms. | The project managed to achieve significant results in some of the pilot sites (eTrikala and Dublin) which could act as show cases for future activities. |

**FINAL EVALUATION COMMENTS**

<p>| Final comments regarding the in-depth evaluation | Whilst achieving some results in specific pilots, the Project did not seem to reach its overall goals. |
| <strong>TOTAL IN-DEPTH EVALUATION SCORE</strong> | 10 |
| <strong>TOTAL SCORE</strong> | 17/32 |</p>
<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acronym</strong></td>
</tr>
<tr>
<td><strong>Project Name</strong></td>
</tr>
<tr>
<td><strong>Programme</strong></td>
</tr>
<tr>
<td><strong>Period</strong></td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
</tr>
<tr>
<td><strong>Project type</strong></td>
</tr>
<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
</tr>
<tr>
<td>- Robotics for Ageing Well</td>
</tr>
<tr>
<td>- Innovative solutions for independent living</td>
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<td>- Innovating elderly care</td>
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<td>- Fall Prevention</td>
</tr>
<tr>
<td>- Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

**BRIEF DESCRIPTION**

**Brief description of the project**

iSTOPPFALLS develops and implements ICT based technologies for fall prediction and prevention and integrates them in daily life practices of older people living at home. They allow for exercise training and fall risk assessment with discrete measuring technologies and adaptive assistance functions. The Senior Mobility Monitor (SMM) continuously monitors the mobility of the users. It provides quantitative information on frequency, duration and type of mobility activities and qualitative information on balance function and muscle power. The MS Kinect based fall preventive exercise training program will facilitate home-based preventative exercises, that also whereby data is acquired by unobtrusive sensing together with biomechanical modelling and optional heart rate data assessment. A knowledge based system for fall prediction & prevention correlates these two sources of mobility information and in turn provides sufficient data to perform a trend analysis of these entities. iStoppFalls will be based on an interactive TV solution with gesture & voice control, providing advanced human computer interaction which is adjusted to the capabilities of older adult users at home.

**OBJECTIVES**

**Objectives of the project**

The primary aim of the iStoppFalls project and its consortium partners is to develop and evaluate innovative home-based technologies to assist in preventing falls, and thus to improve quality of life of older adults living at home. iStoppFalls will develop unobtrusive technological solutions for continuous monitoring and prevention of fall risk factors that are required to coach people in tailored individualized prevention programs, including exercise and education. The emphasis is not on laboratory research but on active implementation of successful fall prevention strategies in people’s own home.
Overall assessment according to review documentation.
Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win
Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

4
The results showed that those who took part in the practical iStoppFalls trials experienced significantly fewer falls than participants in a matched control group and that there was also a significant reduction in the overall physiological fall risk as compared to the control group. Additional beneficial sub-group effects for primary and secondary endpoints could be demonstrated as related to subgroups of exercise compliance, fall risk, age, gender and IT-literacy. Technology questionnaires revealed a good usability, accessibility and user experience for the iStoppFalls system. Also the acceptance of the technology was good in most of the user groups. Finally, a health-economics and secondary stakeholder study has been carried out in different countries in Europe (Germany, Netherlands, Spain) which reveals that there is a potential to save fall related costs by the use of iStoppFalls if it would be used in a wider population.

4
The desired impacts of the call and as they are listed in the DoW are met. The impact on improved quality of life has not been demonstrated on intention to treat, this has to do with the differences in motivation. The real users felt however that the system did have impact on quality of life. In general, the consortium is well aware of enablers and barriers for the existing solution and/or individual components. Certainly, the complexity of the system impacts on the range of real users which is needed to be further detailed during negotiations with future possible stakeholders. This also implies clear focus on the most promising profile of typical users. The scientific impact of this humongous piece of work is definitely there, in particular the aspect of prediction has a huge potential to be further exploited. There is a clear potential for commercial impact, whereas commercialisation seems to be planned in sets of components. It remains vague if the whole system can be commercialised en bloc. The main message respectively conclusions are:
- falls are associated with high costs and high potential savings
- high acceptance for iStoppFalls intervention among elderly, caregivers and insurance companies
- positive outcome of healthcare cost saving scenarios for several countries
- introduction of commercial of the shelf products with dedicated applications developed to predict and prevent respectively reduce fall risk.
Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3

The intended future use of foreground information appears to be appropriate. The differentiation between a common and an individual exploitation strategy needs to be sorted out.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding improved quality of life

This will be evaluated taking into account the programme objectives\(^{110}\) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, concepts for the detection of ageing-related risks, and the reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^{111}\) and visualised through the Policy dashboard on EIPonAHA\(^ {112}\)
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

4

- **Increased quality for life for elderly people and their carers**
  - Primary endpoints of the RCT were the overall fall risk and quality of life.
  - The impact on improved quality of life has not been demonstrated on intention to treat, this has to do with the differences in motivation. The real users felt however that the system did have impact on quality of life.

- **Increased personal independence of the elderly**
  - The results showed that those who took part in the practical iStopFalls trials experienced significantly fewer falls than participants in a matched control group and that there was also a significant reduction in the overall physiological fall risk as compared to the control group.
  - The key reduction in fall risk together with the expected beneficial effects of greater motivation to exercise, leading to better health and independence are also major outcomes of the project. A major aim of the project was to show that a system like iStopFalls could be successfully integrated into the daily lives of older adults, and the fact that this has been demonstrated reflects the success of the project.

- **Concepts for the detection of ageing-related risks**
  - Secondary Endpoints of the RCT were proxy measures for falls, risk assessment and prediction of falls, health and morbidity, cognition and dual task.
  - The iStopFalls project investigated falls in older adults, looking at how the likelihood of falling could be predicted for individuals and

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\(^{110}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.

\(^{111}\) http://mafeip.eu/about_study/

\(^{112}\) http://www.linkedpolicies.eu/policymaps/eiponaha/
investigating how the risks of falling can be reduced and the actual numbers of falls can be minimised.
- This project has achieved great success in terms of providing evidence that a system like iStoppFall can reduce the risk of falls.
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth
- The ISTOPFALLS final report estimates that if 3% of older adults at risk of falling used the system, the risk of falling could be reduced by 35%. This could save up to EUR 27.7 million a year in fall-related health care costs in Germany alone (2012 data).

### Impact area 2: Increased efficiency of health and long-term care

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA</td>
</tr>
<tr>
<td>- Available beds in hospitals per hundred thousand inhabitants</td>
</tr>
<tr>
<td>- Hospital discharges per 100 000 inhabitants</td>
</tr>
<tr>
<td>- In-patient average length of stay</td>
</tr>
</tbody>
</table>

3
- Increased efficiency of care systems
  - A health-economics and secondary stakeholder study has been carried out in different countries in Europe (Germany, Netherlands, Spain) which reveals that there is a potential to save fall related costs by the use of iStopFalls if it would be used in a wider population.
- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay
- Falls are associated with high costs and high potential savings.
- High acceptance for iStopFalls intervention among elderly, caregivers and insurance companies.
- Positive outcome of healthcare cost saving scenarios for several countries.
- Introduction of commercial of the shelf products with dedicated applications developed to predict and prevent respectively reduce fall risk.
### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Market growth and expansion of the EU industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including: New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>
| • New markets for independent and active living products and services through a set of open standards and integrated platforms  
  - The system is built on COTS components the potential market barriers are reduced. |
| • Improved competitiveness of EU industry  
  - The involvement of the AUS partner was a clear added value to the project outcome. |
| • Strengthened global position of EU industry in service robotics for ageing well  
  - N/A |
| • Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing  
  - There is a clear potential for commercial impact, whereas commercialisation seems to be planned in sets of components. It remains vague if the whole system can be commercialised en bloc. |
| • Creating a longer term RTD agenda  
  - N/A |
| • Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA  
  - The Technology questionnaires revealed a good usability, accessibility and user experience for the iStoppFalls system. Also, the acceptance of the technology was good in most of the user groups.  
  - The project has established that it understands the state of the art in all relevant areas it covers, and is working with the world leaders in these fields. This is reflected in the fact that it focuses on clinically meaningful easy tests and interventions and therefore it has produced results that add real value towards future work on falls prevention and treatment.  
  - It is encouraging that the extensive work that the consortium has done on dissemination has resulted in much interest from the scientific community.  
  - The scientific impact of this humongous piece of work is there, in particular the aspect of prediction has a huge potential to be further exploited. |
| • Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.  
  - Intramural R&D expenditure  
  - R&D personnel and researchers in FTE |

### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure  
- R&D personnel and researchers in FTE

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113 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
## DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

### Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

### Supporting Evidence

- **3.** Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Based on the outcomes of the different studies, extensive dissemination and exploitation activities have been carried out, including a set of submitted publications.
  - Some of the key dissemination activities can be seen below:
    - Results from the digital device survey completed by participants recruited in Cologne were presented at the Annual British Society of Gerontology conference.
    - A full paper was submitted to the Games for Health Europe conference to be held in Utrecht, NL in late October.
    - Two papers from AIT/NeuRA on new methods for fall risk assessment have been published. D2.2.3 and D2.2.6 were submitted.
    - A paper on the results of the experimental query engine for researchers has been written and presented on the Medical Informatics Europe conference in September 2014.
  - Dissemination work has been very good, reaching the appropriate actors and opinion-formers in the relevant communities.
  - The website ([http://www.istoppfalls.eu/cms/front_content.php](http://www.istoppfalls.eu/cms/front_content.php)) is simple and well presented, easy to navigate, clear and easy to use and it is recommended if it remains updated regularly.
  - No social media presence was detected, there are no links on the project webpage.
  - Half of the publications are provided under open access.
  - The project video explains all relevant issues clearly.
  - The list of presentations, interviews, promotional activities, news items etc. and the content covered is impressive, the consortium has been extremely active in dissemination.
  - According to the project coordinator, the project outcomes were presented in several conferences, symposia, and scientific workshops as well as business meetings after the project end.
- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - This international, multicentre study was designed as a single-blinded, two-group randomized controlled trial (RCT). A total of 159 community-dwelling older people aged 65 years and older (Germany, n = 60; Spain n = 40; Australia, n = 59) were randomised into control and intervention group.
  - Involvement with end users forms a major part of the project.
  - Potential users and stakeholders have been involved throughout the project, but it seems unlikely that users during the project will continue with their exercises and there is little evidence that a wider range of people will become involved in the activities that iStoppFalls began.

### PROJECT SUSTAINABILITY

#### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

- Newly acquired follow-up projects on National level (Germany) and different plans for further exploitation of the projects foreground (single and joint partner activities).
- Even though the project officially ended in 2014, its researchers have since taken it forward. 'Over the last two years we have gathered interest in rolling out the iSTOPPFALLS system from the Ministry of Social Affairs in Saxony, Germany, the Ministry of Health in Rhineland-Palatinate, and the Agency for Sports and Exercises in North Rhine Westphalia. We are now making modifications to the systems and hope to finalise them by the end of this year
- It was strongly believed and supported by the arguments provided during the course of the review session that the follow up activities envisaged has great potential to be further exploited.
- Exploitation plans were explained during the course of the review and are considered as ambitious and serious. It is acknowledged by the review team that serious efforts have been invested in the potential commercialisation of parts of the iStoppFall project, in particular in Germany.
- According to the project coordinator, the project outcomes and developments are continued and used in the H2020 project my-AHA; this is where 4 international partners from iStoppFalls are collaborating further.
- Furthermore, the project outcomes and...
developments are continued and transferred to the dementia care setting in the German National BMBF project MobiAssist; this is where 3 German partners from iStoppFalls are collaborating further.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The consortium has made links with other appropriate projects, but few synergies have developed.

### BEST PRACTICES

**Best practices that the project has developed**

- The project focuses on really clinically meaningful easy tests and interventions and therefore it has produced results that add real value towards future work on falls prevention and treatment.
- The project has made significant progress in several of the areas which it addressed, and has succeeded in taking forward the state of the art in the use of relatively inexpensive computer-based gaming techniques being used to carefully control and monitor specific physical exercises.
- The project has also made advances in unobtrusive methods of sensing in daily behavioural settings and the iStoppFalls fall risk assessment tool, a screening tool which relies on motion capture technology to assess fall risk, could prove a major step forward in this field.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

Overall the period was successful and excellent progress was made, the major objectives of the project were successfully met. The main objectives of the iStoppFalls project were to develop and evaluate innovative home-based technologies to assist in preventing and predicting falls, thus improving the quality of life of older adults living at home. These objectives have been achieved.

The review team is aware of the fact that the scope of a STREP project is not to provide a finalised product to the market. Therefore, it is appreciated by the review team that the focus was put on a good analysis and performance of the trials.

| TOTAL IN-DEPTH EVALUATION SCORE | 17 |
| TOTAL SCORE | 28/32 |
## IN-DEPTH ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>I-SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>ICT-Supported Bath Robots</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>H2020</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>03/2015 – 02/2018 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>3,563,198</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Research and Innovation Action</td>
</tr>
</tbody>
</table>

### Project subject (to help categorise the results for the final publication)

- Innovative solutions for independent living
- Robotics for Ageing Well
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

The I-SUPPORT project envisions the development and integration of an innovative, modular, ICT-supported service robotics system that supports and enhances older adults’ motion and force abilities and assists them in successfully, safely and independently completing the entire sequence of bathing tasks, such as properly washing their back, their upper parts, their lower limbs, their buttocks and groin, and to effectively use the towel for drying purposes. Advanced modules of cognition, sensing, context awareness and actuation will be developed and seamlessly integrated into the service robotics system to enable the robotic bathing system to adapt to the frail elderly population’s capabilities and the frail elderly to interact in a master-slave mode, thus, performing bathing activities in an intuitive and safe way.

### OBJECTIVES

**Objectives of the project**

Adaptation and integration of state-of-the-art, cost-effective, soft-robotic manipulators will provide the hardware constituents, which, together with advanced human-robot force/compliance control that will be developed within the proposed project, will form the basis for a safe physical human-robot interaction that complies with the most up-to-date safety standards. Human behavioural, sociological, safety, ethical and acceptability aspects, as well as financial factors related to the proposed service robotic infrastructure will be thoroughly investigated and evaluated so that the I-SUPPORT end result is a close-to-market prototype, applicable to realistic living settings.
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

Main scientific and technological achievements of the project, some already reflected in scientific publications, include user-centred specification of user and safety requirements, although unbalanced in favour of German users, definition of I-Support service robotic functional specifications and system architecture for tracking human posture, movements and actions in shower environment etc. Researching methods and control implementations for direct telemanipulation of the robotic soft arm, for robot perception and for recognition of actions, gestures, spoken commands, and the state-of-a human user etc. A CAD model was designed to represent the physical system. System hardware and software components are being implemented.

In line with the DoA, the main innovation activities of the project consist in specifying and launching the development of a modular ICT-supported service robotics system meant to support and enhance frail older adults’ motion and force abilities and assist them in successfully, safely and independently completing entire sequence of bathing tasks with initial focus on washing and scrubbing the back and washing and scrubbing the legs. Advanced modules of cognition, sensing, context awareness and actuation are being researched and implemented to enable the robotic bathing system to adapt to the frail senior citizens population’ abilities and enable frail senior users to interact with the robotic system in a safe, master-slave mode.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.

2

I-Support shows a significant potential for scientific and technology impacts. Its short and mid-term social and commercial impacts are, however, questionable at this stage due to high complexity of multiple research, development, integration and evaluation tasks. Also, some of key project impact objectives are at high risk, in particular the expected impact 1, i.e. “Evidence for the benefits of service robotics developed, based on proof of concept and involvement of relevant stakeholders”. The project has fully embraced a coherent and comprehensive dissemination strategy within both the research community and media in general.

As this project aims to draw upon and coherently integrate and evolve previous work with soft robotics, robot middleware, and available sensor and actuator systems, the potential impact is
expected to be high. The work carried out follows the plan detailed in the DoA to deliver innovation to the markets in order to strengthen the competitiveness and growth of related companies by user-centred specification of the requirement, system architecture definition and initiation of a wide range of research and development activities to prototype and evaluate an intelligent, adaptive and flexible service robotics bathing system. Innovative activities like user studies and CAD models of the hardware are carried out. However, caused by delay in a profound definition of the user requirements and system specification, additional effort is required to meet the goal of a close-to market prototype within the lifetime of the project. This gap is expected to be filled during the next reporting period.

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE**

3

As the project has only completed its first year, results are limited as evaluation has not started yet. Adequate IPR management policy has been agreed among the partners, in line with the DoA. An update to the exploitation plan has not been foreseen in the DoA for the period under review.

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives, including increased quality for life for elderly people and their carers, increased personal independence of the elderly, concepts for the detection of ageing-related risks, and the reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA -

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem

3

- **Increased quality for life for elderly people and their carers**
  - I-Support shows a significant potential for scientific and technology impacts. Its short and mid-term social and commercial impacts are, however, questionable at this stage due to high complexity of multiple research, development, integration and evaluation tasks.
  - As this project aims to draw upon and coherently integrate and evolve previous work with soft robotics, robot middleware, and available sensor and actuator systems, the potential impact is expected to be high.

- **Increased personal independence of the elderly**
  - The main innovation activities of the project consist in specifying and launching the development of a modular ICT-supported

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115 The programme objectives were detailed in Section 2.2 of our Technical Offer.
116 http://mafeip.eu/about_study/
117 http://www.linkedpolicies.eu/policymaps/eiponaha/
- Healthy life years at birth

- Service robotics system meant to support and enhance frail older adults’ motion and force abilities and assist them in successfully, safely and independently completing entire sequence of bathing tasks with initial focus on washing and scrubbing the back and washing and scrubbing the legs.

- Concepts for the detection of ageing-related risks
  - N/A
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

#### How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in

#### Supporting indicators & Evidence

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - N/A
- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - The work carried out follows the plan detailed
multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^\text{118}\) and visualised through the Policy dashboard on EIPonAHA\(^\text{119}\).

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

In the DoA to deliver innovation to the markets in order to strengthen the competitiveness and growth of related companies by user-centred specification of the requirement, system architecture definition and initiation of a wide range of research and development activities to prototype and evaluate an intelligent, adaptive and flexible service robotics bathing system.

- Innovative activities like user studies and CAD models of the hardware are carried out. However, caused by delay in a profound definition of the user requirements and system specification, additional effort is required to meet the goal of a close-to market prototype within the lifetime of the project. This gap is expected to be filled during the next reporting period.

- A successful implementation of I-Support may offer new service and product opportunities to SME, specifically SME partners of the Consortium ROBOTNIK and OMEGATECH, not only in the area of service robotics for bathing but in any other area where advanced research and development objectives of this project would find application.

#### Creating a longer term RTD agenda

- N/A

#### Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA

- Main scientific and technological achievements of the project, some already reflected in scientific publications, include user-centred specification of user and safety requirements, although unbalanced in favour of German users, definition of I-Support service robotic functional specifications and system architecture for tracking human posture, movements and actions in shower environment etc.

- Advanced modules of cognition, sensing, context awareness and actuation are being researched and implemented to enable the robotic bathing system to adapt to the frail senior citizens population’ abilities and enable frail senior users to interact with the robotic system in a safe, master-slave mode.

- The project continues to be highly relevant, promising scientific and industrial breakthrough.

#### Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

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\(^\text{118}\) [http://mafeip.eu/about_study/]
\(^\text{119}\) [http://www.linkedpolicies.eu/policymaps/eiponaha/]
<table>
<thead>
<tr>
<th>DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES &amp; STAKEHOLDER PARTICIPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notable efforts with regard to the dissemination of the project results</td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
<tr>
<td>Supporting Evidence</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>• Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- The project website (<a href="http://www.i-support-project.eu">www.i-support-project.eu</a>) has been created, and project brochures prepared and distributed. The consortium has also participated in conference and workshop events.</td>
</tr>
<tr>
<td>- A successful implementation of I-Support may definitely offer new service and product opportunities to SME, specifically SME partners of the Consortium ROBOTNIK and OMEGATECH, not only in the area of service robotics for bathing but in any other area where advanced research and development objectives of this project would find application.</td>
</tr>
<tr>
<td>- Adequate dissemination means, including a dissemination team and quite wide range of dissemination instruments (demos, direct contacts, website, press releases etc.).</td>
</tr>
<tr>
<td>- Open access to selected research data/results such as user requirements as well as sound knowledge management and IPR policies are foreseen.</td>
</tr>
<tr>
<td>- The project website (<a href="http://www.i-support-project.eu/">http://www.i-support-project.eu/</a>) is quite professional and attractive, however, the News IS a bit outdated (late 2016) and the dissemination page contains yet only few links. None of the project deliverables are available for review as of yet. There is an intranet part of the website.</td>
</tr>
<tr>
<td>- No media broadcasting &amp; events is yet made available (although some are mentioned in the Deliverable).</td>
</tr>
<tr>
<td>- Social Media: the importance of highly popular social media channels, such as Facebook and Twitter, should not be underestimated either in a dissemination plan that is intended to also have an outreach to the non-scientific community. The project brochure is only available in English.</td>
</tr>
<tr>
<td>- Quite some relevant activities in 2015 are reported, however their impact is not assessed (how many contacts, which outcome and follow-ups etc.). Quite some scientific activities are also planned for 2016, however, the nature of the activity is not clearly stated (active presentation of paper or “passive”</td>
</tr>
</tbody>
</table>
• Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Overall 30 primary users and 15 healthcare professionals were interviewed in order to evaluate the requirements of the I-Support System. Additionally, several discussions with experts in the healthcare sector, stakeholders and Industry were carried out. An awareness of the greater deployment issues is demonstrated via work already underway in scheduling the ethical approval of I-SUPPORT system, although work is still in progress.

PROJECT SUSTAINABILITY

Continued impact from the project today

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

3

• Are the outputs from the project still being used today?
  - However, an important aspect towards the goal of a close-to market prototype has not been investigated as extensively as it should have been at this stage of the project, namely the interaction between the system and the user (more will follow below).
  - As the project has only completed its first year, results are limited as evaluation has not started yet. Adequate IPR management policy has been agreed among the partners, in line with the DoA. An update to the exploitation plan has not been foreseen in the DoA for the period under review.

Supporting Evidence

• Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
  - A promising plan is announced to contribute to the elaboration of standards for the field of domestic service robotics that involve physical contact between the human and the robot.

BEST PRACTICES

Best practices that the project has developed

• The main innovation activities of the project consist in specifying and launching the development of a modular ICT-supported service robotics system meant to support and enhance frail older adults’ motion and force abilities and assist them in successfully, safely and independently completing entire sequence of bathing tasks2 with initial focus on washing and scrubbing the back and washing and scrubbing the legs. Advanced modules of cognition, sensing, context awareness and actuation are being researched and implemented to enable the robotic bathing
system to adapt to the frail senior citizens population’s abilities and enable frail senior users to interact with the robotic system in a safe, master-slave mode.

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final comments regarding the in-depth evaluation</td>
</tr>
<tr>
<td>TOTAL IN-DEPTH EVALUATION SCORE</td>
</tr>
<tr>
<td>TOTAL SCORE</td>
</tr>
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</table>
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>KSERA</th>
</tr>
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<tbody>
<tr>
<td>Project Name</td>
<td>Knowledgeable Service Robots for Ageing</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
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<tr>
<td>Period</td>
<td>02/2010 – 01/2013 (36 months)</td>
</tr>
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<td>EU Funding contribution</td>
<td>2,900,000</td>
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<td>Project type</td>
<td>Collaborative Project</td>
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### Project subject (to help categorise the results for the final publication)

- [x] Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**

The research and development of a Knowledgeable Service Robot for Aging (KSERA) that will serve several related purposes for elderly persons in general and those with pulmonary disease in particular.

## OBJECTIVES

**Objectives of the project**

Specifically, KSERA provides (1) a mobile assistant to follow and monitor the health and behavior of a senior, (2) useful communication (video, internet) services including needed alerts to caregivers and emergency personnel, and (3) a robot integrated with smart household technology to monitor the environment and advise the senior or caregivers of anomalous or dangerous situations. KSERA aims at an adaptive technical aid that will provide needed and useful services in a pleasant, easy-to-use format via a robot that also acts as a companion and assistant.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**2**

In summary the positive points include:

- The project has managed to successfully work on the concept originally proposed and has proven to stimulate the interest of end-users.
- The project has demonstrated some value of the concept for potential use in the future.
- The 2nd prototype and technical descriptions have improved a lot over the past year.
- The project presented a lot of achievements on good quality in individual technical topics
- Scientific dissemination has been accomplished with lots of publications and participations at various events
During the reporting period the project has devoted a lot of efforts towards the proof of the added value of the Ksera concept. These efforts have enhanced the potential of the concept in the future.

- The project has worked towards a motivational and adaptive solution for physical exercise at home for COPDs that might be applicable also to other user categories.

In summary the negative points include:

- During the review the project has not planned and not demonstrated the full integration of all technological components. Therefore, the review team was not able to observe the full functionality of the system with all subsystems/subfunctionalities fully integrated.

- The evaluation was based on a limited sample missing out some likely user profile. More in depth qualitative analysis of the results would have been expected.

- Exploitation path is uncertain because of the limited functionality and integration of the current prototype. In the future there is a need for further research and development of 3rd parties.

- Some technical objectives, i.e. robot navigation and human-robot-interaction need further research and development, because of the limitations of the available state-of-the-art in robotics and computing.

- The robot by itself provides entertainment to the user, but overall system's entertainment functionality is not fully explored.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td>The project was aiming the ambitious goal to enhance quality of life and support elderly people through the incorporation of humanoid SAR robots. While during the review the project was not able to fully demonstrate an integrated system that would fully meet this optimistic objective (because of several reason the main being the limitations of the used robot), the overall project aim is still an important issue and the project contributed to this by providing several document with developed technologies and lessons learned on several methods and methods and subsystems, as well as by providing a set of scientific publications that have the potential to influence the scientific community of this or similar subjects.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still</td>
<td>The exploitation plans include individual plans for</td>
</tr>
</tbody>
</table>
appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</td>
<td></td>
</tr>
</tbody>
</table>

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives including increased quality of life for elderly people and their carers, increased personal independence of the elderly, concepts for the detection of age-related risks, and the reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, creation of ICT products and services for age well, facilitate wide implementation of sustainable innovation services, efficiency through consensus and common visions between relevant key stakeholders and cooperation and longer-term research deployment.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

| 2 | Increased quality of life for elderly people and their carers
|   | The robot by itself provides entertainment to the user, but overall system’s entertainment functionality is not fully explored.
|   | Increased personal independence of the elderly
|   | The project has worked towards a motivational and adaptive solution for physical exercise at home for COPDs that might be applicable also to other user categories.
|   | Concepts for the detection of age-related risks
|   | The Reduction of admissions and days spent in care institutions.
|   | Population that perceive their health as good or very good
|   | Population having a long-standing illness or health problem
|   | Healthy life years at birth

| 2 | Increased efficiency of care systems
|   | N/A
|   | Creation of ICT products and services for age well
|   | N/A
|   | Facilitate wide implementation of sustainable innovation services
|   | N/A
|   | Efficiency through consensus and common visions between relevant key stakeholders and cooperation and longer-term research deployment.
|   | Available beds in hospitals per hundred thousand inhabitants
|   | Hospital discharges per 100,000

120 The programme objectives were detailed in Section 2.2 of our Technical Offer.
121 http://mafeip.eu/about_study/
122 http://www.linkedpolicies.eu/policymaps/eiponaha/
How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

New markets for independent and active living products and services through a set of open standards and integrated platforms

- During the review the project has not planned and not demonstrated the full integration of all technological components. Therefore, the review team was not able to observe the full functionality of the system with all subsystems/subfunctionalities fully integrated.

Improved competitiveness of EU industry

- N/A

Strengthened global position of EU industry in service robotics for ageing well

- N/A

Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing

- N/A

Creating a longer term RTD agenda

- N/A

Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA

- The overall project aim is still an important issue and the project contributed to this by providing several documents with developed technologies and lessons learned on several methods and methods and subsystems, as well as by providing a set of scientific publications that have the potential to influence the scientific community of this or similar subjects.

Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

Notable efforts with regard

123 http://mafeip.eu/about_study/
124 http://www.linkedpolicies.eu/policymaps/eiponaha/
to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

- Scientific dissemination has been accomplished with lots of publications and participations at various events.
- The dissemination plans are of appropriate quality, but there is no clear coordination between planned dissemination and exploitation.
- The project has performed dissemination actions such as, publications and conference papers at an acceptable level and demo run with the prototypes. The scientific dissemination was very strong.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - The project has managed to successfully work on the concept originally proposed and has proven to stimulate the interest of end-users.
  - The Ksera evaluation has been conducted on a very limited number of people 16 in total with conclusion presented from a quantitative prospective which is not state of the art in surveys with limited sample.
  - No particular information on potential users or stakeholder contacts over the period, other than those reported in the previous period.

PROJECT SUSTAINABILITY

Continued impact from the project today

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

Supporting Evidence

- Exploitation path is uncertain because of the limited functionality and integration of the current prototype. In the future there is a need for further research and development of 3rd parties.
- There is no evidence of a near or medium term commercial exploitation of the overall system. There a quite fair potential of use of the scientific results achieved by the project.

- Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
  - The project reported several links with other projects, which were in the areas of dissemination & technical development.

BEST PRACTICES

Best practices that the project has developed

- The Project provided several documents with developed technologies and lessons learned on
several methods and methods and subsystems, as well as by providing a set of scientific publications that have the potential to influence the scientific community of this or similar subjects.

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final comments regarding the in-depth evaluation</strong></td>
</tr>
</tbody>
</table>

The KSERA Project provided a sound knowledge base to enhance quality of life and support elderly people using humanoid SAR robots. However, due to some technological limitations, it seems that the project was unable to reach its full potential and have the desired impact originally planned in the DOA.

| TOTAL IN-DEPTH EVALUATION SCORE | 11 |
| TOTAL SCORE                     | 18/32 |
## IN-DEPTH ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>LIFE 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Geographical positioning services to support independent living and social interaction of elderly people</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>11/2010 – 10/2013 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>1 971 388</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>
| Project subject (to help categorise the results for the final publication) | ☐ Robotics for Ageing Well  
☐ Innovative solutions for independent living  
☐ Innovating elderly care  
☒ Better connected through integrated care  
☐ Frailty, early detection and intervention  
☐ Fall Prevention  
☐ Knowledge sharing and standardisation related to age well |

### BRIEF DESCRIPTION

**Brief description of the project**

The LIFE 2.0 project aims at generating new opportunities for local interaction by creating new services for elderly people, based on the use of tracking systems.

### OBJECTIVES

**Objectives of the project**

The objective of the project is to build product-service solutions that increase the opportunities for a) social contacts between elderly people in their local area, b) acquiring knowledge about people living in the areas and events occurring close by, c) getting knowledge about commercial services and assistance available in their area and d) offering their residual capabilities and skills to friends, family and other people of any age, living in their area.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

**3**

Overall the Project has done well, and has produced some important, useful results. It has achieved or exceeded most of the KPIs originally established in the DoW. More generally it has generated a significant amount of re-usable know-how in the area of the provision of IT services and equipment, and social networking capability, to the elderly. The results also have potential applicability to other groups who have specific social needs, for example immigrants.

The Life 2.0 project was selected by the Design for All Foundation as the 2013 winner of its prize.
in the Living Lab category. This represents a considerable achievement, and should be a significant advantage for the future exploitation of the Project’s results. The award is an important, independent seal of approval, and should be leveraged to the maximum extent possible.

It is important that the extensive know-how, lessons learned, and best practices which this Project has produced are made readily available for the benefit of future projects and activities in this area.

A key challenge for this last year of project has been to develop a sustainable business model. In this perspective, the Consortium has not been able to come up with an approach that shows convincing viability for the long term.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>8</th>
</tr>
</thead>
</table>

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased quality for life for elderly people and their</td>
<td></td>
</tr>
</tbody>
</table>
### Improved quality of life

This will be evaluated taking into account the programme objectives\(^\text{125}\) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^\text{126}\) and visualised through the Policy dashboard on EIPonAHA\(^\text{127}\):

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

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125 The programme objectives were detailed in Section 2.2 of our Technical Offer.
126 http://mafeip.eu/about_study/
127 http://www.linkedpolicies.eu/policymaps/eiponaha/
How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including:

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - The Project’s outputs are essentially open source software, together with extensive accompanying know-how, which includes lessons learned, best practice, etc.
- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - More generally it has generated a significant amount of re-usable know-how in the area of the provision of IT services and equipment, and social networking capability, to the elderly. The results also have potential applicability to other groups who have specific social needs, for example immigrants.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

128 http://mafeip.eu/about_study/
129 http://www.linkedpolicies.eu/policymaps/eiponaha/
already made at the year 2 review. If some deliverables contain confidential sections, a public version summarising or omitting the confidential information should be made available. Further, there should be more specific dissemination focus towards SMEs and funding actors.
- The website no longer seems to be available suggesting that the project outcomes are no longer being used.
- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Yes, with respect to end users and related organisations, but not sufficiently for what concerns other business stakeholders like SMEs and public authorities – there is little evidence of direct involvement of them.

### PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>2</td>
</tr>
<tr>
<td><strong>Are the outputs from the project still being used today?</strong></td>
<td>2</td>
</tr>
<tr>
<td>- The plans for exploitation discussed during this Review Meeting appear to be sensible and appropriate. There appears to be considerable exploitation potential, notably building on and extending the Pilot Trial work already done in the 4 centres. However, exploitation issues are not well documented in WP5.</td>
<td>2</td>
</tr>
<tr>
<td>- A core concern holds about the pretty empirical and ad hoc approach to address some key business case issues (see more specific comments for the deliverables below). Moreover, some of the underlying assumptions have not been properly justified to enforce the conclusions and business forecasts provided by this WP.</td>
<td>2</td>
</tr>
<tr>
<td>- Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</td>
<td>2</td>
</tr>
<tr>
<td>- It would have been beneficial to have some more direct and intense interactions with other ongoing Smart Cities-related projects that could have contributed to increase the number of adopters/users and potential technology/service providers.</td>
<td>2</td>
</tr>
<tr>
<td>- The consortium has had interactions with other projects and programmes. However, these have not been well documented, and the real extent of these is not clear.</td>
<td>2</td>
</tr>
</tbody>
</table>

### BEST PRACTICES

<p>| Best practices that the | • The Project has generated a significant amount |</p>
<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
<th>Whilst the Project seemed to make significant progress regarding social networking capability for the elderly, it seems that it fell short at successfully converting this know-how into an effective business case that could be replicable in the market.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL IN-DEPTH EVALUATION SCORE</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL SCORE</td>
<td>19/32</td>
</tr>
</tbody>
</table>
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>LONG LASTING MEMORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>A unified solution for cognitive and physical health and autonomous living for senior citizens.</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>06/2009 – 03/2012 (34 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>€2 360 000</td>
</tr>
<tr>
<td>Project type</td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- □ Robotics for Ageing Well
- X Innovative solutions for independent living
- □ Innovating elderly care
- □ Better connected through integrated care
- □ Frailty, early detection and intervention
- □ Fall Prevention
- □ Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

Long Lasting Memories (LLM) is an EU project aiming at an integrated ICT platform which combines state-of-the-art cognitive exercises with physical activity in the framework of an advanced ambient assisted living environment. By combining cognitive exercises and physical activity LLM delivers effective countermeasures against age-related cognitive decline, thus actively improving the quality of life of the elderly and significantly prolonging the time they can remain independent at home, while respecting ethical and legal boundaries.

### OBJECTIVES

**Objectives of the project**

The LLM service can be installed in individual homes, day care centres, or more formal medical settings, enabling the accident-free, personalised and monitored physical and cognitive training of its users. Meanwhile, users are able to take advantage of the features of an independent living solution. This is accomplished by home automations that compensate for the disabilities of people with cognitive problems or mild dementia during their daily activities. Finally, an elaborate distributed sensor network guarantees immediate response in case of an emergency, by calling for help through public telephone lines (in case of home installations), or issuing alerts to onsite caregivers (in case of other installations).

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use

| 4 |

The ICT-PSP-CIP-pilot-B-type project "Long Lasting Memories" (LLM) commenced mid 2009 with a duration of 30 months and had a 4-month extension (ending 31st of March 2012) on the basis of an amendment requested after the 2nd ATR, that detected underperformance of the French partner (eSeniors), a general shortage of...
of resources, impact.

pilot users especially in "home-environments" and lack of tangible plans for sustainment of the project’s potential achievements. The amendment period has been used to compensate partly from the problems identified in the 2nd ATR, mainly by discontinuing the French pilot, reallocating funding, and performing more pilots in Greece, Spain, and Cyprus (these with a total of five iterations of piloting) - and in Austria four iterations were performed.

After uncertainty following the previous review, this project has now completed very successfully. In particular the problems caused by eSeniors’ inability to run trials in France have been overcome well, with commercial buy-in from eSeniors retained.

The statistical analysis showed positive effects on the memory and on the cognitive abilities of elderly people of combined physical and cognitive training. The project even reports the potential of reducing the negative effects of dementia! If this can be further validated and confirmed in an extensive clinical trial then the socio-medical-economic impact would be immense.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

3

Long Lasting Memories project will be able to deliver a strong and straightforward “message” that non-pharmacological intervention is able – in a dose-dependent manner – to improve brain functions, thus supporting the intentions of two more healthy years for European citizens by 2020.

If this can be further validated and confirmed in an extensive clinical trial then the socio-medical-economic impact would be immense.

(It is advised to do another iteration on the presentation and display of the scientific evaluation of the combined cognitive and physical training to make the “message” as clear and persuasive as possible)

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3

At the 2nd review immature business plans were presented. At this review in an annex to D5.4 much more mature plans for each partner and different segments of end-customers are presented. At the ATR meeting the business plans were the subject of intense dialogue between the reviewers and the project with the aim of developing plans further.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 10
### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>4. Increased quality for life for elderly people and their carers</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives(^{130}) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.</td>
<td>- The statistical analysis showed positive effects on the memory and on the cognitive abilities of elderly people of combined physical and cognitive training. The project even reports the potential of reducing the negative effects of dementia. If this can be further validated and confirmed in an extensive clinical trial then the socio-medical-economic impact would be immense.</td>
</tr>
<tr>
<td>Supporting indicators &amp; Evidence The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study(^{131}) and visualised through the Policy dashboard on EIPonAHA(^{132})</td>
<td></td>
</tr>
<tr>
<td>- Population that perceive their health as good or very good</td>
<td></td>
</tr>
<tr>
<td>- Population having a long-standing illness or health problem</td>
<td></td>
</tr>
<tr>
<td>- Healthy life years at birth</td>
<td></td>
</tr>
<tr>
<td>- Long Lasting Memories project will be able to deliver a strong and straightforward “message” that non-pharmacological intervention is able – in a dose-dependent manner – to improve brain functions, thus supporting the intentions of two more healthy years for European citizens by 2020.</td>
<td></td>
</tr>
<tr>
<td>- The impact on combined cognitive and physical training of primary an end-user’s cognitive functions are evaluated using an active control group and psychometric and physical fitness tests.</td>
<td></td>
</tr>
<tr>
<td>- The episodic memory performance improved significantly (compared to controls) and this effect appears to be dose-dependent (increased slightly with the number of training sessions performed) and not dependent on the cognitive status before the training – which means that also cognitive impaired people displayed improvements suggesting the brain plasticity can be induced by combined physical and cognitive training in this group of seniors as well. Physical fitness also improved in intervention groups.</td>
<td></td>
</tr>
<tr>
<td>- Training with the LLM program made 94% of the participants feel mostly positive (they felt it was fun, they liked it, they felt cheerful after training with it, they felt refreshed and calm).</td>
<td></td>
</tr>
<tr>
<td>- 95% of participants believed that exercising through LLM was beneficial for them, most felt LLM was amusing and they enjoyed their sessions with it and LLM met their expectations.</td>
<td></td>
</tr>
</tbody>
</table>

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\(^{130}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.

\(^{131}\) http://mafeip.eu/about_study/

\(^{132}\) http://www.linkedpolicies.eu/policymaps/eiponaха/
Training (full LLM), leads to significant improvements in both episodic memory (the capacity to learn and retain new information) and working memory (the capacity to hold and cognitively manipulate new information) in the elderly.

- Longer training durations and more training sessions induces stronger improvements of long-term memory function. Based on this we recommend a continuous training regimen which is associated with long-lasting memory improvements.

- Follow up measurements (which continue) are encouraging; they indicate that LLM effect lasts for 6 months; then users need to repeat LLM before 1-year elapses to continue to reap positive impacts.

- Interviews directly with carers involved in the pilots have also indicated the improvement of carers’ quality of life, directly by managing more easily the daily exercise and training of the elderly.

- According to the project coordinator, the project continues continuously even after its completion in 2012. Extensive trials and expansions have been attempted as successful pilots for the Long Lasting Memories (LLM) project proved the capacities for improving the cognitive and physical condition of the elderly by using innovative ICT based services and products in the area of ICT Assisted Cognitive Training and Social Interaction (Bamidis, P. D., et al. (2015). Gains in cognition through combined cognitive and physical training: the role of training dosage and severity of neurocognitive disorder. Frontiers in aging neuroscience, 7.).

- **Increased personal independence of the elderly**
  - This significant impact potential of LLM is justified, by using a clinical intervention trial protocol and specific scientific metrics, which indicated a significant improvement of the elderly involved in the pilot regarding their quality of life related to cognitive, motor and social function indices and autonomy.

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

**Impact area 2: Increased efficiency of health and long-term care**
How the project has made an impact regarding Increased efficiency of health and long-term care
This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

### Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

### Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>- Increased efficiency of care systems</td>
<td>- New markets for independent and active living products and services through a set of open standards and integrated platforms</td>
</tr>
<tr>
<td>- Creation of ICT products and services for ageing well</td>
<td>- Integrating the cognitive and physical training components into one LLM platform was achieved. Moreover, the system was tested with end-users and validated.</td>
</tr>
<tr>
<td>- Facilitate wide implementation of sustainable innovation services</td>
<td>- However, the full integration into a novel and advanced AAL environment was less successful. But positive lessons were drawn, as the project oriented its activities more to the integration of the two training components.</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Improved competitiveness of EU industry</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Strengthened global position of EU industry in service robotics for ageing well</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing</td>
</tr>
<tr>
<td></td>
<td>- For each piloting partner a separate spin-off/start-up company or activity within an academic institution was presented.</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Creating a longer term RTD agenda</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA</td>
</tr>
</tbody>
</table>

133 http://mafeip.eu/about_study/
134 http://www.linkedpolicies.eu/policymaps/eiponaha/
<table>
<thead>
<tr>
<th>DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES &amp; STAKEHOLDER PARTICIPATION</th>
</tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td><strong>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</strong></td>
</tr>
<tr>
<td>- The scientific evaluation of impact in the well-managed pilot installations are a good basis for dissemination and sustainment of the project results, since it provides evidence of a desired effect on cognitive functions that has not been demonstrated that clear before in AAL.</td>
</tr>
<tr>
<td>- The WP2 Dissemination Work Package has been effective. Individual partners and especially the coordinator have also been very active in dissemination work. The consortium has achieved a substantial number of dissemination activities e.g.</td>
</tr>
<tr>
<td>o Website: sufficiently attractive and published with information in five different languages. The last new item to be published on the website was from 2013.</td>
</tr>
<tr>
<td>o A Network of Interest: properly managed, but not clear how this will be of value for the further exploitation of results. On the other hand, positive feedback was received from the network subscribers.</td>
</tr>
<tr>
<td>o Dissemination materials: sufficiently available: brochures, leaflets, posters etc.</td>
</tr>
<tr>
<td>o Social media: YouTube channels and social media with 25 different subscribers and with material in different languages. A group was also established on LinkedIn.</td>
</tr>
<tr>
<td>o LLM workshops</td>
</tr>
<tr>
<td>o Scientific based dissemination: papers, articles, presentations, conferences, workshops and exhibitions etc. LLM will seek top level publications in the following journals: Neuroscience &amp; Biobehavioural Reviews (two review articles are in preparation); articles focusing on different aspects of the</td>
</tr>
</tbody>
</table>
results in the Annals of Neurology, the Journal of Alzheimer’s Disease, Biological Psychology, the International Journal of Psychophysiology, Health Policy, JAMIA, IEEE Trans Inf, Tech Biomedicine and other technical journals.

- Contacts and publications in press, TV attention, etc.

- Overall the consortium is praised for their efforts and the continuation of these until the end of the project and even beyond that.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

- LLM accomplished to demonstrate the significant impact potential of its service in four (4) different countries and directly reached and impacted 1846 users (elderly people) participating in the trials, while around 80500 elderly, carers and their families, were impacted locally, through dissemination and their indirect involvement, especially inside the care centers.

- LLM has accomplished to reach forty-two (42) Homes and thirty six (36) care centers.

- User satisfaction surveys were conducted for care-personnel and for the primary end-users. In general, the scores of the qualitative questionnaires are well above average. Primary end-users were in general more satisfied with the physical training than the cognitive or combined training. Users have also been given the opportunity to express their evaluation in free text on the questionnaires and in general the comments are positive.

- LLM project achieved to verify the technical, organisational and legal feasibility of LLM service along the complete value chain of stakeholders, involved through a dedicated Network of Interest maintained through the project lifetime, involving more than 350 stakeholders.

PROJECT SUSTAINABILITY

Continued impact from the project today

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

Supporting Evidence

4

- Are the outputs from the project still being used today?

  - The verification of the sustainability, scalability and applicability of the LLM system was achieved. Credible – but however rather modest - local business plans were developed, serving well the future intentions of the project and its partners.

  - These business plans were for per-pilot-site (country) and have an estimated 5-10
installations in day-care centres per country per year, increasing by a similar rate each year for the five-year period presented.

- Each care-centre is estimated to acquire 50 licences, which appear overestimated (see recommendation (1). Expenses for marketing and other activities seem in general underestimated in the business plans.

- The Greek local business plan has won a 1st prize in the “Intervalue” interregional R&D workshop, which has had an encouraging effect on the consortium, but no tangible agreements have been made by any of the “spin-off” structures that is planned for sustainment of the project results.

- The positive user acceptance has led to the intention of several LLM partners to continue providing LLM services to users in the piloting environments for some time after the project’s end (AUTH, NKUA, INTRAS, and UCY).

- In 2014 the LLM platform, under the new brand name “LLM Care” passed from the pilot implementation to the market implementation, as a service provided to local stakeholders, public and private elderly care homes, health care professionals, individuals, as well as elderly citizens in need (Romanopoulou E, Zilidou V, Antoniou P. Spinning off gerotechnology business activities: The LLM care best practice paradigm. In P. Bamidis, I. Tarnanas, L. Hadjileontiadis, & M. Tsolaki Eds, Handbook of Research on Innovations in the Diagnosis and Treatment of Dementia. Hershey, PA: IGI Global. 2015; 426-436.).

- The project has managed to verify the sustainability, scalability and applicability of LLM services across Europe through:
  - the total acceptance of all partners engaged in the project to continue for full deployment, through five (5) local business plans and one (1) business case, in six (6) countries in total.
  - a flexible and reasonable pricing model and five (5) business models adaptable to the local needs and replicable to other EU countries
  - the interest of around fifteen (15) health/care organisations ready to test the service after the end of the project, with a forecast of around nine (9) of them to become our first customers.
  - The interest of around forty-three (43) Stakeholders (care centres, health organisations, public authorities and hospitals) of our network of interest to deploy the service in the next years.
According to the coordinator, IPRs and business processes were defined and signed between partners of the LLM consortium for the exploitation of the results of the project. Since the end of the project there is a continuous collaboration among some of the partners either for the commercialization process or for new proposals.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - A list of ten other collaborating projects was presented together with a long list of dissemination activities and materials.
  - There have been preliminary contacts with standardisation bodies. Other projects have been using LLM achievements e.g. USEFIL (infrastructure) and DISCOVER (training material).
  - According to the project coordinator, Through the LLM Care ecosystem ([http://www.llmcare.gr/en](http://www.llmcare.gr/en)), an established self-funded initiative in technology driven elderly social care (Romanopoulou ED, Zilidou VI, Bamidis PD. Creating and sustaining a Social HealthCareEcosystem: the Case of LLM Care Services in Greece. Hell J Nucl Med, 2017.), numerous such stakeholders are already using the developed services ([http://llmcare.gr/el/map](http://llmcare.gr/el/map)). It participates in the European Initiative on Active and Healthy aging ([http://ec.europa.eu/research/innovation-union/index_en.cfm?section=activ...](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=activ...)) as a Candidate Site of EPIonAHA, as well as its Greek localised network activities ([www.eiponaha.gr](http://www.eiponaha.gr)) and is member of the European Network of Living Labs (ENoLL) with the Thessaloniki Active and Healthy Ageing Living Lab (Konstantinidis EI, Bamparopoulos G, Bamidis PD. Moving Real Exergaming Engines on the Web: The webFitForAll Case Study in an Active and Healthy Ageing Living Lab Environment. IEEE J Biomed Health Inform. 2017 May;21(3):859-866. doi:10.1109/JBHI.2016.2559787.) aiming at updating LLM Care service by facilitating the speeding up of innovation, collaboration, development and testing of more accurate services, which is achieved by the early involvement of users as co-creators.

**BEST PRACTICES**

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
<th>▪ The two components of the LLM system include:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>- Cognitive Training Component (CTC) (a set of cognitive exercises), based on the</td>
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</tbody>
</table>
“BrainFitness” owned by PositScience and the “GRADIOR software” owned by Intras (partner in the project). The objective is to improve cognitive capacity or mental health, by means of a set of computerised exercises.

- Physical Training Component (PTC), based on the “FitForAll” platform, developed by the, Lab of Medical Informatics of the University of Thessaloniki. This component uses the WII-remote as sensor for movements and also various equipment for loading the musculoskeletal system and training of coordination. The WII platform itself and other sensors (such as the balance board) are not utilized in the project.

- The LLM system is now commercially available in four (4) languages, with a specific price and technical support in five (5) countries.

- The team has participated in various research technology competitions through LLM Care Ecosystem winning a lot of awards, such as the "AWARD FOR INNOVATION 2017" sponsored by the UNCAP project, the bronze award for the best openlivinglabs project organized by ENoLL 2017 (http://www.openlivinglabs.eu/).

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The statistical analysis showed positive effects on the memory and on the cognitive abilities of elderly people of combined physical and cognitive training. The project even reports the potential of reducing the negative effects of dementia! If this can be further validated and confirmed in an extensive clinical trial then the socio-medical-economic impact would be immense.

<p>| TOTAL IN-DEPTH EVALUATION SCORE | 17 |
| TOTAL SCORE | 27/32 |</p>
<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acronym</strong></td>
</tr>
<tr>
<td><strong>Project Name</strong></td>
</tr>
<tr>
<td><strong>Programme</strong></td>
</tr>
<tr>
<td><strong>Period</strong></td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
</tr>
<tr>
<td><strong>Project type</strong></td>
</tr>
</tbody>
</table>
| **Project subject (to help categorise the results for the final publication)** | ![Robotics for Ageing Well](x)
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well |

<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION</th>
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<tbody>
<tr>
<td><strong>Brief description of the project</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives of the project</strong></td>
</tr>
</tbody>
</table>

| OVERALL PROJECT ASSESSMENT |
Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

The major achievements in the project so far have been:

- The MARIO robotic prototype has been developed and integrated and is available in an initial version to the developers
- The consortium has managed to attract a large number of experts to support the project
- The involvement of stakeholders such as patients and care-givers is well developed
- The proposed system will incorporate recent advances in the state of the art technologies, in particular with regards to the semantic technologies and to methods for CGA/MPI calculation
- The project is very active with regards to dissemination in scientific and non-scientific media. The initial exploitation plans are well developed.

Nevertheless, there are some issues which need further attention:

- The presentations in the review did not sufficiently refer to the related activities/tasks in the work plan. In particular, as many of the tasks are active, but have not yet been reported in written deliverables, it was difficult to assess of the progress of the project in some areas. In addition, it would have been helpful to present how the consortium has responded to the recommendations from the previous review.
- The demonstrated functionality of the robot during the review is still immature with regards to functional abilities such as voice recognition. The integration of behavioural modules, person tracking and localization features was not demonstrated or presented at the review. This raises concerns about whether the software integration of components for these features has sufficiently progressed. As such, there is insufficient evidence that milestone MS3 has been achieved as a basis for the timely start of the pilots, posing a high risk that the pilot deployments may be delayed or may start with an insufficiently mature robot. The project has neither demonstrated an adequate awareness of these risks nor provided an appropriate mitigation plan for them.
- Although the involvement of End Users and other stakeholders has been reported (e.g. T2.3 “User tests conducted to gather initial feedback on the interface” in both the DoA
and in the periodic report section: Interviews with caregivers and people with dementia in T3.1) it is not clear from the deliverables how these interviews have influenced the actual technical work.

- In a similar way, it is not clear which concepts from the literature survey in WP4 and from the investigation of various technological areas will be used in the development of the MARIO Robot. Overall, interaction and collaboration between the various work packages and tasks has not been sufficiently described.

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</td>
</tr>
</tbody>
</table>

| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU's Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry. |

| 3 |
| The consortium has made a serious effort to identify technologies to be developed in the project with potential for commercial exploitation. The Periodic Technical Report - Part B summarises the current status of the exploitable project results. It may be seen that innovation activities, such as in the form of products (for example the development of the robotic platform) and services (for example the development of a robotic CGA module), are underway according to the work plan in the DoA. Testing and evaluation of the implemented technologies during the pilot trials will eventually permit a more informed assessment of the impact of the proposed innovations. The work being carried out within this project contributes towards the expected impacts of the relevant Work Programme. The social impact of this project is expected to become more evident, and hence may be better assessed, from the results of the pilot trials. |

| Plans for the use and exploitation of results |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |

| 3 |
| The exploitation plan has been updated within the resubmitted D9.1. In addition, it has been reported in the Periodic Technical Report - Part B that the consortium partners have been actively seeking potential market players in order to secure uptake of the technology being developed within this project. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE |
| 9 |

| OVERVIEW OF PROJECT IMPACT IN KEY AREAS |
| Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas: |

| Impact area 1: Improved quality of life |
| How the project has made 4 |
an impact regarding
Improved quality of life
This will be evaluated taking into account
the programme objectives\(^{135}\) including
Increased quality for life for elderly people
and their carers, Increased personal
independence of the elderly, Concepts for
the detection of ageing-related risks, and
the Reduction of admissions and days
spent in care institutions.

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study(^{136}) and visualised through the Policy dashboard on EIPonAHA(^{137})</td>
</tr>
<tr>
<td>- Population that perceive their health as good or very good</td>
</tr>
<tr>
<td>- Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td>- Healthy life years at birth</td>
</tr>
</tbody>
</table>

- Increased quality for life for elderly people and their carers
  - The work being carried out within this project contributes towards the expected impacts of the relevant Work Programme. The social impact of this project is expected to become more evident, and hence may be better assessed, from the results of the pilot trials.
  - Interviews carried out within Task 3.2 confirm the approach taken by the MARIO to engage and prompt persons with dementia in order to reduce loneliness, addressing loneliness, and helping people with dementia with service robot.
  - As the project reaches its halfway point, the work carried out with end users so far has enabled the team to equip MARIO with specific psychosocial applications designed to meet patient needs. ‘For example, the Connect My Hobbies module, which consists of My Music, My News, and My Games applications, have been developed and can now be tailored to the needs of end users,’ says Casey. ‘These may seem like simple applications, but they actually promote autonomy and empower people with dementia, who can select what they want to watch or listen to and decide when they want to do so, without having to wait for a busy nurse or caregiver.’
  - ‘As a result of engaging with MARIO we believe the loneliness and isolation experienced by many people with dementia will be reduced, and their autonomy and their quality of life improved,’ says Casey. ‘We also believe that through undertaking the CGA, MARIO will reduce the burden of care on caregivers as they will have more time to spend on other meaningful tasks and interacting with people with dementia.’
- Increased personal independence of the elderly
  - N/A
- Concepts for the detection of ageing-related risks
  - The team is equipping MARIO with the capability of undertaking the Comprehensive Geriatric Assessment (CGA), something that would normally take a health care professional around 30 minutes per patient to complete.
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as

\(^{135}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.
\(^{136}\) http://mafeip.eu/about_study/
\(^{137}\) http://www.linkedpolicies.eu/policymaps/eiponaha/
Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry

Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - The consortium has made a serious effort to identify technologies to be developed in the project with potential for commercial exploitation. The Periodic Technical Report - Part B summarises the current status of the exploitable project results. It may be seen that innovation activities, such as in the form of products (for example the development of the robotic platform) and services (for example the development of a robotic CGA module), are underway according to the work plan in the DoA

- Improved competitiveness of EU industry
  - N/A

- Strengthened global position of EU industry in service robotics for ageing well
  - N/A

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing

138 http://mafeip.eu/about_study/
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

### Dissemination and Engagement Opportunities Aimed at Transferring the Results to a Wider Communities & Stakeholder Participation

<table>
<thead>
<tr>
<th>Notable efforts with regard to the dissemination of the project results</th>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
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<td>3 Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
</tbody>
</table>

#### Supporting Evidence

- The project is very active with regards to dissemination in scientific and non-scientific media. The website highlights 15 different publications that have been developed.
- As reported in the Periodic Technical Report - Part B, the consortium partners have been active in disseminating the project activities through talks, articles and on social media. It is also reported that the consortium members are preparing short demos of the Mario Kompai robot. Moreover, the consortium has disseminated the project results through its website and social media such as twitter.

139 http://www.linkedpolicies.eu/policymaps/eiponaha/
- The project has an active Facebook page with 221 likes; The project has an active Twitter account with 248 tweets and 207 followers; The project has an active Youtube channel with 13 subscribers.
- According to the project coordinator, we are organising a Special Thematic Session (STS) as part of the scientific program for the 16th International Conference on Computers Helping People with Special Needs that takes place in July 11-13, 2018 in Linz, Austria. This will allow us to attract experts in the area of robotics and dementia interested in presenting their work and help establish synergies and post-MARIO project follow up activities. We are also planning on organising a pre-conference or parallel workshop thereby providing an opportunity for more in-depth discussions.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - The consortium has managed to attract a large number of experts to support the project
  - The involvement of stakeholders such as patients and care-givers is well developed.
  - The objective of task 3.2 is to identify the needs of PWD, caregivers and family members using the MARIO service, for this purpose, intensive collaboration with the local Galway Dementia Network and with people with dementia and caregivers across all pilot sites has been setup during the reporting period.
  - The MARIO robot is due to arrive at three pilot sites – Ireland, UK and Italy – at the end of August 2016, where it will spend more than 12 months being tested by end users including people with dementia and caregivers.

### PROJECT SUSTAINABILITY

#### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

- The initial exploitation plans are well developed.
- It has been reported in the Periodic Technical Report - Part B that the consortium partners have been actively seeking potential market players in order to secure uptake of the technology being developed within this project.
- According to the project coordinator, Partners, following their individual interests are already planning new collaborations both regarding research activities as part of the H2020 in the next years (Calls of 2018 and 2019), as well as...
for business development purposes with collaborations in the context of national bids for pre-commercial procurement of innovations which will make (part) use of the MARIO outcomes. At this stage many of these activities are still in the preparation phase and we cannot disclose details but in the following months we plan to announce them from within the project Web site.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - ‘Our current work is very much informed and based on the work conducted in the DOMEO project,’ explains Meftah Ghrissi from project partner Robosoft. ‘To put it simply, without DOMEO there would be no Kompai-2 for the MARIO project. Indeed, the legacy of DOMEO is relevant not only for the MARIO project but for an entire ‘class’ or ‘generation’ of projects that are now underway or planned in the future.’

### BEST PRACTICES

**Best practices that the project has developed**

- Several aspects of DOMEO (AAL Programme) will now be expanded upon through MARIO’s research agenda. These include verbal interactions with the user, along with Human Robot Interaction to support cognitive and memory assistance involving semantics.
- ‘Until today Kompai was using a fixed dictionary for voice recognition,’ says project coordinator Dympna Casey. ‘Our aim is that the MARIO project takes a step forward and exploits natural language processing. In this respect, we hope that MARIO will leave a legacy to the field of robotics comparable to that of DOMEO, by being the first project that places semantics at the centre of any new future similar robot applications.’

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

As many of the tasks are active, but have not yet been reported in written deliverables, it is difficult to assess the progress of the project in some areas. Testing and evaluation of the implemented technologies during the pilot trials will eventually permit a more informed assessment of the impact of the proposed innovations. However, the project has a great potential for impact, particularly in the realm of an improved quality of LIFE.

| TOTAL IN-DEPTH EVALUATION SCORE | 15 |
| TOTAL SCORE                   | 24/32 |
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>MOBISERV</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>An Integrated Intelligent Home Environment For The Provision Of Health, Nutrition And Mobility Services To The Elderly</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>12/2009 – 08/2013 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>
| Project subject (to help categorise the results for the final publication) | □ Robotics for Ageing Well  
 □ Innovative solutions for independent living  
 □ Innovating elderly care  
 □ Better connected through integrated care  
 □ Frailty, early detection and intervention  
 □ Fall Prevention  
 □ Knowledge sharing and standardisation related to ageing well |

## BRIEF DESCRIPTION

**Brief description of the project**

MOBISERV will deliver a robotic prototype of an open standard-based personal platform capable of sensing the user’s personal environment and adapting to the user’s patterns of behaviour. By early detection of threatening environmental and/or emerging medical conditions, harmful consequences will be mitigated by issuing warnings and providing guidance; in case adverse events cannot be evaded, alarms will be issued. The platform will be an integration of innovative components delivered by the project and of existing standards-compliant technologies.

## OBJECTIVES

**Objectives of the project**

The objective of the MOBISERV project is to design and evaluate a system and service to support independent living of seniors by means of a proactive personal companion robot integrated with smart textiles, innovative sensors, and a smart home environment. The system monitors your physical activity and health indicators by means of wearable fabrics, monitors your nutrition habits by smart home sensors, and offers an extensive secure portal for informal and professional carers to use, setup, and fine-tune the support system.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if

<table>
<thead>
<tr>
<th>Score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>This was a very ambitious project with the required expertise in the consortium. The project had some delay at the beginning of the reporting period, but assured to catch up during the prolongation period. According to the new DoW, all milestones and</td>
</tr>
</tbody>
</table>
deliverables have been achieved. The project was carried out according to the adjusted work plan. Use of resources was according to the new plan and reasonable. No major deviations occurred. However, the effort needed for integration of the components had been underestimated leading to delays in the technical integration of the prototype. This also affected the planning and execution of the evaluation and validation studies but did not affect their quality. The overall quality of the results presented is good: The consortium has managed to achieve its main objectives and bring the project to a successful end, notwithstanding the severe delays experienced in the previous review period and the serious complications caused by the change in management.

**OVERVIEW OF PROJECT IMPACT**

**Scientific, technical, commercial, social or environmental impact related to the AHA Triple win**

*Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) improved quality of life, 2) increased efficiency of health and long-term care, 3) market growth and expansion of the EU industry.*

---

**3**

There is no significant impact so far. The consortium could achieve impact with a thorough analysis of market niches, a realistic exploitation plan, and effective exploitation activities. Especially single modules could be exploited. Since the components of the MOBISERV system are independent, capabilities can be selected based on the requirements of target users and be deployed in different contexts, from private homes to large care facilities, the potential impact could be high. Such flexibility is a key value, especially since it is supported by in-depth knowledge about the field. And, furthermore, it enables the integration of third party modules. The knowledge and insights gained within the project with regard to context and conditions of use, integration and implementation do’s and don’ts, introduction and familiarization of users with the technology, and criteria for acceptance could be made available as consulting packages. Such consulting could be validated by the comprehensive results of all the user studies.

---

**Plans for the use and exploitation of results**

*Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.*

---

**2**

The project has produced exploitation plans and market analysis reports, albeit plans for the use of results are rather vague. The final exploitation plan presents the business opportunity plans for the overall MOBISERV concept, and three groups of subcomponents. This business opportunity plan identifies and details the exploitation objectives for the overall system concept and the subcomponents, the directions to take, the regional dimensions, the promoters and actors, the market sectors and finally the exploitation strategies. As such this
report can be useful for the further use of the project's results. Furthermore, the project provided a market analysis report in which horizontal and vertical markets were analysed, i.e. actual products and services that are currently on the market, the target customers that could benefit from (parts of) the MOBISERV system, as well as relevant research projects related to MOBISERV were included in the overviews and analyses. The roles for the consortium as a whole and for individual partners were adequately addressed.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 8

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives Including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.</td>
<td></td>
</tr>
</tbody>
</table>

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

<table>
<thead>
<tr>
<th>Increased quality for life for elderly people and their carers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- There is no significant impact so far. The consortium could achieve impact with a thorough analysis of market niches, a realistic exploitation plan, and effective exploitation activities.</td>
<td></td>
</tr>
<tr>
<td>- Since the components of the MOBISERV system are independent, capabilities can be selected based on the requirements of target users and be deployed in different contexts, from private homes to large care facilities, the potential impact could be high.</td>
<td></td>
</tr>
<tr>
<td>- Based on state-of-the-art artificial intelligence and robotics technologies, the MOBISERV robot companion is designed above all to offer cognitive support to users, offering reminders and suggestions to help them lead healthy and socially active lives.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increased personal independence of the elderly</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- 'Older people were extremely positive about the robot. They can see the benefits of the cognitive support it provides and also, if they live alone, they like the idea of having something they can interact with. For some, it's almost like a pet with its own personality,' Mr Van den Heuvel says.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concepts for the detection of ageing-related risks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- N/A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Reduction of admissions and days spent in care</th>
<th></th>
</tr>
</thead>
</table>

140 The programme objectives were detailed in Section 2.2 of our Technical Offer.
141 http://mafeip.eu/about_study/
142 http://www.linkedpolicies.eu/policymaps/eipona/
### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

*This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.*

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA</td>
<td></td>
</tr>
<tr>
<td>- Available beds in hospitals per hundred thousand inhabitants</td>
<td></td>
</tr>
<tr>
<td>- Hospital discharges per 100 000 inhabitants</td>
<td></td>
</tr>
<tr>
<td>- In-patient average length of stay</td>
<td></td>
</tr>
</tbody>
</table>

#### Impact area 3: Market growth and expansion of the EU industry  
*Score 1-4*

#### How the project has made an impact regarding Market growth and expansion of the EU industry

*This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.*

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
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</tr>
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<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA</td>
<td></td>
</tr>
</tbody>
</table>

| 2                                                                                              |   |
| Increased efficiency of care systems                                                          | N/A |
| Creation of ICT products and services for ageing well                                         | N/A |
| Facilitate wide implementation of sustainable innovation services                             | N/A |
| Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment. |   |
| - Available beds in hospitals per hundred thousand inhabitants                                 |   |
| - Hospital discharges per 100 000 inhabitants                                                  |   |
| - In-patient average length of stay                                                           |   |

| 2                                                                                              |   |
| New markets for independent and active living products and services through a set of open standards and integrated platforms |   |
| - During the integration phase, problems emerged with the initially chosen architecture (Microsoft robotics studio). Thus, very late in the project, a new architecture, based on open standards, was defined and implemented. This caused severe delays for the integration of the final prototype. The overall MOBISERV system was updated, subsystems were integrated and new functionalities implemented. |   |
| - Improved competitiveness of EU industry                                                     | N/A |
| - Strengthened global position of EU industry in service robotics for ageing well              | N/A |
| - Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing | N/A |

143 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - The knowledge and insights gained within the project with regard to context and conditions of use, integration and implementation do's and don'ts, introduction and familiarization of users with the technology, and criteria for acceptance could be made available as consulting packages. Such consulting could be validated by the comprehensive results of all the user studies.
  - The contribution to the state of the art is mostly on the development of algorithms for visual information analysis.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

**DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION**

Notable efforts with regard to the dissemination of the project results
Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

3

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - The project has worked hard on the dissemination and exploitation plans. These plans are focused and demonstrate the possibilities for exploitation and directions for achieving impact.
  - Partners have already performed many dissemination activities:
    - A new website has been launched
    - A completely new demonstration video has been created
    - The consortium has provided a joint press release in 7 languages.
    - More scientific papers have been written and submitted to journals and conferences, but the focus has been on non-scientific dissemination.
  - The focus of most dissemination activities was on the potential stakeholder community to create visibility and goodwill in the overall care chain, to elicit insights for further exploitation, to gain feasibility and acceptability feedback and propositions for business opportunities. In addition, the project published and presented a...
- Overall, the consortium continued their impressive dissemination work through many dissemination activities on MOBISERV subcomponents (mainly scientific) and on the integrated system (mainly non-scientific), a big audience has been reached via live talks at conferences and demos, via printed media, via TV and radio, and via online media such as news sites, blogs, Twitter, and YouTube.
- The project organised several workshops, reaching out to a large number of interested parties, and increased the interest for the use of social companion robots in the care sector.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - The final MOBISERV system prototype and its components like the robot companion have been tested in a large range of studies involving primary users, secondary users (such as partners, formal and informal carers), and tertiary users (such as care managers and policy makers) in several settings such as home labs, people's own homes, and care homes. Findings of all these evaluation studies have been analysed and reported in D2.6 and a list of future improvements has been provided.
  - The project could adapt and accommodate its schedule and planning for the user evaluations and generated an impressive repository of user feedback and requirements that can support research and technical development, and the integration of robotic systems in the overall care chain.
  - The final MOBISERV system platform prototypes were fine-tuned and installed at two sites (SMH, UWE) for user evaluation studies.
  - Throughout the project the potential users and stakeholders have been involved. This involvement is appropriate as an inherent part of the project.

---

**PROJECT SUSTAINABILITY**

### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

### 2 Are the outputs from the project still being used today?

- The final exploitation plan presents the business opportunity plans for the overall MOBISERV concept, and three groups of subcomponents. This business opportunity plan identifies and details the exploitation objectives for the overall system concept and the subcomponents, the directions to take, the regional dimensions, the promoters and actors, the market sectors and finally the exploitation...
strategies. As such this report can be useful for the further use of the project's results.
- Despite significant efforts towards exploitation, there is no convincing or realistic plan.
- The MOBISERV partners are currently seeking funding for follow up projects or a joint spin-off to further enhance and perfect their design, as well as conduct user trials on a larger scale.
- According to the project coordinator: no activities have taken place after the end of the project and there are no plans to continue working on the project activities with the rest of the consortium.

- **Consortium's interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - The project has been involved with other FP7 projects in the domain, KSERA, FLORENCE and others. The project cooperates closely with the FP7 project Companionable and actually incorporates relevant results from this project. No new collaborations or contacts have been reported

<table>
<thead>
<tr>
<th>BEST PRACTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best practices that the project has developed</strong></td>
</tr>
<tr>
<td>'This has been a very broad project, we've worked not only on the robot but also integrating it with a smart-home system and with smart clothes,' Mr Van den Heuvel notes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final comments regarding the in-depth evaluation</strong></td>
</tr>
<tr>
<td>This Project was successful in that the consortium managed to come back from a rather disastrous situation with the coordinator abandoning the Project early on.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>19/32</td>
</tr>
</tbody>
</table>
### IN-DEPTH ANALYSIS EVALUATION SHEET

#### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>MOBOT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td><strong>Intelligent Active Mobility Assistance Robot integrating Multimodal Sensory Processing, Proactive Autonomy and Adaptive Interaction</strong></td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>FP7</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>02/2013 – 07/2016 (42 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>3,149,912</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication):**
- X Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

#### BRIEF DESCRIPTION

**Brief description of the project**

The MOBOT project aims at supporting mobility and thus enforcing fitness and vitality by developing intelligent active mobility assistance robots for indoor environments that provide user-centred, context-adaptive and natural support. Towards these targets, a multimodal action recognition system will be developed to monitor, analyse and predict user actions with a high level of accuracy and detail. Direct involvement of end-user groups will ensure that actual user needs are addressed. User trials will be conducted to evaluate and benchmark the overall system and to demonstrate the vital role of MOBOT technologies for Europe’s service robotics.

#### OBJECTIVES

**Objectives of the project**

Our driving concept envisions cognitive robotic assistants that act (a) proactively by realizing an autonomous and context-specific monitoring of human activities and by subsequently reasoning on meaningful user behavioural patterns, as well as (b) adaptively and interactively, by analysing multi-sensory and physiological signals related to gait and postural stability, and by performing adaptive compliance control for optimal physical support and active fall prevention.

#### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

*Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.*

3

A number of high quality contributions to the state of art are as follows:

- During the project with visual processing a doubled increase in human location, detection and action classification accuracy was achieved by switching to DCNN. Techniques developed in Mobot (WP1) applied to standard benchmark tests outperform SoA alternatives. Methods and
Various proactive and adaptive context-aware robot controllers have been developed and implemented on the rollator platform. Performance during the demo and user evaluations was promising.

With respect to the rollator platform, the differences with the state of the art (SoA) are the two motorized arms that can support users in standing up and sitting down, and potentially support the user’s balance.

**OVERVIEW OF PROJECT IMPACT**

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
<td></td>
</tr>
<tr>
<td>The expected scientific impact is good especially in the areas of gait modelling and analysis, shared haptic control, audio-visual gesture recognition, novel intent recognition methods, and methodologies for user trials and evaluation of their results. The current significant volume of scientific publications is a testimony to this. However, the commercial impact is difficult to see at this stage of the project.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans for the use and exploitation of results</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.</td>
<td></td>
</tr>
<tr>
<td>The plan for the use of foreground is appropriate for this type of research project. The effort spent in the final report to identify an exploitation strategy for each of the partners is remarkable. The envisioned use of research foreground for the consortium as whole and for individual beneficiaries is realistic. However, the closer commercial exploitation for the project (the MOBOT rollator) will require a thorough re-design.</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE**

9

**OVERVIEW OF PROJECT IMPACT IN KEY AREAS**

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and</td>
<td></td>
</tr>
<tr>
<td>Increased quality for life for elderly people and their carers</td>
<td></td>
</tr>
<tr>
<td>From end-user point of view the MOBOT’s overall objectives are: a) rollator platform - to maintain mobility of elderly with moderate to mild walking impairment via assisted walking;</td>
<td></td>
</tr>
</tbody>
</table>

145 The programme objectives were detailed in Section 2.2 of our Technical Offer.
the Reduction of admissions and days spent in care institutions.

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
<th>Avoid falls in the early stages of postural instability via posture support and active fall prevention;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- b) Nurse platform – to relieve nursing personnel from heavy supporting actions during standing-up/ sitting-down phases.</td>
</tr>
<tr>
<td></td>
<td>- Increased personal independence of the elderly</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- Concepts for the detection of ageing-related risks</td>
</tr>
<tr>
<td></td>
<td>- N/A</td>
</tr>
<tr>
<td></td>
<td>- The Reduction of admissions and days spent in care institutions.</td>
</tr>
<tr>
<td></td>
<td>- Population that perceive their health as good or very good</td>
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<td>- Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td></td>
<td>- Healthy life years at birth</td>
</tr>
</tbody>
</table>

Impact area 2: Increased efficiency of health and long-term care

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
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</tr>
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<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
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</tr>
</tbody>
</table>

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry   Score 1-4

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Market growth and expansion of the EU industry</th>
<th>3</th>
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<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well,</td>
<td></td>
</tr>
<tr>
<td>New markets for independent and active living products and services through a set of open standards and integrated platforms</td>
<td></td>
</tr>
<tr>
<td>- The major technological contributions of the project for the reporting period are as follows:</td>
<td></td>
</tr>
<tr>
<td>- Platform development</td>
<td></td>
</tr>
<tr>
<td>- Software and hardware integration</td>
<td></td>
</tr>
<tr>
<td>- Multimodal sensory processing</td>
<td></td>
</tr>
</tbody>
</table>

146 http://mafeip.eu/about_study/  
147 http://www.linkedpolicies.eu/policymaps/eiponaha/
Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Human behavior analysis
Proactive and adaptive context-aware robot control

- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - A number of high quality contributions to the state of art are as follows:
    - During the project with visual processing a doubled increase in human location, detection and action classification accuracy was achieved by switching to DCNN. Techniques developed in Mobot (WP1) applied to standard benchmark tests outperform SoA alternatives. Methods and results have been published in several conference and journal papers.
    - Various proactive and adaptive context-aware robot controllers have been developed and implemented on the rollator platform. Performance during the demo and user evaluations was promising.
    - With respect to the rollator platform the differences with the SoA are the two motorized arms that can support users in standing up and sitting down, and potentially support the user’s balance.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the

2
- Assess whether the dissemination of project results

148 http://mafeip.eu/about_study/
149 http://www.linkedpolicies.eu/policymaps/eiponaha/
### Project Results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The dissemination activity, during the project is very good in terms of publications, conferences contributions and web diffusion. Both quality and quantity of the publications in relevant journals are very high and have a clear impact on further research in the field.</td>
</tr>
<tr>
<td>- Numerous dissemination activities have been carried out such as:</td>
</tr>
<tr>
<td>- Joint Science and Technology Workshops with contiguous research projects and initiatives</td>
</tr>
<tr>
<td>- Participation in end-user conferences</td>
</tr>
<tr>
<td>- Presentation to specialists or representatives of potential user groups to Science and Technology Workshops</td>
</tr>
<tr>
<td>- Presentation of MOBOT demonstrators at industry fairs</td>
</tr>
<tr>
<td>- Dissemination to the media at large</td>
</tr>
<tr>
<td>- Newspaper, television and radio</td>
</tr>
<tr>
<td>- Talks at universities</td>
</tr>
<tr>
<td>- The project webpage (<a href="http://www.mobot-project.eu">http://www.mobot-project.eu</a>) is quite basic but contains information on the project and tasks that have been carried out.</td>
</tr>
<tr>
<td>- No presence on social media is featured on the project web page.</td>
</tr>
</tbody>
</table>

### Potential Users and Other Stakeholders (Outside the Consortium) Are Suitably Involved (If Applicable)

- The consortium organised two workshops for technology transfer and involvement of potential user groups. Although an interest from the conference attendees has been reported, there was no follow-up for these interactions to show the involvement of any external stakeholders.

### Project Sustainability

#### Continued Impact from the Project Today

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Further possibilities to perform R&amp;D exploitation actions have been identified from each of the partners. From the pure business perspective, as originally planned, no immediate possibility of product development has been detected. This is in line with the research nature and complexity of this project although also no applications for patents has been initiated.</td>
</tr>
<tr>
<td>- Further research, design optimisation and IPR actions are needed for reaching the market.</td>
</tr>
</tbody>
</table>

#### Are the Outputs from the Project Still Being Used Today?

- Further possibilities to perform R&D exploitation actions have been identified from each of the partners. From the pure business perspective, as originally planned, no immediate possibility of product development has been detected. This is in line with the research nature and complexity of this project although also no applications for patents has been initiated. |
| - Further research, design optimisation and IPR actions are needed for reaching the market. |
The major exploitable result, according to the only SME in the consortium (ACCREA), is the MOBOT rollator since it has much higher market potential than the nurse-type device. Although a set of further actions to advance the rollator sub project has been correctly identified in the periodic report it is not clear who will perform them and in which context.
- The plan for the use of foreground is appropriate for this type of research project. The effort spent in the final report to identify an exploitation strategy for each of the partners is remarkable.
- The envisioned use of research foreground for the consortium as whole and for individual beneficiaries is realistic. However, the closer commercial exploitation for the project (the MOBOT rollator) will require a thorough re-design.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - Research projects/platforms similar to MOBOT were developed as research projects and produced as prototypes for research purposes. The most notable ones are: RT Walker, MARC robotic walkers, COOL Aide, different types of iWalker, Care-O-bot, Guido, Carnegie Mellon University helper, FLO, Pearl robot, i-go walker, Walbot, Walkmate system, JAIST Active Robotic Walker, MONIMAD, robuWalker, Chugo group walking helper, WAR (Walking Assistant Robot), SMW (Smart Mobile Walker).
  - One of the advantages of MOBOT is the fact that MOBOT includes the functionality of the standard rollator (gait support), but also helps in sit to stand transfers. Further, MOBOT includes sensors recognising the posture of the user as well as allowing for communication with usage of gestures and voice commands.

<table>
<thead>
<tr>
<th>BEST PRACTICES</th>
<th>Expected major scientific contributions of MOBOT are:</th>
</tr>
</thead>
</table>
| **Best practices that the project has developed** | • A multimodal action recognition system that will capture and process multi-sensory data (integrating visual, range, haptic, speech and physiological sensors) regarding human activity and motions, in order to detect and recognize human actions, with emphasis on limb localization, body pose estimation, spoken and gestural commands recognition, haptics, and physical human-robot interaction.  
  • A system that will further analyze human behavior, in order to perform identification of higher-level |

305
- The integration of the above modules within a context-aware cognitive robot control architecture, which will incorporate contextual reasoning and planning regarding assistive robot actions and behaviors, guiding the robot mechanism to assume optimal configurations and to provide proactive assistance and situation-adapted mobility support.

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final comments regarding the in-depth evaluation</td>
</tr>
<tr>
<td>From the project review and available documentation, it seems that this is a research project that has made progress in several areas. However, the project seems to have failed to execute the findings and convert them into future projects, patents or commercial opportunities. The reviewers recommended that the current results achieved constitute a good ground for a new cutting edge European project in assistive robotics and the current consortium partners are encouraged to submit such a project proposal.</td>
</tr>
</tbody>
</table>

| TOTAL IN-DEPTH EVALUATION SCORE | 11 |
| TOTAL SCORE                    | 20/32 |
GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>PERSSILAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>PERsonalised ICT Supported Service for Independent Living and Active Ageing</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
</tr>
<tr>
<td>Period</td>
<td>11/2013 – 10/2016 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2,450,000</td>
</tr>
<tr>
<td>Project type</td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

BRIEF DESCRIPTION

Brief description of the project

The aim of PERSSILAA (PERsonalised ICT Supported Service for Independent Living and Active Ageing) is to develop and validate a new service model for detecting pre-frail older adults and providing them with training services to improve their health and prevent frailty. This multimodal service model is focusing on nutrition, physical and cognitive function. To implement the service model, PERSSILAA has developed an integrated software platform for elderly people that consists on modules for screening, monitoring, and training on healthy nutrition, physical exercise and cognitive function. The platform also provides intelligent decision support and gamification. The core idea in the project is therefore to offer on-line services for elderly people detected as pre-frail and activate them to use independently PERSSILAA services in promotion of their health condition. The PERSSILAA service concept has been tested and validated in two countries, The Netherlands and Italy.

OBJECTIVES

Objectives of the project

PERSSILAA’s main focus is to:

- develop remote service modules for screening, monitoring and training.
- enable a transition of our care services from fragmented reactive disease management to preventive personalized services, that are offered locally, supported by proactive caregivers and health professionals, which is integrated into existing healthcare services.
- set up a technical service infrastructure to support these multiple services and users in an efficient, reliable and easy way which will entail gamification, interoperability and clinical decision support.

OVERALL PROJECT ASSESSMENT

Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project.

3

PERSSILAA has developed a scalable and interoperable ICT platform that provides and
quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

integrates different modules and external services for the early detection and treatment of pre-frail older people. Service scenarios and use cases were created to drive the design of the software platform. Service modules for screening, monitoring and training concerning nutrition, physical stage and cognitive functions of elderly people have been implemented and integrated in the platform. Some of these modules were already developed in other projects. The PERSSILAA concept has been tested and evaluated in Netherlands and in Italy. The positive changes in the health condition of elderly people after using independently online services are not clearly demonstrated during this project. Further refinements and validations are needed for getting PERSSILAA achieving the desired effects. The creation of screening system, however, can distinguish pre-frail, frail and robust elderly people and the technical solutions for screening, monitoring and training services have been successfully integrated.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

Scientific impact: Good efforts were made to disseminate the project on a scientific/academic level. The solution based on screening, training and monitoring has innovative elements, such as the integration of all the modules in an interoperable ICT platform.

Technological impact: Cost-effectiveness of PERSSILAA has been studied when evaluating the business models. The project had provided evidence that the solution can be cost-effective when screening and training people with the risk for (pre-)frailty. Moreover, evidence has been given already during the project that a successful implementation, and in the future the PERSSILAA solution has huge potential to be scaled up. The training services, however, must be improved to really demonstrated a positive effect on frailty. The project has high potential to create business once the identified issues have been improved. The exploitation potential for the developed foreground is high. 13 concrete product/services for exploitation have been identified: 1 is already on the market and 6 are planned for next year. However more is to be done for the monitoring module and the gamification layer, or to demonstrate whether this last innovation is a real and effective contribution for elderly persons.
Monitoring and gamification have been identified as targets for further research.
Social impact: The project was always user-centric in its approach. The response from users and stakeholders, medical professionals, but also decision makers was high.
Most importantly, the solution can have a direct impact on health and quality of life of elderly persons, where an early detection of the problems and prevention is essential.

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3

The exploitations activities are mainly developed in The Netherlands and Italy. The business models included a cost-effectiveness analysis (cost-benefit is an important and often decisive barrier for adoption and implementation of new ICT based services) as well as the clinical evaluation (evidencing the potential of ICT supported services to detect and improve frailty). The project started from “region-specific” business models, taking into account social, cultural and organisational parameters. In both regions the business modelling is based on the Osterwalder business canvas.

In Enschede, most of the exploitation results come from the Dutch spin-off project Langgezond.nl. The services will be licenced in a B2B2C model to the municipalities. In Italy FOUND involved the loco-regional stakeholders, promoting PERSSILAA services and the use of ICT for screening of frailty in older adults through the churches and communities. However, the approach for Campania is not addressing the cost structure and revenue model. It is not clear who will be willing to pay for the services and what the ROI could be.

The exploitation plan of the project is well conceptualised and the results are very promising. Inzotech, a recently established partnership in the Netherlands, is interested to coordinate the further deployment of the PERSSILAA products and services throughout Europe together with the PERSSILAA consortium.

A lowlight is the lack of information for potential exploitation in Portugal, Spain and Ireland. These partner countries are almost not addressed in the relevant deliverable, besides the interesting information found in the annexes. So it remains unclear when and how exploitation could take place in these countries, even in Italy.

The Dutch partners are ahead of the other partners: awareness creation, stakeholder involvement (and users), scaling up and sustainability strategies and activities, and in particular through the unique selling point of Langgezond.nl. Moreover, the cost/investment
and revenues have been studied and the plans/steps for the future are clearly defined.

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</th>
</tr>
</thead>
</table>

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

**Impact area 1: Improved quality of life**

How the project has made an impact regarding Improved quality of life

This will be evaluated taking into account the programme objectives\(^{150}\) including Increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

<table>
<thead>
<tr>
<th>3</th>
<th>Increased quality for life for elderly people and their carers</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>The positive changes in the health condition of elderly people after using independently online services are not clearly demonstrated during this project. Further refinements and validations are needed for getting PERSSILAA achieving the desired effects.</td>
</tr>
<tr>
<td>-</td>
<td>The training services, must also be improved to really demonstrated a positive effect on frailty.</td>
</tr>
<tr>
<td>-</td>
<td>However, in Italy, an improvement of the parameters for quality of life and e.g. an improvement of the physical status were identified.</td>
</tr>
<tr>
<td>-</td>
<td>The validations show that the usage of PERSSILAA services result into a maintenance of health status over two years, but no significance differences are found between the intervention and control group.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Increased personal independence of the elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Concepts for the detection of ageing-related risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>The creation of the screening system can distinguish pre-frail, frail and robust elderly people and the technical solutions for screening, monitoring and training services have been successfully integrated.</td>
</tr>
<tr>
<td>-</td>
<td>Most importantly, the solution can have a direct impact on health and quality of life of elderly persons, where an early detection of the problems and prevention is essential.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>The Reduction of admissions and days spent in care institutions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Population that perceive their health as good or very good</td>
</tr>
<tr>
<td>-</td>
<td>Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td>-</td>
<td>Healthy life years at birth</td>
</tr>
<tr>
<td>-</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^{151}\) and visualised through the Policy dashboard on EIPonAHA\(^{152}\)

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

---

\(^{150}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.

\(^{151}\) [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)

\(^{152}\) [http://www.linkedpolicies.eu/policymaps/eiponaha/](http://www.linkedpolicies.eu/policymaps/eiponaha/)
### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFeIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for new innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA.

**3**

- **Increased efficiency of care systems**
  - A significant impact in health care delivery is expected in the future through the exploitation of project results.
- **Creation of ICT products and services for ageing well**
  - PERSSILAA has developed a scalable and interoperable ICT platform that provides and integrates different modules and external services for the early detection and treatment of pre-frail older people.
- **Facilitate wide implementation of sustainable innovation services**
  - Evidence was provided during the project that with a successful implementation, the PERSSILAA solution has huge potential to be scaled up.
  - Inzotech, a recently established partnership in the Netherlands, is interested in coordinating in the further deployment of the PERSSILAA products and services throughout Europe together with the PERSSILAA consortium.
  - The added value for the PERSSILAA application was also well perceived by the health professionals, and the reaction to deploy (eventually) the system into the (regional) healthcare system was positive and encouraging.
- **Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100,000 inhabitants
  - In-patient average length of stay
  - N/A

- **New markets for independent and active living products and services through a set of open standards and integrated platforms**
  - PERSSILAA offers a multimodal service model that focuses on nutrition, physical and cognitive function and offers screening, monitoring and trainings modules by means of an interoperable ICT service infrastructure.
  - The service infrastructure is very interoperable, as demonstrated by the integration of several modules and external services. It is also somehow intelligent since it can distinguish the frail state of older users (the intelligence still
Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study153 and visualised through the Policy dashboard on EIPonAHA154
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

needs some improvements for personalized recommendations about training), and it is motivating from the point of view of adoption of the services by the end-users.

- **Improved competitiveness of EU industry**
  - In Enschede, most of the exploitation results come from the Dutch spin-off project Langgezond.nl. The services will be licensed in a B2B2C model to the municipalities.
  - In Italy, FOUND involved the loco-regional stakeholders, promoting PERSSILAA services and the use of ICT for screening of frailty in older adults through the churches and communities.

- **Strengthened global position of EU industry in service robotics for ageing well**
  - N/A

- **Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing**
  - The interest shown by the Dutch spin off Langgezond.nl shows a step in the right direction in this sense.

- **Creating a longer term RTD agenda**
  - N/A

- **Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**
  - PERSSILAA is a project that addressed frailty management and the screening and prevention of frailty and functional decline, which is a major public health challenge in Europe. The project and its results represent a major contribution to this challenge in the health domain.
  - PERSSILAA offers an integrated detection and prevention program on frailty and functional decline including nutrition, physical and cognitive functioning; the project results contribute to the state of the art. The project uses telemedicine technology and community-based interventions as well as motivation modules for engaging elderly people with the offered services.

- **Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.**
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

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153 http://mafeip.eu/about_study/
154 http://www.linkedpolicies.eu/policymaps/eiponaha/
### RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Notable efforts with regard to the dissemination of the project results**

*Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).*

<table>
<thead>
<tr>
<th>3</th>
<th><strong>Supporting Evidence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</strong></td>
<td></td>
</tr>
<tr>
<td>- A portfolio of dissemination materials is available online e.g. youtube video’s, education materials, project posters. PERSISLAA is well demonstrated and documented on the project website, which has continuously been updated with new information, results and recommendations. Also the websites <a href="http://www.langgezond.nl">www.langgezond.nl</a> website and Nutriageing website (<a href="http://nutriageing.fc.ul.pt/">http://nutriageing.fc.ul.pt/</a>) are relevant to the project.</td>
<td></td>
</tr>
<tr>
<td>- The national activities have been mainly done in Netherlands. The exploitation activities are mainly developed in The Netherlands and Italy. In Enschede, most of the exploitation results come from the Dutch spin-off project Langgezond.nl, while in Italy FOUND involved the loco-regional stakeholders, promoting PERSISLAA services and the use of ICT for screening of frailty in older adults through the churches and communities. Plans for exploitation in Portugal, Spain and Ireland are momentarily less concrete.</td>
<td></td>
</tr>
<tr>
<td>- Dissemination was based on a well-structured and thought through vision and strategy. KPI’s were clearly identified and evaluated (in metrics) per activity. The project has done a great number of dissemination activities, including, among others: articles in news; presentations to, meeting, and discussions with target groups; many scientific articles mainly in workshops and conferences, but also some journals.</td>
<td></td>
</tr>
<tr>
<td>- A workshop was organized in Enschede by RRD an UT. Its aim was to give a broad overview around the theme healthy ageing seen from different perspectives, with a link to the PERSISLAA project to raise awareness and start a collaboration about the project purpose.</td>
<td></td>
</tr>
<tr>
<td>- One specific accent was on the dissemination of the scientific/clinical results of the project. Overall policy decision makers, health care professionals, and scientists have been the main target groups during this period. The project produced in total 27 published peer-reviewed papers.</td>
<td></td>
</tr>
<tr>
<td>- Social media: The project has accounts on Twitter (@perssilaa) with 109 followers and recent activity from July 2017; Youtube with 8 videos in different languages and 3 subscribers; and linkedin with a group with 23 members.</td>
<td></td>
</tr>
</tbody>
</table>
Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
- The project was always user-centric in its approach. The response from users and stakeholders, medical professionals, but also decision makers was high.
- The service model has been tested in The Netherlands and Italy:
  o A large number of users has been involved in the iterative process of testing, in particular in the Netherlands the project was very successful to achieve participation from local communities (e.g. GP’s), social organisations and end-users themselves.
  o The testing in Italy was i.e. focusing on training of ICT and health literacy of the users, this was also an important barrier for adoption and implementation in the regional health care system.
- An outstanding result was the involvement of users and stakeholders, this resulted in:
  - participation of more than 2,500 users attending the ICT and health literacy activities in the project screening on pre-frailty of about 4,000 older persons
  - a participation of municipalities and ‘churches’, GP’s in NL and It.

PROJECT SUSTAINABILITY

Continued impact from the project today
Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

4
Are the outputs from the project still being used today?
- The exploitation activities are mainly developed in The Netherlands and Italy. The business models included a cost-effectiveness analysis (cost-benefit is an important and often decisive barrier for adoption and implementation of new ICT based services) as well as the clinical evaluation (evidencing the potential of ICT supported services to detect and improve frailty).
- The platform was already scaled up in the Netherlands and has been offered to about 10,000 users (situation Nov 2016), in 4 municipalities.
- The PERSSILAA platform, service model and business model have been validated and a sustainable implementation in the health care system is envisaged, with clear socio-economic benefits for the service providers.
- 13 key exploitable results have been produced.

Supporting Evidence
in the project, of which 1 application is already on the market, 6 applications are envisaged for 2017 and 2 in 2018/2019.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - PERSSILAA refers to activities within European Innovation Partnership on Active and Healthy Aging (EIPAHA).

### BEST PRACTICES

| Best practices that the project has developed | • The solution based on screening, training and monitoring has innovative elements, such as the integration of all the modules in an interoperable ICT platform.  
• The main innovation in the project is the creation of a screening protocol for finding pre-frail and frail elderly people considering their physical, cognitive and nutritional condition.  
• The project has obtained very relevant findings and provided important recommendations towards the generation of European guidelines for the identification, monitoring and management of pre-frailty. These recommendations are structured into health related, ICT-related, and organizational recommendations. |

### FINAL EVALUATION COMMENTS

| Final comments regarding the in-depth evaluation | The solution can have a direct impact on health and quality of life of elderly persons, where an early detection of the problems and prevention is essential.  
The Dutch partners are ahead of the other partners: awareness creation, stakeholder involvement (and users), scaling up and sustainability strategies and activities, and in particular through the unique selling point of Langgezond.nl. Moreover, the cost/investment and revenues have been studied and the plans/steps for the future are clearly defined.  
13 key exploitable results have been produced in the project, of which 1 application is already on the market, 6 applications are envisaged for 2017 and 2 in 2018/2019. As this is a research project, this is quite an achievement. It is also worth noting that the project was nominated for the “Innovation Radar Prize 2016”, which has put the project in the European picture. |

### TOTAL IN-DEPTH EVALUATION SCORE
**16**

### TOTAL SCORE
**26/32**
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>RADIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Robots in assisted living environments: Unobtrusive, efficient, reliable and modular solutions for independent ageing</td>
</tr>
<tr>
<td>Programme</td>
<td>H2020</td>
</tr>
<tr>
<td>Period</td>
<td>04/2015 – 03/2018 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3 805 625</td>
</tr>
<tr>
<td>Project type</td>
<td>Research and Innovation Action</td>
</tr>
<tr>
<td>Project subject (to help categorise the results for the final publication)</td>
<td>X Robotics for Ageing Well</td>
</tr>
<tr>
<td></td>
<td>□ Innovative solutions for independent living</td>
</tr>
<tr>
<td></td>
<td>□ Innovating elderly care</td>
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<td></td>
<td>□ Better connected through integrated care</td>
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<td>□ Fall Prevention</td>
</tr>
<tr>
<td></td>
<td>□ Knowledge sharing and standardisation related to ageing well</td>
</tr>
</tbody>
</table>

## BRIEF DESCRIPTION

**Brief description of the project**

In RADIO, we will develop an integrated smart home/assistant robot system. By using the integrated smart home/assistant robot system as the sensing equipment for health monitoring, we mask the functionality of the sensors rather than the sensors themselves. In this manner, sensors do not need to be discrete and distant or masked and cumbersome to install; they do however need to be perceived as a natural component of the smart home/assistant robot functionalities.

## OBJECTIVES

**Objectives of the project**

The objective of the RADIO project objective is to pursue a novel approach to acceptance and unobtrusiveness: a system where sensing equipment is not discrete but an obvious and accepted part of the user’s daily life.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

| 3 |
| Overall the project has made very good progress and has produced results, completing the stated objectives. All the deliverables and milestones planned in the period have been successfully achieved; deliverables show good quality and clarity with regard to the content presentation. Particular highlights are:
| - The target group, the needs for monitoring this target group and the setup of the pilots have been properly identified and described. |
| - Ethical issues and technical requirements |
have been addressed very properly based on the needs of the pilots. Overall the ethics contribution to this project to be thoughtful, comprehensive and well done. The specific ethics relevant objectives were completed to a suitable standard.

- Extensive literature reviews have been done in order to pave the way to develop and implement methods for identifying ADL and their interplay with the various sensors and parts of the RADIO framework.
- The conceptual architecture of the RADIO system has been defined and based on the assessment items for the pilots, proper technological solutions have been identified and assessed.
- The technical concept for integrating the RADIO system into the SmartHome has been elaborated.
- The technical concept for integration of the RADIO system into the wider ecosystem of services for the medical care institutions and informal care-givers has been developed.
- Two demonstrators based on the RADIO concept and technologies have been set up and will be launched very soon.
- Dissemination and exploitation actions with very high quality have been proposed and implemented.
- The project has been managed well and the quality of the provided reports is good.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
</tr>
</thead>
<tbody>
<tr>
<td>is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU's Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
</tr>
</tbody>
</table>

3

The project may have relevant impact in the area of assistive technologies in particular with regard to the proposed approach related on innovative technical development based on the integration of a robot in a smart assisted home environment. With regard to the innovation, the developed prototype system, both the RADIO robot and its integration into a wider information system for involved stakeholders, may be highly innovative. The results may improve the competitiveness of the involved companies, which have already presented very good relevant initial proposals for exploiting the project results, which should however be further developed.

With regard to the impact towards the end users, the project can provide benefits and improve the quality of life of the elderly. Primary users in particular could benefit from the project by improved quality of life. Still, the role of secondary users should be kept in focus for the...
future. In this regard, attention should also be paid to cost effectiveness and practicability of the system. From this point of view the quality of the work to be conducted with regard to the end user feedback collection will be crucial to ensure the success of the project.

The work carried out follows the proposed activities in the DoA well. The activities for maximizing the impact are already at a fairly developed stage, given the early phase of the project.

| Plans for the use and exploitation of results | 3 |
| Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. |
| The initial plan for the exploitation of results is good and well developed given the early phase of the project. Recommendations (R3) have been given for the future period. |

| TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE | 9 |
| OVERVIEW OF PROJECT IMPACT IN KEY AREAS | |
| Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas: |

| Impact area 1: Improved quality of life | 3 |
| How the project has made an impact regarding Improved quality of life |
| This will be evaluated taking into account the programme objectives\(^{155}\) including Increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions. |
| • Increased quality for life for elderly people and their carers |
| - The project may have relevant impact in the area of assistive technologies in particular with regard to the proposed approach related on innovative technical development based on the integration of a robot in a smart assisted home environment. |
| - The project can provide benefits and improve the quality of life of the elderly. Primary users in particular could benefit from the project by improved quality of life. |
| - The activities for maximizing the impact are already at a fairly developed stage, given the early phase of the project. |
| • Increased personal independence of the elderly |
| - In order to enable a wider deployment of ICT based solutions for Active and Healthy Ageing and thus allowing EU citizens to carry independent lives for longer, RADIO focuses on user acceptance and unobtrusiveness. In this framework an extensive analysis of obtrusiveness dimensions aims at user |

\(^{155}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.

\(^{156}\) http://mafeip.eu/about_study/

\(^{157}\) http://www.linkedpolicies.eu/policymaps/eiponaha/
acceptance and also at developing a system that respects individual preferences and promotes dignity.

- Concepts for the detection of ageing-related risks
  - N/A
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

*This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.*

**Supporting indicators & Evidence**

*The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA*

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry

**How the project has made an impact regarding Market growth and expansion of the EU industry**

*This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an Innovators’ community and ecosystem for AHA solutions.*

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - The technical concept for integration of the RADIO system into the wider ecosystem of services for the medical care institutions and informal care-givers has been developed.
  - With regard to the innovation, the developed prototype system, both the RADIO robot and its integration into a wider information system for involved stakeholders, may be highly innovative.
  - Architectural and methodological work in RADIO provides heterogeneous networking
evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study158 and visualised through the Policy dashboard on EIPonAHA159
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- Solutions for bridging the robotic and the smart home network infrastructures and software stacks. This work aims at integrated, secure, and power-aware data collection, transmission and processing within an internet of fixed sensors and mobile robotic platforms.

- Improved competitiveness of EU industry
  - The results may improve the competitiveness of the involved companies, which have already presented very good relevant initial proposals for exploiting the project results, which should however be further developed.
  - RADIO develops a solution that is both scalable and transferable. Architectural and methodological work in WPS ensures that multiple RADIO Homes and care-givers can be interconnected in a scalable and secure ecosystem, including RADIO Homes integrating different key enabling technologies and addressing different societal needs and health problems.
  - The RADIO communication infrastructure will provide critical advantages compared to any already existing solution based on a single solution, in terms of coverage area, energy consumption as well as traffic capacity. In addition, the design agreed upon during this year assures extensibility to any new and upcoming short range, ultra-low power protocol. Furthermore, the RADIO communication infrastructure can take advantage of a much wider market of sensor modalities and vendors compared to any other solution. This drastically enhances the usefulness, flexibility and adaptability of the proposed infrastructure to diverse use case scenarios; significantly reducing future deployment costs by remaining independent of any specific sensor/technologies provider.

- Strengthened global position of EU industry in service robotics for ageing well
  - N/A

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - Several SMEs are involved in the RADIO consortium. The consortium contains SMEs (ROBOTNIK, S&C, and AVN) and the project will have a positive impact on the competitiveness of these companies. In addition to this, the project could benefit also other European SMEs working and developing innovative solution in the area of technology and infrastructure development for assistive technologies for the elderly.

158 http://mafeip.eu/about_study/
159 http://www.linkedpolicies.eu/policymaps/eiponaha/
elders, as well as related technologies including robotics.

- Creating a longer term RTD agenda
- N/A

- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - Extensive literature reviews have been done in order to pave the way to develop and implement methods for identifying ADL and their interplay with the various sensors and parts of the RADIO framework.
  - From the end user point of view the work conducted with regard to the usability and acceptance of the system is interesting and relevant with regard to the current state of the art in particular considering the work conducted under D2.6 in order to bridge the gap between medical requirements and obtrusiveness: this work is also relevant with regard to the current state of the art.

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE - N/A

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
<thead>
<tr>
<th>Notable efforts with regard to the dissemination of the project results</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
<td></td>
</tr>
<tr>
<td>Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
<td></td>
</tr>
</tbody>
</table>

**Supporting Evidence**

- Dissemination and exploitation actions with very high quality have been proposed and implemented.
  - The project results have been disseminated through the internet and through the project website (<http://www.radio-project.eu/>) as well. On the project website, among 4 publications, 3 are available via open access. Public project deliverables due to the period have been made fully available on the project website as well. Plans presented with regard to future dissemination cloud have been more elaborated. The website is clear and presents the projects results in a very attractive way.
  - Social media: The beneficiaries have used other means of dissemination well, in addition to the traditional ones, in particular the social presence through Facebook (110 likes), Twitter (198 followers and 278 tweets) and Linked-in group (52 members) Has been effective, as the
The project has made very good use of such social media. For example, through the twitter hashtag #radioprojectEU the project has realised very appealing dissemination, as the content disseminated is very clear, up-to-date and well built (by using images, hyperlinks, videos, etc.) and has been also very constant during the project lifetime.

- Project video: Alongside, the video shown during the review is very good, as it visualizes the RADIO concept also to a broader audience, and therefore should be available to the general public and highly promoted.
- The RADIO project has also appeared on the EURONEWS TV show.
- RADIO partners participate to various dissemination events. In dedicated scientific venues RADIO promoted the scientific results of the project so far. Moreover, through various events targeted to the general public, the partners promoted the idea of RADIO environment, the societal challenges that urge the development of Ambient Assisted Living solutions and pursued to familiarize lay people with the idea of automatic medical monitoring.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - With regard to the impact achieved so far, the project has well supported the creation of a user group base with the definition of the requirements, targets, plans and overall organisation of the trials. This has also been applied for the “secondary end-users group”, the caregiver and the relatives, doctors, etc. although the project has so far focused more onto the primary target group and activities regarding the secondary group will mainly be achieved during the next period. Overall, if successful, the impact will be high, also thanks not least to the fact that all participants are committed to a very good and broad strategy of exploitation and dissemination.

**PROJECT SUSTAINABILITY**

**Continued impact from the project today**

Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

**Supporting Evidence**

3. Are the outputs from the project still being used today?
- The RADIO technology has drawn significant interest from companies specialized in smart home and ambient assisted living technologies, which have contributed, in both cases, as sponsors. Among the sponsoring companies are Siemens, ABB, Dialog, CISCO, Embedded Systems and FUJITSU.

- Consortium’s interaction with other related
BEST PRACTICES

Best practices that the project has developed

- RADIO investigated how to bridge the gap between medical requirements and obtrusiveness considering individual preferences. A framework was established that organises the choices that need to be made and assigns obtrusiveness indices to what is technically possible. This will enable making informed decisions about what technical solutions are needed for each given end-user, and also provides insights about which technical advancements will have the most impact.

- RADIO also reviewed sociological, ethical, and gender. Legal aspects of RADIO are also considered in terms of satisfying the guidelines of several directives in term of private data preservation. Moreover, all equipment used at this stage is certified and the whole set-up is approved from ethics committees to be used in all different pilot environments.

FINAL EVALUATION COMMENTS

Final comments regarding the in-depth evaluation

This Project has great potential to have an impact in the development of an integrated smart home and assistant robot system, pursuing a novel approach to user acceptance and unobtrusiveness. The project is still underway, however, the preliminary results are extremely promising. The impact on the market growth and expansion of the EU industry. The project is being effectively disseminated therefore proving the necessary communication of the project results to the target groups.

TOTAL IN-DEPTH EVALUATION SCORE 16
TOTAL SCORE 25/32

IN-DEPTH ANALYSIS EVALUATION SHEET

GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>RAMCIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Robotic Assistant for MCI Patients at home</td>
</tr>
<tr>
<td>Programme</td>
<td>H2020</td>
</tr>
<tr>
<td>Period</td>
<td>01/2015 – 12/2017 (36 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>3 981 178</td>
</tr>
<tr>
<td>Project type</td>
<td>Research and Innovation Action</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
| Project subject (to help categorise the results for the final publication) | ☐ Innovative solutions for independent living  
X Robotics for Ageing Well  
☐ Innovating elderly care  
☐ Better connected through integrated care  
☐ Frailty, early detection and intervention  
☐ Fall Prevention  
☐ Knowledge sharing and standardisation related to ageing well |

**BRIEF DESCRIPTION**

Brief description of the project

RAMCIP will research and develop a novel domestic service robot, with the aim to proactively and discreetly assist older persons, MCI and AD patients in their everyday life. Instead of simply being an obedient servant, the RAMCIP robot will have high-level cognitive functions, driven through advanced human activity and home environment modeling and monitoring, enabling it to optimally decide when and how to assist. The robot will provide subtle physical and cognitive user skills training, by maintaining an optimal balance between physical assistance provision and user stimulation to act.

**OBJECTIVES**

Objectives of the project

Apart from touch-screen, speech and gestural modalities, RAMCIP will incorporate an augmented reality display, as well as an underlying empathic communication channel, allowing it to sense user affect and moderate it. In the context of robotic manipulations, RAMCIP will introduce advanced dexterity in service robots for assisted living environments; the robot will employ a sophisticated anthropomorphic hand, manipulated through novel grasping and dexterity algorithms, being capable to grasp and manipulate a variety of objects in realistic user homes, supporting also safe handover. Safety will be a major research focus. By establishing safe and dextrous manipulations, emphasis will be paid on physical HRI, enabling novel assistance scenarios that will involve physical contact between the user and the robot. Through multi-faceted proactive assistance enabled through all the above, RAMCIP will advance user independency and quality of life of its user. The robot will be evaluated in two pilot sites that will be deployed in two countries.

**OVERALL PROJECT ASSESSMENT**

Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

The project has made good progress in many activities, with exception of WP7 that has encountered delays in platform development, affecting the project timelines. Progress beyond state of the art is achieved mainly in WP3, WP4, WP5 and WP6 and reflected by the number of scientific publications emerging from some of this work. Progress of WP2 in socioeconomic impact assessment is promising. The consortium reports a potential patent application for the RAMCIP hand made by SHADOW. WP3 presents the incorporation of the metric maps and hierarchical object model.
however the practicality of such approaches in responding to a dynamically changing environment is to be explored and effectiveness substantiated. Furthermore, many parameters related to different topics such as fatigue, health, medication, nutrition, obstacles, security, emotion recognition, etc. will be gathered separately thanks to the different types of tracking provided. However, the way each parameter will be integrated in a coherent and relevant care solution, specific to MCI, lasting a couple of hours is not provided. Also, how different topic is prioritised and form a part of a global solution is not clear (for example if fall detection is active before electric appliance tracking?). WP8 presents preliminary work in evaluation of the v1 system with healthy and MCI participants, while future plans are subject to change due to completion of the v2 system in coming months and the requirement to test the v2 system prior to its evaluation. WP9 activities related to publication and dissemination are good. The exploitation work benefits from focus on real exploitable output, that can be identified using surveys and market studies, as well as usefulness evidence.

**OVERVIEW OF PROJECT IMPACT**

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

2

Current impact is via dissemination activities that so far is mainly scientific and demonstration activities and social and web media. Further impact is expected, and solely dependent on potential supportive results obtained from the main project evaluation.

When considering the stage of the project, level of innovation delivered to the market still needs to be proven as current prototype is far from delivering expected services and further, expected features for trial.

The work presented so far does not have any policy impact.

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

2

The preliminary exploitation plan is established and IPR ownership and partner exploitation plans highlighted. However, the exploitation plan currently lacks supportive market studies and surveys to inform and provide focus on the choice of project offerings with most value and most exploitable.

**TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE**

7
## Overview of Project Impact in Key Areas

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life

*This will be evaluated taking into account the programme objectives** including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.*

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA. 

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

*This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.***

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry

How the project has made an impact regarding Market growth

**Score 1-4**

160 The programme objectives were detailed in Section 2.2 of our Technical Offer.
161 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
and expansion of the EU industry
This will be evaluated taking into account
the programme objectives including New
markets for independent and active living
products and services through a set of
open standards and integrated platforms,
Improved competitiveness of EU industry,
Strengthened global position of EU
industry in service robotics for ageing well,
Lead position of SMEs in markets for ICT
innovative products and services for
independent living and active ageing,
Creating a longer term RTD agenda,
Reinforced academic and industrial
knowledge base and excellence in
multidisciplinary research on ICT for AHA,
Facilitating the emergence of an
evaluation culture in ICT for AHA and
Scalable business and financing models.

- New markets for independent and active living
  products and services through a set of open
  standards and integrated platforms
  - N/A
- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in
  service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT
  innovative products and services for independent
  living and active ageing
  - There are chances for exploitation of the
    RAMCIP hand v2, and also further exploitation
    of the RACMIP mobile manipulator robot via
    ACCERA. Both SMEs will benefit from this
    exploitation.
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base
  and excellence in multidisciplinary research on ICT
  for AHA
  - Progress beyond state of the art is achieved
    mainly in WP3, WP4, WP5 and WP6 and
    reflected by the number of scientific
    publications emerging from some of this work.
- Facilitating the emergence of an evaluation culture in
  ICT for AHA and Scalable business and financing
  models.
  o Intramural R&D expenditure
  o R&D personnel and researchers in FTE
  - N/A

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard
to the dissemination of the
project results
Assess whether the dissemination of
project results and information (via the
project website, publications, conferences,
etc.) has been adequate and appropriate.
Indicate whether potential users and other
stakeholders (outside the consortium) are
suitably involved (if applicable).

Supporting Evidence

3
- Assess whether the dissemination of project results
  and information (via the project website,
  publications, conferences, etc.) has been adequate
  and appropriate.
  - WP9 activities related to publication and
    dissemination are good. The exploitation work
    benefits from focus on real exploitable output,
    that can be identified using surveys and market
    studies, as well as usefulness evidence.
  - Current impact is via dissemination activities
    that so far is mainly scientific and
demonstration activities and social and web
    media.
  - The project has participated in scientific open
    access and green open access publications. A
    total of 12 publications (11 conferences and

163 http://mafeip.eu/about_study/
164 http://www.linkedpolicies.eu/policymaps/eiponaha/
one journal paper) are reported for this period. The beneficiaries have participated in 17 events during Y2.

- Web, social media, workshops, flyers, media, trade fair participation and videos are reported.
- The project website ([http://www.ramcip-project.eu/ramcip/](http://www.ramcip-project.eu/ramcip/)) includes all of the deliverables and results from the project including updated information.
- Social media: The project has accounts on Twitter (113 tweets and 105 followers); LinkedIn

Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

- Stakeholder involvement is secured on two sites but the progress has been slow due to delays in delivery of version 2 robot, and its subsequent deployment as a reliable test platform.
- Work in WP8 has progressed regarding the preliminary trials with 18 participants under task 8.1. This has allowed to gather some preliminary data on acceptability and usability of the presented solutions leading to lessons that have been considered under task 8.2 in preparation of the trial protocol as well as regarding improvements to the prototype v1.

### PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>3</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>3</td>
<td>Are the outputs from the project still being used today?</td>
</tr>
<tr>
<td>3</td>
<td>- The consortium reports a potential patent application for the RAMCIP hand made by SHADOW.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The preliminary exploitation plan is established and IPR ownership and partner exploitation plans highlighted. However, the exploitation plan currently lacks supportive market studies and surveys to inform and provide focus on the choice of project offerings with most value and most exploitable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- At this stage, the expected impact of the project is via the scientific publications and further exploitation of the shadow hand robot. The demonstrated RAMCIP robot, v1, did not present a reliable and repeatable demonstration at the review and hence, its potential impact is questionable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Evidence
<table>
<thead>
<tr>
<th>BEST PRACTICES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Best practices that the project has developed</td>
<td>• There are chances for exploitation of the RAMCIP hand v2, and also further exploitation of the RACMIP mobile manipulator robot via ACCERA.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINAL EVALUATION COMMENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Final comments regarding the in-depth evaluation</td>
<td>RAMCIP has managed to make progress beyond the state of the art in different areas. However, the project is ongoing and the real impact of what is being done cannot be seen yet.</td>
</tr>
</tbody>
</table>

| TOTAL IN-DEPTH EVALUATION SCORE | 13 |
| TOTAL SCORE | 20/32 |
## IN-DEPTH ANALYSIS EVALUATION SHEET

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>ROBOT-ERA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Implementation and integration of advanced Robotic systems and intelligent Environments in real scenarios for the ageing population</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
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<tr>
<td>Period</td>
<td>01/2012 – 12/2015 (48 months)</td>
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<tr>
<td>EU Funding contribution</td>
<td>6 470 000</td>
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<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
<tr>
<td><strong>Project subject</strong> (to help categorise the results for the final publication)</td>
<td>X Robotics for Ageing Well</td>
</tr>
<tr>
<td></td>
<td>Innovative solutions for independent living</td>
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<tr>
<td></td>
<td>Innovating elderly care</td>
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<td></td>
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<td>Frailty, early detection and intervention</td>
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<td></td>
<td>Fall Prevention</td>
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<td></td>
<td>Knowledge sharing and standardisation related to ageing well</td>
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</table>

### BRIEF DESCRIPTION

**Brief description of the project**

Robot-Era develops, implements and demonstrates the general feasibility, scientific/technical effectiveness and social/legal plausibility and acceptability of a plurality of complete advanced robotic services, integrated in intelligent environments. These robotic services will actively work in real conditions and cooperate with real people and between them, to favour independent living, improve the quality of life and the efficiency of care for elderly people. The Domestic, Condominium and Outdoor robotic platforms have been developed and the Robot-Era services have been defined. The first experimental loop in Peccioli (Italy) and ängen (Sweden) has started in September 2013. Over 6 months 70 senior citizens will use and test the Robot-Era system in realistic indoor and outdoor environments.

### OBJECTIVES

**Objectives of the project**

The objective of the Robot-Era proposal is to develop, implement and demonstrate the general feasibility, scientific/technical effectiveness and social/legal plausibility and acceptability by end-users of a plurality of complete advanced robotic services, integrated in intelligent environments, which will actively work in real conditions and cooperate with real people and between them to favour independent living, improve the quality of life and the efficiency of care for elderly people.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

3

The Robot-Era project has concluded with all key objectives being successfully completed within the planned timeframe. While there were some deadline deviations and slippage throughout the project’s four-year period, the final conclusion was fully in line with expectations from an
Integrated Project. A 6-month extension was requested but not granted. The project has advanced the state of the art for service robots and intelligent environments and has become a visible showcase for the use of such technologies for elderly care. The contribution is however more through the integration of multiple systems than any one particular breakthrough and there is much that has been learned that should be shared with the wider community. The consortium should be commended on the way that they worked together to deliver a complex and multi-faceted project with some very interesting and novel contributions.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win
Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.

The resulting outcomes of the project are expected to have a lasting significant impact with valuable lessons learned for work on multi-robot integration in ambient intelligent environments. It has become a showcase project for sophisticated multi-robot systems embedded in ambient intelligent environments. The project impact is primarily through publications in scientific conferences and journals, as well as raised awareness of the potential contributions that service robots and intelligent environments can play in elderly care. Impact would be greatly enhanced if project results were used to develop commercial products.

Plans for the use and exploitation of results
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

The Robot-Era project provides the foundation for complex multi-system collaboration and integration scenarios for both the area of assisted living for the elderly and the research community as a whole. It is planned that this will be productively extended via spin-off projects and the new company already registered. The consortium has also been involved in standards activities and engagement with regulatory and advisory bodies.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding

2

- Increased quality for life for elderly people and their
Improved quality of life
This will be evaluated taking into account the programme objectives165 including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

- The development and evaluation of personal services based on these prototype robots and infrastructure has contributed to advancing to the state of the art in personal robotics for ageing and has helped to clarify how such technologies can be used to assist caregivers providing services for the elderly.
- However, converting such progress into measurable impact on services for ageing will require going to market with commercial products based on this progress.

- Increased personal independence of the elderly
  - N/A
- Concepts for the detection of ageing-related risks
  - N/A
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study166 and visualised through the Policy dashboard on EIPonAHA167:
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care
This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry Score 1-4

How the project has made an impact regarding Market growth

2
- Increased efficiency of care systems
  - N/A
- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - N/A
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay

165 The programme objectives were detailed in Section 2.2 of our Technical Offer.
166 http://mafeip.eu/about_study/
167 http://www.linkedpolicies.eu/policymaps/eiponaha/
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

### New markets for independent and active living products and services through a set of open standards and integrated platforms
- The contribution of the project is more through the integration of multiple systems than any one particular breakthrough and there is much that has been learned that should be shared with the wider community.
- The resulting outcomes of the project are expected to have a lasting significant impact with valuable lessons learned for work on multi-robot integration in ambient intelligent environments.
- It has become a showcase project for sophisticated multi-robot systems embedded in ambient intelligent environments.
- The result is a stable and flexible middleware that will be available to other research teams as an open software system. A permanent installation of robots will remain after the project's end in Pecciolli and Angen for the benefit of additional research initiatives.
- The Robot-Era software has been documented, packaged and released as open-source.

### Improved competitiveness of EU Industry
- N/A

### Strengthened global position of EU industry in service robotics for ageing well
- It is planned that this will be productively extended via spin-off projects and the new company already registered.
- This has resulted in the establishment of the CO-ROBOTICS srl. company, which plans to productise the developed solution. Although it is clear that business opportunities exist, it remains unclear whether any actual commercial exploitation of project results will occur, either by project partners or by third parties.

### Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
- A company has been registered to exploit the product (CO-ROBOTICS srl).

### Creating a longer term RTD agenda
- N/A

### Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^{168}\) and visualised through the Policy dashboard on EIPonAHA\(^{169}\):
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

168 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
The project has advanced the state of the art for service robots and intelligent environments and has become a visible showcase for the use of such technologies for elderly care.

- The project impact is primarily through publications in scientific conferences and journals, as well as raised awareness of the potential contributions that service robots and intelligent environments can play in elderly care.

- The consortium completed the second round of experimental trials in both realistic and real settings, which drew on lessons learned from the first round and subsequent further developments and evolution of all three robotic platforms as well as to the ambient intelligence infrastructure. This iterative process for systems design and alignment with real world challenges has proven a valid approach with multi-loop testing and design phases and allowed the robot platforms achieve a considerable degree of maturity. The result is a tried and tested user- and society-centred design solution based on multidisciplinary expertise. This work has therefore helped further progress in robotics research and technology for the development of robotic system integrated in smart environments, with rich sensory-motor skills and high level cognitive and learning competencies for reasoning and planning.

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

<table>
<thead>
<tr>
<th>DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES &amp; STAKEHOLDER PARTICIPATION</th>
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<tbody>
<tr>
<td>Notable efforts with regard to the dissemination of the project results</td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
</tbody>
</table>

Supporting Evidence

- Dissemination and training activities remained a strong point of the consortium throughout the project. As with previous years, a sustained program of public demonstrations was carried out with:
  - A detailed project website with the last news item from November 2015.
  - Social Media: A Facebook page with 1,534 likes (last publication March
2016); a Youtube Channel with 88 subscribers; a Linkedin group with 137 members.
  o Demonstrations and interviews on television and radio
  o Press releases, newsletters
  o A number of demonstrations at exhibitions and conferences.
  o A summer school for doctoral students and young researchers was organised with 64 publications including 19 appearing in peer-reviewed scientific journals.
  o The project branding is also coherent and well done throughout the project.
  - It is clear that these activities have accelerated as the project matured and the level of media coverage has continued to grow significantly during the project. Overall a very strong effort has been made in this area with excellent results.

- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - The consortium has also been involved in standards activities and engagement with regulatory and advisory bodies. The partners became more active in the standards and certification community by participating in an ISO working group on standards on personal care robot safety.
  - The number of participants used in the test scenarios is improved with in all 155 users involved.
  - A small study with 21 participants was conducted in which participants were shown films and asked questions. The results from this study indicate that technologies such as those developed in the project should be acceptable by elderly users.
  - A total of 155 users tested in Robot-Era system, which may be one of the largest testing groups in the world for such extended multi-scenario testing environments. Key findings from First Experimental Loop were gathered and analysed and fed into the design process before the Second Experimental Loop.

PROJECT SUSTAINABILITY

Continued impact from the project today
Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).

- Robot-Era has provided the groundwork for a newly funded regional project with Piaggio in Italy.
- In addition, three permanent infrastructures
### Supporting Evidence

- have been developed during the project, including the RIF in Peccioli, the living lab in Angen and site in the “San Lorenzo” end-user organization. These are planned to be used beyond the Robot-Era project itself to allow research to continue.
  - Despite efforts by the consortium to document the commercial potential and to develop paths to market, actual plans for commercial exploitation of project technologies are not currently evident. Nonetheless, the potential for commercial deployment of the project results remains, and consortium members should be encouraged to pursue such opportunities.

### BEST PRACTICES

| Best practices that the project has developed | • A showcase project for sophisticated multi-robot systems embedded in ambient intelligent environments. |

### FINAL EVALUATION COMMENTS

| Final comments regarding the in-depth evaluation | The consortium has successfully developed and performed experiments with prototype robots for indoor personal domestic spaces (Doro), public indoor spaces (Coro) and outdoor tasks (Oro) as well as an ambient intelligence infrastructure (PIES). The main contribution of the project is through the integration of multiple systems than any one particular breakthrough and there is much that has been learned that should be shared with the wider community. The project has advanced the state of the art for service robots and intelligent environments and has become a visible showcase for the use of such technologies for elderly care. |

### TOTAL IN-DEPTH EVALUATION SCORE

| 15 |

### TOTAL SCORE

| 24/32 |
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>SILVER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Supporting Independent LiVing for the Elderly through Robotics</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>FP7</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>01/2012 – 08/2016 (56 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>€2,609,529</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Collaborative Project</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication):**
- X Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**
SILVER searches for new robotics based technologies to assist elderly people in their everyday lives. Their purpose is to help older people to continue independent living at home even if they have physical or cognitive disabilities. A unique aspect of SILVER is that it uses a Pre-Commercial Procurement (PCP) process to identify and select the new technologies and solutions. In Europe, the PCP has so far been an under-utilized tool for promoting innovation. One of the aims of this project is to demonstrate the effectiveness of the PCP approach to address societal and governmental needs.

## OBJECTIVES

**Objectives of the project**
The SILVER project has two concrete primary objectives. The first is to establish and validate a Pre-Commercial Procurement (PCP) process in the participating countries. The second is to use that process to identify new technologies and services to address the challenge of Supporting the Independent living of the Elderly through Robotics.

## OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

The SILVER project is the first of its kind. Therefore, SILVER can be considered as the pioneer example of a PCP process at EU scale.

Overall, the project has achieved its main objectives of a practical implementation and assessment of a transnational PCP process. One of the main project results and contribution to the wider community is the guidelines and templates developed for the PCP process itself, as well as supporting information for contractors (aiming at provision of assistance throughout the...
The project has used the developed PCP process to identify new technologies and services to support the independent living of the elderly through robotics.

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>3</th>
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<tbody>
<tr>
<td><strong>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy:</strong> 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.</td>
<td>Currently the project presents a status that can be considered as the pioneer example (including several important “lessons learnt”) of a PCP performed at EU scale. On one hand, as the documents produced have been used in most other EU PCPs, the impact towards PCP process standardisation is evident. On the other hand, as some project partners indicate that the size and coordination demands might discourage future adoptions, there is an indication that there is still room for improvement. It will probably in any case require both will and competence to follow the next steps. Therefore - under appropriate conditions - one expected impact for the project is largely to produce a “best practice guide” for trans-national PCPs, based on the practical experience of the project. In this it has reached the first stage and produced valuable information on the process and templates for future use. Impact will depend now on future take-up, which depends largely on promotion by the partners and the EC. If the approach is widely adopted, then the impact could be significant both at application level (to develop innovations which without PCP support might not appear), and at process level for PCPs. There could potentially be a specific impact in the health/assistive technology sector if/when the contractor completes and fully commercially exploits the product.</td>
</tr>
</tbody>
</table>

### Plans for the use and exploitation of results

**Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.**

The project results have been already used at two levels: within the project partners (i.e. the lessons learned, process and templates), and other actors not directly involved (i.e. new PCPs using project results). The project is acting as a best practice example and is creating awareness of the PCP model, as well as the solution that reached phase 3. The outcome of the PCP would ideally be a commercial procurement, as the result of Phase 3 is already there. While the project partners declare interest to follow up the developments of the prototype and to consider that move at a later stage, this is not secure and there are
doubts if this will happen and to what extent.

<table>
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<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>9</th>
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OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

**3 Increased quality for life for elderly people and their carers**

- ‘The project aimed to identify new technologies capable of assisting elderly people in their everyday lives, and also develop tools and support awareness within Europe of the PCP process,’ explains programme manager Jon Hazell.
- On paper, LEA is a robotic, mobile personal assistant designed to enable the elderly to live independently at home. In practice, it is a game-changer. From helping with daily routines and housekeeping to serving as a personal trainer or even dance partner, the robotic stroller/walker system is having a significant impact on those with mobility or cognitive disabilities.

- **Increased personal independence of the elderly**

- The project has used the developed PCP process to identify new technologies and services to support the independent living of the elderly through robotics.
- ‘We believed that with the use of robotics and related technologies, the elderly can continue independent living at home, even if they have physical or cognitive disabilities.’
- ‘LEA is stable – you cannot fall, whereas my normal walker is light and you can easily fall,’ says once satisfied user. ‘I was afraid because I have fallen so often, but LEA gives me the confidence to move on my own.’ But even in the case of a fall, the robot’s fall detection system will automatically call for help.
- Other functionalities include autonomous navigation localised to a user’s home and voice guidance to warn the user about obstacles and how to avoid them. LEA is even capable of coming to the user when summoned. The system provides reminders of daily tasks, along with video conferencing so users can easily chat with friends and family. The system is easily converted back and forth from a walker to a

170 The programme objectives were detailed in Section 2.2 of our Technical Offer.
171 http://mafeip.eu/about_study/
172 http://www.linkedpolicies.eu/policymaps/eiponaha/
### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

#### How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry.

#### 4.

- **New markets for independent and active living products and services through a set of open standards and integrated platforms**
  - N/A
- **Improved competitiveness of EU industry**
Improved competitiveness of EU industry, Stronger position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer-term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

- The SILVER project has supported the uptake of new technologies and broaden the knowledge in the area of care robotics. And finally, the SILVER project has created a highly professional network within the field of public procurement that open ups new opportunities in both national and international contexts.

- **Strengthened global position of EU industry in service robotics for ageing well**

  - ‘In Europe, PCP has so far been an under-utilised tool for promoting innovation,’ says Hazell. ‘One of the aims of the project was to demonstrate the effectiveness of this approach to address such societal and governmental needs as identifying new technologies and services to support the independent living of the elderly.’

  - LEA is already attracting attention, with RCS having won several innovation contests, including the SHELL WIRE 2015 and RABOBANK Innovation awards. It’s also winning over investors, recently securing over EUR 5 million in additional funding. With this solid foundation in place, certification is expected in the fourth quarter of 2016, with mass market production beginning in the second quarter of 2017.

  - The contractor, Robot Care Systems, encourages other SMEs to enter PreCommercial Procurement projects as they provide a good opportunity for developing new solutions and even starting up a new company. Furthermore, by participating in EU funded projects, SMEs are able to gain credibility which can be helpful, for example, in getting additional funding. Robot Care Systems won several innovation awards in 2015 which helped them move forward in the further development of LEA Care robot.

  - “To the small and mid-sized companies that do not yet have financing, PCP is a perfect way to create a sustainable company that can distribute products all over the world,” summarizes Maja Rudinac, CEO for Robot Care Systems, the main benefits from the SME’s point of view.

  - According to the verbal and written feedback given by the participants, all these events have provided a wider understanding over the Pre-Commercial Procurement tool in general as well as shared practical tips for the future exercises. Especially the SMEs and other PCP/PPI project have found the SILVER events useful in this respect. Furthermore, the presentations by the contractor, Robot Care Systems, and

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

173 http://mafeip.eu/about_study/
174 http://www.linkedpolicies.eu/policymaps/eiponaha/
demonstrations of LEA Care robot have been found very inspirational by the participants.

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - As the documents produced have been used in most other EU PCPs, the impact towards PCP process standardisation is evident.
  - The SILVER project has given the opportunity for better understanding of the innovation process within the healthcare technology field, cross organizational and transnational innovation, user-driven product development as well as practical management of complex and explorative projects.
  - The project has provided partners with a set of Pre-Commercial Procurement specific document and reporting templates together with questionnaires for real life testing.
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

Notable efforts with regard to the dissemination of the project results
Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

- The SILVER consortium partners have been active in promoting the SILVER project as well as its innovative approach in their respective countries as well as on European level. Furthermore, European Union has promoted the SILVER project – and especially the public documents – for other PCP and PPI projects.
- The Members of the SILVER Consortium have been actively disseminating the results of the SILVER project as well as the Pre-Commercial Procurement tool by giving presentations in national as well as in international seminars:
  - AAL Forum, and other events
  - EAFIP (European Assistance for Innovative Procurement) hosted workshops.
During the spring and summer of 2016, the SILVER Consortium delivered two SILVER workshops for European level decision-makers, six national SILVER workshops organised by the procurers as well as end-of-project conference and workshop in relation to the end-of-project conference.

The Silver project participated at the 2016 eHealth week in Amsterdam and hosted several local workshops/seminars in order to highlight the results of the SILVER project and the learnings gained.

- The SILVER website (www.silverpcp.eu) is the main communication channel of the SILVER project. It shares the latest news and events and it has been regularly updated to communicate the recent developments within the SILVER project. It also acts as a communication channel between the SILVER consortium and the members of the target audiences. All the public deliverable documents as well as communication materials are available for downloads via the SILVER website. The SILVER website will be open until the end of the year 2017.

- Social media: The Project has a twitter account with 89 followers and 79 tweets. The last activity is from September 2016; The project also has a LinkedIn group with 7 members; The project also has a subscribable newsletter on the website.

- The project also produced a wide range of communication materials such as newsletters and press releases and videos.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**

- A large panel of external experts was used for assessment of the proposals. These assessors had a significant impact on the final ranking of proposals and therefore the selection of assessors should be done carefully. Furthermore, it is vitally important that the experts chosen for the assessment panel have a firm motivation as well as the relevant competence and knowledge.

**PROJECT SUSTAINABILITY**

<p>| Continued impact from the project today | 4 |
| Are the outputs and results from the project still being used today? | Are the outputs from the project still being used today? |
| Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and | - The project results have been already used at two levels: within the project partners (i.e. the lessons learned, process and templates), and |</p>
<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
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<td>other actors not directly involved (i.e. new PCPs using project results). The project is acting as a best practice example and is creating awareness of the PCP model, as well as the solution that reached phase 3.</td>
</tr>
<tr>
<td>- Some procuring authorities will also look to further exploit the results of Project SILVER through networks such as the European Connected Health Alliance (<a href="http://www.echalliance.com">www.echalliance.com</a>), which has a large connector platform with which to share the lessons from Project SILVER as well as bring the contractor to a wider market.</td>
</tr>
<tr>
<td>- Some partners further confirm that the learnings have already been used in other projects and as experience influencing the partners’ work with innovative procurement and innovation projects in general.</td>
</tr>
<tr>
<td>- According to the project Coordinator: contractor has continued development of the product, gained medical device certification and is now developing production models and evaluating with organisations in the Netherlands. Once complete the next steps will be to engage with other countries.</td>
</tr>
<tr>
<td>• Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</td>
</tr>
<tr>
<td>- Partners have been able to apply the learnings gained in the SILVER project when participating in a related PCP/PPI proposals and projects. For example, SILVER partners have been involved in the following projects: SELECT for Cities, CHARM, THALEA, Preforma and ENIGMA.</td>
</tr>
<tr>
<td>- The SILVER Consortium has identified several networks that are beneficial for disseminating the SILVER project results and thus increasing the impact. These include, for example, the European Network of Living Labs (ENoLL), Eurocities, the European Network of Social Authorities (ENSA) and Ambient Assisted Living Network (AAL). The SILVER Consortium has co-operated with these networks in multiple ways during the project life span and will continue this work after the project closure. Furthermore, the SILVER Consortium has also co-operated actively with the EAFIT and other actors promoting better innovative public procurement, such as Public Procurement Network.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEST PRACTICES</th>
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<tbody>
<tr>
<td>Best practices that the project has developed</td>
</tr>
<tr>
<td>• SILVER can be considered as the pioneer example of a PCP process at EU scale.</td>
</tr>
</tbody>
</table>
- One of the main project results and contribution to the wider community is the guidelines and templates developed for the PCP process itself, as well as supporting information for contractors (aiming at provision of assistance throughout the whole process).
- Robot Care Systems’ Lean Elderly Assistant (LEA) ultimately being awarded a contract to test the prototype with end users in five countries (the United Kingdom, Finland, Sweden, the Netherlands and Denmark).

**FINAL EVALUATION COMMENTS**

<table>
<thead>
<tr>
<th>Final comments regarding the in-depth evaluation</th>
<th>This Project is a pioneer in establishing the first transnational pre-commercial procurement in Europe and providing key reference documents to that effect. Furthermore, the innovative LEA solution that was adopted through the process will also have a direct impact on the quality of older people’s lives in the future. The project’s impact on innovative SMEs should also not be overlooked and the efforts regarding dissemination of the PCP documents and procedures are commendable.</th>
</tr>
</thead>
</table>

**TOTAL IN-DEPTH EVALUATION SCORE**  
17

**TOTAL SCORE**  
26/32
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>SmartCare</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Joining up ICT and service processes for quality integrated care in Europe</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>03/2013 – 08/2016 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 144 559</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

**Project subject (to help categorise the results for the final publication)**

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

Against the background of the European Innovation Partnership on Active & Healthy Ageing, SmartCare aims to define a common set of standard functional specifications for an open ICT platform enabling the delivery of integrated care to older European citizens. A total of 24 regions and their key stakeholders will define a comprehensive set of integration building blocks around the challenges of data-sharing, coordination and communication. Ten regions will then pilot integrated health & social services to combat a range of threats to independent living commonly faced by older people while the other will prepare for early adoption. In a rigorous evaluation approach, the pilot will produce and document much needed evidence on the impact of integrated care, developing a common framework suitable for other regions in Europe. Guidelines and specifications for procuring, organising and implementing the service building blocks will be produced. The organisational and legal ramifications of integrated care will be analysed to support long term sustainability and upscaling of the services.

### OBJECTIVES

**Objectives of the project**

SmartCare services will provide full support to cooperative delivery of care, integrated with self-care and across organisational silos, including essential coordination tools such as shared data access, care pathway design and execution as well as real time communication support to care teams and multi-organisation access to home platforms. The services build on advanced ICT already deployed in the pilot regions including high penetrations of telecare and telemonitoring home platforms.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives

2

At this final stage, the Consortium has attained some of its objectives and has helped to transfer
347

and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

knowledge to more recent projects, such as CareWell and BeyondSilos. Multidimensional evidence on impacts of integrated care on all stakeholders concerned through common evaluation approach transferable to follower-regions across Europe was not generated. More attention should have gone to the dynamics of an Integrated Care service. Service transferability is not possible as the project remains a fragmented set of subprojects, gained results cannot be generalised and transferred to other countries/regions/areas. The viability to link SmartCare with two other similar projects (Care Well and Beyond Silos) and undertake more ample evaluations or even cross-project comparison, has been assessed at methodological level. The validation of data is in process and the team is aware of the existing potential for further analysis of the whole database – in cooperation with the two projects that are still running, although these projects come to an end soon. A common policy for publication of results has been agreed by the representatives of the three projects.

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

3

At pilot-site level, in most cases the Integrated care was positively adopted and included into the system of delivery of health and social care, somewhere even supported by local financing schemes. The project has increased at local level the awareness, has helped to motivate the professionals and the patients, has trained professionals and patients, and has ultimately convinced policymakers that integrated care is a promising path for many regions in the EU. More concrete outcomes may be obtained thanks to the cooperation with the two other projects, with the potential to persuade the policy-makers on different levels about the positive new trend brought by Integrative care supported by ICT.

The project has a limited impact at cross-site level, due to the unavailability of comparable and robust datasets. It was shaped to have a significant social and economic effect not only on regions where implemented but also at European level. The scientific, technical, commercial and social impact at project level and beyond is scarce since transferability of the knowledge from one side to another side is limited.

Plans for the use and exploitation of results

2

In all nine sites, a cost-benefit analysis has been undertaken for the key stakeholders, resulting
appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date. predominantly in negative outcomes for at least one stakeholder, if not more. No region has implemented an open ICT platform. The procurement guidelines are a section within the guidelines for deployment, with many questions and tips, but no concrete criteria to help public purchasers design and deploy such a service in their region. Unfortunately, these results are going to have just a limited importance for further usage. Already mentioned obstacle is to be seen in different conditions in all sites that can only hardly result into the model to be generalised.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>7</th>
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</table>

<table>
<thead>
<tr>
<th>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</th>
</tr>
</thead>
</table>

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

### Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
<th>2</th>
</tr>
</thead>
</table>

This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

- Increased quality for life for elderly people and their carers
  - Multidimensional evidence on impacts of integrated care on all stakeholders concerned through common evaluation approach transferable to follower-regions across Europe was not generated. More attention should have gone to the dynamics of an Integrated Care service.
  - The project has increased at local level the awareness, has helped to motivate the professionals and the patients, has trained professionals and patients, and has ultimately convinced policymakers that integrated care is a promising path for many regions in the EU.
  - The project has a limited impact at cross-site level, due to the unavailability of comparable and robust datasets. It was shaped to have a significant social and economic effect not only on regions where implemented but also at European level.
  - The scientific, technical, commercial and social impact at project level and beyond is scarce since transferability of the knowledge from one side to another side is limited.
  - At European level, the impact of the project remains weak, both at the level of the QALY gained by the service or the cost-effectiveness of the new care model. SmartCare could not proof that Integrated care improves the quality

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
</table>

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth
of life of older patients with chronic diseases. Interpretations about the impact of the proposed Integrated Care approach – such as reduced admissions - are sometimes very doubtful.

- The impact is to be seen in the feedback of end users and their care givers as well. Their involvement and positive adoption of the system reported on all pilot sites is a good starting point for PR activities promoting Integrated care.

- Increased personal independence of the elderly
  - N/A
- Concepts for the detection of ageing-related risks
  - N/A
- The Reduction of admissions and days spent in care institutions.
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry.

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - No region has implemented an open ICT platform.
- Improved competitiveness of EU industry
Strengthened global position of EU industry in service robotics for ageing well
Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
Creating a longer term RTD agenda
Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

- N/A

- Strengthened global position of EU industry in service robotics for ageing well
  - The impact seems to be significant for individual regions where implemented, as it started to perform a new kind of services which are in some cases supported by various local stakeholders. The strengthening of contacts with local and regional authorities recommended in the last review report has been followed in most of the sites. This approach guarantees that the introduced Integrated care services will not stop in most of the regions, and in some cases, they may even be further developed.

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A

- Creating a longer term RTD agenda
  - N/A

- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - The research component of the project has been rather weak, with very few scientific publications. During the review, the promotion of further research, e.g. via PhD theses, has been suggested.

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

Notable efforts with regard to the dissemination of the project results
Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
- External dissemination activities have used besides other tools (websites, videos, presentations on conferences, TV broadcasts) also the social networks.
- The project website

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

Supporting Evidence

3

178 http://mafeip.eu/about_study/
179 http://www.linkedpolicies.eu/policymaps/eiponaha/
(http://pilotsmartcare.eu/home/) provides detailed information about the project activities and results.

- Social media: The reported 500 followers on Twitter seem to be rather poor result of this activity.
- In the last period of the project realisation the dissemination activities were appropriate using many different means of project activities promotion such as: web-sites of the project and of individual partners, project brochure, presentation on conferences and workshops, videos, broadcasts on TV and finally also preparation of two scientific papers to be published in the impact journals.
- Deliverable D9.4A describes in detail the dissemination activities for the whole project period. They are substantive and manifold, address local and supra-local channels, and work a lot on the multiplier effect of EU associations, such as EIP-Aha, EHTEL or EHMA.
- The production of white papers and scientific papers is weak, especially under open access, one of the project’s key claims. This is why the continuation of the project beyond the extended timeline of end of August 2016 should be harnessed, establishing synergies with other related EC projects, with the aim to gather more results and publish them in scientific journals.
- Knowledge exchange seminars with the committed regions have helped to disseminate some results across more regions, such as the committed regions, although the information on the project web site is not complete for all regions (see e.g. this link: http://pilotsmartcare.eu/smartcare-regions/timis-ro.html).
- A common publication policy has been defined among SmartCare, BeyondSilos and CareWell.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - The recruitment of patients and informal carers turned out to be a more difficult task, maybe because of overload and change of habits, also due to fear to use technology and be held responsible to manage your health, or the sensation of too much care. This is why most sites launched information campaigns. Another important factor influencing patient recruitment is the view of the professionals. They may be reluctant to participate, which is why they need to be well briefed prior to the patient recruitment stage.
  - Three Advisory Boards assessed the impact of the project at user and policy level. The CRB
proved that there is an extensive interest in some other regions to follow the ICT based Integrated care and introduce new approaches at their territory.

<table>
<thead>
<tr>
<th>PROJECT SUSTAINABILITY</th>
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### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
</table>

- **Are the outputs from the project still being used today?**
  - In all nine sites, a cost-benefit analysis has been undertaken for the key stakeholders, resulting predominantly in negative outcomes for at least one stakeholder, if not more.
  - Various (although not all) Committed Regions have completed a template on how the SmartCare pathway could be developed in their region, as described in the DoW. The impact of this selfassessment and knowledge transfer exercise can be reinforced in other EC projects with synergies with SmartCare.
  - No global result for Integrated Care could be offered. Although all nine regions have undersigned a commitment to continue with the implementation of their integrated care services after project finalisation, it is not fully clear if such work will be continued, and how.
  - The expected commercial potential has not been addressed. There was no business plan elaborated highlighting the economic impact of the solution.
  - Each of the nine deployment regions has also assessed its involvement beyond SmartCare project duration, with the following outcomes:
    - **FVG**: regional minister approved a strategy, Interreg project with Austria, led by FVG
    - **Scotland**: HC and SC already pooled budgets, technology as enabler, falls indicator effect rather than a diagnosis, but good to bring together both communities. Tools will be continued via LIU platform, 34% people being motivated to do daily tasks. Digital apps, such as step counters, integrated into EHR. Change management, ASSIST and MAST are being used. Co-production with users, to define a personalised falls risk and prevention plan, has been promoted.
    - **RSD**: how (not whether) do we want to have IC? Extra funding from the govt
    - **Aragon / Salud**: the service will continue, more agreements with social care providers being signed, home care included, new services to cover also rehabilitation of mental health
disorders. Aragon is drafting the IC strategy for chronic people.

- Attica: 3 municipalities, MoU between them, the political commitment continues but local govt has no budget for social care.

- Kraljevo: The service will continue, they use SmartCare portal to exchange info. Mobile app still being used to communicate with GPs. Mayor may come to BRX event in December.

- NL: The service will continue the services in several ways, including RCT, hospitals will start e-health implementation for remote patient management and prevention for people at risk.

- Estonia: Tallinn city will continue, e-health strategy

- Finland: services already part of normal services, available after project termination, including home care units. Same organisation is delivering HC and SC.

### Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)

- Consortium has attained some of its objectives and has helped to transfer knowledge to more recent projects, such as CareWell and BeyondSilos.

- The viability to link SmartCare with two other similar projects (Care Well and Beyond Silos) and undertake more ample evaluations or even cross-project comparison, has been assessed at methodological level. The validation of data is in process and the team is aware of the existing potential for further analysis of the whole database – in cooperation with the two projects that are still running, although these projects come to an end soon. A common policy for publication of results has been agreed by the representatives of the three projects.

- SmartCare has collaborated with the following initiatives:
  - Synergy projects Beyond Silos and Care Well. The links between SmartCare, BeyondSilos, CareWell have been promoted via WP7 and commonalities as well as key differences among the three projects have been assessed. Collaboration with BeyondSilos and CareWell continued and a high level of synergy...
has been achieved. In this respect, a definite asset is the fact that members of SmartCare, BeyondSilos and CareWell share the same management and evaluation teams. Special care has been put into spreading the knowledge acquired in SmartCare to the deployment sites in CareWell and BeyondSilos creating thus a sound collaboration framework among all three projects. As part of the Synergy activities, mentoring sessions have been organised in which partners of the three projects were involved. A common web site has been created (www.integrated-ecare.eu), enhancing the sharing of know-how on integrated care at operational level.

- The AIP AHA policy. Collaboration with the EIP AHA initiative in general and especially with the B3 Action Group - with IFIC as promoter of this Action since some months - has been equally strengthened and representatives of SmartCare have attended and actively participated in all the events organised by the EIP AHA. Some of the SmartCare Committed Regions which are pilot sites in both BeyondSilos and CareWell have participated in the Maturity Model exercise carried out under the auspices of B3 Action Group coordinator.

BEST PRACTICES

Best practices that the project has developed

- SmartCare has produced a series of results and methods, such as the following ones:
  - Integration matrix
  - ECCis client impact survey
  - Predictive modelling use cases
  - ASSIST framework use cases
  - MAST-based evaluation and revision of MAST framework
  - Deployment guidelines

- Major outcome at final project stage are the Deployment guidelines, a different outcome from the foreseen procurement guidelines described in the DoW, but still intended to offer knowledge based on the practical experience of nine deployments. The guidelines, with 202 key questions and 140 tips, offer guided questions and tips and include the following content / methods:
  - ICT procurement (with the support from Continua alliance)
  - EIP maturity model
| **FINAL EVALUATION COMMENTS** | **Organised alongside different phases, from start to implementation and evaluation**  
- Regional perspective, valid for any region  
- Practical tool, to be used as check list  
- Strategic vision, multi-level analysis  
- Multiplier strategy |

**Final comments regarding the in-depth evaluation**

Whilst the Smart Care project attained most of its objectives and helped transfer knowledge to more recent projects such as CareWell and BeyondSilos, it failed to provide multidimensional evidence on the impacts of integrated care on all stakeholders concerned through a transferable common evaluation approach. More attention should have gone to the dynamics of an Integrated Care service.

**TOTAL IN-DEPTH EVALUATION SCORE**  

12

**TOTAL SCORE**  

19/32
<table>
<thead>
<tr>
<th>GENERAL PROJECT INFORMATION</th>
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<tbody>
<tr>
<td><strong>Acronym</strong></td>
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<td><strong>Project Name</strong></td>
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<td><strong>Programme</strong></td>
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<td><strong>Period</strong></td>
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<td><strong>EU Funding contribution</strong></td>
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<td><strong>Project type</strong></td>
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<tr>
<td><strong>Project subject (to help categorise the results for the final publication)</strong></td>
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<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION</th>
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<tr>
<td><strong>Brief description of the project</strong></td>
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<tr>
<th>OBJECTIVES</th>
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<tbody>
<tr>
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<td><strong>Overall assessment according to review documentation.</strong></td>
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<tr>
<td>Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.</td>
</tr>
</tbody>
</table>
cost items but also feedback from the user evaluations are discussed or presented in sufficient detail. Milestone M4.3 “Adjusted Prototype” has been achieved.

The trials at the different sites throughout Europe – which started in 2009 - were finalised in November 2010 (on site at the partner GKOSICE). The methodology and results per site are described in detail in the D4.1. A full data analysis was presented in D4.4 with details given in D4.1 (“Detailed reports on the tests”). Milestone M4.2 “Validation” has been achieved.

Positively, the trials – a well randomised controlled cross-over study - were very well prepared and successfully organised and the project succeeded to recruit a substantial number of test persons.

The data analysis to verify the evidence of the SMILING system has been completed. Although there is as yet no validated scientific proof of the clinical efficacy of the Smiling system, the experience gained will be very useful for the further evaluation and improvement of the system.

**OVERVIEW OF PROJECT IMPACT**

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

3

The project has produced an innovative mechatronic system that can be considered as state-of-the art in the field of rehabilitation, as it is based on the scientific idea on the Chaos theory and Dynamic system theory. This idea was used to develop the Smiling shoe as medical devices potentially to be exploited and potentially to put on the market as rehabilitation system. Developing the SMILING system presented enormous challenges, which have been met successfully by the partners despite some major difficulties and delays that have been tackled appropriately.

In conclusion and although successful in delivering a prototype and achieving the technical and formal goals of the project, the project was not able to reach the ultimate objective, namely to develop a clinically validated system for training to be spread in rehabilitation and health care to support of the rehabilitation process in ageing and the prevention of falls. This does not devalue the essential part of the research, as the project has delivered a set of fully functional prototypes that have undergone clinical validation. The lessons learned through the scientific work that has been carried out, is also considered as a major product of the project, upon which the future activities can be based.
The final exploitation plan is credible, the product portfolio and potential market analysis and routes to reach these markets are realistic. However, a commercial product (“near to market” as stated in the first version of the DoW) can only be considered on the long term. It is evident that at the time being the system developed is more related to rehabilitation and clinical research applications, and less to individuals for every day use as a stand-alone device (e.g. under a rehabilitation protocol).

Plans for the use and exploitation of results
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

The project has presented during the review and in D5.6 the potential exploitation of the integrated system or components of the system in research market, hospital/clinics market, home/fitness market and identified 4 individual exploitable results (research systems, virtual reality system, hospital falls prevention system, gait/motion analysis system). Also, the consortium presented future plans and plans activities on exploitation as well as the prerequisites in achieving exploitation. Furthermore, the consortium has concluded a document titled “Smiling agreement” in which individual exploitable system components and ownerships are listed along with rules for the IPRs beyond the duration of the project. In relation to IPRs, see comments on WP5 in section 2.b, and Recommendation R4.

The exploitation plans presented are realistic and consider appropriate actions for potential exploitation. The review team sees that there is a strong potential of exploitation of the project results in the research market as this have been defined in the consortium in the relevant deliverable and therefore strongly encourages the consortium to proceed with that.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE
9

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life
This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly. Concepts for

2

- Increased quality for life for elderly people and their carers
  - N/A
- Increased personal independence of the elderly
  - N/A

180 The programme objectives were detailed in Section 2.2 of our Technical Offer.
the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^1\) and visualised through the Policy dashboard on EIPonAHA\(^2\).
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

### Impact area 2: Increased efficiency of health and long-term care

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Increased efficiency of health and long-term care</th>
</tr>
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<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.</td>
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**Supporting indicators & Evidence**
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

2

- Increased efficiency of care systems
  - N/A
- Creation of ICT products and services for ageing well
  - N/A
- Facilitate wide implementation of sustainable innovation services
  - The project has produced an innovative mechatronic system that can be considered as state-of-the-art in the field of rehabilitation, as it is based on the scientific idea on the Chaos theory and Dynamic system theory.
- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay
  - The project was not able to reach the ultimate objective, namely to develop a clinically validated system for training to be spread in rehabilitation and health care to support of the rehabilitation process in ageing and the prevention of falls.

### Impact area 3: Market growth and expansion of the EU industry  Score 1-4

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Market growth and expansion of the EU industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing.</td>
</tr>
</tbody>
</table>

2

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - N/A
- Improved competitiveness of EU industry
  - N/A
- Strengthened global position of EU industry in service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative

---

1. http://mafeip.eu/about_study/
### Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

- **Creating a longer term RTD agenda**
  - N/A
- **Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA**
  - The data analysis to verify the evidence of the SMILING system has been completed. Although there is as yet no validated scientific proof of the clinical efficacy of the Smiling system, the experience gained will be very useful for the further evaluation and improvement of the system.
  - The project has delivered a set of fully functional prototypes that have undergone clinical validation. The lessons learned through the scientific work that has been carried out, is also considered as a major product of the project, upon which the future activities can be based.
- **Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.**
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^\text{183}\) and visualised through the Policy dashboard on EIPonAHA\(^\text{184}\).

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intramural R&amp;D expenditure</td>
</tr>
<tr>
<td>R&amp;D personnel and researchers in FTE</td>
</tr>
</tbody>
</table>

#### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

<table>
<thead>
<tr>
<th>Notable efforts with regard to the dissemination of the project results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>The Smiling system was presented and demonstrated in different European events and conferences, and had good response from the general public and professionals.</td>
</tr>
<tr>
<td>The information on the website has been constantly updated. Demonstration activities have been numerous, e.g. the SMILING PRO shoes were successfully presented at the ICT 2010 Conference in Brussels Expo - September 2010. During this event, the project has got good attention from the public and media. Highlight of the dissemination activities have been the Euronews-Futuris cover on the project and the note on ICT Results. The project dissemination activities achieved visibility and collected interest in several occasions (e.g.</td>
</tr>
</tbody>
</table>

#### Supporting Evidence

183 http://mafeip.eu/about_study/
184 http://www.linkedpolicies.eu/policymaps/eipona
ICABB 2010, TSR, presentations in China etc.).
- The project website is still available (http://www.smilingproject.eu/) containing information and news about the project. The last news item was from December 2010. It also contains a full repository of information on the project including the main deliverables.
- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).
  - Positively, the trials – a well randomised controlled cross-over study - were very well prepared and successfully organised and the project succeeded to recruit a substantial number of test persons.
  - The involvement of users and professionals in the project was very positive. Contacts with users and professionals were already established in the first months of the project.
  - The consortium organised its clinical trials in 4 countries, mobilising some 150 users: recruitment, selection, training and participation in the trials.
  - SMILING established a Scientific Advisory Board (SSAB) aimed to monitor the scientific progress of the project and provide advice on validation protocols, statistics, outcome measures, etc., and review safety data as needed. The Scientific advisory board was drawn from well known academic personnel in each validation country.

**PROJECT SUSTAINABILITY**

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td>Are the outputs from the project still being used today?</td>
</tr>
</tbody>
</table>
| - The project coordinator took all the appropriate actions (eg. preparation work, invitation of a formal Steering Committee meeting, legal consultation) in order to reach an agreement that will ensure the maximum exploitation potential of the project results after the official end of the project. All the consortium members have been actively participating and contributing towards this goal and the result is the document titled “Smiling Agreement”. | - The final exploitation plan is credible, the product portfolio and potential market analysis and routes to reach these markets are realistic. However, a commercial product (“near to market” as stated in the first version of the DoW) can only be considered on the long term.
- It is evident that at the time being the system developed is more related to rehabilitation and clinical research applications, and less to individuals for everyday use as a stand-alone device (e.g. under a rehabilitation protocol). |
| - The project has presented during the review |

**Supporting Evidence**
and in DS.6 the potential exploitation of the integrated system or components of the system in research market, hospital/clinics market, home/fitness market and identified 4 individual exploitable results (research systems, virtual reality system, hospital falls prevention system, gait/motion analysis system).

- The exploitation plans presented are realistic and consider appropriate actions for potential exploitation. The review team sees that there is a strong potential of exploitation of the project results in the research market as this have been defined in the consortium in the relevant deliverable and therefore strongly encourages the consortium to proceed with that.

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - Meetings with the FP7 project CONFIDENCE have been reported but there was no essential outcome from it.

### Best Practices

| Best practices that the project has developed | • The project has produced an innovative mechatronic system that can be considered as state-of-the-art in the field of rehabilitation, as it is based on the scientific idea on the Chaos theory and Dynamic system theory. This idea was used to develop the Smiling shoe as medical devices potentially to be exploited and potentially to put on the market as rehabilitation system. |

### Final Evaluation Comments

| Final comments regarding the in-depth evaluation | In conclusion and although successful in delivering a prototype and achieving the technical and formal goals of the project, the project was not able to reach the ultimate objective, namely to develop a clinically validated system for training to be spread in rehabilitation and health care to support of the rehabilitation process in ageing and the prevention of falls. |

| TOTAL IN-DEPTH EVALUATION SCORE | 11 |
| TOTAL SCORE | 20/32 |
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>SOCIABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Motivating platform for elderly networking, mental reinforcement and social interaction</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>05/2009 – 10/2012 (42 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>2 299 998</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot Action Type B</td>
</tr>
</tbody>
</table>

- **Project subject (to help categorise the results for the final publication):**
  - Robotics for Ageing Well
  - Innovative solutions for independent living
  - Innovating elderly care
  - Better connected through integrated care
  - Frailty, early detection and intervention
  - Fall Prevention
  - Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

SOCIABLE introduces a radically new approach for ICT assisted cognitive training and social activation for a wide range of senior citizens including cognitive intact elderly, older adults with Mild Cognitive Impairment, as well as patients suffering from mild Alzheimer’s disease. SOCIABLE supports personalized cognitive training interventions designed according to medically sound principles covering all the cognitive skills. The applications support a novel approach combining the conventional human care factor with an ICT surface computing platform.

### OBJECTIVES

**Objectives of the project**

The objective was to pilot the SOCIABLE services concept in a residential care environment and in-home care. SOCIABLE intended to license a commercial framework for multi-touch surface computing. From the beginning, the project selected the Microsoft Surface Platform. For the use in home care, an application on a tablet PC has been put forward.

The objective was to pilot SOCIABLE with the participation of 350 senior citizens in 7 different sites from 4 European countries (Greece, Italy, Norway, and Spain). Pilots would be targeting end-users (aged individuals) in specialized care or leisure centres, but also within their home environment.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

<table>
<thead>
<tr>
<th>3</th>
</tr>
</thead>
</table>

Overall the work performed was in line with the DoW.

- The main objective of the project was fully and successfully achieved, namely to develop cognitive training and social interaction activities and offering these by using surface computers.
SOCIABLE offers a new approach for ICT assisted cognitive training and social activation for a wide range of senior citizens including cognitive intact elderly, older adults with Mild Cognitive Impairment, as well as patients suffering from mild Alzheimer’s disease. SOCIABLE also offers a new ICT based solution for medical experts and for institutional care. Specifically, the project delivered:

- a novel ICT based model to cognitive training and social activation of the elderly;
- a SOCIABLE platform software running over both surface tables and tablet PCs (the Samsung SUR40 as the new standard for MS surface);
- 27 ergonomic, motivating and pleasant cognitive training games;
- the Book of Life application implemented over both surface tables and tablet PCs;
- tools for Medical Experts and Health Professionals supervising SOCIABLE sessions;
- the SOCIABLE solution has been validated with over 300 elderly users and approximately 50 health professionals during cognitive training sessions;
- 7 pilots in 4 countries have been organised; involving three main elderly groups suffering from cognitive decline, including healthy elderly, elderly with Mild Cognitive Impairment (MCI) and elderly with mild Alzheimer’s disease (AD);
- the project conducted an evidence based study with important (however early) scientific results: evidence was provided for a positive effect on the cognitive and functional abilities of the elderly, using the SOCIABLE ICT solution;
- the necessary steps were taken for commercial exploitation; this is clearly set out on the new website www.cognitivetraining.eu. The SOCIABLE solution should be brought to the market within the next year.

The SOCIABLE solution is used in three new R&D/innovation EU-funded projects (IDONTFALL, ELDERSPACES, and BRAIN-PLASTICITY).

OVERVIEW OF PROJECT IMPACT

| Scientific, technical, commercial, social or environmental impact related to the AHA Triple win |
| Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the project? |
| 4 |
| In the light of the clinically validated results proving the effectiveness of the cognitive training for elderly people with MCI or mild dementia, the project is in the position to have a large impact on improving the quality of life for elderly individuals. |
EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

European-wide impact at social, medical, business levels on the matter of cognitive training and social activation services.

The Sociable games and Book of Life are very interesting features to be put in practice in any clinical setting; both attractive for the end-user and for the health clinician.

The project is relevant to the eInclusion agenda, as the SOCIABLE project keeps a clear focus on the social inclusion of elderly people suffering from cognitive decline.

Within the framework of an increasing trend for cognitive training games, SOCIABLE services and its underlying platform have a great potential for successful post-project exploitation. Is unique selling proposition is based on a strong clinically-proven intervention strategy.

Clear sustainability potential for SOCIABLE services stems as well from the addressed configurability, extensibility and modularity of the SOCIABLE platform architecture.

However, in that respect a major attention on the interoperability with HER in place and related standards (i.e. HL7), as well as a larger attention on the scalability matter would have increased the SOCIABLE services sustainability potential.

Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

3

The consortium delivered some plans for the joint and the individual exploitation of the deployed services. However, they are still in an early stage and the consortium should elaborate more on these aspects. In particular, the unique selling proposition for the SOCIABLE services will be to offer cognitive training ICT-mediated games and social activation primarily to healthcare institutions willing (i) to include SOCIABLE services in the range of their proposed services and (ii) willing to implement cost reduction for carrying out computerized management of elderly cognitive rehabilitation programs.

The consortium delivered individual exploitation plans for three different cluster of partners, ranging from private companies as solution providers and/or integrators (SLG, CEDAF), to healthcare institutions (FSL, AUSL) and social services department of local public authorities (SPC, Trondheim).

Financial plans for the SLG and CEDAF business plans have been delivered showing an acceptable payback of the planned investment over six years. The net margins will be much improved if presence in countries other than Italy Greece and Spain will be ensured through potential agreement with local dealers and/or vendors with which bilateral agreements could be designed and put in place.
For the time being the cross-marketing strategy with Microsoft and ASUS appears very promising. However, the consortium should exploit potential collaboration with other mixed PC/Tablet or Tablet manufacturers as home-based individual cognitive training services and medical assessment could be run over such devices and underlying platforms. The market potential is high, especially when considering the market boost for tablets and smart phones. However, a cost-affordable hospital or residential (e.g. day centres) hardware configuration should be considered, as surface tables are very expensive.

<table>
<thead>
<tr>
<th>TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERVIEW OF PROJECT IMPACT IN KEY AREAS</td>
<td></td>
</tr>
</tbody>
</table>

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

<table>
<thead>
<tr>
<th>How the project has made an impact regarding Improved quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.</td>
</tr>
<tr>
<td>Population that perceive their health as good or very good</td>
</tr>
<tr>
<td>Population having a long-standing illness or health problem</td>
</tr>
<tr>
<td>Healthy life years at birth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increased quality for life for elderly people and their carers</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project conducted an evidence based study with important (however early) scientific results: evidence was provided for a positive effect on the cognitive and functional abilities of the elderly, using the SOCIABLE ICT solution;</td>
</tr>
<tr>
<td>Among elderly with mild cognitive impairments and mild Alzheimer’s Disease improvements were observed with respect to the global functioning and several specific cognitive functions, notably memory. All the cognitive functions of healthy elderly were improved after training, and in particular memory, language, praxis and executive functions. A relevant achieved result is the follow up analysis, i.e. the persistence of the mental ability improvement after three and six months from the cognitive sessions undertaking.</td>
</tr>
<tr>
<td>The final evaluation of SOCIABLE and services from a clinical perspective confirmed significant positive effect of the treatment on a sufficiently large number of persons.</td>
</tr>
<tr>
<td>All the cognitive functions of healthy elderly were improved after training, and in particular memory, language, praxis and executive functions. These are significant achievements and important cross over results were demonstrated.</td>
</tr>
</tbody>
</table>

185 The programme objectives were detailed in Section 2.2 of our Technical Offer.
186 http://mafeip.eu/about_study/
187 http://www.linkedpolicies.eu/policymaps/eiponaha/
### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFIEIP Study and visualised through the Policy dashboard on EIPonAHA:

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

### Impact area 3: Market growth and expansion of the EU industry  
**Score 1-4**

**How the project has made an impact regarding Market growth and expansion of the EU industry**

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

**2. Increased efficiency of care systems**

- N/A

**Creation of ICT products and services for ageing well**

- SOCIABLE offers a new approach for ICT assisted cognitive training and social activation for a wide range of senior citizens including cognitive intact elderly, older adults with Mild Cognitive Impairment, as well as patients suffering from mild Alzheimer’s disease.
- SOCIABLE also offers a new ICT based solution for medical experts and for institutional care.

- Facilitate wide implementation of sustainable innovation services

- N/A

- Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

**3. New markets for independent and active living products and services through a set of open standards and integrated platforms**

- The necessary steps were taken for commercial exploitation; this is clearly set out on the new website www.cognitivetraining.eu. The SOCIABLE solution should be brought to the market within the next year.
- Based on the positive, validated achievements from the operational pilots, business and marketing plans were delivered, in which a cooperation agreement among partners for IPR sharing has been set up, as well as a detailed financial exercise for the two ICT companies, i.e. SiLO (the coordinating partner) and CEDAF.

- Improved competitiveness of EU industry
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

- A first coherent pricing strategy, which takes into account competitors’ market offers has been delivered, which addresses the reformulated services bundles. Different coherent deployment models have been analysed and proposed, ranging from the licensing scheme to the SaaS (Software-as-a-Service) one. Cross-marketing strategies with hardware vendors Microsoft, ASUS) are a reasonable way for successful exploitation.

- The consortium delivered individual exploitation plans for three different cluster of partners, ranging from private companies as solution providers and/or integrators (SLG, CEDAF), to healthcare institutions (FSL, AUSL) and social services department of local public authorities (SPC, Trondheim).

- Financial plans for the SLG and CEDAF business plans have been delivered showing an acceptable payback of the planned investment over six years. The net margins will be much improved if presence in countries other than Italy Greece and Spain will be ensured through potential agreement with local dealers and/or vendors with which bilateral agreements could be designed and put in place.

- Strengthened global position of EU industry in service robotics for ageing well
  - N/A

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - N/A

- Creating a longer term RTD agenda
  - N/A

- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - N/A

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE

- A comprehensive evaluation was carried out in which the results achieved were analyzed by making use of suitable statistical tools in order to derive clinically-validated results on the effectiveness of the cognitive training for the targeted end users.

- Other validations were carried out, including technical, usability, secondary end users (health professionals, informal caretakers like family

188 http://mafeip.eu/about_study/
189 http://www.linkedpolicies.eu/policymaps/eiponaha/
stakeholders), as well as a financial one.

**DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION**

<table>
<thead>
<tr>
<th>Supporting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notable efforts with regard to the dissemination of the project results</strong></td>
</tr>
<tr>
<td>Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
<tr>
<td><strong>3</strong></td>
</tr>
<tr>
<td>- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.</td>
</tr>
<tr>
<td>- Dissemination activities were continued and intensified during this review period. They included participation in events, press visibility, press releases, papers in conferences, presentations, dissemination materials: leaflets, videos and presentations (in several languages).</td>
</tr>
<tr>
<td>- The project organized information days at each pilot site of the project which contributed to its visibility. Publication included presentation of results at academic events and in commercial contexts.</td>
</tr>
<tr>
<td>- However, the dissemination was not sufficiently focused on the end-user (healthcare) oriented fairs, and was mainly carried out in Italy, Spain and Greece, limiting project’s achievements in raising awareness of the results in countries not directly participating to the project.</td>
</tr>
<tr>
<td>- Very much appreciated is the new website <a href="http://www.cognitivetraining.eu">www.cognitivetraining.eu</a>. The creation of this website is an example of good practice for moving forward from a project-oriented to a more product-oriented vision.</td>
</tr>
<tr>
<td>- Social media: The Sociable project has its own Facebook page with 65 followers (although the latest posts are from 2012) and Youtube Channel (<a href="https://www.youtube.com/user/SociableProject">https://www.youtube.com/user/SociableProject</a>). The latest video was posted over 5 years ago.</td>
</tr>
<tr>
<td>- Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).</td>
</tr>
<tr>
<td>- The SOCIABLE solution has been validated with over 300 elderly users and approximately 50 health professionals during cognitive training sessions;</td>
</tr>
<tr>
<td>- 7 pilots in 4 countries have been organised; involving three main elderly groups suffering from cognitive decline, including healthy elderly, elderly with Mild Cognitive Impairment (MCI) and elderly with mild Alzheimer’s disease (AD);</td>
</tr>
<tr>
<td>- The novelty with respect to the DoW applied under this WP was the recruitment of the so called “butterfly users” who were interested elderly users using the platform in an informal way without adhering to the SOCIABLE clinical...</td>
</tr>
</tbody>
</table>
trial protocol. Quite appropriately their feedback was not used for the clinical evaluation, but only as part of a broader stakeholders’ evaluation.

- There is not much evidence of significant and clear interaction with other project or similar initiatives, although this was requested in the second-year review report. The consortium should have been more active in that regard.

### PROJECT SUSTAINABILITY

**Continued impact from the project today**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today?</td>
<td>Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
</tr>
</tbody>
</table>

**Supporting Evidence**

- Are the outputs from the project still being used today?
  - In the light of the clinically validated results proving the effectiveness of the cognitive training for elderly people with MCI or mild dementia, the project is in the position to have a large European-wide impact at social, medical, business levels on the matter of cognitive training and social activation services.

- Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)
  - The SOCIABLE solution is used in three new R&D/innovation EU-funded projects (IDONTFAL, ELDERSPACES, and BRAIN-PLASTICITY).
  - The project is relevant to the eInclusion agenda, as the SOCIABLE project keeps a clear focus on the social inclusion of elderly people suffering from cognitive decline.

### BEST PRACTICES

**Best practices that the project has developed**

- The Sociable games and Book of Life are very interesting features to be put in practice in any clinical setting; both attractive for the end-user and for the health clinician.
- Within the framework of an increasing trend for cognitive training games, SOCIABLE services and its underlying platform have a great potential for successful post-project exploitation. Its unique selling proposition is based on a strong clinically-proven intervention strategy.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The main goal of the SOCIABLE project was to deploy and pilot a novel integrated ICT service empowering the elderly to improve their mental ability, while at the same time boosts their social interaction. SOCIABLE offers a new approach for ICT assisted cognitive training and social activation for a wide range of senior citizens including cognitive intact elderly, older
adults with Mild Cognitive Impairment, as well as patients suffering from mild Alzheimer’s disease.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>24/32</td>
</tr>
</tbody>
</table>
**IN-DEPTH ANALYSIS EVALUATION SHEET**

### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>STOPandGO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Sustainable Technology for Older People – Get Organised</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>CIP</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>04/2014 – 03/2018 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>4 446 000</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>PPI</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

The overarching strategy of STOPandGO (Sustainable Technology for Older People – Get Organised) has been to pilot an innovative procurement process to improve the lives of older citizens. Through Public Procurement of Innovative Solutions (PPI), the project produced and validated a standard 'European Specification Template' that was enacted in a coordinated manner in six localities. STOPandGO showed that an innovative procurement process based on a service delivery approach prioritised clearly defined clinical and social outcomes.

### OBJECTIVES

**Objectives of the project**

The procurer teams are ready with appropriate patient groups in four countries, which make up more than 5,000 users. Relevant services and suppliers were invited to an open tender. The approach emphasised the importance of developing outcome-based service specifications with clear built in key performance indicators.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

3

Overall, the project deliverables are of good to adequate quality, and reflect the majority of the improvements in line with previous recommendations and are well presented and thorough in their considerations. The main achievements of the project up to now:

- Significant progress in the implementation of the PPI pilots
- Two tenders published in Spain and the UK,
clear timetables for the rest of the pilots
- All pilots have published PINs
- Open Market Consultation (OMC) adopted, although different levels of maturity
- Successful identification and bringing on board of new partners
- Good recording of the process, barriers and learning through the PPI process
- Purpose of the EST (European Specification Template, Del 2.2) refined and clarified and updated version produced.
- EST used in procurements to enable development and improvement from use in practice
- A useful summarized version of the project guidelines for the tenders in the format of a checklist for procurers has been produced
- Update to the Reference Business Case (RBC) (D 2.1.)
- Evaluation guide for deployments (D 3.2)
- Report on local adoption of project documentation ((D 5.1)
- Guidelines on interoperability assessment
- Updated evaluation framework
- Dissemination activities

OVERVIEW OF PROJECT IMPACT

Scientific, technical, commercial, social or environmental impact related to the AHA Triple win

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

3

It remains too early in the project progress to conduct a fair evaluation of its overall impact. However, the project now promises to be providing good learning experience from the pilots in the use of PPI approaches to integrated care and examples of how integrated care enabled by technology can transform service provision. If the project manages to achieve these goals within its time frame this would be a valuable outcome and provide good case studies to promote a broad uptake of innovation procurement in the public sector. The project is likely to have impact in terms of demonstrating good practice and leaving behind a model for the procurement of integrated technology enabled care services that can be more widely adopted. However, to do so will need continued effort in the quality and quantity of dissemination and exploitation over the final phase of the project. Remains unclear if the project has contributed to improve the position for EU industry including SMEs in new markets. Also unclear how the project would intend to report and demonstrate
such an impact. It is at this point not clear how the project will contribute to a reduced fragmentation of public sector demand across states, as the degree to which strategies of the different procurers will be addressed jointly is not clear. However, impact at the procurer level regarding the shift to integrated services approach and the adoption and demonstration of value in the PPI methods adopted are promising.

Plan for the use and exploitation of results
Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE 8

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life
This will be evaluated taking into account the programme objectives including increased quality of life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Increased quality for life for elderly people and their carers
- The STOP&GO project pilots the use of innovation procurement to improve the lives of older citizens and aims to create a framework of supporting methodologies and reference documents to promote and facilitate the innovative procurement of integrated service delivery enabled by technology to other public authorities beyond the project.

Increased personal independence of the elderly
- Whilst not a direct impact from the project, it can be considered as an indirect impact.

Concepts for the detection of ageing-related risks

The Reduction of admissions and days spent in care institutions.
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth
- STOPandGO aims to demonstrate that those...
benefits can be translated from small populations to wider ones, providing scale uptake of technology and proportional reductions in the pressure on services. It also shows that improvements can be made in quality of life, care and carer programmes and hospital in-patient stay.

- In Sant Pau hospital in Spain, The tender specifications defined a new model of collaboration between the hospital and the service provider, where the supplier participates in all stages of the healthcare delivery process and shares the risks with the hospital. The contract’s objective was to provide an integrated service with the final aim being the improvement of the patient’s quality of life through an innovative care process and connections amid actors involved in service delivery. As Marcel Olivé Elias highlights: ‘The new model was completed with the introduction of payment criteria linked to the health outcomes of the patients, as well as to service and technology performance, which turns into an improvement of the service delivered.’

- In recognition of the innovative approach taken by Sant Pau, it was a finalist in the Healthcare Management of Patients category in an annual award ceremony for innovation management, which highlights results that have made a positive impact.

### Impact area 2: Increased efficiency of health and long-term care

#### How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including Increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

#### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

#### 4 Increased efficiency of care systems

- The project now promises to be providing good learning experience from the pilots in the use of PPI approaches to integrated care and examples of how integrated care enabled by technology can transform service provision.

- As one report on the Liverpool project noted: ‘This case study demonstrates how a PPI enabling procurement approach, together with well targeted grant funding, was used to transform social care service provision and create a framework for further adoption of technology.’

- Since 2015, in the Netherlands, municipalities are responsible for all professional social care services. The government distributes funds to each municipality on a yearly basis, but has greatly reduced these budgets because they believe municipalities can offer more tailored and local services, which should be cheaper. This prompted the City of Helmond to put more effort into innovation. They chose ‘dementia patients, pre and post diagnosis, and their immediate informal caregivers’ (around 12,000 people) as the target group for a STOPandGO tender.
• Creation of ICT products and services for ageing well
  - For one of the partners, Liverpool City Council, as a result of the procurement process, there are now a number of benefits associated with the service. This includes improving monitoring of service provision, payment by results, increased flexibility of the service and data-enabled urgent care interventions.

• Facilitate wide implementation of sustainable innovation services
  - If the project manages to achieve these goals within its time frame this would be a valuable outcome and provide good case studies to promote a broad uptake of innovation procurement in the public sector.
  - The project is likely to have impact in terms of demonstrating good practice and leaving behind a model for the procurement of integrated technology enabled care services that can be more widely adopted. However, to do so will need continued effort in the quality and quantity of dissemination and exploitation over the final phase of the project.
  - However, impact at the procurer level regarding the shift to integrated services approach and the adoption and demonstration of value in the PPI methods adopted are promising.
  - STOPandGO embeds innovation in the procurement process from the outset, a holistic approach geared to meeting identified service requirements, rather than seeing it as some separate or ‘add on’ element. This necessitates a collaborative consortia approach, often with diverse stakeholders so bidders can develop complete offers that address organisational, technical and user/stakeholder aspects. Procurements are outcomes based, with elements of Payment By Results introduced.

• Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.
  o Available beds in hospitals per hundred thousand inhabitants
  o Hospital discharges per 100 000 inhabitants
  o In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry  Score 1-4

How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU

3

• New markets for independent and active living products and services through a set of open standards and integrated platforms
  - N/A

• Improved competitiveness of EU industry
  - N/A

• Strengthened global position of EU industry in service
industry in service robotics for ageing well. Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing.

Creating a longer term RTD agenda.

Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA.

Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

**Robotics for ageing well**

- N/A

- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing.
  - It remains unclear if the project has contributed to improve the position for EU industry including SMEs in new markets. Also unclear how the project would intend to report and demonstrate such an impact.
  - According to the Project coordinator, UK partners are building on Liverpool’s digitisation of social care achieved in STOPandGO by addition of new services based on ambient sensing over low power radio - we are currently running a hackathon (#StitchHack) with users and SMEs to frame what these services will look like. This will lead to new service procurements outside of the PPI mechanism.

- Creating a longer term RTD agenda.
  - N/A

- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA.
  - The Project promises to provide useful and clearly presented insights in to the application of PPI in to the innovative centred care services environment by the end of the project.
  - Lessons learnt during the project deployment should lead the training programmes and the exploitation of other project results.

- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - The project has helped to find commonalities in services, triggering organisational innovation in models of care, increasing care coordination, fostering patient activation and strengthening managerial decisions.

**Dissemination and Engagement Opportunities Aimed at Transferring the Results to a wider Communities & Stakeholder Participation**

Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

Supporting Evidence

3

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Some good efforts have been made on creating dissemination outputs, although unclear how widely and proactively these have been communicated to the wider network of people interested in PPI and eHealth.
  - Dissemination of project results and information

193 http://mafeip.eu/about_study/
194 http://www.linkedpolicies.eu/policymaps/eiponaha/
seems to have improved in this period, with the use of multiple activities (such as active participation in the eHealth Week 2015, TSA summit, AAL Forum etc), the STOPandGO website, www.stopandgoproject.eu, the @STOPandGOEU Twitter account (74 tweets, 156 followers) and the LinkedIn group.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - The project has involved new potential procurers, suppliers and other stakeholders, but they need to grow their networks during the coming year to ensure an appropriate exploitation and impact.
  - The Open Market Consultation (OMC) process, organized in most of the procuring localities, has been well received by both procurers and suppliers and its value in co-creation recognised. A wider outreach and the involvement of more procurers could however be expected. It would be beneficial for greater details on the process of stakeholder engagement and involvement in the procurement process to be recorded.

## PROJECT SUSTAINABILITY

### Continued impact from the project today

*Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant).*

### Are the outputs from the project still being used today?

- The management report contains limited information on actions undertaken which seem mainly at the national (Italy) level. One notable action has been the creation of a spin-off project. The WP lead is presented as a “pathfinder” with much of the activity is orientated to national actions in Italy; i.e. trying different approaches to scale up innovation procurement, spin-off project, finding some ways to engage with structural funds. This WP Should be given more attention in Year 3 and ensure links to other existing and emerging European Initiatives and eHealth Innovation Ecosystems.

- According to the project coordinator, the services procured in the project will persist and we expect there will be continued activities. Procuring partners are already being sought for ‘extra’ events such as the upcoming Procurement conference in Tallinn and the AAL Forum in Coimbra.

- Furthermore, STOPandGO and new actors have been successful in the RITMOCORE project - http://cordis.europa.eu/project/rcn/206004_en.htm a similar eHealth services PPI. UK partners are building on Liverpool’s digitisation of social care achieved in STOPandGO by addition of new services based on ambient sensing over low power radio - we are currently running a hackathon (#StitchHack) with users and SMEs to frame what these services will look like. This will lead to new

### Supporting Evidence
service procurements outside of the PPI mechanism.

- “I would note that the STOPandGO procuring partners have been impressed with services developed as a result of the PPI process to the extent that they will use the STOPandGO innovation procurement method well beyond the formal end of the project.”

- At the end of the project, a consolidated release of the European Specification Template and Reference Business Case, suitable for use in all the European Regions to support EU strategies depicted in the Strategic Implementation Plan of the EIP on AHA, will be published. In order to further the work of the project and to enable it to be put into practice on a wider scale, this will be an accessible, practical and usable document. The consortium behind the project encourages others to take on the approach they developed, concluding: ‘we want to open up the floor for them to contact us to learn about the approach.’

- **Consortium’s interaction with other related Framework Programme projects and other national/international R&D programmes and standardisation bodies (if relevant)**
  - Links to other PPI projects and experts have been developed in line with recommendations and the partners should be encouraged to continue to build links, e.g. with EPP-eHealth, and continue to share their experience in workshops and events.
  - There is more evidence of effective collaboration and peer exchange with other projects. Connections were made to other initiatives including PROEIPAHA, HAPPI, EcoQUIP, EPP eHealth projects and the C2 EIP-AHA and the B3 EIP-AHA action groups.
  - This should be continued and if possible deepened to involve closer collaboration in relation to wider market development and exchange of PPI experience.

**BEST PRACTICES**

**Best practices that the project has developed**

- Some of the main contributions from the project include: guidelines for future procurers using PPI, including the role of evaluation and interoperability in the procurement process.
- A summarised version of the project guidelines for the tenders has been produced, in the format of a checklist for procurers. This check list is a very useful document and should be incorporated as a tool into the EST.

**FINAL EVALUATION COMMENTS**

**Final comments regarding the in-depth evaluation**

The project has been extremely successful, despite initial reservations as can be seen in the review report from the
first year. The STOPandGO has developed a comprehensive method and tools to enable the procurement of innovative solutions, adaptable for any service and any locale across Europe. The approach has been successfully applied to introduce technical and commercial innovation into a range of health and care services delivered to thousands of users. Furthermore, there is clear evidence that the approach has been used in other projects and initiatives even before the official end of the project.

<table>
<thead>
<tr>
<th>TOTAL IN-DEPTH EVALUATION SCORE</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCORE</td>
<td>25/32</td>
</tr>
</tbody>
</table>
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>T-SENIORITY</th>
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</thead>
<tbody>
<tr>
<td>Acronym</td>
<td>T-SENIORITY</td>
</tr>
<tr>
<td>Project Name</td>
<td>T-SENIORITY: EXPANDING THE BENEFITS OF INFORMATION SOCIETY TO OLDER PEOPLE THROUGH DIGITAL TV CHANNELS</td>
</tr>
<tr>
<td>Programme</td>
<td>CIP</td>
</tr>
<tr>
<td>Period</td>
<td>07/2008 – 12/2010 (30 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>2 669 997</td>
</tr>
<tr>
<td>Project type</td>
<td>PB - Pilot Type B</td>
</tr>
</tbody>
</table>

#### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

The proposal is based in the integration of digital services addressed to elders and info-margined audiences that will be accessed by TV channels and where the important segment of people already acquainted with the TV remote control can be included in the digital society and benefit from it. T-SENIORITY main target is a "user-centric" integration of services throughout TV, especially assistance programs (including trans-borders services) for disadvantaged social groups, focusing mainly in older people and "early stages of getting older" people, to cover a diverse range of care needs in a wide range of service modalities (home care, tele-assistance, mobile telecom services, tele-alarms, nursing services....).

### OBJECTIVES

The objective of the T-SENIORITY project is to significantly improve quality of life and ensure efficient health and social care for the ageing population by specifying and demonstrating innovative ICT enabled products and services.

### OVERALL PROJECT ASSESSMENT

3

The initial project promised to use over the air interactive digital television as one of its main means of dissemination, but this hasn’t proved practical, and the focus changed to interactivity via internet-connected TVs. The project has tried to make the best of a different technical situation by stressing that T-Seniority is hardware-independent. This is a valuable achievement. The project refocused its goals and the pilot tests have been carried out in several areas, generally
The findings that elderly people are not willing to pay themselves for T-Seniority resulted in the project’s development of a business model “3rd party as payer”. The market seems unconvinced that it should take up the T-Seniority system and thus it is unclear as to whether the work of the project will continue in many areas of Europe after the project has ended.

OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care, 3) Market growth and expansion of the EU industry.</td>
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</tbody>
</table>

The work of T-Seniority potentially could have had great impact on its target markets, but the actual outcomes of the project are less than might have been hoped. It is difficult to see how the T-Seniority work has significantly improved the outcomes of the earlier Seniority project – the partners have realised that it is not the technology that is actually the key to this type of work.

The sustainability has been largely investigated in WP5. A promising potential for the T-Seniority services model is argued by the consortium. Business plans were developed for each of the partners. Some of these partners intend to proceed into business development; others do not have further intentions. Overall, a concrete commercialisation of T-Seniority by the consortium is not envisaged on the short term.

OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

<table>
<thead>
<tr>
<th>Impact area 1: Improved quality of life</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>How the project has made an impact regarding Improved quality of life</td>
<td></td>
</tr>
<tr>
<td>This will be evaluated taking into account the programme objectives including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and</td>
<td></td>
</tr>
</tbody>
</table>

The programme objectives were detailed in Section 2.2 of our Technical Offer.
### Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study[^1] and visualised through the Policy dashboard on EIPonAHA[^2].

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

- It is difficult to see how the T-Seniority work has significantly improved the outcomes of the earlier Seniority project – the partners have realised that it is not the technology that is actually the key to this type of work.
- The main objective of working out how to enable a replicable solution across Europe within the digital services area which would contribute to the improvement of the quality of life and social care for the ageing population has been achieved in the form of successful pilot projects which are replicable.

- **Increased personal independence of the elderly**
  - N/A

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

---

## Impact area 2: Increased efficiency of health and long-term care

### How the project has made an impact regarding Increased efficiency of health and long-term care

This will be evaluated taking into account the programme objectives including increased efficiency of care systems, Creation of ICT products and services for ageing well, Facilitate wide implementation of sustainable innovation services, Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.

- **Increased efficiency of care systems**
  - N/A

- **Creation of ICT products and services for ageing well**
  - N/A

- **Facilitate wide implementation of sustainable innovation services**
  - N/A

- **Efficiency through consensus and common visions between relevant key stakeholders and Cooperation and longer-term research deployment.**
  - Available beds in hospitals per hundred thousand inhabitants
  - Hospital discharges per 100 000 inhabitants
  - In-patient average length of stay

### Supporting indicators & Evidence

The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.

- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

---

## Impact area 3: Market growth and expansion of the EU industry  **Score 1-4**

### How the project has made an impact regarding Market growth and expansion of the EU industry

This will be evaluated taking into account

- **New markets for independent and active living products and services through a set of open**

[^1]: [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

<table>
<thead>
<tr>
<th>Supporting indicators &amp; Evidence</th>
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<tbody>
<tr>
<td>The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study(^ {198}) and visualised through the Policy dashboard on EIPonAHA(^ {199})</td>
</tr>
</tbody>
</table>

- Intramural R&D expenditure
- R&D personnel and researchers in FTE

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

#### Notable efforts with regard to the dissemination of the project results

Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

- Much effort was put into dissemination activities, planning sustainability and the completion of pilots in different European member states.
- All the necessary efforts were made to reach the relevant stakeholders in a European context.
- The 2nd T-Seniority workshop was successfully organised in October 2010 and reported in the related deliverable D2.3.2.
- The website (http://tseniority.idieikon.com/index.php/lang-en) is now longer available.
- No presence on social networks has been detected which is of no surprise seeing as the project finished in 2010.

#### Supporting Evidence

- The pilots involved some 152,000 users of public services and 1,400 users of personalized

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198 [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)
## PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th></th>
<th>Continued impact from the project today</th>
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<tbody>
<tr>
<td></td>
<td>Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
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### Supporting Evidence

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<tr>
<td></td>
<td>2</td>
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<tr>
<td></td>
<td>• Are the outputs from the project still being used today?</td>
</tr>
<tr>
<td></td>
<td>- A concrete commercialisation of T-Seniority by the consortium is not envisaged on the short term.</td>
</tr>
<tr>
<td></td>
<td>- The exploitation plans are broadly acceptable, but fail to convince that that the project work will be extensively taken up and used throughout Europe.</td>
</tr>
<tr>
<td></td>
<td>• Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</td>
</tr>
<tr>
<td></td>
<td>- The project has involved a wide range of stakeholders and users, and also communicated well with other related projects.</td>
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<tr>
<td></td>
<td>- The consortium has worked closely with other related projects to share findings and understanding.</td>
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### BEST PRACTICES

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<table>
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<tbody>
<tr>
<td></td>
<td>Best practices that the project has developed</td>
</tr>
<tr>
<td></td>
<td>• There are no best practices from this Project.</td>
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### FINAL EVALUATION COMMENTS

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<tbody>
<tr>
<td></td>
<td>Final comments regarding the in-depth evaluation</td>
</tr>
<tr>
<td></td>
<td>Upon reviewing in more detail the documentation from this project, it has become evident that the concept in itself is not viable and that the Project, after enduring various problems on an organisational level, scrambled to reach a close.</td>
</tr>
</tbody>
</table>

### TOTAL IN-DEPTH EVALUATION SCORE

|  | 11  |

### TOTAL SCORE

|  | 18/32  |
## GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th><strong>Acronym</strong></th>
<th>UNCAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Ubiquitous iNteroperable Care for Ageing People</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td>H2020</td>
</tr>
<tr>
<td><strong>Period</strong></td>
<td>02/2015 – 12/2017 (36 months)</td>
</tr>
<tr>
<td><strong>EU Funding contribution</strong></td>
<td>3 086 254</td>
</tr>
<tr>
<td><strong>Project type</strong></td>
<td>Research and Innovation Action</td>
</tr>
</tbody>
</table>

### Project subject (to help categorise the results for the final publication)

- **X** Innovative solutions for independent living
- Robotics for Ageing Well
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

## BRIEF DESCRIPTION

**Brief description of the project**

UNCAP delivers an interoperable platform based on open industrial standards that leverages on existing technologies for biosensing, indoor/outdoor localisation and home-automation. The result is an open source, scalable and privacy-savvy ecosystem compatible with existing Personal Health Record systems, that can deliver novel services that can help aging people (incl. those with cognitive impairments) live independently and with dignity.

## OBJECTIVES

### Objectives of the project

UNCAP uses state-of-art physical/cognitive assessment tools together with technologies to locate objects, devices and users within indoor/outdoor spaces, to continuously monitor—in a non-invasive way—users and to assist them in case alert conditions are detected. In practice, UNCAP develops a product suite for formal and informal care environments made of: 1) the UNCAP BOX (an Android consumer device connected to TVs); 2) the UNCAP App for both users and caregivers; 3) the UNCAP CLOUD, delivering scalable care services; 4) the UNCAP certification suite, to help software and hardware manufacturers assess compliance with standards.
## Overall assessment according to review documentation.

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies (whether acceptable), take-up of the recommendations from the previous review (if applicable), contribution to the state of the art, use of resources, impact.

### 3

The project is proceeding but further speed up and focus is required to ensure its successful completion within the following reporting period. The project is overall adhering to the workplan but has not fully and in a timely manner attained all of its objectives and milestones as specified in the Description of Action (DoA). Within the reporting period from January to December 2016 the project was progressing with the implementation of the specified technology. According to information provided, the main activities consisted of:
- Piloting and training (WP3)
- Preparation of an impact analysis (WP4) for the users and caregivers involved, but also on the overall impact in terms of business and financing
- Market analysis of the service delivery including value chains
- Procurement models
- The involvement of strategic partners
- Preliminary “UNCAP” product promotion

### OVERVIEW OF PROJECT IMPACT

<table>
<thead>
<tr>
<th>Scientific, technical, commercial, social or environmental impact related to the AHA Triple win</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.</td>
</tr>
</tbody>
</table>

### 2

The beta version of the UNCAP components and services has been released and deployed in the pilot sites with a delay, thus hampering the project overall and resulting in insufficient training of affected users. Moreover, the impact assessment tasks that have been established in the project have failed to provide preliminary assessment outcomes that would clearly strengthen the project’s results and dissemination. With regards to market penetration a first draft version of the project’s Business Plan has been released but important parts of this document are expected within the following reporting period. At the same time, the Uncap project partners highlight the knowhow of the individual partners, and this gives them confidence in managing the upcoming activities in the project.

### Plans for the use and exploitation of results

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

### 2

An indication of the IP handling is specified in the draft version of the Business Plan (D5.3). A concrete description of IPR handling is expected to be included in the final version of the Business Plan deliverable. The lack of appropriate indications on the effectiveness of the UNCAP solution is clearly hindering the exploitation of the produced outcomes.
### TOTAL PRELIMINARY ANALYSIS EVALUATION SCORE

<table>
<thead>
<tr>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

### OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

#### Impact area 1: Improved quality of life

**How the project has made an impact regarding Improved quality of life**

This will be evaluated taking into account the programme objectives\(^{200}\) including increased quality for life for elderly people and their carers, increased personal independence of the elderly, Concepts for the detection of ageing-related risks, and the Reduction of admissions and days spent in care institutions.

**Supporting indicators & Evidence**

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^{201}\) and visualised through the Policy dashboard on EIPonAHA\(^{202}\).

- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

2. **Increased quality for life for elderly people and their carers**

- The impact assessment tasks that have been established in the project have failed to provide preliminary assessment outcomes that would clearly strengthen the project’s results and dissemination.
- The lack of appropriate indications on the effectiveness of the UNCAP solution is clearly hindering the exploitation of the produced outcomes.
- The proposed solution has the potential to provide a significant societal and market effect. If the pilots succeed, the project will have strong impact as a demonstrator. Yet achieving this impact could be jeopardised if additional delays are introduced in the running of the pilots as well as all other activities.
- If the project succeeds, it will improve the quality of life for elderly people and of carers. It will also have a positive impact on the economic efficiency of elderly care systems in general. The provided solution has been recently released and deployed to the pilot sites; therefore, no concrete results have been collected up-to-date proving that this goal has been achieved. Yet, the potential is still there and may be achieved in the upcoming period.

- **Increased personal independence of the elderly**
  - N/A

- **Concepts for the detection of ageing-related risks**
  - N/A

- **The Reduction of admissions and days spent in care institutions.**
  - Population that perceive their health as good or very good
  - Population having a long-standing illness or health problem
  - Healthy life years at birth

#### Impact area 2: Increased efficiency of health and long-term care

**How the project has made an impact regarding Increased efficiency of health and long-term care**

---

\(^{200}\) The programme objectives were detailed in Section 2.2 of our Technical Offer.

\(^{201}\) [http://mafeip.eu/about_study/](http://mafeip.eu/about_study/)

<table>
<thead>
<tr>
<th>Impact area 3: Market growth and expansion of the EU industry</th>
<th>Score 1-4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How the project has made an impact regarding Market growth and expansion of the EU industry</strong></td>
<td><strong>3</strong></td>
</tr>
<tr>
<td>This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.</td>
<td></td>
</tr>
<tr>
<td>- The project is not aiming at a technological breakthrough. However, the scope and scale of the project’s integrated approach has a high value as a demonstrator of the UNCAP potential and the overall potential of demonstrating Ambient Assistant Living (AAL) systems via Sensorik and ICT.</td>
<td></td>
</tr>
<tr>
<td>- It should be noted that the innovation of the proposed solution lies in the application of the integrated platform and end users’ ability to integrate components available on the market and thus its expected societal impact, not in its technological innovativeness.</td>
<td></td>
</tr>
<tr>
<td><strong>Improved competitiveness of EU industry</strong></td>
<td></td>
</tr>
<tr>
<td>- Achieving the project objectives can happen to the extent, to which impact assessments are embedded in the pilots, evaluating the overlap between dissemination, exploitation and further development activities, and whether the level of integration and interoperability at the technological level has been achieved. If all this is successful, the provided solution has the potential to stimulate the market calling for software, hardware and service-providers, but, as stated, this should be supported by real evidence that can be collected from the pilots.</td>
<td></td>
</tr>
<tr>
<td><strong>Strengthened global position of EU industry in</strong></td>
<td></td>
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<tr>
<td></td>
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</tbody>
</table>

Supporting indicators & Evidence

The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100 000 inhabitants
- In-patient average length of stay

203 http://mafeip.eu/about_study/
204 http://www.linkedpolicies.eu/policymaps/eiponaha/
- Service robotics for ageing well
  - N/A
- Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
  - The open-source standards-based approach, along with the executed standardization actions has strong potential for SMEs. The project can receive additional attention from the SMEs if more intensified dissemination actions are performed backed up with results from the pilot cases, though the performed work has not had a positive impact on the SMEs yet.
- Creating a longer term RTD agenda
  - N/A
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - N/A
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
  - N/A

## DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

### Notable efforts with regard to the dissemination of the project results
Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).

### Supporting Evidence

- Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.
  - Scientific Publications: The consortium has appropriately handled the publication of its outcomes to several scientific venues. Additional publications to top-line scientific journals and magazines are expected to be provided in the following period with the aid of concrete results from the pilot sites. It is clear, that without a wellreasoned justification and a successful demonstration of the product through pilots, the market cannot be opened for Uncap.
  - The consortium has been highly motivated and geared towards the execution of additional dissemination activities (project website, social media, video). However, this again greatly depends on having impact in the pilots and thus supporting data for dissemination.
  - The project website ([http://www.uncap.eu/](http://www.uncap.eu/)) is very professional and clearly lays out the project objectives, results and current activities.
  - Social media: The project has accounts on flickr (598 photos), Youtube (9 subscribers); Lined in
with 138 members.
- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - It has been obvious from the demo during the review meeting that caregivers and elders where not familiarized with the UNCAP system and especially the beta version. In this frame, it is rather difficult to assess what were the issues raised by the pilots, i.e. those that had the alpha version installed, that were introduced in the beta version. The accompanying report doesn’t provide any indication on the issues of the alpha version that were addressed in the beta.

## PROJECT SUSTAINABILITY

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>2</th>
<th>Are the outputs from the project still being used today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td></td>
<td>- With regards to market penetration a first draft version of the project’s Business Plan has been released but important parts of this document are expected within the following reporting period.</td>
</tr>
<tr>
<td>Supporting Evidence</td>
<td></td>
<td>- At the same time, the Uncap project partners highlight the knowhow of the individual partners, and this gives them confidence in managing the upcoming activities in the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Consortium’s interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Standards are essential to the project and the achievement of its vision. Existing standardization efforts are on track, but they should be further strengthened and intensified in the following period. In this frame the corresponding partners as well as management should ensure that they have the required resources to compete this task.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- A fair amount of liaisons have been activated within this reported period but a greater number of candidates have been planned for the following period. The consortium should establish a proper strategy so as to maximize its effectiveness.</td>
</tr>
</tbody>
</table>

## BEST PRACTICES

<table>
<thead>
<tr>
<th>Best practices that the project has developed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• If the project succeeds, it will improve the quality of life for elderly people and of carers. It will also have a positive impact on the economic efficiency of elderly care systems in general.</td>
</tr>
<tr>
<td><strong>FINAL EVALUATION COMMENTS</strong></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>---</td>
</tr>
<tr>
<td><strong>Final comments regarding</strong></td>
<td>Whilst the UNCAP Project is still coming to a conclusion, it can be said that the Project has strong potential to have an impact on the quality of life of elderly people and their carers and the economic efficiency of elderly care systems in general.</td>
</tr>
<tr>
<td>the in-depth evaluation</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL IN-DEPTH EVALUATION SCORE</strong></td>
<td><strong>12</strong></td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td><strong>19/32</strong></td>
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</table>
### GENERAL PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>universAAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Universal open platform and reference specification for ambient assisted living</td>
</tr>
<tr>
<td>Programme</td>
<td>FP7</td>
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<tr>
<td>Period</td>
<td>02/2010 – 01/2014 (48 months)</td>
</tr>
<tr>
<td>EU Funding contribution</td>
<td>10,775,000</td>
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<tr>
<td>Project type</td>
<td>Collaborative Project</td>
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</table>

#### Project subject (to help categorise the results for the final publication)

- Robotics for Ageing Well
- Innovative solutions for independent living
- Innovating elderly care
- Better connected through integrated care
- Frailty, early detection and intervention
- Fall Prevention
- Knowledge sharing and standardisation related to ageing well

### BRIEF DESCRIPTION

**Brief description of the project**

UniversAAL will produce an open platform that provides a standardised approach making it technically feasible and economically viable to develop AAL solutions. The platform will be produced by a mixture of new development and consolidation of state-of-the-art results from existing initiatives. We recognise that this not only poses technical challenges but also raises issues of adoption and uptake. Work on establishing and running a sustainable community will achieve attention right from the start, with promotion of existing results gradually evolving into promotion of the universAAL platform, as it develops into one consolidated, validated and standardised European open AAL platform.

### OBJECTIVES

**Objectives of the project**

The main goal of the universAAL project is to make it easier for the ICT industry in Europe to develop and successfully deploy AAL solutions. To achieve this, the project is developing an open standardized platform/specification on which the AAL service providers can quickly and cheaply build AAL services. The project also assists the developers by providing development tools to further decrease the development costs. Moreover, universAAL helps to further expand the AAL market by providing an application store, called uStore, through which developers, service providers and end users can offer and obtain AAL applications.

### OVERALL PROJECT ASSESSMENT

**Overall assessment according to review documentation.**

Assessment according to main scientific/technological achievements of the project, quality of the results, attainment of the objectives and milestones for the period, adherence to the work plan, any deviations (whether justified) and remedies

3

The UniversAAL project builds on the legacies of a number of EU projects devoted to the production of AAL software infrastructures (including PERSONA, Amigo, GENSYS, OASIS, SOPRANO and MPOWER), consolidating the results from these
Overall, the UniversAAL project has achieved most of its objectives. The main outcome is a unifying software infrastructure for the provisioning of AAL services. The research and development processes have delivered a number of software items that constitute a unifying software infrastructure for AAL service provisioning. The items were tested and validated with users. During the review, the reviewers have witnessed a live demonstration. The user validation (questionnaires) was executed and reported. Therefore, all the final deliverables submitted are suggested for acceptance.

### OVERVIEW OF PROJECT IMPACT

**Scientific, technical, commercial, social or environmental impact related to the AHA Triple win**

Is there evidence that the project has so far had, and is it likely to have, significant scientific, technical, commercial, social or environmental impact (where applicable) within the three key impact areas of the EU’s Triple Win Strategy: 1) Improved quality of life, 2) Increased efficiency of health and long term care 3) Market growth and expansion of the EU industry.

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<tbody>
<tr>
<td>3</td>
<td>The impact assessment is based on the current implementation, the formal deliverables, and by the demonstration made during the final review (15th January 2014) in Barcelona. Overall, the integration work is likely to have the impacts aligned with the promise made in the UNIVERSAAL DoW. As already pointed out in the previous report, the real impact remains difficult to estimate at this stage of the project due to the late delivery of some “final” deliverables. The UniversAAL framework is resulting in less effort spent towards the impact creation so far. However, a subset of partners of the current consortium has successfully applied for a continuation within the reAAL project to ensure efforts for impact creation beyond the universAAL project are carried out.</td>
</tr>
</tbody>
</table>

**Plans for the use and exploitation of results**

Comment on whether the plan for the use of foreground, including any updates, is still appropriate. Comment also on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiaries or groups of beneficiaries, and its progress to date.

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>4</td>
<td>The current use of the results appears in line with the DoW and best practices. Overall, the intended future use of foreground is still appropriate. There are respective plans detailed in the current deliverables (see above sections). The exploitation strategy you presented today consists of three essential pillars: (1) a commitment by a NFPO to keep uStore up and running (2) through an open source IPR construction (3) (but) delay a more tangible exploitation by acquiring REAAL grant. Reviewers documented different individual viewpoints on the exploitation of the project results. After the discussion, the agreed Consensus is that the approach taken by the project is practical and well-motivated.</td>
</tr>
</tbody>
</table>

**TOTAL PRELIMINARY ANALYSIS EVALUATION** 10
OVERVIEW OF PROJECT IMPACT IN KEY AREAS

Each of the sub-areas of impact (see below) will be analysed according to its impact in the following areas:

Impact area 1: Improved quality of life

How the project has made an impact regarding Improved quality of life
This will be evaluated taking into account the programme objectives including increased quality of life for elderly people and their carers, increased personal independence of the elderly, concepts for the detection of ageing-related risks, and the reduction of admissions and days spent in care institutions.

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Population that perceive their health as good or very good
- Population having a long-standing illness or health problem
- Healthy life years at birth

Impact area 2: Increased efficiency of health and long-term care

How the project has made an impact regarding Increased efficiency of health and long-term care
This will be evaluated taking into account the programme objectives including increased efficiency of care systems, creation of ICT products and services for ageing well, facilitate wide implementation of sustainable innovation services, efficiency through consensus and common visions between relevant key stakeholders and cooperation and longer-term research deployment.

Supporting indicators & Evidence
The analysis will be supported (where possible) by thematic areas of the indicators developed as part of the MAFEIP Study and visualised through the Policy dashboard on EIPonAHA.
- Available beds in hospitals per hundred thousand inhabitants
- Hospital discharges per 100,000 inhabitants
- In-patient average length of stay

Impact area 3: Market growth and expansion of the EU industry

How the project has made an impact regarding Market growth and expansion of the EU industry

Score 1-4

Supporting indicators & Evidence

205 The programme objectives were detailed in Section 2.2 of our Technical Offer.
206 http://mafeip.eu/about_study/
207 http://www.linkedpolicies.eu/policymaps/eiponaha/
impact regarding Market growth and expansion of the EU industry
This will be evaluated taking into account the programme objectives including New markets for independent and active living products and services through a set of open standards and integrated platforms, Improved competitiveness of EU industry, Strengthened global position of EU industry in service robotics for ageing well, Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing, Creating a longer term RTD agenda, Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA, Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.

- New markets for independent and active living products and services through a set of open standards and integrated platforms
  - In the field of standardisation an IHE DEN and HL7 CDA R2 Consent Directive standardization process is on-going, the universAAL Framework for User Interaction in AAL Spaces has become an IEC PAS and new standardization processes have been initiated on Reference Model and Architecture and Device Abstraction Layer with OSGi Alliance.
  - The project successfully designed and established the uStore, a digital market platform concept inspired by Apple’s “App Store”. The uStore is a one-stop-shop for UniversAAL end-user services.
  - The project designed and established the UniversAAL developer depot. This will contain all resources needed by developers: all parts of the platform itself, tools, basic services for incorporation in new end-user services, adapter components for interoperability with non-UniversAAL systems, libraries of “drivers” supporting use of different sensors etc. available on the open market. Again, the project credibly addressed this point working on the resources needed by developers. The AAL Studio is an example.
  - The project consolidated existing work and integrated new development. UniversAAL will build on existing solutions from finished projects (including PERSONA, Amigo, GENYS, OASIS, SOPRANO and MPOWER) and running projects. The project addressed this point working on the resources inherited from the respective projects. The Reference Architecture has been developed also to obtain a common system architecture.
  - The project devised a technical strategy for achieving interoperability amongst UniversAAL platform elements.
    - Improved competitiveness of EU industry
      - N/A
    - Strengthened global position of EU industry in service robotics for ageing well
      - N/A
    - Lead position of SMEs in markets for ICT innovative products and services for independent living and active ageing
      - N/A
    - Creating a longer term RTD agenda
      - The research synergy shaping the European Research Area (E.R.A.) was achieved. It is

Supporting indicators & Evidence
The analysis will be supported (where possible) by the thematic areas of the indicators developed as part of the MAFEIP Study\(^\text{208}\) and visualised through the Policy dashboard on EIPonAHA\(^\text{209}\):
- Intramural R&D expenditure
- R&D personnel and researchers in FTE

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208 http://mafeip.eu/about_study/
209 http://www.linkedpolicies.eu/policymaps/eiponaha/
- Reinforced academic and industrial knowledge base and excellence in multidisciplinary research on ICT for AHA
  - N/A
- Facilitating the emergence of an evaluation culture in ICT for AHA and Scalable business and financing models.
  - Intramural R&D expenditure
  - R&D personnel and researchers in FTE
- Setup of a common evaluation framework for the universAAL project

### DISSEMINATION AND ENGAGEMENT OPPORTUNITIES AIMED AT TRANSFERRING THE RESULTS TO A WIDER COMMUNITIES & STAKEHOLDER PARTICIPATION

**Notable efforts with regard to the dissemination of the project results**

*Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate. Indicate whether potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).*

3

- **Assess whether the dissemination of project results and information (via the project website, publications, conferences, etc.) has been adequate and appropriate.**
  - With regard to dissemination and exploitation, the articulation of the user community is intertwined with a growing network within the AALOA association. The cooperation with the EIP-AHA action group C2 has also been committed.
  - The dissemination of the project continued based on the continued updating of the website, leaflet and catalogue, active participation in social networks (Twitter, Facebook, LinkedIn, Youtube) and the periodic newsletters. The project has been also presented in several conferences and workshops, with more than 100 attendances and over 106 publications that are available at the universAAL website.

- **Potential users and other stakeholders (outside the consortium) are suitably involved (if applicable).**
  - This project aimed to extend the range of actors involved in creating and operating AAL solutions. The project will promote a move away from today’s “monolithic” approach in which a complete solution is designed and delivered by a single, organisation. The project has well addressed this objective working together and growing the community of the actors capable to contribute in the platform.
  - The involvement of the representative real-life end-users was evident but rather limited. The numbers being reported gave no statistically relevant figures concerning the delivery. Based on the presentations/deliverables, the results of the community building activities are not yet visible.
  - Based on the very brief reporting about the external liaisons (URC, Continua, OHT), there is
no evidence about the attempt to link/involves the direct end-users. Community building activities were performed.

**PROJECT SUSTAINABILITY**

<table>
<thead>
<tr>
<th>Continued impact from the project today</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the outputs and results from the project still being used today? Comment on the consortium's interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant).</td>
<td><strong>Are the outputs from the project still being used today?</strong></td>
</tr>
<tr>
<td>Supporting Evidence</td>
<td>- <strong>Are the outputs from the project still being used today?</strong></td>
</tr>
<tr>
<td></td>
<td>- A subset of partners of the current consortium has successfully applied for a continuation within the reAAL project (AAL programme) to ensure efforts for impact creation beyond the universAAL project are carried out. According to the Coordinator of the Universaal project, work also continued beyond the ReAAL project.</td>
</tr>
<tr>
<td></td>
<td>- The exploitation strategy was presented at the final meeting consists of three essential pillars:</td>
</tr>
<tr>
<td></td>
<td>o (1) a commitment by a NFPO to keep uStore up and running</td>
</tr>
<tr>
<td></td>
<td>o (2) through an open source IPR construction</td>
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<td>o (3) (but) delay a more tangible exploitation by acquiring REAAL grant.</td>
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<td>- Reviewers documented different individual viewpoints on the exploitation of the project results. After the discussion, the agreed Consensus is that the approach taken by the project is practical and well-motivated.</td>
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<td><strong>Consortium's interaction with other related Framework Programme projects and other national/international R&amp;D programmes and standardisation bodies (if relevant)</strong></td>
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<td>- The UniversAAL project builds on the legacies of a number of EU projects devoted to the production of AAL software infrastructures (including PERSONA, Amigo, GENSYS, OASIS, SOPRANO and MPOWER), consolidating the results from these where feasible and carrying out new development where necessary.</td>
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<td>- The community building and the clustering with other projects are in line with the milestones. The E4S conference in Barcelona is a tangible example. Another item is the web presence; it addresses the above communities further. The networking is adequate.</td>
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<td>- UniversAAL focuses on consolidation of so-called &quot;input&quot; projects. The consortium itself is constituted of some partners involved in the above &quot;input&quot; projects. The reuse of results is an inherent concept of this project. Furthermore, links towards European Partnership on Active and Healthy Aging, Action Group C2 as well as ReAAL are established.</td>
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<td>- UniversAAL submitted a commitment to the European Innovation Partnership on Active and...</td>
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Healthy Ageing (EIP AHA) in 2012, related to general use of multiple project results. In the course of this reporting period, universAAL also submitted a second commitment to EIP AHA, this time specifically focusing on promotion of the uStore result.

- Although no formal agreement is in place, it is clear that universAAL will co-operate with the newly started ReAAL project. ReAAL is a CIP project in area CIP-IST-PSP.2013.3.2, and has as its main aim to demonstrate the advantages of open ICT solutions through pilot deployment to over 7000 users across seven countries. As ReAAL will build upon universAAL, there is a clear mutual benefit for both projects to cooperate.

### BEST PRACTICES

**Best practices that the project has developed**

- The main outcome is a unifying software infrastructure for the provisioning of AAL services.
- The main result of the project will be the UniversAAL platform, offering support on three main axes: at runtime, for developers and to support the emergence of an AAL community and marketplace.
- The research and development processes have delivered a number of software items that constitute a unifying software infrastructure for AAL service provisioning. The items were tested and validated with users.

### FINAL EVALUATION COMMENTS

**Final comments regarding the in-depth evaluation**

The UniversAAL project builds on the legacies of a number of EU projects devoted to the production of AAL software infrastructures (including PERSONA, Amigo, GENSYS, OASIS, SOPRANO and MPOWER), consolidating the results from these where feasible and carrying out new development where necessary. The UniversAAL project has achieved most of its objectives. The main outcome is a unifying software infrastructure for the provisioning of AAL services.

In terms of continued impact, the universal project is active within the EIPonAHA and is likely to participate in the ReAAL project under the CIP programme.

**TOTAL IN-DEPTH EVALUATION SCORE** 16

**TOTAL SCORE** 26/32