IN LIFE Report Summary

Project ID: 643442
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Periodic Reporting for period 3 - IN LIFE (INdependent LIving support Functions for the Elderly)

Reporting period: 2017-02-01 to 2018-01-31

Summary of the context and overall objectives of the project

The main idea was to address the challenge of turning existing research efforts to reality for real people across Europe. IN LIFE offers personalised, multi-faceted existing ICT solutions and services addressing diverse daily activities to users with cognitive impairments (CI) living in their own home or in sheltered homes and their formal and informal carers.

IN LIFE aims to prolong and support the independent living of seniors with CI, through interoperable, open, personalised and seamless ICT solutions that support home activities, communication, health maintenance, travel, mobility and socialisation, with novel, scalable and viable business models, based on feedback from large-scale and multi-country pilot applications.

The project’s aim was approached through the following objectives:
- To connect a wide range of adaptable ICT solutions for elderly with various CI, into a common open reference architecture, to allow their interconnection and enhance their interoperability.
- To instantiate applications, services and business models to different geographical and sociocultural backgrounds, user group types and lifestyles.
- To provide tools and systems for services adaptation and personalization, to meet the different needs and wants of each individual in a dynamic way.
- To provide tools and instruction to carers of people with CI and/or dementia in order to support communication & functioning in daily life.
- To estimate the RoI of business models and connected services through pilots in 6 sites (UK, Sweden, The Netherlands, Spain, Greece, Slovenia) and highlight best practices for relevant viable business and financial models for their instantiation.
- To issue key guidelines on the proper and ethical application of the proposed business models and to study their scalability and sensitivity and provide guidelines on their optimal application.

Work performed from the beginning of the project to the end of the period covered by the report and main results achieved so far

The IN LIFE service-oriented architecture has been fully developed; it resolves interoperability issues among the different modules of the IN LIFE system and specifying the necessary data and control flows between the various components including also the adaption of the SSL cryptographic protocol for secure communication.

Twelve services are included in the Independent Living Support Module in 6 different categories; being pre-programmed daily functions; health monitoring and wellbeing support functions; mental training; security functions; fall detection and living in the moment.

The travel support module is comprised of a driving assessment, the simplified and elderly-focused MLS navigation support...
and a public transport support navigation & assistance sub-modules.

The communication and socialization module resulted in two tools (CIRCA and CIRCUS, including support for multilingual and multicultural support).

The Carers Support modules are to be used by the carers, being monitoring, supervision, scheduling and reminding, tele-consultation, patient management and complaints monitoring and virtual training.

The pilots were successfully conducted at the 6 pilot sites, having different sites enabled testing in as many as possible environments by taking advantage of the know-how of each site. Over 2,900 users participated in either the baseline or treatment phases. Prior to the tests, training was given to the participants, with the project tools. For the users of most sites, the increase in the MMSE score, the decrease in the negative PANAS (Positive And Negative Affect Scale; for measuring emotional functioning), and the decrease in the informal caregivers' burden have all shown to have statistical significance, thus receiving positive and encouraging outcomes and findings through our pilots. All types of users favoured the functionalities offered by the applications. The possibility to maintain a continuous monitoring and communication between elderly user-caregiver through IN LIFE was also very appealing to them.

The differences between the two conditions were used to calculate the QALY (Quality of Life in years) at pilot and project level. Overall, EQ-5D (U=485821.5, p<.05) and QoL increased in treatment condition. The use of the IN LIFE platform and the services for the entire population was beneficial and improved their QoL and the overall QALY was found to be high (0.741±.185).

Regarding data management, specific data were selected to be available through the INLIFE Data Management System in a dedicated area (Open Data) for external researchers.

Models of total cost of ownership and cost benefit analysis were developed and populated with the partners financial feedback. The IN LIFE Consortium elaborated on business models, market understanding and deployment promotion, aiming to interact with top-level decision makers in government, service providers and industrial companies. There are also a number of IN LIFE modules and services, which offer potential for direct commercialization. The IN LIFE platform will be brought to the market through a spin-off company; the route to market for each IN LIFE tool is also provided. The registry for IPR was maintained and updated; each partner retains the rights to their own IPR. The dimensions of the IN LIFE Business Model and SWOT analyses are performed and pilot site data on willingness to use IN LIFE in the future, WTP and preferred pricing mechanisms was added per country. The cost effectiveness of the interventions have been examined in terms of health gains, expressed in quality-adjusted life years (QALY) and visualised in terms of effectiveness and expense.

The 2nd project Workshop was organised with a great success on 17.01.18 in Madrid, with 60 European health professionals researchers, physicians and members of IN LIFE.

IN LIFE project has strong good practices to offer; based on experts, the project identified good practices are: i) the ‘IN LIFE system architecture

**Progress beyond the state of the art and expected potential impact (including the socio-economic impact and the wider societal implications of the project so far)**

**SOCIETAL IMPACT**

In the QoL estimation process, the final outcome was an estimate that can be further utilized in economic and cost provision calculations beyond QoL instrument analysis; the Quality adjusted Life Years (QALY). One is the highest QALY (i.e. living one year in full health) and 0.5 is a QALY estimation of being bed-ridden, then the estimation for the next year, for the IN LIFE whole sample is predicted to be a steady and mediocre health condition, when that happens with continuous assisted independence by using the IN LIFE platform ICT services.

**ECONOMIC IMPACT**

IN LIFE offers: 1) Mature Services, extensively tested in Real-Life Applications in 6 sites Europewide; 2) Sustainable Business Scenarios and Exploitation Opportunities as developed and tested during the pilots; and 3) Low Cost Services Integration and Maintenance achieved through the use of the open cloud platform and the ability of all connected services to work in it to allow seamless, barrier-free, accessible from everywhere and without high local computing capacity required service delivery mechanisms.
INNOVATION IMPACT

Key impact has been achieved through the following: Travelling to the Cloud; Bridging the Gap to the Electronic World and Social Media for elderly users with cognitive impairments and Making novel, scalable and adaptive business models for the silver market, that are widely tested and of proven viability.

Related information

![architecture.png]

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