INNOVATION REPORT

Maintaining long-term quality of life at home for a rapidly ageing population

· ·

Project leader: Ricardo de las Heras Martín. (Telefónica I+D)

The ITEA 2 AMIE project has developed an intelligent Information and communications technologies (ICT) based system offering elderly people a new way of obtaining advice on their health and wellbeing while monitoring their status and daily habits to help them overcome isolation and loneliness and enabling them to stay as long as possible in their own homes. Innovations include fully configured systems and multimodal interfaces depending on location, adapted to specific users in existing situations, which were acceptable and understandable to an older population without being intrusive.

Ageing is a huge and growing challenge as Europeans live longer than ever thanks to economic growth and advances in healthcare. Average life expectancy is now over 80 in the European Union, which currently has the highest proportion of elderly citizens worldwide. And, according to UN figures, this is set to continue for next half century.

Around 20% of the EU population was over 60 in 2000; this will grow to 25% by 2020 and to a staggering 37% in 2050. The prevalence of disability also grows significantly with age. These changes will therefore inevitably lead to an increase in the proportion of the population with impairments, disabilities or chronic illnesses. As a result, more and more adults are expected to face the need to care for very old and sometimes ill relatives.

All this affects individuals, families, communities and nations, and may have profound consequences for the economies of European states – and all other developed countries around the globe. It will not only make it more and more difficult for families to take care of an increasing number of ageing relatives but also impact the cost of medical and social-care systems.

Non-intrusive and friendly approach

The EU and Member State governments are seeking to improve medical treatment and support, and find a more economically sustainable model of care. AmIE targeted the development and use of new technologies to provide such care and independence to the elderly, enabling them to enhance their quality of life in a non-intrusive, helpful and friendly way. While not solving all issues, the results should provide relief in many situations as well as facilitating care for the elderly and making it more economically feasible.

AmIE defined wellbeing as ensuring a good quality of life at home. The ITEA 2 project aimed to increase autonomy for the elderly with security, offering tele-monitoring and home support. It provides information about the daily life of the user directly to doctors and carers, so they know what is happening in the user's house.

Among the innovative aspects are use of multimodal interfaces depending on the location of the user, information that will be provided by an indoor location system; and the assessment and tracking of the user's health through the employment of medical devices and new applications such as the habit-tracking system (HTS) which will facilitate the prevention and diagnosis of new illnesses.

HTS is designed to track user habits and detect deviations. Some potential health deterioration can be predicted by analysing night-time activity and hence preventive action taken. HTS will build on home sensors' information, mainly a location system that consists of a bracelet worn by the user and a set of beacons distributed across the home. The bracelet interconnects with the beacons through ZigBee technology and these with a central node via Wi-Fi. Each bracelet has a single identification so the central node is able to locate the position of a user within the home.

Such ICT functions can help the elderly overcome isolation in their own homes, increasing the possibilities for keeping contact with friends and extending their social networks. And they can provide applications such as electronic alarm systems, tele-health monitoring and home automation to control heating, lighting and fridge contents remotely to assist in everyday living.

The AmIE platform also opens up the way for further technical developments and the discussion on new commercial and social applications, always oriented to the needs of the user.

Improving accessibility to technology

However, many older people face barriers in exploiting ICT products, services and applications to their full potential. Some are physical – 21% of the over-50s have hearing, vision or dexterity problems, making it difficult or impossible to use standard equipment. To break down such barriers, systems manufacturers need to think much more about usability and accessibility when designing systems for the elderly.

AmIE has therefore developed a solution where interaction with the user is not standard or partially configured, but adapted specifically to each user and to each situation for optimal acceptance and understanding. The design is based on the principle of non-intrusiveness so that the daily life of the user is not affected by the various elements of the system.

ITEA 2 provided the ideal opportunity to develop such a project, allowing work with a wide range of

partners in several countries. AmIE involved companies and organisations from Belgium, Finland, the Netherlands, Spain and Turkey. Partners included research organisations, e-health and tele-medicine companies, and end users through gerontology institutes. Telefónica was responsible for user profiling and establishing user choices – such as preferences for messages on a loud speaker or a screen – as well as in communications between home and remote centres.

AmIE focused not so much on new technologies but rather on how to put services together – integrating different offers on a common platform, while adding some specific elements to provide tailored interaction to users. Such additions included localisation services in the house so the system knows where to send/display messages.

A series of demonstrators were developed. These included:
• Monitoring sleep quality – does the user roll continually or is he/she restful, or does he/she suffer from sleep apnoea;
• Measuring vital signs in tele-medicine;
• Organising the users service diary; and
• Preparing laundry or shopping lists.

Major impact expected

AmIE is expected to have a major impact as it is the first time all these services have been fully integrated – previous projects have been more limited in scope. In addition, the way the systems reacts to users according to their personal preferences is very relevant to getting such products to market; adapting services to individual users – such as taking into account their hearing levels – is a real innovation.

Key target markets are in tele-care and tele-medicine. Each partner will also try to exploit the results according to their own business plans. For example, Telefónica will exploit it for other products as well – including for home automaton systems. Other partners may well look at use in hospitals.

The success of AMIE is important for Europe with its rapidly ageing population as this type of service will have increasing demand. The resulting applications should save governments a lot of money by helping people stay at home and live autonomously for longer. The results of the project could also be extended to other target groups – including patients in prison facilities and people in drug rehabilitation programmes

More information: http://www.amieproject.com/