Care in the clouds

Telecare proponent Dr J Artur Serrano is integrating cloud technology and an innovative mobile application to help older people feel safe in their homes. Here, he describes the system’s features, and the reward of improving quality of life

Can you outline how your professional background has led to your participation in the VictoryaHome support system consortium?

My education is in computer science, with a particular focus on users and their interaction with computer systems. Since 2000, I have been involved in projects related to healthcare. I have always been interested in the connection between health and social care; it is amazing how separated they can be, even today. The VictoryaHome project is bringing together health and social aspects. Being directly involved with the users, rather than exclusively doing research in a lab, is a strong motivation for me; the ability to see the societal benefits of my research is highly rewarding.

With what aspect of the support system’s development are you most involved?

I am the scientific manager of the project, responsible for the results of the research. I also lead the usability testing and trials carried out in users’ homes. In relation to the system development, my group is specifically responsible for the mobile application and cloud technology. We are also involved in creating the business plan to develop the VictoryaHome system into a commercial product.

Could you introduce the mobile telepresence device, Giraff?

I first came across Giraff at a conference in Denmark in 2009. I was so excited that I convinced my institute to acquire a unit. Since the day it arrived, I have been thinking about how it could benefit older adults, and how we could develop the idea for large scale deployment.

In what way did the idea of using cloud computing occur and how is it applied in this system?

At the time, I was involved in some projects in telecare, and the idea came to me to combine existing telecare applications with Giraff, to expand the care network to the family and friends of the older adult. I decided to set up an international consortium and led an application for VictoryaHome. We had most of the initial components in a basic form: the telepresence device, the sensors, a web application for the alarm centre; however, there was a major missing link: a method of integrating it all.

Around this time, cloud computing was gaining momentum and development tools were emerging. My group decided to explore its use in the context of VictoryaHome. We call this component ‘Victorya’s mind’ as it is responsible for collecting all the information coming from the sensors and sending it to the relevant people involved in care. This is an innovative approach as most telecare systems still use a house hub – a computer placed at the home of the older adult. Victorya’s mind lives in the cloud and allows us to inform caregivers of any situation that might need attention. In this case, they can communicate with the older adult at home, from wherever they are, using the telepresence device.

What motivates you most about your work?

What I like about my work is the feeling that it brings a better quality of life to people. It provides peace of mind for carers, and allows older people to live for longer in their own homes. The motivation to keep going is expressed by the vision of this project: Be Well, Create Possibilities – we want older adults to be well in their homes and create new possibilities in their lives, and also in the lives of those who care for them.

How will you evaluate the effect that VictoryaHome has on care?

A multisite trial study, which is rare in large international projects, is underway across five countries: Netherlands, Norway, Portugal, Sweden and Australia. Forty older adults and over 100 of their partners, family members, friends and formal caregivers will be involved. Research teams will not only try to understand the potential benefits for older people, but also the impact on their family and friends. We will measure indicators for burden of care, loneliness, quality of life and technology acceptance.

How important has collaboration been to the success of the project?

The collaboration within the VictoryaHome consortium has been essential. I am also very grateful to the HOPE group, and the team here at the Norwegian Centre for Integrated Care and Telemedicine. We welcome anyone that might be interested in working with us to get in touch!

VICTORYAHOME
Building trust in telecare

The results of a collaborative project involving the Norwegian Centre for Integrated Care and Telemedicine, VictoryaHome is a support system that allows older adults to live in their own homes for longer, and brings peace of mind to those who care for them.

FOR THOSE IN the later years of their life, living alone can be challenging and unsafe. It also places a heavy burden on the friends and family who routinely offer informal care. As the population ages, this burden will increase, placing an unsustainable demand on public care systems. In this context, telecare – technology and services enabling people to remain independent in their own homes and offering support to their carers – shows great promise. Telecare services can help older adults to live independently for longer by integrating technologies that monitor health, and communicating those data to caregivers, thus offering peace of mind.

Computer scientist Dr J Artur Serrano is an expert in these technologies and is applying them in Norway, where the problem of population ageing is particularly acute. The country has a relatively low population density; people often live miles away from their neighbours and family, making social contact sparse and care delivery difficult. There are currently around 700,000 people aged 65 or over in the country, about 15 per cent of the population. By 2050, that number is predicted to reach 1.2 million. The increasing number of Norwegian older adults will create unprecedented and unsustainable demand for care.

SEEKING SERENITY
Serrano is Scientific Manager of VictoryaHome, a project initiated by the Norwegian Centre for Integrated Care and Telemedicine and involving care organisations, research institutes and industry across different countries in Europe and Australia. With the vision ‘Be Well, Create Possibilities’, VictoryaHome is a comprehensive support system that monitors the health and safety of older adults and facilitates social contact.

The system is built around a mobile telepresence device called Giraff, which enables the individual to keep in touch with family through video calls and messaging. It also ensures that the older adult is safe via a number of sensors.

Integrating all the component systems, and conveying the information to the various caregivers via cloud computing, is the purpose of the SerenityButton app for smartphones, developed by Serrano and his research team. Caregivers and family members can download the app from Google Play onto their smartphones to keep in touch with their older adult relatives, and are notified should any one of the sensors detect a problem.

The app thus gives family, friends and carers peace of mind by providing an overview of the individual’s wellbeing at all times, and notifying them of missed medications, falls, reduced activity or visit requests. As a backup, when the family does not respond to a notification within a previously established time interval, for example 15 minutes, an emergency response centre is contacted, ensuring the individual always receives help in a timely manner.

TRAFFIC LIGHT CARE
The concept is simple, intuitive and easy to use – the key tenets of good software. Without even opening the app, it provides information on the status of the resident via a widget that can be placed on the phone’s home screen. If the button is green, everything is OK. If attention is required, for example because of a missed
To design, create and roll out useful and usable services to improve the wellbeing, independence, health and safety of older adults and provide peace of mind and connectedness for their family, friends and professional caregivers.

**KEY COLLABORATORS**

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**J ARTUR SERRANO** gained his PhD in Software Engineering and Human Computer Interaction from the University of Glasgow, UK. In addition to VictoryaHome, he has been the manager of several European projects in the areas of eHealth and home care technologies. Serrano has been the co-editor of the Journal for Telemedicine and Telecare and a reviewer for several scientific conferences and journals.

**FUNCTIONALITY OF THE SERENITY BUTTON APP**

When a button is pressed, the app sends an emergency alert to caregivers, who can then make a ‘virtual visit’, or video call. The app combines monitoring, contact and communication, enabling the first version of VictoryaHome to be deployed. In January, long-term trials began across four European countries and Australia, with initial results soon to be published. “In the coming months, we will have over 40 systems in homes, and over 100 caregivers involved,” comments Serrano. Older adults, their family, friends and professional caregivers will all be involved in testing the newly developed services.

**THE PATH TO COMMERCIALISATION**

Since its creation in 2013, three full cycles of user-centred design have been carried out, enabling the first version of VictoryaHome to