A new way of caring for the elderly

Managing Director **Eija Sorvari** and Development Manager **Helena Launiainen** describe how their organisation exploits new technology to help older people continue to live independently and safely outside the traditional care setting

To begin, could you outline the core objectives of the Miina Sillanpää Foundation?

The Miina Sillanpää Foundation was founded for the benefit of adults in 1965. Miina Sillanpää was a member of the Finnish Parliament for 38 years and became Finland's first female government minister in the 1920s. She was a visionary who worked hard for a wide range of social issues in Finland. Our Foundation's mission is based on her life's work.

Our main objectives are to organise rehabilitation services for working-age and elderly people, and to provide residential and other services for elderly people.

How does the Miina Sillanpää Foundation serve working-age and elderly populations?

Through research, development and innovation (RDI), we aim to enhance social participation, promote health and maintain a good quality of life for people under all conditions. We focus on developing new models, services and solutions to enable meaningful daily living and wellbeing. Our RDI focuses on future-orientated, proactive operations, based on multiprofessional cooperation and co-creation with all stakeholders.

As a non-profit organisation, the Foundation works for the common good, so our RDI results can be implemented both nationally and internationally. The Foundation owns Avire Ltd, which provides services for promoting wellbeing and work ability, and Wilhelmiina Services Ltd, which offers homes, rehabilitation and other services for elderly people.

Some technologies already available can help with specific needs/problems. What is different about how the Happy-project supports seniors?

A number of technologies enhance seniors' feelings of safety and independence, but cover and report only on limited aspects of daily performance. Some are not even designed for seniors; for example, some activity level monitoring bracelets do not take into account whether the person uses a walking aid.

The Happy-project looks at seniors' daily living from a broad perspective. Instead of focusing solely on the possibilities technology has to offer, the project develops technology-supported services from the human perspective. This has been achieved by creating a valid theoretical framework combining Life Based Design with the International Classification of Functioning, Disability and Health. From our experiences, these models complement each other and form a structured framework that enables the design of comprehensive technologies that bring genuine value to people's lives.

Your Happy-project is run as a mini-ecosystem. Can you clarify how this works?

The mini-ecosystem consists of companies (Benete, Blue Lake Communication and Capcon), research organisations (VTT Technical Research Centre of Finland, the University of Jyväskylä, the University of Turku and Åbo Academi) and the Miina Sillanpää Foundation. The project is part of the larger BeWell Project funded by the Finnish Funding Agency for Technology and Innovation.

The Happy-project is based on human-centred multidisciplinary co-design. All partners contribute unique expertise to creation and production of services. The perspectives of all stakeholders, including seniors and their family members, are brought into design discussions. Needs, attitudes and experiences concerning technology are derived and understood via participatory means, such as interviews and workshops.

Can you explain how your new interventions support rehabilitation for people with dementia?

Our Foundation has developed rehabilitation programmes for people diagnosed with Alzheimer's disease or related disorders with funding from Finland's Slot Machine Association. Two newly developed interventions, Mutual Tone and Memory Phone, focus on technology-assisted rehabilitation in the early stages of memory disease. They aim to enhance active participation, encourage independent living and restore cognitive functioning.

The Mutual Tone and Memory Phone applications provide rehabilitation options that are not available with traditional methods. Both interventions are supervised by professionals and consist of group intervention, individual counselling and training at home via mobile technology. The applications include cognitive practices, recollection of common knowledge, recollection of Finnish popular music and music-based activities. They are available via our website for free.

How do you see your work developing?

Finland's Slot Machine Association is now funding a new three-year project to develop a virtual internet service for people with dementia and their families. The service will also be useful for those generally interested in memory functions. The aim is to develop an intelligent interactive platform called Virtual Memory Park that will provide comprehensive information about brain health, rehabilitative activities and guidance for local services. The platform will apply modern gaming techniques, making it easy to use. Virtual Memory Park will be provided in its own web domain and will be free of charge.

New technology for a happy old age

The **Miina Sillanpää Foundation** is developing technology-based interventions to enable people to remain in their homes despite advanced age and any associated health conditions, including memory diseases

BIRTH RATES IN EU countries have declined significantly since the mid-20th Century while, at the same time, life expectancy has increased. According to the EC, net native population growth has virtually stagnated since 2003 across the entire region.

Finland is a prime example of an EU country with a fast-growing population of people aged 65 or older. While its birth rate has remained at around 11 per cent for years, its proportion of older people is growing. For instance, over-65s comprised 20 per cent of the total population in 2014 – a number that is expected to rise to 28 per cent in 2060. This evidently has huge implications for social welfare and health care services, leading the Finnish Government to explore policy efforts that reduce the reliance of the elderly on institutional care. Instead, the aim is that long-term care for the elderly should be, as far as possible, met in their own homes or within an equivalently homely environment.

HELPING PEOPLE TO AGE IN PLACE

Most elderly people wish to remain in their own homes. Indeed, a recent American Association of Retired Persons study found that 89 per cent of people over 50 would prefer to remain in their own homes indefinitely. Another US study, Ageing in Place in America, reported that senior citizens fear moving into a nursing home and the accompanying loss of independence even more than they fear death. This latter study reported that their children, too, had grave concerns about their physical treatment and psychological wellbeing in a care institution setting. Interestingly, about 65 per cent of senior citizens surveyed were open to the idea of employing new technologies to assist them in maintaining their independence – and more than half were interested in the use of ambient technologies, in the form of sensors installed their homes, to help with monitoring their health and safety.

The Miina Sillanpää Foundation in Helsinki develops services for the wellbeing of adults of both working and retirement age. With respect to the elderly, the Foundation focuses on improving their rehabilitation and care. Because financial and personnel resources for traditional home care services are

SPOTLIGHT ON LIFE BASED DESIGN

The Life Based Design approach (Leikas 2009; Saariluoma & Leikas 2010) is a holistic, multidimensional means of designing technology concepts and products, which uses everyday life as a starting point for design work. It uses Form of Life analysis – spanning biological, sociocultural and psychological considerations – to establish how technological interventions can improve quality of life. The team at Miina Sillanpää Foundation has drawn heavily on this approach in its work.

MIINA SILLANPÄÄ FOUNDATION

OBJECTIVE

To organise rehabilitation services for working-age and elderly people and to provide residential and other services for elderly people.

KEY COLLABORATORS

Dr Jaana Leikas, VTT Technical Research Centre of Finland, Finland

Dr Erja Poutiainen, Rehabilitation Foundation, Finland

Dr Ari Rosenvall, Suomen Alzheimer-tutkimusseura (Society for Alzheimer Research), Finland

Dr Pertti Saariluoma, University of Jyväskylä, Finland

PARTNERS

Avire Ltd.

The Alzheimer Society of Finland

City of Helsinki

Rehabilitation Foundation, Finland

Society for Memory Disorders Expertise in Finland

SOSTE Finnish Federation for Social Affairs and Health

Wilhelmiina Services Ltd.

FUNDING

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Finland's Slot Machine Association

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EIJA SORVARI holds an MSc in Education. She has worked at the Miina Sillanpää Foundation for 10 years and has had much experience in the field of rehabilitation and elderly care services. Sorvari has also had many national and international positions of responsibility. She was Chair of the Board of Rehabilitation International Finnish Committee and a member of Rehabilitation International Social Commission. She was also Chair of the Association for Promoting Rehabilitation, a secretary and member of Advisory Board for Rehabilitation of the Ministry of Social Affairs and a member of the Occupy Your Own Age movement.

limited and likely to be further constrained in the future, the Foundation has explored alternatives for supporting independent living at home. As part of this, it has investigated how new technology might best be exploited under any personal or environmental conditions. "Our work is designed to enable senior citizens to remain in their homes even if they have health-related issues, such as Alzheimer's disease," explains Eija Sorvari, the Foundation's Managing Director.

CLIENT-BASED DEVELOPMENT OF NEW TECHNOLOGIES

The Miina Sillanpää Foundation has recently conducted several projects exploring the effectiveness of technology-based support for senior citizens in their own homes: the Mutual Tone and Memory Phone projects and the Happy-project.

Both the Mutual Tone and the Memory Phone projects delivered six-month interventions based on a music and cognitive-linguistic application for a tablet computer, coupled with videophone technology, which aim to improve cognitive function and emotional wellbeing in people with early-stage dementia. Importantly, these applications were developed by professionals in rehabilitation, music therapy, speech therapy and neuropsychology.

Prioritising a human-centred, ethical and future-orientated approach, the complexities of end users' everyday lives and activities are the starting point for the development of projects. Above all, the Foundation's development team seeks multidisciplinary and participatory co-creation with the end users and their close family members in order to maximise the value, usability and acceptability of their technological solutions. "This is because dementia impacts the whole family," Sorvari points out. "Yet the conceptualisation of the client as a person with dementia and their relatives is still uncommon in rehabilitation."

HAPPY-PROJECT: TOWARDS TRULY INDEPENDENT LIVING

Meanwhile, the Happy-project aims to develop models for an intelligent ambient environment and supporting services that will help to maintain quality of life, enhance active daily living and ensure safety for older people living in their own homes.

In the Happy-project, the team analysed the 'forms of life' of a cohort of volunteer end users to identify the daily routines and activities they typically carry out. They also clarified why the volunteers did these activities, what value was associated with them and how they were structured, guided by the principles of human-technology interaction design as set out by cognitive scientist Jaana Leikas in her Life Based Design method. Their model also referenced the World Health Organization's International Classification of Functioning, Disability and Health – the framework for measuring health and disability at both individual and population levels.

The Happy-project aims to develop models for an intelligent ambient environment and supporting services that will help to maintain quality of life, enhance active daily living and ensure safety for older people living in their own homes

Sensor technology placed in senior citizens' homes to create an intelligent ambient environment can gather information about how well senior citizens are performing their usual activities and reveal any changes in their daily habits. This information enables any variations in their activity levels to be discovered and visualised. "The data complements traditional health-related information, leading to integrated understanding of the person's daily performance," Sorvari explains. "These technologies also reveal acute or gradual changes that indicate a need for professional intervention."

IMPROVING MOTIVATION AND CONFIDENCE

The Happy-project is currently in its proof-of-concept phase, with a pilot study completed in 2015. In this study, home tracking systems were installed in the homes of 14 volunteer participants aged between 74 and 91. The tracking systems consisted of three motion sensors and two door sensors placed in locations that were significant in the participants' usual routines. While the results of the pilot have yet to be fully analysed, Sorvari points out that early results highlight the value of collecting objective data about older people's activities over a long-term period.

The results of a trial of the music-based Mutual Tone rehabilitation intervention have also been positive so far, showing enhancement of linguistic short-term memory and mood, and indicating improvements in attention and visual processing in the elderly. Sorvari expects that the full results of the Memory Phone rehabilitation project – available at the end of August 2016 – will confirm that these tablet computer applications add great value to the lives of older people and their families, helping them structure their daily routines and encouraging more communication and social interaction opportunities. "Acquiring new skills in technology also elevates self-confidence," she concludes.