ICT for increased quality of life for the elderly

Calendar, photo album, music, news and communication all in one place…

During recent years, the individual, social and economic challenges connected to the ageing population have received ever-increasing attention. Statistics that describe the demographic changes all over the world have convinced us all.

Cognitive impairment and especially dementia is a major problem for people as they get older. It is often more difficult for this group of people to maintain their quality of life (QoL) than for other older people. Living confidently at home is difficult; boredom and social isolation are very common. The lives of informal caregivers such as family or friends easily turn into a mixture of stress, constant worry, sadness and bad feelings. Many family caregivers have no opportunity to step into the role of a full-time nurse at the age of 50. They have their own jobs, their hobbies, and perhaps teenage children to look after. Formal caregivers such as professional healthcare providers experience distressing job situations when elderly care is more and more often reduced to the management of physiological needs rather than taking care of the wellbeing of the elderly person. Undoubtedly, tight budgets and job rationalisation have a negative impact on the care situations.

At the European level, there are differences between the nations' ways of organising their elderly care systems. To illustrate the differences, we might say that in the Nordic countries the welfare-state is supposed to take sole responsibility for the care of the elderly, whereas in the Mediterranean countries the family is regarded as the most natural and certainly the best qualified caregiver, including financial responsibility. However, there is little or no doubt about the challenges that in different ways affect the European countries depending on the care-culture, family structures, birth rate and the like.

One of the potential instruments for better coping with the care challenges that have been recognised is offered by ICT for ageing well. Within a number of areas, ICT may play an important role. Some examples are:

■ Stand-alone technologies, such as tracking devices, movement and fall detectors, pendant alarms, medicine dispensers, lighting sensors, fire, water and gas leak alarms, and door and window guards. Moreover, some devices are available as so-called elderly models, eg telephones and remote controls with extra large, visually clear buttons;

■ Telecare and telehealth solutions – Telecare refers to safety confirmation and lifestyle monitoring connected to a main centre through which an alarm can be raised, whereas telehealth covers the delivery of health related services and information via ICT;

■ Home automation and smarthouses where electrical devices in a house are integrated with each other, typically through a computer network to allow a certain level of intelligence and remote control of lighting, heating, irrigation, ventilation and air conditioning, appliances, security systems and access control, entertainment, and telecom systems.

Common to these is the ambition to provide increased QoL to persons who might otherwise require frequent presence of the caregivers, or institutional care.

However, in order to increase the quality of life of the elderly and people with dementia in a more holistic manner, a broader spectrum of the well-known problems of the target groups has to be addressed. One approach is to conceptualise QoL first, and afterwards combine this to the development, availability and uptake of the necessary ICT-enabled solutions. Brodd et al (1999) offer an excellent conceptual framework of QoL domains for cognitively impaired persons.[1] These include following domains:

■ Physical functioning (ability to perform basic physical activities of daily life);

■ Daily activities (ability to use telephone, shopping, food preparation, housekeeping, laundry, mode of transportation, responsibility of own medication and the ability to handle finances)[2];

■ Performance of discretionary activities (working, hobbies, being active);

■ Mobility (ability to travel out of the house);

■ Social interaction and relationships;

■ Ability to interact with the environment;

■ Bodily wellbeing (symptoms and bodily states reflecting physical comfort, discomfort);

■ Sense of wellbeing (positive and negative emotional/affective states and perceptions of self);

■ Sense of aesthetics (sensory awareness);

■ Overall perceptions (summary ratings and evaluations about one's health and overall life situation).

ICT-enabled support is currently available to many of these domains. There are, however, QoL domains that are more demanding to support through ICTs, but that undoubtedly affect the QoL remarkably. These are social interaction and relationships, sense of wellbeing and sense of aesthetics. Clearly, ICT support for the elderly and people with dementia within these domains is a challenge, yet not impossible to approach.

> **Mylife aims to support independence for older people with reduced cognitive function by giving them access to simple and intuitive services that are adapted to their individual needs and wishes.**

ICT can be applied to provide appropriate and personalised support to time orientation, sensory awareness, communication and recreational activities (entertainment). Thus, boredom, loneliness and social isolation can be reduced. Loneliness, isolation and lack of daily social interaction are in fact well-known contributors to difficulty with medication schedules and depression among the elderly and people with dementia.[3] This, in turn, implies less healthy ageing.

To combat these problems, a new 'family' of ICT products that aim at improving the wellbeing and QoL of the elderly and those with dementia, is developing. Characteristic to these products is the focus on a small number of core functionalities in different combinations and at different levels of sophistication: daily schedule (appointments and reminders), entertainment (photo galleries, games, etc) and messaging (email, chat, etc). A certain lever of personalisation and

remote control by the caregivers are also common features.

One of these development initiatives is the Mylife project (Multimedia technology to support independence for and participation by people with dementia), supported by the Ambient Assisted Living Joint Programme.[4] Mylife aims to support independence for older people with reduced cognitive function by giving them access to simple and intuitive services that are adapted to their individual needs and wishes. Mylife uses services available on the internet, such as calendar, photo album, music, news and communication, and presents them together on everyday devices with a touch screen. Tablets that are mounted in a stationary docking station, or mobile or handheld, can be used to display Mylife. Mylife is flexible and can be gradually modified to follow the user's cognitive development. Caregivers administer the setup, personalisation and content management of the Mylife product via a web interface. The service offered by Mylife supports time orientation, communication and recreational activities. Mylife will be available in several European languages.

Finally, successful development and uptake of ICT-based services and solutions depend on a number of user-centric approaches. This applies for the Mylife project and for all other enterprises that approach the market of assistive technologies. The Ambient Assisted Living Joint Programme has in its calls for proposals formulated challenges that have to be taken into account in all application areas.[5] These summarise the universal success factors of ICTS for elderly and people with dementia:

- Elderly people's access to, acceptance, trust, and use of ICT-based services and solutions have to be improved;

- User interfaces and the usability of devices and solutions for elderly people have to be improved and

Dr Riitta Hellman,
Senior Adviser R&D and Innovation

based on design for all principles as far as possible;

- Customisation to individual needs and wishes of elderly people of the total service chain, involving different providers, channels, methods and market segments, has to be enabled.

1   M Brod, A L Stewart, L Sands, and P Walton 'Conceptualization and Measurement of Quality of Life in Dementia: The Dementia Quality of Life Instrument (DQoL)' The Gerontologist 39: 25-35 (1999)

2   M P Lawton, and E M Brody, 'Assessment of older people: Self-maintaining and instrumental activities of daily living' The Gerontologist 9:179-186, (1969)

3   NOU 2011:11 'Innovation in Care Services' Report by the committee appointed by Royal Decree of 26th June 2009, submitted to the Ministry of Health and Care Services on 16th June 2011, Oslo, Norway

4   Project no. AAL 2010-3-012, co-funded by the European Commission Coordinator: Dr R Hellman, Karde AS, Norway, email: rh@karde.no, web: www.karde.no/MYLIFE_english.html

5   Ambient Assisted Living (AAL) Joint Programme: Call for Proposals 2010. AAL-2010-3: ICT-based Solutions for Advancement of Older Persons' Independence and Participation in the 'Self-Serve Society', 23rd April 2010