## Project Profile

DEMWatch
Dementia Watch System

The number of people facing a significant life challenge such as dementia is rising dramatically. In 2010 the number of dementia sufferers worldwide was 35.6 million. By 2030 this figure is expected to be 65.7 million and by 2050 some 115.4 million. Memory disorders and dementia result in a progressive deterioration of cognitive and functional abilities and interfere with social and occupational functioning, therefore a proper understanding of the societal costs of dementia, its impact upon families, health/ social care services and governments is essential so that this challenge is addressed effectively. The ITEA 2 DEMWatch project sets out to assist people with slight and moderate memory disorders by creating assistive indoor and outdoor technology that supports everyday life and boosts independent living and inclusion.
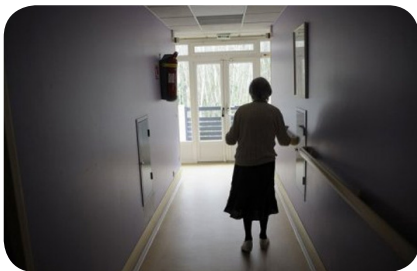
INDOOR & OUTDOOR ASSISTIVE SOLUTIONS

One of the key issues of the DEMWatch system is to provide an accurate localisation of the person. Pedestrian localisation in a living environment includes outdoor and indoor positioning. In DEMWatch, novel techniques for both indoor and outdoor localisation are going to be studied:

- Indoor – Several types of wireless technologies are used for indoor localisation. Currently there are many indoor positioning techniques, such as infrared ray (IR) techniques, wireless Bluetooth techniques, radio frequency identification (RFID) techniques, ultrasound techniques, ultra-wideband (UWB) Techniques, WLAN , ultrasonic system and cellular based techniques.

Future trends of wireless indoor positioning systems are as follows: Hybrid position algorithms;

- Internetworking of different wireless positioning systems; and
- Sensor fusion: Wireless combined with other technologies such as optical (e.g., IR), inertial, dc electromagnetic and ultrasonic

Outdoor – In the outdoor environment, GNSS (such as GPS, GLONASS...) systems are widely spread and already available. Different approaches studied by some partners of the consortium and the state of the art will be compared to: Dead-reckoning and inertial navigation systems, magneto-inertial navigation systems and vision based systems. Project is going to use GNSS standards for outdoor localisation. The indoor solution will also be combined to GNSS for outdoor environment to provide a full reliable localisation system..

A TOOL & A CARE PLATFORM

DEMWatch aims to develop a Patient Monitoring and Care Platform comprised of a wearable device for the patient, such as a watch or a pendant with an LCD screen, and interactive monitoring devices for the caregiver (such as iTV, Phablets, iPads, etc.). The wearable will do the following:

- Geriatric tracking and bio-monitoring of dementia patients;
- Body activities such as temperature;
- Location Tracking (Indoor & Outdoor);
- Consist an emergency button (Tracker alarm, e-call, etc.);
- Motion Detection w/ 9-axis (Falling, step counter, etc.);
- Sound notification (buzzer); and
- Body Area Network(BAN) Gateway.

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DEMWatch Care Platform

The overall system can be described as smart devices that provide care data to the relevant parties with support from a decision-making system on the serverside.

TECHNOLOGY-ASSISTED HEALTHCARE BOOST

The ultra-low power design products generated by DEMWatch will be available at low cost and so create the right business impact. The advance in ubiquitous computing, including interoperability, pervasive computing power, low-power devices and a high penetration of sensor-equipped interactive devices, allows the user's behaviour to be captured more accurately than ever before.Ultimately, this triple impact will have an important knock-on effect in terms of boosting commercial opportunities and therefore jobs throughout Europe.

PIONEER

The new technology will not only improve the quality of life of the users and their caretakers but also reduce the rehabilitation cost of memory impaired patients and, since people with memory disorders will be able to cope independently for longer and the care needs to be less intensive, the economy will be boosted with savings running up to billions of euros. This makes the DEMWatch project an attractive proposition in the European healthcare industry and a pioneer in a new,

virtually unexploited market that is expected to grow with the increasing elderly population, offering solutions to the high costs of dementia care with low-cost smart devices that are also easy to use and reliable, fostering, at the same time, social awareness and support.

DEMWatch Biometric Monitoring and Tracking watch

DEMWatch
(ITEA 2 ~ 12020)   March 2015