

# CAALYX

## Complete Ambient Assisted Living Experiment

Older people's autonomy and self-confidence can be greatly increased by wearing a light device that measure vital signs, detect falls, and automatically raise an alert to their care centre in case of an emergency.

### Objectives of the project

Europe is about to face a significant social change, brought about by an unprecedented demographic change: the ratio of elderly people to the entire population is steadily growing, while the ratio of younger age groups, especially the working population is shrinking.

CAALYX's main objective is to develop a wearable light device able to measure specific vital signs of the elderly, to detect falls and to communicate automatically in real time with his/her care provider in case of an emergency, wherever the elderly person happens to be, at home or outside.

*Caalyx aims at increasing older people's autonomy and self-confidence by helping them in case of emergency*

Specifically, CAALYX' objectives are:

- To identify which vital signs and patterns are more relevant to determine probable critical states of an elder's health.
- To develop an electronic device able to measure vital signs and to detect falls of the aged person at the domestic environment and outside. This gadget will have a geolocation system so that the monitoring system may be able to know the elder's position in case of emergency (especially outdoors).
- To allow for the secure monitoring of individuals organised into groups managed by a caretaker who will decide whether to promote raised events to the emergency service (112).
- To create social tele-assistance services that can be easily operated by users.

### Project Description

CAALYX' system considers three main areas of contribution: the Roaming Monitoring System, the Home Monitoring System and the Central Care Service and Monitoring System.

**The Roaming Monitoring System** intends to monitor unobtrusively the older person when carrying out his/her daily activities in an independent way, both in his home and outdoors. Several vital signs besides falls will be measured and automatically communicated together with his/her geographic position to the Central Care Service in case of emergency, so that a rescue unit can be dispatched in a timely manner.

**The Home Monitoring System** intends to provide a video communication channel for monitoring and service-providing. This communication link can be used to provide on-demand services like grocery shopping, cleaning, housekeeping or gardening, and periodic consultation with the doctor or personal caretaker.

**The Central Care Service and Monitoring System** will receive alerts from subscribed older persons. The caretaker will evaluate whether received alerts need to be promoted to the emergency service (112), in which case the geographic position and data about the likely type of emergency (fall, stroke, etc.) will be disclosed to the emergency service, so that a suitably equipped emergency team may be dispatched in a timely manner to the patient's location. Besides this service, videocommunication with the home environment will be held to attend the older person's demands. Other possible services include reminders of pills, visits, activities, etc.

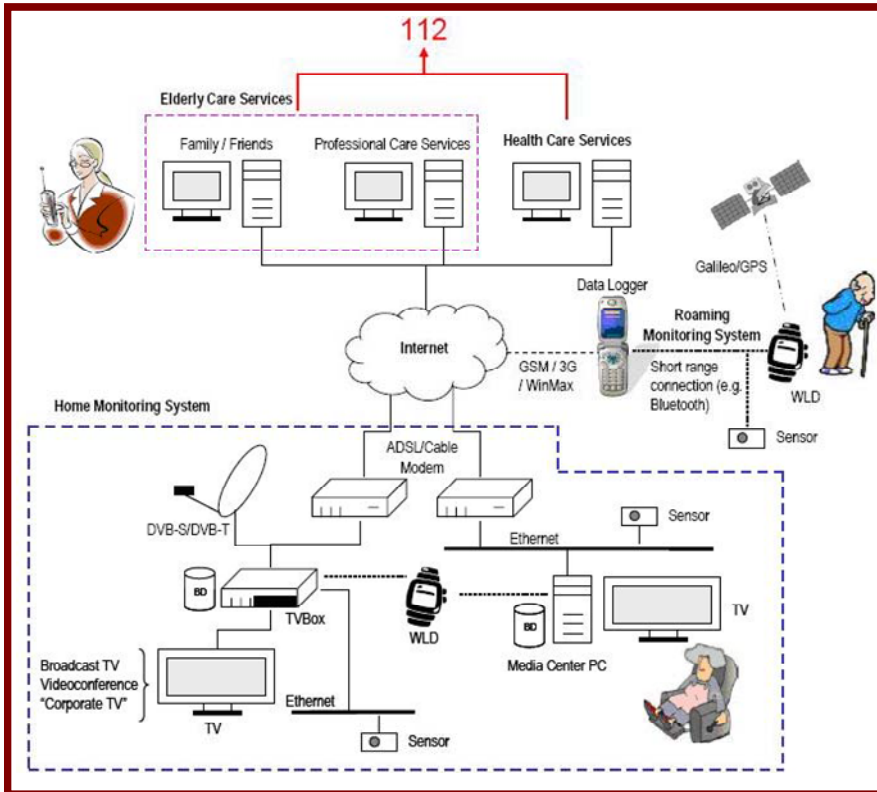
### Scenario

Peter is 65, lives alone, in a sheltered accommodation managed by social services. He values his independence but suffers from memory loss and uses a system of notes and reminders to keep track of his activities. His son lives nearby and visits him occasionally. His friend Barry lives next door and takes the responsibility for looking after him. After getting ready for the day at 7:30, Peter fits his well-being sensors and mobile phone when getting dressed. At 8:00, his TV automatically reminds him to take his medication. At 10:00, He goes for a walk.

If his well-being sensors detected unusual conditions, a voice channel would be opened with his caretaker, and if there were an emergency, his location would be disclosed (the fall sensor is equipped with a Geographic Positioning System device) so that the emergency services would perform a quick rescue. If the problem arises at home, a similar alert procedure is adopted. Falls are registered by the system and a weekly log is sent to Peter's General Practitioner who monitors his progress and evaluates his medication.

Terry monitors his dad's progress via his TV. On Friday nights, Peter plays bingo (from his TV) with his other friends while they chat about what they have done during the week. This is conducted through an audio/video system which connects several sheltered accommodations together.

End users' needs will be fully considered in CAALYX by studying how older persons live. The study will include interviews with people interacting with them: family, neighbours, friends, caretakers, social services, representatives of National Health Services, etc. Besides, a small sample of older persons will be involved in a real test of the system at the end of the project. A report will assess system performance and strengths, contrasting them against identified success criteria.



## Expected Results & Impacts

The aging European society is placing an added burden on future generations, as the 'elderly-toworking-age-people' ratio is set to steadily increase in the future. Nowadays, quality of life and fitness allows for older persons to have an active life well into their eighties. Furthermore, many older persons prefer to live in their own house and choose their own lifestyle. This project will have a clear impact in increasing older persons' autonomy by ensuring that they do not need to leave their preferred environment in order to be properly taken care of and monitored.

The impact on society will revolve around the following issues:

- **Individualisation** - Today traditionally denser and firm social networks like family and friends have become scarcer. Single households are becoming a mainstream way of living in urban centres. Older people living alone who are unable to leave their homes and care for themselves after having accidents or rapidly deteriorating health conditions can go unnoticed for long times.
- **Population migration** - By reducing the need for the older person to relocate (e.g., to live in an elder care institution or with family members at another location), the current elder living environment is not depleted of its people. This is especially important in rural areas with a preponderance of older persons, whose desertification (of people) has a clear ecological impact.
- **Manpower** - The current demographic trend makes it difficult to foresee how Europe will find enough people to take care of its older population, without a major change in traditional elderly care methods. Elder care will compete with other economic activities for resources.
- **Europe wide impact** - The migration of north European retirees to areas with a milder weather is a well known phenomenon. The care network will be distance independent, with several entities collaborating in care delivery.

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STREP

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Tele-assistance, well-being monitoring, fall monitoring, elderly people, independent living