

H2AD – October 2009-1/2 _ R&D PROJECTS

H2BOX

H2BOX is a non intrusive system capable of monitoring and tracking evolutions of the subject's behavior at home.

H2BOX is based on years of on-going behavioral science research conducted by H2AD doctors in medicine. Research results were applied to the system through development of a Bayesian inference and probability engine.

As a result, when H2BOX is installed at a person's home, it starts by analyzing the users' behavior for a period of time known as « learning ». Once the learning period is over, H2Box automatically switches to a permanent evaluation mode where current behavior is compared to past behavior, and where variances are matches with possible pathology syndromes using the Bayesian engine.

H2BOX can be used to detect short-term problems such as falls and consequences of falls, or dehydration as a result of a heat wave. H2BOX can also detect long term health deterioration patterns, such as premises of an Alzheimer disease.

H2BOX is simple to install, does not require ADSL, does not use a keyboard or any other input device. It requires no voluntary action of any kind from the user. In fact, it is meant to be installed and forgotten, so as not to interfere with or influence in any way the person's behavior.

H2BOX is currently undergoing a scientific evaluation with the help of the Saint-Etienne Public Hospital and Research Center (CHU de Saint-Etienne), based in Saint-Etienne, France. As part of this program led jointly by H2AD and the CHU's geriatric department, ten patients are followed simultaneously for 6 months by H2BOX and the CHU's geriatric team. Results will eventually be compared and published in appropriate medical publications.

D2C

Providing appropriate home care services to people in need is a growing concern of policy makers as a means of helping the elderly stay at home as long as possible, mostly because the number of elderly people is increasing, and the cost of hospitalization and health services in general is sky rocketing. Yet social services in charge of helping people access the services they need are usually at a loss for pinpointing the precise services the user really needs. There are several reasons for that, namely the total isolation between social services and medical professionals, the lack of understanding of the person's real needs, and the lack of tools for analyzing the various private offerings for personal home care services on the market.

H2AD has undertaken the D2C project, with partial funding from the French Government agency ANSP (Agence Nationale des Services à la Personne – Personal home care services agency) to develop a new generation tool for social services that will bridge the gap between medical and social services. D2C will help provide efficient to-the-point solutions to people in need by applying the WHO (World Health Organization) International Classification of Functioning, Disability and Health (ICF) to rate the persons abilities and determine their real needs.

It will match the person's needs with private sector offerings after the latter have been evaluated in terms of their value for users whose abilities and needs are rated using the ICF codes.

D2C is a 2-year project, with a one-year full scale experimentation due to start early 2010.

CASPER

CASPER is a 3-year project led by INRIA (the French national research agency for computing and automation) and France Telecom R&D. The goal of the CASPER project is to bring intelligence and efficiency to the loose and unstructured network of people potentially in a position to come and help an elderly or a handicapped person in case of acute need. This is often described as structuring the network of helpers.

In order to achieve this goal, the CASPER project envisions using various technological devices, at the subject's home as well as at the helpers homes, so as to know in real time whether the subject is in need for help, and whether each helper is in a position to provide help.

H2AD was sought for its expertise in home care in order to write functional specifications for the project, and to bring occasion precise expertise on various topics throughout the project. As an example, H2AD help specify how and at what conditions the local device could be used to determine automatically whether a person was in need of help, using rules based on behavioral science.

RESIDAS

One of the major problems faced today by elderly or handicapped people living alone at home is the fear of falls, and the fear of various risks such as leaving a door open, forgetting to turn off the water or the stove, or mistakenly taking an inappropriate or outdated medication.

There are solutions that address some of these problems, mostly in the form of objects worn by users. The limit of such product is that objects that must be worn are never always worn, because one does not sleep or take a shower with an alarm device around their neck.

The goal of RESIDAS is to develop a solution to equip the home, with nothing worn by the user. The RESIDAS product will use various detectors installed around the home to monitor and analyze situations, and trigger alarms when necessary. Detectors will be visible-range cameras, Infra-red detectors and sound microphones.

The signals from the various detectors will be processed and results crossed so as to determine in pseudo-real time the probability of looking at a situation requiring an alarm to be triggered.

The RESIDAS system will be open so that new types of detectors can be developed and added, bringing additional information to the central expert system that analyses situations.

In addition to the detectors, RESIDAS plans to embark the central intelligence in a consumer-friendly product such as an electronic picture frame, and add an RFID antenna to that devices so as to identify sensitive products such as medications.

H2AD has put together a consortium of private companies and public research centers that includes The French Institute for Vision, INRIA's PULSAR lab, INPG's GIPSA lab, ProBayes and Applitude. The RESIDAS consortium is currently seeking funding from the government innovation fund (FUI) for this 3-year project due to start in 2010.