

Compensation of Handicap and Autonomy Loss through e-Technologies and Home Automation for Elderly People in Rural Regions: An Actual Need for International Initiatives Networks

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Abstract. To face the problems of elderly and disabled people in a rural environment, the district of Guéret (department of Creuse, France) has set up the “Home automation and Health Pole”. In association with the University of Limoges, this structure is based on the use of e-technologies together with home automation techniques. In this frame, many international collaborations attempts have started through a BSc diploma. This paper sums up these different collaborations and directions.

Keywords: Home automation, elderly people, e-technologies, international collaboration, universities exchanges.

1 Introduction

The department of Creuse today prefigures how large areas of Europe will stand within the next 20 years. The rural population of the department of Creuse is at now one of the oldest in Europe. To take benefit of this demographic reality, the district of Guéret [1], (19 towns for 29 000 inhabitants) decided, 3 years ago, to create the “Home automation and Health Pole”. The aim is to drive a coherent action plan in terms of comfort, safety, autonomy and communication for the elderly and disabled people. In conjunction with this, the University of Limoges now proposes for its first year a BSc dedicated to “Home automation and people autonomy”. The last ongoing extensions are now necessarily made via international relationships thru universities exchanges and European network of Living-Labs (EnoLL) program [2].

2 The Local Initiative Context

E-communication techniques and networks technology together with home automation management constitute the backbone of this rural healthcare initiative.

It has to answer and fit the following objectives:

- Improvement of the living conditions of elderly people, in respect for their socio-economic environment, following ethical rules;
- Help for the development of home automation companies and associated services for health and assistance domains;
- Participation of the university and the education system in specific training and research programs.

Concerning this last item, a new BSc diploma has been created and has welcome its first students in September 2008. This diploma has been created jointly with the University of Limoges and the district of Guéret.

More recently, different public and private partners have joined in the EnoLL program and as been validated as a “Living-Lab”, thus emphasizing the need for coordinating actions in the domain:

- The region (Limousin) and department (Creuse) councils;
- The hospital center of Guéret;
- The Legrand industrial group, world leader in home automation equipments;
- Axione, the regional telecommunications operator;
- The Chamber of Commerce and professional offices;
- A wide range of official organizations, foundations and medical centers which services are dedicated to elderly and disabled people;
- The University of Limoges through teaching and research programs:
 - National research laboratories working on telecommunications and e-technologies such as XLIM [3];
 - The engineering school ENSIL [4];
 - The Science and Technique college with the BSc “Home automation and Autonomy”;
 - The University hospital center.

Applied experiments are today under deployment and preliminary results can now be reported on:

- Field trials: supply of 10 show apartments, communication networks optimization (digital subscriber line - ADSL, optical fiber, power lines -PLC, radiofrequency base stations, ...);
- Experiments of home automation products in the hospital of Guéret and surrounding medical centers;
- Economic effects;
- First results of the work placements of the BSc program students;
- Impact on the medical staff and people. Adaptation / resistance to new practices monitored by e-technology. Inferred ethical problems.

Scientific and technical experiments at a research level are also in process:

- Indoor communication studies in a perturbed environment (hospital);
- Intelligent distributed home automation/communication network for daily activities assistance and monitoring;

- Intelligent floor for people activity monitoring, people localization inside the house and real-time dangerous situation alarms;
- Intelligent multimedia real-time network share notebook (unique and centralized contextual multimedia tool for the disabled people, the family, the medical doctors and assistants, the home service assistants ...);
- Evaluation of the disabled or elderly people in terms of ergonomics, mental capabilities in conjunction with home automation equipments.

The “Home automation and Health Pole” of Guéret has got several national and European awards and now has the objective, in association with, and through the University of Limoges researchers experience, to initiate international collaborations.

Among these is scheduled a collaboration with the DOMUS laboratory of the University of Sherbrooke in Quebec, Canada. The DOMUS laboratory is a multidisciplinary lab aimed at research in DOMotics and Mobile Computer Science and located at Université de Sherbrooke [5].

Another one is within the frame of the Norwegian Åsgard program [6] which objectives are:

- To stimulate exchanges between France and Norway in terms of the expertise and scientific competences;
- To emphasize the initiatives of cooperation in research & development;
- To enable French and Norwegian researchers to extend their own international networks.

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