Thematic Actions

Coordinating Universities for the Proposal: UCM and UPM

Title of Action	**Installation and Consolidation of the Living-Lab**		
Participating partners	UCM, UPM	**Other participants**	
Personnel involved (indicate institution)	UCM, UPM		
Start date	2009	**End date**	2012
Cluster	i-Health (i-Medicine)	**Other clusters**	
Areas of action	Research / Knowledge Transfer		
Location	UPM		
Infrastructures involved	Living-Lab (UPM)		
Keywords	Ambient intelligence; e-Health; Telemedicine; Knowledge management		

Objectives:

Located in the ETSI of Telecommunications, the Living-Lab is a home fully equipped for the daily life of any person, including persons with disabilities. It is flexibly designed to allow the monitoring and testing of ICT applications that will improve our quality of life and, in particular, health. Ambient intelligence (AmI) solutions from companies or technologies developed in other centres or laboratories can be intensively tested in the Living-lab, using real subjects and during long tests periods.

Description of the action:

This fully accessible environment for the testing of new advanced social and e-health services will be available to the university, scientific and business community. The lab is an ideal location to test and implement advanced e-health services such as telemedicine, telerehabilitation, postoperative follow-up, the tracking of diseases (such as Parkinson's, diabetes, etc.) and where doctors and healthcare personnel can develop and improve their products in a user-focused manner.

The lab has a specific virtual reality system, or CAVE area, that uses virtual reality techniques for rehabilitation sessions, phobia treatment, and learning process improvements for autistic people, etc. In this room, rehabilitation doctors, psychologists and occupational therapists can experiment new techniques using new technologies while users are safely submerged in a 3-D environment.

The lab has an observation room to non-obtrusively track and evaluate the user experiences. It is prepared for the installation of advanced home automation technologies and cutting-edge human-machine systems.

The UPM Smart-House Living Lab forms part of the Spanish Technology Platform for Independent Life and Accessibility, eVIA, through the Life Supporting Technologies Group. Within this platform it contributes to several workgroups, including Ecosystems, Open Innovation Spaces and Living Labs, and the Accessibility group.

Key planned results:

1. **Organisational and infrastructure results**. Consolidation of the real-scale Living-Lab, under construction on the ETSI premises in a network with other such centres in Spain and Europe. This infrastructure will permit the execution of many activities in axes 2, 3 and 4.
2. **Scientific results**. A minimum of three papers in indexed journals and two doctoral theses per year. Science publications, international conventions and conferences.
3. **Technological results**. One international patent in the second year and two patents per year in subsequent years. User environment systems for continuous illness management and p-health applications for lifestyle, education and rehabilitation management.
4. **Evaluation results**. Clinical tests with statistical validity of systems and technologies developed in the project conducted in Spanish and European medical centres. Use of the Living-Lab to evaluate users in real conditions: outside of hospitals.

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Rationale for the action:

ICT applied to p-Health for patients, citizens, environments and professionals will disrupt the healthcare process management system in a cost-effective and sustainable way. In our aging society, where citizens demand more and better social and healthcare services, we must discover innovative procedures in order to rise to today's challenges. We need equitable and high quality services with the citizen at the centre, at an acceptable cost for public bodies and organisations, and handling information in an efficient and error-restricting manner.

Strengthening healthcare systems using ICT will promote essential human rights by enhancing access to information, equality, solidarity, quality of life, and quality of care (WHO, 2005). In this context, p-Health will have an essential role in generating and developing a sustainable framework to assist in the creation of tools, the optimisation of processes, response time improvements, and enhancements in efficacy and efficiency of healthcare processes.

International aspects:

The project will deepen and expand the research centre's existing collaborations with Spanish and European organisations.

a. At present the centre participates in 22 European projects from the 6th and 7th FP and aims to maintain a presence in all future actions.

b. It plans to strengthen collaboration with US University centres, such as Houston University and the Harvard School of Medicine. These centres already collaborate with other European projects.

c. Increased collaboration with other European technology centres, such as Fraunhofer (Germany), CNR (Italy), VTT (Finland), NST (Norway), and companies like Philips, Siemens, Medtronic, Vodafone, GE, Nokia.

d. In the socio-healthcare context, a stronger collaboration will be sought with European entities such as the NHS (UK) and the San Raffaele Foundation (Italy).

e. In Spain, the centre currently collaborates with entities such as the San Carlos Clinical Hospital of Madrid, the Paraplegic Hospital of Toledo, the La Fe Hospital of Valencia, and the Anderson Foundation; with technology centres, such as ITACA, from UPV, e2BC; emergency healthcare bodies like SAMUR, 061 and Civil Protection in Madrid; and companies such as Siemens Ibérica, FENIN (Federation of Medical Technology Companies) and Atos Origin, etc.

Planned impact:

p-Health is highly disruptive because it actively incorporates the patient in the process of managing his/her own illness, opening the possibility of bringing together social and health care in the same space and context. Planned impacts are:

1. The improvement of the assistance system: clinical proof and evidence of health and social benefits emerging from the organisational and process transformation supported by p-Health technologies, which enhance global efficacy, benefiting citizens, and the system's sustainability.
2. The creation of qualified jobs promoting the generation of high-tech industrial infrastructure.
3. Improvements in scientific knowledge through the training personnel qualified to work in R&D centres and companies.
4. Improvements in transference, by means of patents, transference contracts, publications and knowledge diffusion.
5. The creation of opportunities in teaching and higher education, promoting opportunities for doctoral theses, Master's degree courses and undergraduate thesis projects.
6. The presence of the Moncloa Campus in the European Research Area.