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Robots in Assisted Living Environments

*Unobtrusive, efficient, reliable and
modular solutions for independent
ageing*



The RADIO action

Societal Challenge

Demographic and epidemiologic transitions have brought a new health care paradigm with the presence of a growing elderly population and chronic diseases; Life expectancy is increasing as well as the need for long-term care. Institutional care for the aged population faces economical struggles with low staffing ratios and consequent quality problems.

Opportunity

Technical advancements in ICT and robotics bring new opportunities to improve the quality of life of the elderly, their family and caregivers, and to minimize the inconvenience and cost of clinical monitoring; automatically detecting early symptoms of cognitive impairment, frailty, and social exclusion would extend people's ability to safely and comfortably live independently.

Concept

The action develops the **RADIO Home**, an integrated **smart home** and **assistant robot** clinical monitoring environment, where the hardware foreseen primarily serves user comfort and home automation purposes.

Objectives

RADIO Home environment validates **a novel approach to acceptance and unobtrusiveness**: a system where instead of hiding sensing equipment, we make it an **obvious and accepted part of the user's daily life**.

Realistic trials

Extensive, realistic trials of the RADIO system:

- Technical validation at realistic AAL simulation labs
- Medical evaluation at controlled clinical environments
- Usability evaluation at controlled environment and at several private residences

Technological heterogeneity support; diverse sensors and heterogeneous communication technologies coexist and cooperate.

Hardware implementation of ADL recognition algorithms minimizes resource utilization even under highly demanding performance requirements and guarantees that raw visual content can never be compromised.

Advanced ADL recognition services

Unobtrusiveness studies

RADIO assesses system's unobtrusiveness towards:

- The end user in terms of usability, privacy, human interaction, self- concept and daily routine.
- The caregiver in terms of acceptance.
- The clinical staff in terms of functional efficacy.
- The technician in terms of ease of installation and maintenance.

Development of methods that allow applying statistical tools to distributed collections of electronic health records, without accessing any individual health record.

Development of policies and technical means for compliance to personal data regulations.

Security and privacy of personal health records