

Robotics Devices as Digital Solutions to Improve Medical Care on Elderly

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THE AAL PROJECTS



The Active Assisted Living (AAL) aims to connect european researchers to develop technological tools to improve elderly's life. SIMED has then collaborated with other sites as the Netherlands, Italy, Norway, Romania.

Objectives: co-design with end-users some devices or technological tools to help improving the quality of life of frail seniors and their carers, either informal or formal.

- **H2HCare**
is a connected TV with applications offering seniors with heart failure, a better adherence on their home treatment, reducing then the hospitalization rate.
- **Guardian**
is a social robot offering reminders and bringing requests on the frail seniors' home to bring them some qualitative company
- **engAGE**
is a social robot offering games an theater exercises to seniors with mild cognitive impairment



THE EVALAB

SIMED, particularly the EvaLab has been involved in european projects as **evaluation experts on UX design**.

SIMED's laboratory aims to evaluate medical devices, applications, social robots for home care or institutions, and some technological tools aiming to improve elerdy's health.

- **Morae**
serves to register all the actions done (clicks, comments, hesitation, errors) by the end-users on a interface.
- **Eye tracker**
helps to evaluate where the end-users are looking and gives a better insight on their thoughts.
- **Roof cameras**
record how the end-users behave in a simulated environment and to evaluate how the evaluated object will be used in real life conditions.

AAL TOOLS BY EVALAB



Guardian robot offers:

- Medication reminders
- Meals reminders
- Appointment reminders
- Well-being requests
- Sleep quality requests
- Activities suggestions

The robot is connected to a cloud transmitting all the information gathered to the caregiver application, where relatives and health carers can consult the data and adapt their treatments.



H2HCare connected KOMP TV can:

- provide direct calls with medical staff
- offer some a support on taking health mesures daily
- improve the interactions with relatives
- pictures and videos stockage to display

The KOMP device sends data to medical carers, who can consult statistics of the treatment adherence on a specific interface created for them. Relatives also have the possibility to interact with their beloved seniors on their own application



engAGE robot aims to:

- offer cognitive exercises on a playful way
- be installed on care centers or institutions where seniors with mild cognitive impairment use to go
- stabilize their cognitive state and get more information on the difficulties encountered by

The Pepper robot will offer a "take away" mode for seniors wanting to continue playing those games at home, on their tablet or smartphone.

UX EVALUATION



Usability test in simulated environment

Participants among the european sites had to test the devices. The rate of success and the easiness to understand and use the system have been evaluated.

Guardian

43 participants (14 seniors, 29 carers)
December 2021

H2HCare

25 participants (10 seniors, 15 carers)
June 2021

High score of satisfaction among seniors and carers has been registered. Devices are evaluated as easy to use, attractive, and meeting the need and expectations of the targeted population.

MORE INFORMATIONS



Guardian (<https://guardian-aal.eu/>)

Naveira AV, De Masi A, Wac K, et al.
Designing a Social Robot Companion to Support Homecare: Usability Results. Studies in Health Technology and Informatics. 2022;295:261-264. doi:10.3233/SHTI220712



H2HCare (<https://h2hcare-aal.eu/>)

Rochat J, Villaverde A, Klitzing H, et al.
Designing an eHealth Coaching Solution to Improve Transitional Care of Seniors' with Heart Failure: End-User Needs. Public Health and Informatics: Proceedings of MIE 2021. July 2021:530-534. doi:10.3233/SHTI210227



engAGE (<https://engage-aal-project.eu/>)

The project is in progress



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