The project PETAL is cofunded by the European Active and Assisted Living Programme (AAL-2016) and the following National Authorities and R&D programs in Italy, Spain, Austria and Romania.
Who We Are

PETAL Partners

ANA ASLAN INTERNATIONAL
Fundatia Ana Aslan International, Romania
*End-User Organisation*
[anaaslanacademy.ro](http://anaaslanacademy.ro)

APOLLIS
Institute for Social Research and Opinion Polling, Italy
*Enterprise*
[apollis.it](http://apollis.it)

BARTENBACH
Bartenbach GmbH, Austria
*Enterprise*
[bartenbach.com](http://bartenbach.com)

CNR - ISTI HIIS Lab
Human Interfaces in Information Systems Laboratory, Italy
*Scientific Research Institute*
[hiis.isti.cnr.it](http://hiis.isti.cnr.it)

IDEABLE
Ideable Solutions, Spain
*Enterprise*
[ideable.net](http://ideable.net)

SANTA LUCIA
Fondazione Santa Lucia IRCCS, Italy
*Scientific Research Institute, End-User Organisation*
[hsantalucia.it](http://hsantalucia.it)
Motivations and Goals

The aim of this Project is to extend the time older people can live in their home environment by increasing their autonomy and assisting them in carrying out activities of daily living.

The older adults with Mild Cognitive Impairment (MCI) have to face the increased risk of dementia onset in association with physical and cognitive issues (e.g., reduced sight, balance disorder, irregular sleep-wake rhythm, memory loss). Consequently, MCI people are more prone to develop social withdrawal, apathy and depression.
Several controlled studies indicated that:

- adequate lighting can increase recognition, spatial awareness and visual orientation and can improve way-finding;
- spatial light cues can improve spatial orientation and navigation;
- a proper lighting system could ameliorate balance, stability and postural control.
What We Do

The project will provide caregivers with tools to fine tune the behaviour of the home and its connected services in guiding the elderly in their activities:

- Adaptively reacting to the older adults behaviour changing the environment and available device characteristics
- Flexibly driving attention and behaviour in reaching the older adults goals

The users can set the functionalities of the technical support to control lights and other digital devices when relevant events occur. In order to be effective for the wide diversity of users, applications should have flexible and highly personalized context-dependent behaviour.
Remote Control of the Appliances

Sensors and Smart Devices

Personalization Rule Editor
How We Provide a Personalized Context-Dependent Behaviour

*Personalization Rule Editor*

The technological platform will be based on Trigger-Action Rules.

\[
\begin{align*}
\text{TRIGGER} & \quad \text{IF/WHEN } \langle \text{a situation occurs in the elderly context}\rangle \\
\text{ACTION} & \quad \text{DO } \langle \text{a specific action}\rangle
\end{align*}
\]

The platform provides:

- Personalized control of lights and digital appliances
- Personalized warning messages issued in risky situations
- Persuasive messages to stimulate the elderly in more healthy habits (e.g., do more physical activity)
Integrated Serious Game for Cognitive Stimulation

The PETAL platform has been integrated with the Kwido Mementia Serious Game Application, which provides several exercises to work on skills such as memory, calculus, executive functions, language, orientation and attention.

The platform allows caregivers and older adults to create personalization rules triggered by information generated by the application such as emotional and cognitive state, training results and time.
An example of serious game

Personalization rule editor with game-related triggers
Field Trials

Field trials have been performed in Rome, Bucharest, Bolzano and Austria. In the field trials the platform and some applications have been deployed and used, with the objective to understand the impact of the system in real-life settings.

The house of MCI older adults has been equipped with an intelligent system consisting of sensors and a lighting solution.

Example of a house equipped with sensors and a lighting solution.
Sensors and Objects installed in the Trials
For further information on PETAL Project, please visit our website: www.aal-petal.eu

Coordinator institution:
CNR - Consiglio Nazionale delle Ricerche
HIIS - Human Interfaces in Information Systems laboratory
Via G. Moruzzi, 1 Pisa 56124 (Italy)
e-mail: fabio.paterno@isti.cnr.it