A SOFTWARE PLATFORM TO DELIVER SMART, USER EMPOWERING ROBOTIC APPLICATIONS

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ROBOTIC APPLICATIONS FOR SOCIAL INCLUSION

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Ageing in Europe

By 2060 Europeans aged above 65 will reach the 28% of the total European population while those aged above 80 will rise to 12% from the current 5%.

Aging should be a positive experience. But whilst many older people enjoy the options of leisure, learning new things, or spending time with friends and family, others experience isolation and exclusion.

Elderly people are at greater risk of social isolation compared to the general population, because of the increased likelihood of health problems, and major life-events (e.g., death of relatives and friends).
Ageing never comes alone....

Vision
- Visual acuity
- Sensitivity to visual contrast

Hearing
- High frequency sounds
- Sounds in general

Motor skills
- Fine movements
- Larger muscles

Cognitive changes
- Attention
- Learning
- Memory

Social changes
- Living alone
- Isolation
Elderly – a group with a high risk of social exclusion

- Lack of family ties
- Income poverty
- Poor health, dementia and/or disability
- Poor housing conditions
- Poor access to social services/care
- Immigration background
- Living in rural areas
- No access to IT
- Early exit from labour market

Hoff, 2008
Social inclusion, elderly and robots

A socially inclusive society is defined as one where all people feel valued, their differences are respected, and their basic needs are met so they can live in dignity. (Cappo 2002).

Robots caring for elders is still a work in progress in research labs around the world.

A number of robotic applications for elderly needs have already been developed:

- Rehabilitation robots
- Service robots
- Telepresence robots
- Emotional robots

Issues to deal with:
- Financial
- Ethical
- Socially Assistive (yes or no?)
- Acceptance (yes or no?)
RAPP aims to improve the social inclusion of the user by offering a wide range of services.
RAPP pilot sites – 1. Ormylia Foundation

“ORMYLIA” Foundation is a non-profit, non-governmental institution supervised by the Ministries of Development, Culture, Education and Health. “ORMYLIA” Foundation, in its two divisions, the Diagnosis Centre and the Centre for Social Advancement, Medical Prevention and Research, "Panagia Philanthropini", has an average number of more than 1000 of individual external users per year (mainly minorities and impoverished).

Ormylia Foundation is going to collaborate with two social partners:
- Community Seniors Center in New Moudania of Chalkidiki (Greece)
- The Greek Association of Alzheimer Disease and Relative Disorders (GAADRD) in Thessaloniki (Greece)
Non-profitmaking organization with over 130 years’ experience looking after old people and people with disabilities

<table>
<thead>
<tr>
<th>Institution oriented services</th>
<th>Home oriented services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gerontology and Day Care Centres</td>
<td>Sheltered Housing</td>
</tr>
<tr>
<td><strong>Hospital Bermingham</strong></td>
<td>Cohabitation units</td>
</tr>
<tr>
<td>IZA Centre for the Disabled</td>
<td>Integral Home Care Service</td>
</tr>
<tr>
<td><strong>Orto-geriatric service</strong></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation Centres</td>
<td></td>
</tr>
<tr>
<td>MATIA Orienta Service</td>
<td></td>
</tr>
</tbody>
</table>

Aims to generate interdisciplinary scientific knowledge to maximize personal autonomy, independence, health and quality of life for old people, disable people and their caregivers.
User requirements - Assistance, companionship

- User friendly (easy menu, simple actions)
- Front end functionalities orally presented and picked
- Risk detection (open doors, windows etc)
- Skype calls, Email, Social media, Search engines
- Cognitive games Memory ball Results storage
- Simple withdrawal from activities or switch off
- User face recognition
- Calendar - Reminders
- Small object fetching
User requirements – Mobility assistance and activity monitoring

- Adapted to each patient/user
- Very easy to manoeuvre
- Personalized exercises
- Very easy patient-rollator interaction
- Setting up with suitable Rapps for different users
- Stability and robustness
- A seat
- Walking pattern and activity monitoring
User selection methodology – (assistance, companion ship)

The criteria were:
- being 65+
- lack of knowledge on how to use a computer
- lack of knowledge and not use emails, Skype and web search engines
- wish to attend computer classes and general technology tutorials
- wish to meet with a robot

A questionnaire was distributed to be filled in anonymously by those who wished to attend. The questionnaire contained:
- general demographic information like age, gender, marital status and education
- technology related questions like use of mobiles, computer knowledge etc.
- robot related questions to identify their acquaintance with this field.
Users' statistics— (assistance, companion ship)

- Single: 2
- Married: 2
- Divorced: 2
- Widowers: 2
- Married: 16

- Primary: 7
- Junior high: 1
- High: 4
- University: 9
- PHD: 1
## Users’ statistics – (assistance, companion ship)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Yes</th>
<th>No</th>
<th>Use (number of participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone</td>
<td>16</td>
<td>2</td>
<td>- To make and receive calls (18)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- To send messages (9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Internet on the phone (0)</td>
</tr>
<tr>
<td>Personal Computer</td>
<td>5</td>
<td>13</td>
<td>- Shared - Owned by another member of the family (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Personal use only (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- With internet access (2)</td>
</tr>
<tr>
<td>Tablet</td>
<td>1</td>
<td>17</td>
<td>- Skype texting</td>
</tr>
</tbody>
</table>
Users’ statistics— (assistance, companion ship)

The word "robot" does not mean anything to me
I would feel awkward in front of a robot
Seems illogical for me to talk to a robot
I would feel comfortable if there was a robot in my social environment (KAPH)
I would feel comfortable if there was a robot in my house
I would feel comfortable if a robot was helping me in my house
I could feel friendly towards a robot

[Bar chart with responses]

- Totally agree
- Agree
- Nor agree or disagree
- Disagree
- Totally disagree
How elderly imagine robots

Souther Salazar
Seniors Center
Meeting NAO at the Seniors Centre

- It’s small…
- This is all??
- I expected something bigger…
- Does it think by itself and act independently?
- Who is going to program it for us??

- I like it! I would like to have one! How much does it cost?
- He’s not scary at all.
- He is cute! He’s not scary at all.
- He is like a doll…
- Such a little thing can do so many things? Is it true?
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@RAAP_EU  Robotics for social inclusion

Thank you for your attention!

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