

# "Support to elder people in the ageing society: social, industrial and political aspects"

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## Presentation Outline

- The ageing society
- The answer of Robotics
- Two approaches – integration or divergence?
- Another view
- How to achieve the dream?
  - research
  - industry
  - politics

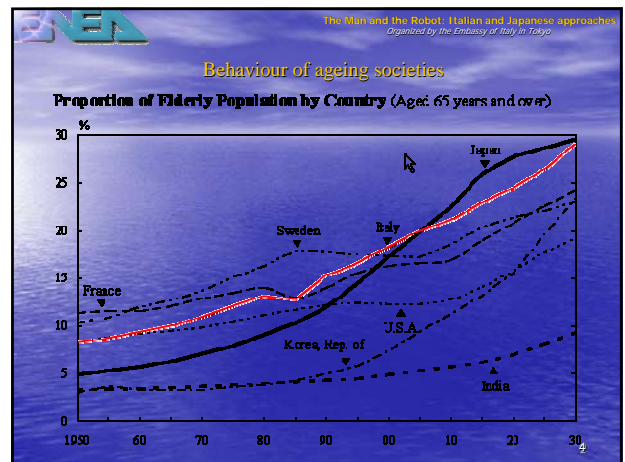
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## Elder people: a problem shared by Italy and Japan

- Life duration increase – *good*
- Life percentage in weakness conditions increases too – *bad*
- Social and private costs raises at very high level
- Possible solutions apply also to another category: disabled people (ills, injuries, genetics pathologies..)

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## Which answers to this dramatic problem ?

- Social organisation: Public Health Insurance, Teleassistance
  - very expensive
- Private solution – imply often serious personal sacrifices
  - many cases of death for lacking of assistance
- Use of assistance personnel at a low qualification (third countries emigration and similar solutions)
- Can technology and Robotics give a different answer ?

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## Yes, but ... not alone

- Political world must increase its awareness of the problem
- Industry has to be stimulated but also addressed by social rules
- Research is achieving the technology level needed to really support trough needs, but efforts are still requested

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A critical point that encompasses the whole problem  
Is: - the need -

Market driven economy is deeply affected by this parameter: if the need is high, the prices go up, doesn't matter how much can be the real production costs, up to the equilibrium level. Typical examples are the costs of some products of the pharmaceutical industry.

Unfortunately the equilibrium often means that a large part of potential users remains outside of the advantages of the solutions because this ensure the optimal economy conditions.

I do not intend to raise the ethical problem. I am just addressing here the need for social rules that cope with this problem.

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Economists knows very well that in a highly complex system the best solution is often an unreachable dream. Many suboptimal solutions can be coexistent and the choice of one of them lead to a deadlock situation in the sense that no other maximum can be found.

Social rules, in cases like this one, could allow the achievement of new and more favourable equilibria

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Which support can be supplied?

Two reference views are sharing the attention of researchers:

- the "tools" approach
- the "life simulating robot" approach (humanoid is part of this as the high end realisation)

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**Tool approach**

Use a specialised or semi-specialised robot for specialised tasks

**Life simulating robots**

Systems able to interact with the user at many more levels than in the past (and currently). Humanoid should be able to do, in this vision, almost every thing a man can do, remaining cheaper and manageable by a family budget.

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**Robotics Tool**

- Capability to perform specialised tasks
- Capability to act under control of Human or Robot
- And ... to be cheap!

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**Life simulating Robots**

- The need for "emotional exchange" of many elders doesn't imply that a "human" intelligence is requested, but a convincing simulation, conceptually like in the well known "Eliza" experiment. This doesn't means the task is much easier
- The creature cannot be considered a doll because there is the need to understand and react to many "real" situations consequent, for instance, to the health modification status of the elder or of the patient
- The creature could have the need to coordinate the "tools" realising a sort of "distributed" robot

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After several studies we concluded that the approach is to be reversed: the point is not which architecture is more suitable to support the human, but to study carefully which are real needs of the elder (or disable).

For most of them one of the major physical problem is a progressive lacking of mobility, then they should need:

To be raised, lowered, supported, helped in walking, assisted in many trivial activities up to the personal cleaning;

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But, at the same time, the elder people is forced to live with one of the worst soul disease: the feeling to be alone and no more useful neither to himself.

This imply the need for any form of emotional communication, the need to be touched, to talk, to perform very simple "social" tasks.

A simple objection is "why not to continue using "pets"?"  
Pets are for sure much more emotionally satisfactory, much more in fact of everything we could be able to realise (at least in short term), but they bring other problems relevant to their own needs that the elder could not be able to satisfy (apart that they are not able to cope with the "tool" approach)

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Prof. Hirose and its groups presented a gallery of really outstanding realisations. This could lead to think that most of the problems in realising systems for human assistance could be close to the industrial realisation. Unfortunately this is not the case:

Special, niche applications can support expensive units, a large base market barely can.

Most of the current performant realisation are based on precise mechanisms motors/gears/joints based on a mature technology and few perspective to a significant mass production economy.

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There is the need to find effective alternatives to the traditional actuation

The most promising opportunity is probably offered by nanotechnology could offer some possibility looking for instance at the not well understood operation of muscles.

If not a technology leap can be envisaged other opportunities could come from a careful planning of the market: involving and stimulating agencies, acting like intermediate agents (several operators could avoid reduce trust effects) toward the final user leasing or renting devices.

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I beg your pardon for discussing for so much time upon these not strictly related robotic topics, but I did that because:

- Support to elders **IS** potentially a big market
- It **IS** a problem that pushes and stimulates our two countries much more than others
- It **IS** a field where all the critical fields that encompass our technology are represented
- It **IS** an extension that can grows in a natural way from the basic ideas that originated ROBOCASA
- It could attract on these thematic other operators both public and industrial

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ENE A has promoted to the italian Ministry of Research suggestions for launching national development programs on these thematic involving several italian firms.

An opportunity to increase the cooperation already started around Robocasa.

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Thank you for your attention  
and for your patience.

We hope in a better future for *humans*