Active ageing in Europe – Opportunities and Challenges by information and communication technology (ICT) based applications

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IPTS

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IPTS mission: “Provide customer driven support to the EU policy-making process by researching science-based responses to policy challenges that have both a socio-economic as well as a scientific/technological dimension”

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Areas of Work

IST Trends

- E-Government
- ICT for Health
- E-learning
- E-inclusion
- KBS EU
- Converging ICT
- Identity Mngt
- FISTERA bis

IST Impact Assessment

- R&D ICT
- EU25+
- KBS EU
Outline

1. Demographic change and key questions
2. Active ageing – IC technologies/applications
3. Active ageing - current and future needs
4. Matching needs and technological options
5. Some conclusions and further steps
Demographic change - key challenge for every European policy field

2007: Reverse demographic pyramid in EU
2050: Share of 65+ in EU will be around 28%

Some key questions:

• How to use the opportunities of the ageing society (e.g. need for new products, services and research)?
• How to stabilize costs of the ageing society while maintaining high quality of life?
• How to maintain ageing individuals socially networked and integrated?
• How to maintain knowledge and experience of ageing individuals?

→ Need for action identified in mid-term review of the Lisbon Strategy (Kok-report, 2005)
Challenges and opportunities of demographic change are high on the political agendas

- **Health and quality of life:**
  - WHO: Active Ageing - A Policy Framework

- **Economy and labour market:**
  - Active ageing included in the European Employment Strategy

- **Social security:**
  - Initiatives in almost every EU Member State

- **Technology and innovation:**
  - EU i2010 policy includes “Technologies for an ageing society” as a flagship initiative
Active ageing: broadening the concept

WHO definition (2002)

“Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.”

IPTS’ work proposes to expand it:

“Active Ageing are those policies that aim at enabling people, as they grow older, to lead independent lives (socially and economically) and to make a full range of choices in the way they shape their lives in all its life spheres.”

► ICT based applications are one policy concept to tackle the challenges and opportunities of the ageing society (others are for instance sports and nutrition)

► A future-oriented and comprehensive active ageing concept could turn challenges into opportunities

► IPTS suggests a priority setting on some “core” policy fields like health, housing, social security, economy
ICT based applications for active ageing

Mainstream, everyday products, services and applications
- Consumer electronics (Mobile)
- Smart homes
- Workplace technologies and Tools
- E-work

Technology-supported care services
- Telemedicine
- Home care
- Telemonitoring
- Emergency systems

eServices
- Health Information
- Video Service
- eLearning
- e-communication
- Networking

Healthcare Technologies
- Telemedicine
- Prevention services

Emerging technologies
- Robotics
- Materials
- Biosensors

Design for all and Inclusive Technologies
- Mobility
- Vision
- Hearing
- Cognitive

Assistive Technologies

Source: David Cullen, Work Research Center Dublin 2005, adapted
A need oriented systematic approach

<table>
<thead>
<tr>
<th>Possible transfer tools: Ambient Assisted Living or Independent Living Services</th>
<th>Societal environment</th>
<th>Individual environment</th>
<th>Individual needs (current and future)</th>
<th>Level</th>
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<tbody>
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<td></td>
<td>Better communication tools (e.g. for social use)</td>
<td>Comfortable &amp; appropriate housing</td>
<td>Hearing aids, self monitoring and future</td>
<td>Transfer tools</td>
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<td>ICT based applications</td>
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- Pervasive communication
- Technology adopted for home environment
- Cochlear implants lab-on-a-chip

Possible transfer tools: Ambient Assisted Living or Independent Living Services
Ambient Assisted and Independent Living

Emerging concepts enabling active ageing

- Ambient Assisted Living
  Address the ageing population by prolonging the time, elderly persons can live in a decent way in their own home through support by emerging ICTs

- Independent Living
  The ability to perform the activities of daily life with no or little help from others. But also the ability to control one’s life, remain integrated within a community and the ability to participate to the social, cultural, political, economic life.

A holistic approach

- Health care
- Housekeeping
- Participation
- Learning
- Social care
- Security
- Social Networking
- Entertainment

1 ART169 AAL Initiative
2 IPTS, Future of Independent Living Services Project
Different stakeholders’ views on ICT based applications for AA

<table>
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<th>Ageing people</th>
<th>Governments</th>
<th>R&amp;D / Industry</th>
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<td>Increase or stabilize QoL.</td>
<td>Active population</td>
<td>New research field</td>
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<td>Experience and knowledge</td>
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<td>Long-term savings</td>
<td>New markets</td>
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Opportunities

Challenges

Affordability | Broad policy topic | Technological Information on needs
Usability | Resistance to change (e.g. habits etc.) | Resources
Ethical considerations | Resources | Resources for research

Platforms for sustainable dialogue + tools to find inter-generational justice
Example I: Hearing aid

- Hearing aids are amongst the most advanced fields for AA. Cochlear Implants available since 1978. About 78,000 implanted already world-wide
- When non-invasive devices will be available this would open the possibility for novel technology for wider use as hearing aids to compensate natural hearing decline

2010?
Example II: Self monitoring

External medical devices (e.g. Pulsometers)
- diabetes or blood pressure

Lab-on-a-chip offer more than 1000 measurements for immediate diagnosis
- Suggestions on diet (less fat, more fruit, etc)

Devices on brain related data
- Information on emotions, stress, etc.

today
2010
2020?
Example III: Maintain brain plasticity

- A brain-gym could be based on neurofeedback. Neurofeedback is basically a Brain Computer Interface without external control purpose and it is a technology already used to enhance cognitive abilities (concentration, memorization, etc).

- Brain-Gym to *maintain plasticity* could become a reality in the near term (*time horizon = 5 years*), the time to develop systems and carrying out for clinical trials. More ambitions aims, like *repopulating nerve cells*, would be long term (*time horizon > 10 years*)
Some conclusions and further steps

Blindspots

- Few studies on how ICT based applications can contribute to individual and societal needs in the ageing society (current and future needs)
- Needs not enough understood
- Little research on applications for ageing individuals and the ageing society by or in cooperation with technologists
- Almost no information on how to match demand and supply
- What kind of political processes are appropriate to tackle the challenges?
Some conclusions and further steps

Actions

► Use the potential of the ageing society (a lot of experience and knowledge)

► Prepare the ageing individual, the ageing society and producers for the upcoming ICT based applications (“no need” problem)

► Develop common visions of the ageing society by using appropriate methods (e.g. scenarios and pictures of the future) and including relevant stakeholders

► Build bridges and platforms:
  • Between scientists of all relevant academic disciplines (to build common understanding of research needed)
  • Between experts & general public (to integrate need-oriented approach)
  • Between all relevant stakeholders (to create common visions and to match demand and supply)
For more information

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Annex
Determinants of active ageing

Health and Social Services
- Health Promotion and Disease Prevention
- Curative Services
- Long-term Care
- Mental Health Services

Behavioural determinants
- Tobacco Use
- Physical Activity
- Healthy Eating
- Oral Health
- Alcohol
- Medications
- Latrogenesis
- Adherence

Determinants related to the Physical Environment
- Physical Environment
- Safe Housing
- Falls
- Clean Water,
- Clean Air and Safe Food

Determinants related to the Social Environment
- Social Support
- Violence and Abuse
- Education and Literacy

Economic Determinants
- Income
- Social Protection
- Work

Source: World Health Organization 2002

→ A number of determinants have a technology component