



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

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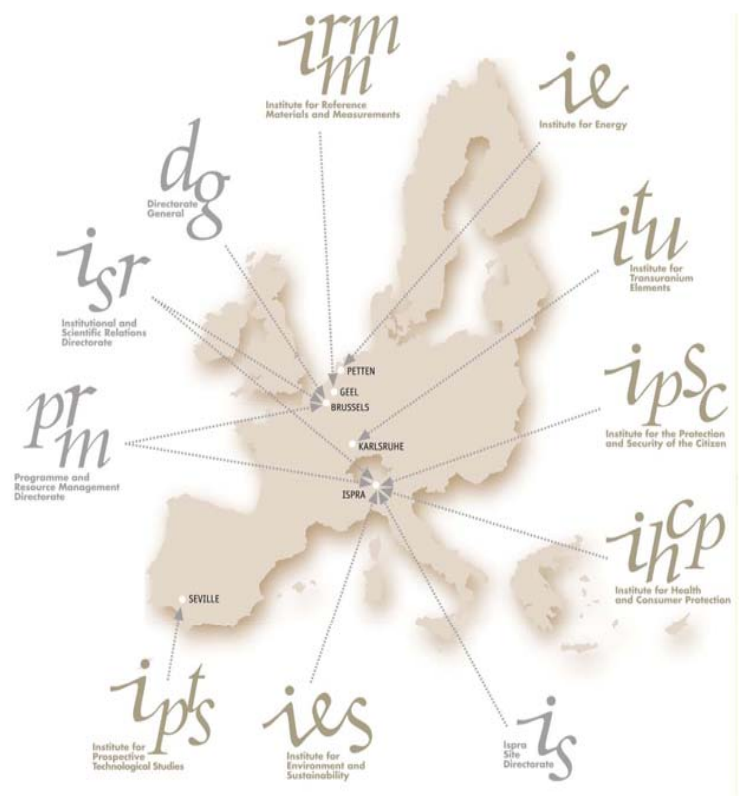
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IPTS

Joint Research Centre



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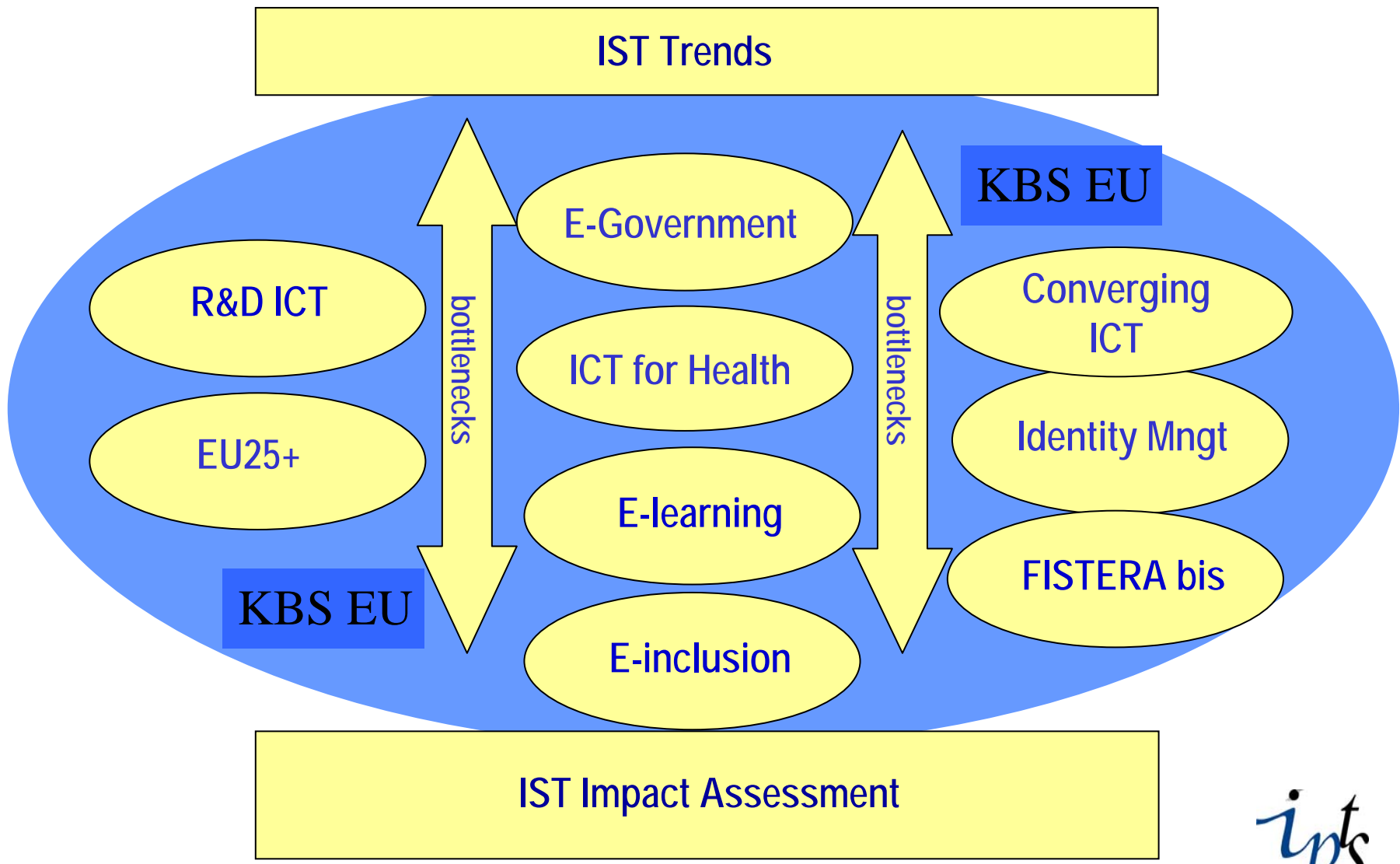
IPTS mission: "Provide customer driven support to the EU policy-making process by researching science-based responses to policy challenges that have both a socio-economic as well as a scientific/technological dimension"

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Areas of Work



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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%

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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)*

PS



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.”

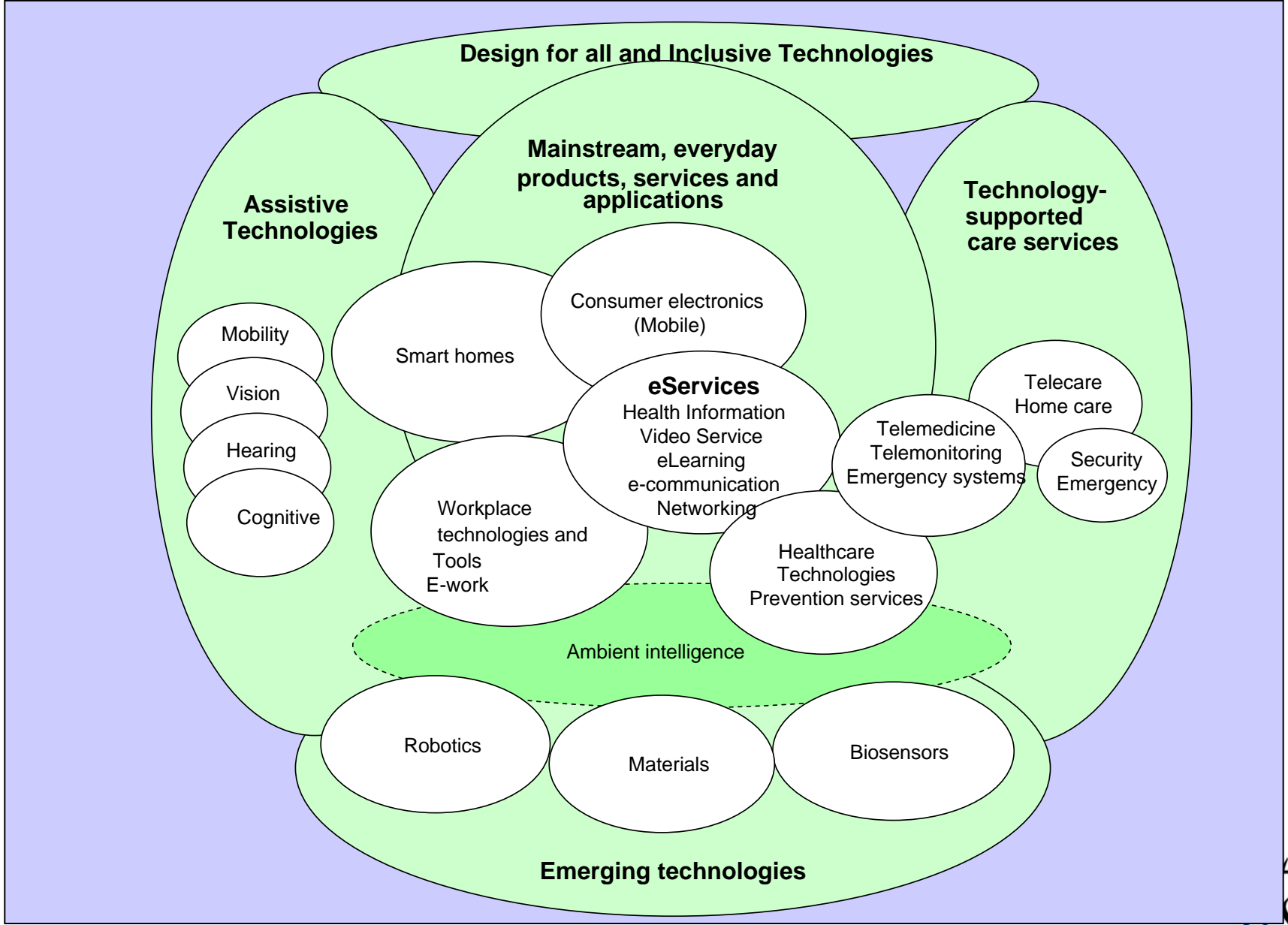
- ▶ ICT based applications are one policy concept to tackle the challenges and opportunities of the ageing society (others are for instance sports and nutrition)
- ▶ A future-oriented and comprehensive active ageing concept could turn challenges into opportunities
- ▶ IPTS suggests a priority setting on some “core” policy fields like health, housing, social security, economy





ICT based applications for active ageing

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A need oriented systematic approach

Level	Needs (current and future)	Transfer tools	ICT based applications
Individual	<i>Hearing aids, self monitoring</i>		<i>cochlear implants lab-on-a-chip</i>
Individual environment	<i>Comfortable & appropriate housing</i>		<i>Technology adopted for home environment</i>
Societal environment	<i>Better communication tools (e.g. for social use)</i>		<i>Pervasive communication</i>

Possible transfer tools: Ambient Assisted Living or Independent Living Services





Ambient Assisted and Independent Living

➤ emerging concepts enabling active ageing

- Ambient Assisted Living¹

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 Living²

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*



1 ART169 AAL Initiative
2 IPTS, Future of Independent Living Services Project



Different stakeholders' views on ICT based applications for AA

Ageing people

Governments

R&D / Industry

Opportunities	Increase or stabilize QoL.	Active population Experience and knowledge Long-term savings	New research field New markets
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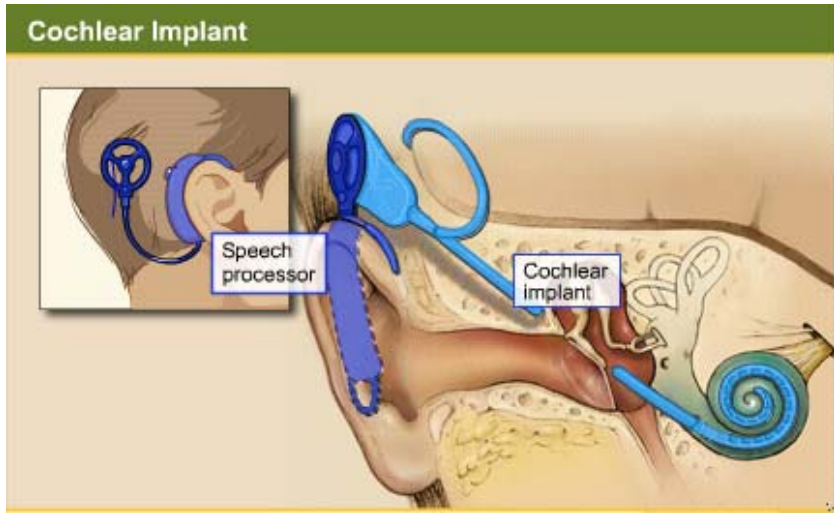
Challenges	Affordability Usability Ethical considerations	Broad policy topic Resistance to change (e.g. habits etc.) Resources	Technological Information on needs Resources for research
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► Platforms for sustainable dialogue + tools to find inter-generational justice





Example I: Hearing aid



www.cochlearamericas.com

- 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?

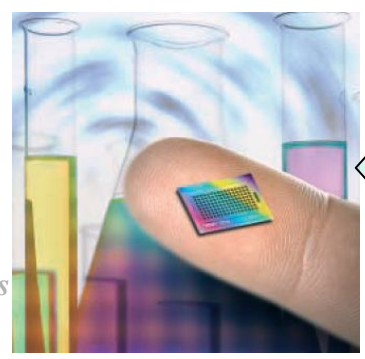


Example II: Self monitoring

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



today

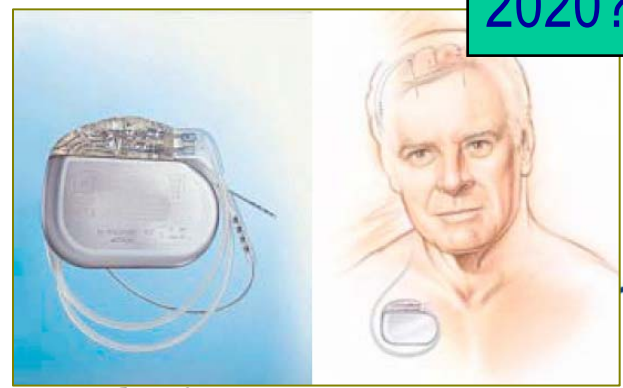


Siemens

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

2010

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

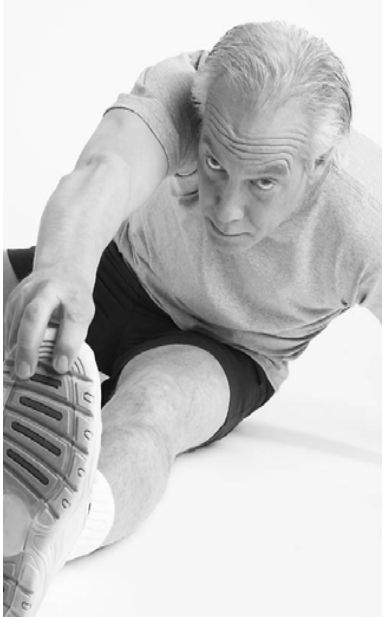


2020?





Example III: Maintain brain plasticity



2010?

- 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 ambitious 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

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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

