



Conference under the patronage of the Polish National
Contact Point for EU Research Programmes and supported by



Let's Construct Europe's Future with
Innovative Buildings and Infrastructures

ECTP-E2BA Conference
4-5 October 2011, Warsaw

Construction & the Ageing Society

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Health and Ageing Society



From now to 2035

- ▷ Increase of retired persons by 52%
- ▷ Increase of the oldest old by 78%
- ▷ Workforce has aged and shrunk by 4%
- ▷ Threats like Poverty, Uncertainty, Lack of social support, Loneliness, Physical isolation
- ▷ Support for older people cannot be met by manpower alone
- ▷ Provide support at home: ageing-in-place
e.g. by ICT and the build environment
- ▷ Create a respective infrastructure to enable an active life for ageing people

Sectorial topics, analyses and proposals
















Consider the multitude of often interwoven sectorial topics, analyses and proposals

- ▷ Economic and financial
- ▷ Health research-and the impact of health status
- ▷ Age discrimination and integration
- ▷ Legislative environment and protection
- ▷ Ageing at work: productivity and skills
- ▷ Ageing and Consumption
- ▷ Infrastructure
- ▷ Urban Planning and Mobility

Need to have an integral approach to the problems

- ▷ Addressing the challenge of demographic ageing population requires **long term balance strategy**, being followed by a **PARTNERSHIP** between the State, individuals, employers, industries, researchers, financial organizations, local authorities, ...
- ▷ But in times of **specialization** we currently face a fragmented and sectorial approach

Challenges

Activities of Daily Living ³	Health profiles ^{1,2}				
	 1 Cancer	 2 Depression Vision problems	 3 Arthritis Cognitive impaired	 4 COPD, diabetes Hearing problems	 5 Heart diseases Stroke
Listening 	Green	Green	Green	Red	Green
Sleeping 	Yellow	Light Green	Yellow	Light Green	Light Green
Reading and watching 	Green	Red	Green	Yellow	Green
Preparing meals 	Yellow	Yellow	Orange	Yellow	Light Green
Social activities 	Light Green	Yellow	Orange	Light Green	Light Green
Eating and drinking 	Orange	Green	Yellow	Light Green	Green
Activities behind a desk 	Light Green	Yellow	Orange	Yellow	Yellow
House hold 	Orange	Orange	Orange	Red	Orange
Provide care 	Orange	Light Green	Orange	Orange	Orange
Physical activities 	Red	Light Green	Orange	Red	Red

Likert-scale: can be performed cannot be performed

The role of the Construction Industry in improving economy in an ageing society

- ▷ **An essential contribution from the construction & architecture sector regarding breakthroughs in new solutions improving the lives of elder people, to**
 - Reduce impairments of immobility & maintain **autonomy**
 - Reduce the number of **accidents** and increase health.
 - Provide for the setting to **enable physical, environmental and social integration**
 - Include **culture, communication and social needs** in the built environment
 - Meet **personal needs**, e.g. by realizing new forms of living together to reduce loneliness
 - High Tech Construction **integrates services**, sensors and diagnostic tools to reduce terminal diseases or to reduce/manage the impacts.

The role of the Construction Industry in improving economy in an ageing society

- ▶ **Also: find or copy solutions regarding the Ageing workforce** and the consequences for industry, e.g. working methods, organization, next step in last phase of career, etc...

The role of the Construction Industry in improving economy in an ageing society

- ▷ **A key potential for crossing traditional boundaries**
 - between architecture, urban planning, designs, industry, sociology, environmental sustainability, law economy, public authorities and politics
 - to create and maintain a **human-made surrounding** for elderly people

Construction Industry & the ageing society: some **key issues / challenges**

▷ **A suitable environment for elderly citizens combining three characteristics that act as ‘enablers’ for participation in society:**

- a safe social (indoor/outdoor) environment,
- an obstacle free and disability adjustable built environment,
- and a state of the art but easy-to-use technological environment.

Construction Industry & the ageing society: some key issues / challenges

- ▷ **Architectural realization of new forms of living – independently & together :**
 - redefining design concepts in order to fully exploit aged society potential,
 - including adaptation of room characteristics and technology to bodily changes and changes in sensory perception
- ▷ **Flexible houses and apartments that will allow modification to suit an ageing population** - reducing impairments of immobility and increasing autonomy
- ▷ **Reinforcement of regulations – in relationships with Eco-development**

Ageing in Construction: the R&D&I strategies of ECTP and ENCORD

▷ Activities

- International Workshop #1 | October 2010 – organized by Fraunhofer-Institut, TU Munich and ENCORD (Holzkirchen, Germany)
- International Workshop #2 | March 2011 – organized by Centre National de Référence Santé à Domicile et Autonomie in France, with support from CSTB and ENCORD (Nice, France)
- Link with the AAL (ambient assisted living groups)
- **ISG*ISARC2012 “Who is afraid of ageing?”**
(June 26-29, 2012, Eindhoven)



ISG*ISARC2012

Eindhoven

WORK, LEISURE, CARE, ROBOTICS AND CONSTRUCTION FOR AGEING

ISG*ISARC2012

June 26 - 29 Eindhoven

www.isg-isarc2012.org

Gerontechnology | Automation & Robotics in Construction



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Health & Self-Esteem

**Automated Data Acquisition
and Monitoring**

Work & Leisure

Mobility & Transport

Housing & Daily living

Realities

**Information
Technology**

Automation

**Communication
& Governance**

Robotics

**Management and
Social Issues**

Ageing in Construction: the **R&D&I strategies** of ECTP and ENCORD

▷ **Focus on**

- Fitting the built environment to ageing users / elderly people (offices, infrastructure, homes, etc...).\;
- The Ageing workforce and the consequences for industry (working methods, organization, next step in last phase of career, etc...).

▷ **Link with**

- THE EUROPEAN INNOVATION PARTNERSHIP (EIP) pilot case on “Active and Healthy Ageing”

Ageing in Construction:

the R&D&I strategies of ECTP and ENCORD

- ▷ **Place ECTP/ENCORD initiative in the EIP Health & Ageing**
- ▷ **Form a Task Force ‘Ageing Society & Construction’** with the initiative coming from ECTP, ENCORD, CNR Santé à domicile & autonomie, CSTB
- ▷ **Define a “R&D & Innovation” roadmap to:**
 - Contribute to understanding the **home as center** for life, care and cure and using the construction sector's experience and knowledge to make this possible
 - Identify and promote where the construction sector can offer (**integrated**) **solutions** regarding the challenges of the ageing society (Vision, Research, Development, Innovation, Communication)
 - Identify **market opportunities** for the construction sector in regards to the challenges of the ageing society (operational side)

Aim

- ▶ Improving the economy in an ageing society by architecture and construction of schools, hospitals, housing, offices, public buildings, urban districts, cities with a focus on active ageing and occupational health and safety of the construction worker (before and after retirement).

Impact sought within 5 years

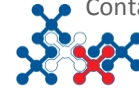
- ▷ Construction in respect to Ageing offers the potential to reduce expenditure on public services and health care, to increase the quality of life of the citizens and to increase construction productivity,. Potential impacts could be:
 - Construction: 7% increase in productivity
 - 30% reduction in cost
 - 1 extra year of work participation of construction workers
 - Older adults: 1-3 years increase of the active part of life
 - 10% increase in personal mobility in the 65+ years cohort
 - 10% increase in leisure activities
 - Society: 5% reduction in health care costs

Ageing Society as a chance

- ▷ Up to now Ageing was often seen as a problem with sick and weak people. We should now take a more **optimistic view** that sees ageing as a normal part of life with many positive sides. As part of this, the home should be understood as the centre for life, the center for care and the center for cure
- ▷ This modern approach implies **paradigm shifting** in **health** (functioning instead of Hippocratic), **economy** (from cost to investment) and **culture** (successful ageing instead of frailty ageing).



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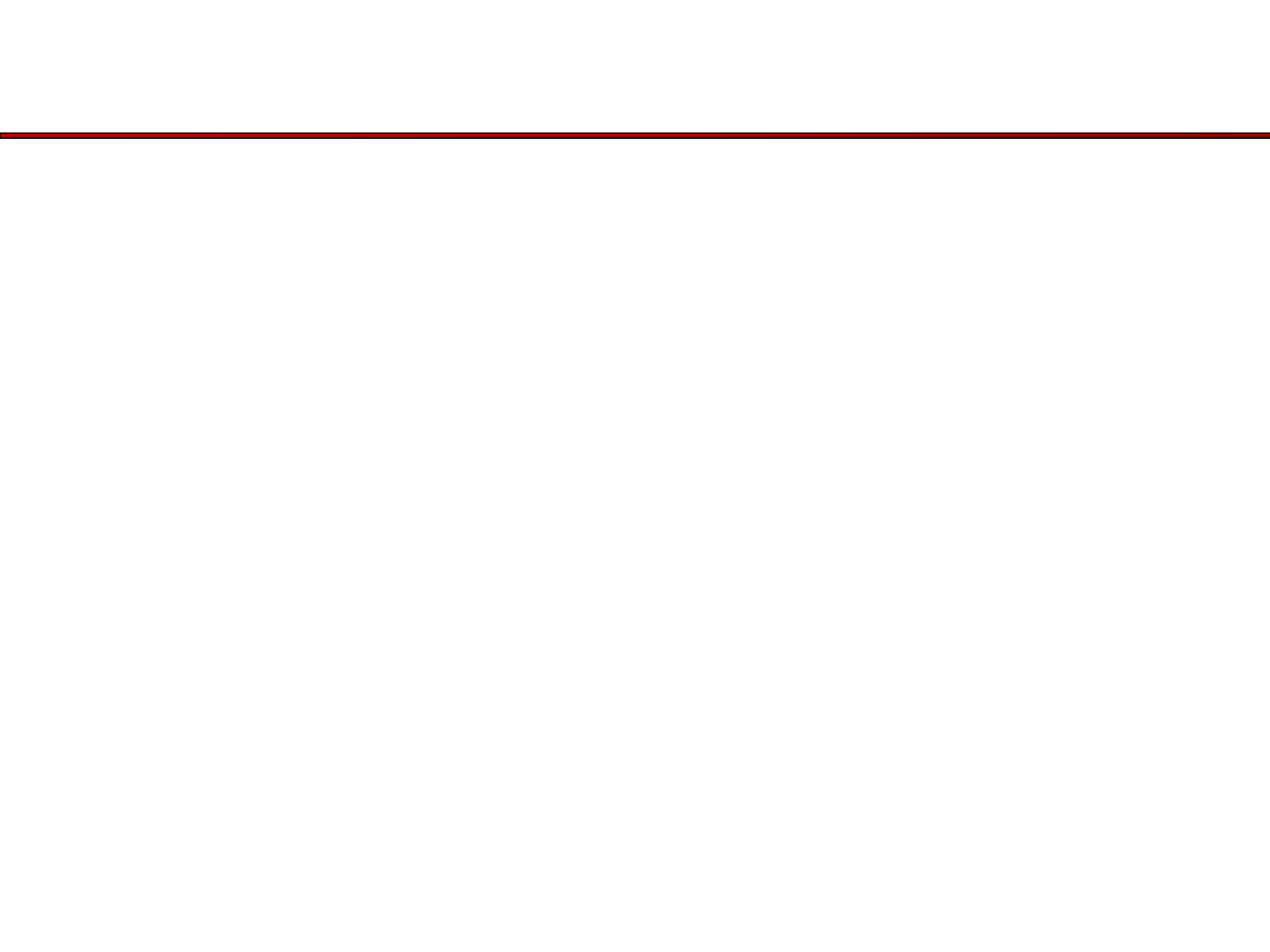
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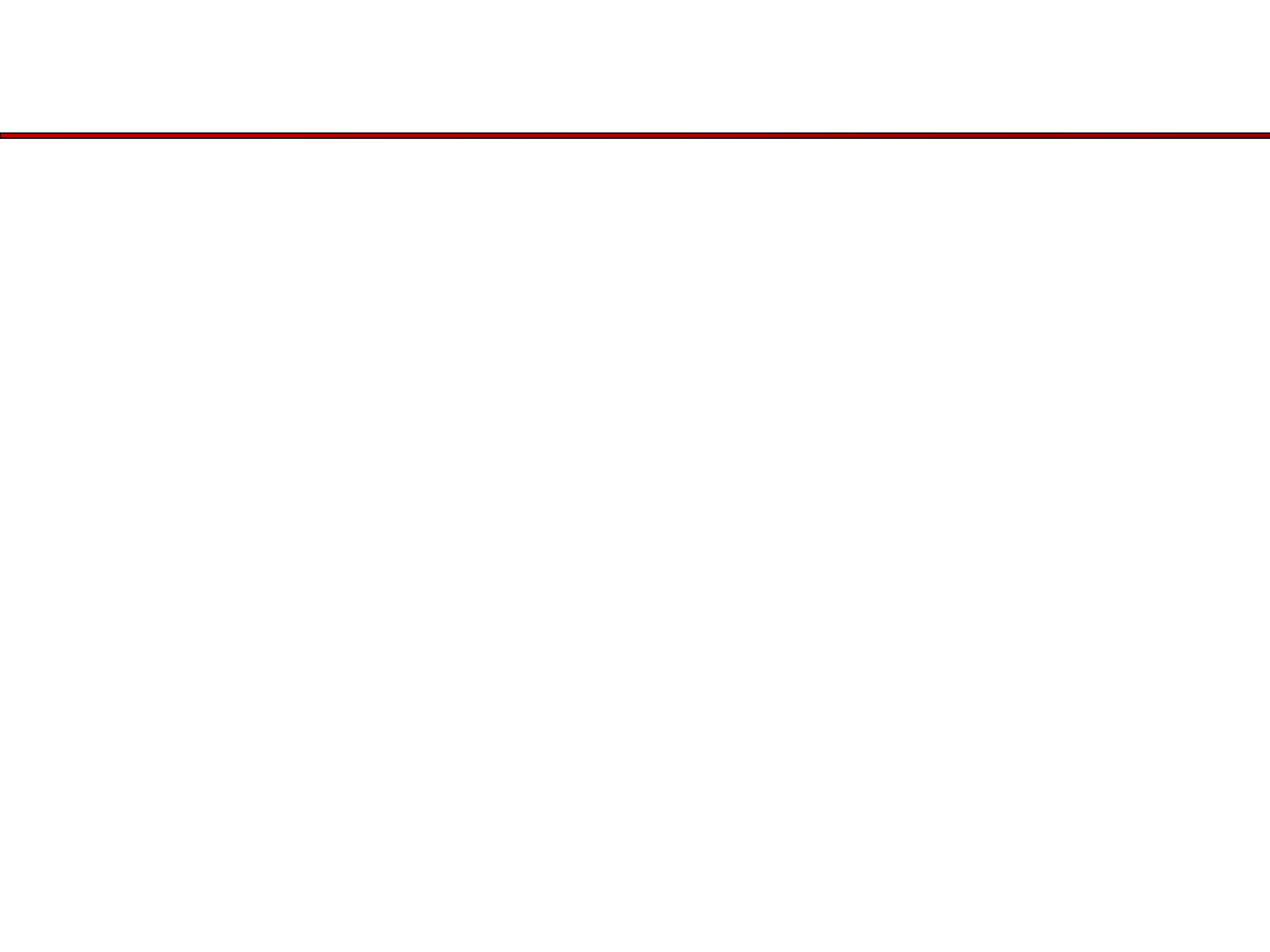


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Potential output

- (i) 101 Best Innovations for Active Ageing (website + paper publication);
- (ii) Suitable business models for the different clients and users of construction and care in the Member States, with value-chain integration;
- (iii) Options for further developing 'Woonkeur' to a European-wide certification and diagnostics tool;
- (iv) A building-retrofitting agenda for individual Member States;
- (v) Suitable implementation models for the construction industry in the Member States;
- (vi) Suggestions for policy changes, and paradigm shifts in construction and care;
- (vii) Suggestions for money exchanges between health-care costing on one side, and built-environment realization and exploitation on the other; and (viii) Architectural, urban and building-services design requirements.
- Certification and diagnostics for built environments at the dwelling and urban level, e.g. the Dutch 'Woonkeur' to include life-span sustainability, accessibility, constructional and ICT adaptability, adaptiveness, plug-and-play domotic and care applications (including open-source middleware with a common semantic among different technologies), as well as ease of construction

The road to follow ?

- The road towards an effective R&D plan passes 4 or 5 phases as follows. To bring more detail in this road, first a choice should be made from which age we let start 'Ageing & Housing' and 'Ageing & Work". Is it 45 years of age? 50? 55? 65? 85?
- 1. European wide basic data and information
- In order to identify the specific problems of the built environment and its construction or retrofiting, basic data and information (or review papers) to be gathered Europe wide, concerning:
 - (i) Age distribution of workers at the construction site;
 - (ii) Housing ownership (% private, commercial and social);
 - (iii) Business models, regulations, standardizations in housing, in construction, in home-care technologies, and for dwelling alterations;
 - (iv) Business models of other markets that look useful;
 - (v) Built-environment characteristics that form determinants for chronic and acute inflictions of users of built environments;
 - (vi) Actors for Active Ageing;
 - (vii) Thermal comfort: PMV & PPD in relation to age and gender (this includes ambient temperature and humidity effects);
 - (viii) Acoustic comfort in relation to age;
 - (ix) Lighting comfort in relation to age, including effects on mood and cognition;
 - (x) Air quality in related to comfort and acute or chronic inflictions;
 - (xi) Sensorial awareness in relation to modern neuroscience.

The road to follow?

- 2. Unifying framework
- We need to adopt a unifying framework of understanding that could be based upon:
 - (i) Modern neuroscience;
 - (ii) The decompensation / compensation / prevention paradigm;
 - (iii) Gerontology –technology matrices from gerontechnology (cross-fertilization, impact-daily living), and resulting multi-disciplinary teams for construction;
 - (iv) A miserabilism versus non-miserabilism paradigm;
 - (v) A start from ‘quality of life’;
 - (vi) The home as: a center for life, a center for care, and a center for cure;
 - (vii) Case-based trial and error.