"Participative R&D of assistive technologies in the Living Lab Schwechat"

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EUROPEAN KNOWLEDGE SOCIETY FORUM
23rd – 25th October 2008
AMAROUSSION - Hellas

Content

• Initial Situation of the municipality of Schwechat
• The Living Lab Schwechat
• Projects
• Conclusion
Schwechat - a base for a Living Lab

- Near to Austria’s capital Vienna
- Small town
  16,5 k inhabitants (~1% of Vienna)
- Traffic hub & industry
  (~19 k jobs)
- Garden & sports city
  ➔ Information hub
  ➔ Ideal for a Living Lab
• ... is a 5-year program to set up an information society in the city of Schwechat (2005 – 2009)

• ... based on the EU-initative i2010

Targets of eSchwechat.at

• ... I2010: intensified development of the Schwechat information society
• ... e-Inclusion: integration of disadvantaged people (seniors, people with special needs, ...) in general and easing the access to state of the art ICT-technologies
• ... increasing education of Schwechat's citizens: schools, adult education, academic education: under-graduate, post-graduate
• ... creation of new jobs
• ... moving in of new inhabitants
e.g.:

- **... Central European Institute of Technology (CEIT)**  
  ➔ extra faculty R&D institute

- **... Academia Nova**  
  ➔ Extra occupational college and university of applied sciences

- **... WLAN in public space**
what is a Living Lab?

- Living Lab stands for an emerging research methodology which includes
  - “sensing, validating and refining complex solutions
  - in multiple and
  - evolving
  - real life contexts”
  [Schuhmacher et al. 2007]
Background & Motivation

• intensive and early involvement of users
  – in the innovation and design process is crucial to ensure
  – that the future product will meet the actual needs of the users in their daily life.

State of the Art

• importance of user involvement
  – in AT projects is widely acknowledged as key success factor

• BUT
  – „In short, the central role that user needs and priorities ought to play …. is well established, but actual implementation lags behind. …."
  
  Source: Joint Research Centre ,G. Comyn et al. 2006
• Ambient Assisted Living
  • "AAL aims to prolongate the time people can live in a decent way in their own home by increasing their autonomy and self-confidence, the discharge of monotonously every day activities, to monitor and care for the elderly or ill person, to enhance the security and to save resources." [Steg et al. 2006]
• Use of state-of-the-art ICT- technologies
A. Actors of the AAL-LL Schwechat

- CEIT – Central European Institute of Technology
- municipality of Schwechat
- Senioren’s centre of the city of Schwechat
- Local social service providers
- Organisations of senior people
- Citizens of Schwechat (“research-citizens“)
- enterprises

B. RALTEC institute

- CEIT RALTEC was founded in 2006 by the municipality of Schwechat
- R&D of innovative ICT in the area of
  - Ambient Assisted Living (AAL),
  - eHealthcare and
  - eHomecare
- For older persons and people with disabilities
- Enabling and Empowering people to live independently and autonomously in their own home as long as possible
- close cooperation with Vienna University of Technology  
  (Prof. Dr. Wolfgang L. Zagler)
• CEIT-ALANOVA is using modern technologies for Urban and Regional Planning in connection with Information Society tools and under the guidance of the principles of sustainability and environmental protection (ePlanning).

• mission: worth living towns for the 21st century

• User oriented R&D in the AAL area
• Setting up a Living Lab as solid base
• Continuous involvement of users
• User centred interactive design
• Integrating social science aspects of technology: ethics of new technologies, analyses of the real needs, wants and wishes of users
• Technology to support the human to human contact (not as a replacement)
settling up the AAL Living Lab

- Setting up of interdisc. cooperation with
  - Centre for Senior Citizens
  - Mobile Social Service Providers
  - City Administration / Social Affairs
  - Companies

- Methods
  - User & Expert Interviews
  - Focus Groups
  - Cultural Probes
  - Workshops
  - Hands-on Evaluation of Rapid Prototypes

Ethical Dimension

- Ethical sound involvement of users
  - Protection of vulnerable users
  - Informed consent procedure
  - Continuous ethical review

- Ethics in the new device
  - Example: balance between privacy and additional safety provided by monitoring system
The design process starts at a starting point, aims at reaching the target where it is completed.

- most often is far from being a linear process.
- the target may be adapted during the process
  - e.g. due to new knowledge which is acquired during the innovation process.
  - Thus the initial target may be discarded and a better suiting target be identified.
Barriers and work arounds during the design process:

- The design process also might be forced to change direction significantly, e.g., to overcome unexpected barriers.

Iterative Process

Process and some useful contributions by AAL Living Lab approach

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Sample projects:

- eShoe – instrumented shoe
- eHome – living with supporting intelligence
- Human Computer Interfaces HCI
- AAL-Demo – apartment
- Residential estate “Frauenfeld”
- Nutrition web-portal
- BUSSTOP 3.0 – interactive stop
- iPEP – saving energy in homes and office buildings

- Prediction of falls
  - Long term
  - Short term
- Analyse of gait
  - Recognising causes of falls
  - Distinctive features with regard to old persons
- Notifying of a fall (if nothing else possible)
- Rehabilitation
- Therapy
- Sports
• targets:
  – Improving personal safety and quality of life in senior’s own home
  – recognition of critical situations
  – recognition of falls
  – monitoring safety-critical areas (e.g. cooker)
  – automatic alarm generation for getting external help

• Funded by FFG

• In cooperation with Vienna University
• TREVNTUS MECHATRONIK
• kapsch ➔ CarrierCom

User Needs

• Cultural Probes
User Needs / 2

- Cultural Probes
  Photographs taken by elderly persons

  Source of danger: to stumble on the dog  Disturbing: too loud

Projekt “Interaktives Bild”

- intuitive voice and video communication platform for Senior Citizens
- based on touchscreen-PC
- Evaluation in Living Lab Schwechat
- In cooperation with
Focus groups in the Living Lab Schwechat

Project “Interactive Picture”

Busstop 3.0

- Local traffic stops become ICT-based information centres
  - Interactive busstop
  - Neighbourhood meeting point
  - Increased activity of public transport

- Study of requirements and challenges in "Living-Lab-Settings"
- Cooperation with local enterprises
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Development is Partnership

• User: not only consumer of Assistive Technology,
• but also part of the development team, because s/he is seen as:
• (Experience-based) expert
  (H. M. Collins & Robert Evans, 2002)
Summary

• Involvement of users right from the beginning can contribute to development of suitable technologies for older persons
• Cooperation with users can create new ideas for development
• Great opportunity in LL Schwechat to integrate and involve all different stakeholders
• Entering the real life environment by R&D-staff
• And user involvement can help saving money in design process

Acknowledgement

CEIT Raltec is a non profit company owned by and partly funded by the municipality of Schwechat

Our special thanks goes to our Living Lab partners, senior citizens, „Seniorenzentrum“ and „Seniorenbeirat“ in Schwechat
ευχαριστώ
Thank you

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