Living Labs
and some European good practices with a special focus on Intelligent Mobility and Smart Energies

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Agenda

- Living Lab’s revisited
- Living Lab Harmonisation Cube
- Quality Dimensions of Living Labs
- Living Lab Database
- Intelligent Mobility case: Vlotte (a Regional activity in Vorarlberg / Austria – Centralabs)
- Smart Energies Case: EU project Save Energy
- Summary & Wrap up
Living Lab
Background

• Living Labs do not suddenly appear
• there is usually a history linked to them e.g.
  – Pole de competitivite
  – Technological Testbed
  – Mobile City
  – Etc.
• All leading Living Labs are PPP
  – Focus on regional issues
  – Regional funding scheme
  – C3P Stakeholder wise a C3P (Citizen Public Private Partnership) is required

Technology push vs. Technology pull
Definition of Living Labs

“A Living Lab is a collaboration of Public-Private-Civic Partnerships in which

Who  ➔ stakeholders [enterprises, academia, public and civic bodies, customers]

What  ➔ co-create [collaborative product development from ideation to market deployment]

What  ➔ new products, services, businesses and technologies [enterprises, academia, public and civic bodies, customers]

Where  ➔ in real life environments and [regions of with specific attributes – urban, suburban, rural, remote, …]

  ➔ virtual networks [networks as regions in a virtual geography]

When  ➔ in multi-contextual spheres.” [in all roles and phases of the customers’ use]

What is a good Living Lab

- Dependent on:
  - The regional setting
  - The thematic orientation
  - History of the LL
  - Stakeholders
  - Goals
  - etc.

Which Quality Dimensions exists for Living Labs
• interoperability cube for harmonizing Living Labs
BP Purpose

• To identify good Practices in the field of Living Labs
• The parameters represent the basic dimensions of a Living Lab (based on the Cube Methodology)
• The identified Parameters have to be considered in their thematic context (e.g. Automotive Living Lab)
• The indicators do not lead to a ranking of Living Labs

BP usage

• To identify interesting thematic living labs
• To identify leaders in certain dimension (e.g. user involvement)
• However:
  – Analysis is based on on desk research
  – A transfer approach requires a thorough analysis of the respective LL-Environment
  – A theme oriented approach seems more likely to be successful
How to measure trans-regionality

- The LL movement has a global character
- Transregional cooperations start to appear as the LL community is maturing
- Different degrees of cooperations can be identified:
  1. Information exchange
  2. Physical meetings
  3. MoU on cooperation (policy support)
  4. Cooperation between regional projects
  5. Common Living Lab Innovation programme
Cross-border Activities

0 50 100

LL resides only in one region
Information exchange with other LL, BP analysis,
Co-operation with LL in other regions, LL trials are done together, common thematic programmes

Database support for Alcotra

Integration of harmonised KPI Framework into DB
Usage of LL DB to support the set-up of thematic Living Labs
Living Lab establishment
Cube definition / Definition of KPI’s
Database (Topic orientation)

Alcotra support Actions
Vlotte – An intelligent Mobility Living Lab

The first model region in Austria for ELEKTRO MOBILITY

illwerke vkw – the corporation

Energy
VfW Energy Sales Corp.
Illwerke Alternative Energy Corp.
Vorarlberg Electric Vehicle Planning and Consulting Corp. (“VLOTTE”)

Tourism
Illwerke Tourism

Energy
VKW Grid Corp.
VKW Green Electricity Corp.
Allgäu Electricity Corp.

Natural Gas
VEG Vorarlberg Natural Gas Corp.

Biomass
Various shareholdings in biomass heating stations
illwerke vkw – smart energy solutions

- Pumped storage power station - Kopswerk II 2008
- Small hydro power plant Bregenz 2005
- Biomass power plant Lech 2000

- Experienced in constructing peripheral renewable energy
- Smart Grid / Smart Meter / V2G
- Energy efficiency projects

VLOTTE – Institution & Support

- Funded by the Klima- and Energiefonds with 4,7 Mio. EUR for the first and 551,000 EUR for the second project phase.

- Institution of the project is the Vorarlberger electric Vehicle Planning and Consulting Corp. (VEA).
VLOTTE – Facts

Electric vehicles and charging stations

- 250 E-vehicles at the beginning of 2012
- 57 Charging stations
- Vehicles within the project:
  - Think City
  - Fiat 500 (modification/electrification)
  - Mitsubishi i-MiEV
  - Citroen C-Zero, Peugeot iOn
  - Citroen Berlingo
- the first „series-production vehicles“ where available with the beginning of Januar 2011
- End of the subsidy was December 2011
  - 360 EV’s are on the street of Vorarlberg
  - 90 charging stations
  - 3 fast charging stations

VLOTTE – Finance-leasing

The Mobility rate

- for approximately 410 EUR the customers get a „All in one package"

Including:
- Warrenty extension for the Zebra battery up to 6 years or 600 charging cycles
  - 5 years for the Li-Ionen battery
- Liability- and full comprehensive insurance
- Free service for electric parts - Zebra batteries
- Local public transport - Vorarlberger Verkehrsvorbund
- Free charging at the public charging stations
- Free break down service - ÖAMTC
5 Years Leasing Contract

price (basic) incl. VAT
€35,900,-
price less sponsorship
€25,130,-

additional with €1,000,- VKW mobility bonus

Complete Mobility rate per month: €349,-

- additionally liability insurance €20,-
- and full comprehensive insurance €40,-

VLOTTE – Energy and Environment

- Exclusively additional energy from renewable energy sources
- Built photovoltaic installations
  approx. 700m² / 100kWpeak = 100,000 kWh/a = 555,000 km/a
  calculated with 18 kWh/100km
- Energy consumption of 240,000 cars in Vorarlberg is 2.500 GWh,
  approx. 30 % of the total energy consumption of Vorarlberg
- Potential of the electro mobility:
  60 % saving of energy
  1,9 t less CO₂-emission per vehicle
- If 10 % in Vorarlberg would be electric cars:
  50 Mio. kWh/a energy consumption
  approx. 2 – 3 % more electric power necessary
  45.600 t CO₂-reduction
VLOTTE – Energy and environment

- Effective energy with an **electric car is 75 %**
  [Energy generated with a hydroelectric powerplant from illwerke vkw]
- Effective energy with a **diesel engine is only 15 %** of the primary energy.

**Key learnings - Project**

- To experience Emobility – WOW factor
- Traffic incentives not decisive in rather countrified areas
- Thoughtful positioning of charging stations
- Charging stations – easy to reach/use/pay
- To see and use EV’s in daily life
- Early adopters are the best multiplier
- Increase of product diversity
- EV standards has to be up to date automobile standards
- Second car (EV) gets first one
- Awareness raising starting in school
Key learnings - customer

– Customer is not interested in:
  • standards of plugs, roaming solutions, charging power, ...

– Customer wants to drive and charge easily (transnational)

– Emobility can be a “bit” more expensive

– Batterie warranty is very important

– Renewable energy

– Customer doesn’t calculate TCO costs

Co-operation with Centralabs

• Full inclusion of customers and non-customers (Citizens of Vorarlberg):
  – Development of new innovations (services, infrastructure, etc.)
  – Development of new Products
  – Expanding the scope to multi-modal e-transport schemes (e-scooters, e-bikes)
  – New financing and use models
Save Energy
Project Overview and Main Results

SAVE ENERGY Pilots and Goals

5 Energy Efficiency Pilots located at public buildings supplying services to the public

Goals:
- 20% of Energy Savings
- Smart ICT Energy Efficiency model and platform
- Serious Game focused on Energy Efficiency at Public Spaces
- User behavior transformation
- Living Lab methodology
- Pilots committed to extend results beyond project completion
- European wide dissemination of results
- Policy Recommendations at Regional, National and European levels
SAVE ENERGY Pilots Framework

Living Labs Methodologies in Save Energy

- Co-design, co-creation, co-testing and validation of Save Energy solutions. Shared open ownership.
- Responsibilities:
  - Leiden/CETIM; System Architecture
  - Portugal/ISA; Integration of pilots to iCenter, data communication, with pilots and Serious Game
  - Helsinki/Aalto University; Serious Game
  - Luleå/CDT; Testing of pilots, energy saving, user behavior transformation
  - Pilot work group; Living Lab methodology, User Interface, system integration, other interfaces
- Weekly Skype meetings. Bimonthly face to face meetings.
- Open discussions, exchange of information and experiences. Helping each other: MOTIVATION and TRUST.
- Involvement in the Energy Efficiency thematic domain of ENoLL.
Crossborder Pilot Collaboration

User Behaviour Transformation

• How:
  – Active Living Lab groups
  – Provide feedback to the users
  – Using Competition/Motivation (e.g. Serious Game)
  – Regular feedback and discussions

• Measured by:
  – Savings related to UBT
  – Questionnaires
  – Serious Game login data
## SAVE ENERGY results

<table>
<thead>
<tr>
<th>Pilot</th>
<th>Savings achieved (UBT-based)</th>
</tr>
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<tbody>
<tr>
<td>Luleå</td>
<td>8% Restaurant 7% Music 30% Office</td>
</tr>
<tr>
<td>Helsinki</td>
<td>9-17% Ala-Malmi 27-74% Pihkapuisto</td>
</tr>
<tr>
<td>Leiden</td>
<td>7% Lighting 19% Heating</td>
</tr>
<tr>
<td>Lisbon</td>
<td>14% Offices</td>
</tr>
<tr>
<td>Manchester</td>
<td>7% Catering 47% Lighting</td>
</tr>
</tbody>
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## ENoLL Energy Efficiency Domain Network

![Living Lab: Areas of activity on Energy Efficiency](http://www.example.com)
Project Main Achievements

- Refinement of the Living Lab co-creative methodology to design, implement, test and validate energy efficiency pilots.
- Creation of the SAVE ENERGY mini-games.
- Full pilots implementation, testing and evaluation.
- Pilot data integration in common platform (iCenter).
- Proactive dissemination strategy, namely the update of the SAVE ENERGY portal and the execution of numerous dissemination activities, including presentations, videos, conference, workshops, newsletters, etc.
- Support to the SAVE ENERGY partners SMEs to exploit new market opportunities in Europe, Brazil and China.
- Development of the SAVE ENERGY Community external to the Consortium, making use of social networks and Web 2.0 tools.
- SAVE ENERGY Manual
Summary & Wrap up

- LL Harmonization Cube as baseline for BP Indicators
- Indicators have been incorporated into the LL DB as part of Alcotra
- BP indicators do not rank the LL, but rather describe the particularities of the Living Lab
- Interesting synergetic thematic areas

Smart Mobility