



LIVING LAB project

D5.5

Second stakeholder consultation
workshop

Public



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Keyword list:	Stakeholder workshop, consultation
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Abstract:	This report documents the set up and the outcomes of the second stakeholder consultation workshop held in Brussels on the 02 nd March 2010.
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1 Second stakeholder consultation workshop

1.1 Objective of the workshop

The main purpose of the first stakeholder consultation workshop was to receive feedback on the developed concepts that will be incorporated in the selection of the best concept.

Second consultation workshop was not about creativity or lots of ideas, but about obtaining feedback and concrete research that is of interest to real stakeholders.

On March 2nd, the LIVING LAB consortium invited relevant stakeholders and industry experts to discuss next steps on how to contribute to European industry innovation success. This agenda-setting event brought all up-to-date on the LIVING LAB project, providing exclusive information about the labs that are now under development. During the meeting stakeholders have been given the opportunity to meet business development and research partners and also have been invited to generate ideas for potential LIVING LAB project.

Stated goals (from official agenda)

To explore the following themes with the summit participants:

- What needs can you identify for user insights within your organisation that could be studied in LIVING LAB?
- What kind of research would need to be performed in LIVING LAB to gain these insights? How does this fit with the capabilities of the LIVING LAB infrastructure?
- How can the LIVING LAB infrastructure be used to conduct this type of research, which organisations can be involved in the execution, and what could be their role?

Additional goals / role of the moderator

This workshop was planned as a feedback / question-solving / enthusiasm-raising session, NOT a creative session. The role of the moderator was to interactively walk the participants through the LIVING LAB approach, trying to fit their ideas on research topics, goals and approach with the way we have defined LIVING LAB.

The unstated additional goals:

- Give a solid, consistent view of what LIVING LAB is, what it's added value is why it is so attractive to join
- Help organisations imagine concrete research that can be done in LIVING LAB
- In a positive, convincing manner resolve doubts and questions about LIVING LAB goals and capabilities
- Make participants enthusiastic about participating in LIVING LAB research



- Identify concrete interest in collaborating in the setting up LIVING LAB and/or performing research at LIVING LAB facilities

The idea was to get people enthusiastic, so that they may join future initiative, not try to set up the initiative in one go – that is too ambitious for a single workshop. We should especially avoid trying to be too pushy asking 'what project are you going/willing to participate in'.



1.2 Methodology

In addition to presenting our LIVING LAB concept, lively discussions with stakeholders have been provided. In these workshops, we explored:

- Stakeholders involvement:
 - Concrete research projects stakeholder would like to execute within LIVING LAB
 - Roles that stakeholder might take up in the execution of research projects
- General feedback to the LIVING LAB research agenda
- The match between organization's interest and the identified research line
- Possible role during the next realization steps of LIVING LAB

Based on the research lines which were identified for LIVING LAB, four workshops themes have been held in six parallel sessions during the LIVING LAB summit. Stakeholders previously have been asked about their preferences of workshop topic to be involved.

- **Sustainable Homes (2 Teams)**
- **Home Energy Management**
- **The Connected Home**
- **Resource Efficient Lifestyles (2 Teams)**

*The full explication on the workshop themes can be found into the Appendix A2

Each team has been provided by Facilitator and Co-facilitator both partners of the Consortium Living Lab. The moderator took the lead in explaining the LIVING LAB approach have been defined in the last 2 years to goal and continues with the next following parts:

I. Preparation part.

1. Introduce to the goal of the workshop as a collective feedback session on LIVING LAB research (focussed on theme of the workshop). It is not about creativity or lots of ideas, but about obtaining feedback and concrete research that is of interest to real stakeholders.
2. Mutual introductions and initial feedback
 - Name, organisation, function
 - Main interest in LIVING LAB
 - Impression on morning session phrased in three keywords

Each person at the table writes first name and three keywords regarding his/her impression of the morning session on a large post-it note. Each in turn gets two minutes to state personal details, main interest in Living Lab and explain the keywords (all post-its put on the whiteboard). After this some time to clear up any doubts or questions about LIVING LAB before continuing with the session itself.

II. Research presentation part.

1. Collection of research topics and key questions

Identify topics with key questions (insights to be obtained) for research, by inviting participants to write them down on large post-its. Each primary facilitator have to identify topics and questions relevant to the specific team that can be offered in case the group does not come up with fitting topics and questions. Aim is to identify topics that many can identify with and for which it is easy to understand the relevance of LIVING LAB research for generating new insights. After writing, each post-it is stuck to the whiteboard and each participant can explain. After that, each participant gets three stickers to vote which topic we choose for next steps.

2. Research approach

Partners are asked to use the cards (which containing basic building blocks of LL research) to puzzle together a research approach fitting with the selected topic and question(s). Discuss with the participants how the research should be conducted to answer the research questions. This is the opportunity to discuss how LIVING LAB research will work, get people convinced that it can work and gain insight into how it is received by different participants: do they find it realistic, do they see added value, etc.? Doubts should be resolved as much as possible.

3. Models of collaboration and conclusions

Discuss with the participants who should be involved in such research. Try to get them to express their interest in the topic. The aim is to validate the general thesis that the topic, research questions and research approach defined are not wishful thinking, but that participants really could imagine their organisations and other partners they suggest, collaborating in the research. Then make a last round of the table inviting each person to summarize their perception of how LL could help them to reach their own (business / scientific / social) goals.

III. Feedback session stakeholders and evaluation part.

Stakeholders have been asked to provide feedbacks for each concept of the workshop, conclusions have been written in the separated Template. The consortium partners reflected on the workshop and the given feedback.

Stakeholder's comments arrow have been presented during the workshop on the corresponding A2 panels. Around the tables, we have 3 sketchers: Marian Van Orshoven, Ben Reynkens, Erik Geens walking around, visualizing the topics presented.

1.3 Participants

Nearly 45 of the stakeholders, members of the public authorities, research institutes, companies, have shown great interest in the LIVING LAB project and have confirmed their attendance in the meeting. Furthermore representatives were invited to the feedback session.

*The complete list of presented stakeholders can be found into the Appendix A3.



From the consortium members, representatives of the following partners were present:

- Delft University of Technology (Coordinator)
- Procter & Gamble
- Wuppertal Institute for Climate, Environment and Energy.
- BASF
- ETH Zurich
- ACCIONA
- Universidad Politecnica de Madrid

Next to this all advisory board members have a highly relevant presentation given by representatives of:

- Philips User Experience Labs
- The Swiss Sustainability Lab (ETH Zurich)
- User research at Procter & Gamble
- Living Tomorrow
- Video message of Mr. Ernst Ulrich von Weizsäcker



1.4 Set up workshop


The workshop itself was organised and facilitated by all consortium partner in two parts of the final Living Lab Summit.

In the morning session next to the opportunity to hear about and discuss the creation of LIVING LAB research infrastructure, the programme includes highly relevant presentations on the Philips Experience Labs, the plans for the Sustainability Lab at ETH Zurich and on Consumer Research at P&G.

The afternoon session of the workshop was mainly used for deeper understanding of the program, that's why the presentation of the concept development, insights and findings of several work packages were shared. Six concepts were chosen and further discussed in the smaller groups of the stakeholders.


*The full agenda of the Summit can be found in Appendix A1.

Reports from the afternoon workshop sessions have been resumed in form of the Templates.

Workshop title	Sustainable home (1A)
Facilitator	Lucesse van Wonterghem, (Procter & Gamble)
Co-facilitator	Dr. Maria J., (Wuppertal Institute for Climate, Environment and Energy)
Participating stakeholders	<ul style="list-style-type: none"> • Huntsman • Next Energy • BOSS paints NV • Recticel • Universita Politecnica Delle Marche • Howest (univ) Design regio –Koktrijk • Care for Life • University of Manchester 
Introduction	Workshop facilitator presented the aim of the workshop: a collective feedback to Living Lab approach and research topics for Living Lab research on sustainable home.
Initial feedback –main interests in Living Lab	<p>The interests of participants on Living Lab focused on:</p> <ul style="list-style-type: none"> • Energy efficient technologies that can be integrated in new and existing buildings • Sustainability: how to deal with this approach in context of buildings? • The new (sustainable) way of living • Energy supply systems • Energy systems (the whole life cycle) • Environmental friendly human design • Interactions between efficiency and sustainability • User centred approach • Next steps of Living Lab organization: want to implement modular system in own building project and become part of the Living Lab infrastructure over the 3 phases

	<ul style="list-style-type: none"> • How Living Lab is dealing with climate change issues
<p>Initial feedback – Impression on morning session</p>	<p>In this part of workshop some critical points were addressed:</p> <ul style="list-style-type: none"> • Missing outcomes of the Living Lab project: concrete studies, analysis, background papers, tools • General character of the presentations in the morning, the practical outcomes of the project are not clear. • Missing overall vision • Would have liked to see more of the process and comparisons of what worked and what did not, versus the finished result. More details on project <p>Some participants asked for clarification:</p> <ul style="list-style-type: none"> • On the topic of “Fair trade” in context of Living Lab. How this is integrated, if at all. • Has Living Lab project addressed the social aspects, especially the factors influencing consumer behavior? • Can Living Lab help in the analysis of needs of the future consumers? • What are the plans for the Mediterranean area and climate? Currently not really included? • Limitations (of possible interactions) • LL POD <p>Some participants expected more concrete information about next steps in Germany.</p> <p>All these questions and comments were discussed in the group. We clarified that we understood that the morning session did not meet their expectations. We explained that there are clear outcomes and study results, but that it was not the objective of the event. Nevertheless they could all the information would soon be public on the website. Workshop facilitator and co-facilitator informed participants about the structure and the aim of the Living Lab project and the content of deliverables in the project. The research agenda was shortly presented.</p>
<p>Collection of research topics</p>	<p>The workshop participants identified many research topics relevant for their work/organizations:</p> <ul style="list-style-type: none"> • Acoustic – relation between real (measured) situation and perception experience • Durability of coatings • Incorporation of PCM’s • Cooking/food preferences in home • Emotional/mood variable design • Color changing painting • Technology for and understanding of (sustainable) electricity trading for individuals • New heating systems (how to heat person not space) Heat loss discipline

	<ul style="list-style-type: none"> • Different energy systems: how to get the best network instead of selling electricity, selling comfort and quality of life. • Low voltage power • Technical innovations without side effects + understanding behavior to stimulate “sustainable behavior” while increasing quality of life.
Voting for 1-3 selected topics	<p>The following three themes get the most points:</p> <ul style="list-style-type: none"> • Emotional/mood variable design • Acoustic – relation between real (measured) situation and perception/experience • Cooking/food preferences in home <p>The group decided to focus on the first topic.</p>
Research approach Discussion on the basis of research methods (DUT-cards)	<p>Workshop facilitator clarified the three phases of Living Lab research: (1) insight generation, (2) use of the living Lab home laboratories and (3) field testing. The participants formulated research questions regarding the selected research topics. The workshop participants formulated questions regarding their selected topic: “Emotional/mood variable design”:</p> <ul style="list-style-type: none"> • How can interior design respond to your mood? • Building basic understanding on moods and interaction with the interior. Understand the needs and issues. measure? What influences ones mood? • How to measure, which emotions measurement tools to use? • Testing technologies and acceptance by consumers What kind of software would be needed (in test to measure and in real live, ect) • What’s the connection to sustainability?
Models of collaboration and conclusions	<p>The discussion of the research design methods was possible very general (the subject is very complex und needs much more time.</p>
Additional comments	<p>The research topic emotional design seems to be very interesting for Living Lab.</p>
Additional materials	<p>*All sketches material you can find into the Appendix A5 (sustainable homes)</p>

Workshop title	Sustainable home (1B)
Facilitator	Sacha Silvester, (Delft University of Technology)
Co-facilitator	Magdalena Rozanska, (ACCIONA)
Participating stakeholders	<ul style="list-style-type: none"> • Delft University of Technology • Estrada Real Estate • Development, Rotterdam • University of Technology Eindhoven • Procter & Gamble, Brussels 
Introduction	Short introduction were provided by Facilitator, emphasize on importance of the feedback to Living Lab approach and research topics for Living Lab.
Initial feedback –main interests in Living Lab	<p>Main interest in Living Lab determined personally by each stakeholder:</p> <p>Delft University of Technology</p> <ul style="list-style-type: none"> ▪ Actual energy use and behavior (average use/ real live) ▪ More about the functioning of appliances like heating and ventilation systems ▪ There are no empirical data available, Living Lab possibilities ▪ Housing qualities <p>University of Technology Eindhoven</p> <ul style="list-style-type: none"> ▪ Open innovation ▪ Value creation and user driver ▪ Value proposition collaboration ▪ Wellbeing, health <p>Estrada Real Estate</p> <ul style="list-style-type: none"> ▪ Floor plan development together with customers through Living Lab ▪ Neighborhood development through Living Lab ▪ Partnerships with different companies through LL, like building contractors, architects, interior-/product-designers, innovative suppliers in building industrie, consumer organizations etc.. <p>Procter & Gamble, Brussels</p> <ul style="list-style-type: none"> ▪ Opportunities use “house of future” for break through ideas (10-15 y from now) ▪ Opportunities partners/industries (PHEA, PHILIPS, UNIVERSITIES)

<p>Initial feedback –</p> <p>Impression on morning session: + = positive aspects - = negative aspects</p>	<p>Main conclusions and insights from the morning session:</p> <ul style="list-style-type: none"> + Living Lab approach good development + Energy + Eco + Sustainability + Test + Smart Research Industry + Consumer insight building + Connections + Willingness to share resources + Industries/University partnership <ul style="list-style-type: none"> - Business stories too much from product development - there are no connection with the interaction - lack of tangible output (design phase) - lack of results (will build lab) - better leverage “house of the future” - Sharing knowledge in a competitive manhunt Not sure how does that work? - Lot of attention for methods! No solutions presented.
<p>Collection of research topics</p>	<p>Short and brief introduction of the 3 Living Lab phases have been presented (1) insight generation, (2) use of the LLab home laboratories, (3) field testing.</p> <p>Stakeholders have collected research topics, most relevant problems determined to be solve in their university/company in the near future:</p> <ul style="list-style-type: none"> ▪ How to reduce the usage of water to clean (laundry/surface)? ▪ How to reduce the usage of electricity to heat water during cleaning (washing machine, dishwasher)? ▪ What will be the shopping environment of 2025? ▪ How to know the surface types of 2015? How will future consumers perceive these new materials ▪ How to do in-context research in the environment of 2025? ▪ Fast Temperature adoption? ▪ Closet space in housing? ▪ House reacts on space demand? ▪ Collecting data on actual use of appliances? ▪ Heating behavior? ▪ Ventilation behavior? ▪ Use of hot water? ▪ Which information on energy use is useful for people? ▪ How to collaborate in cross-border open innovation LL? ▪ What is the appropriate platform for communication? ▪ What are the benefits of sharing innovation across-border? ▪ What are the benefits for the end user? <p>Then they have tried to assign each of the research questions to the one of the 3 phases of the Living Lab. The most of the collected topics have been added to the 2. Living Lab research phase.</p>
<p>Voting for 1-2 selected topics</p>	<p>Time has been used for deeper understanding of possible future research questions, personal depending on the stakeholder university/company preference, and their reference to the Living Lab Research Program.</p>

Research approach Discussion on the basis of research methods (DUT- cards)	<p>Several research methods were presented to the stakeholders. Short exercise were provided, each stakeholder has chosen 2-3 research method cards and familiarized with and presented to others participants. Together with help of facilitators stakeholders have tried to connect those strategies to the each research question collected previously.</p> <p>Exercise helped to understand better each research approach; moreover some stakeholders have seen new possibilities of working with the future Living Lab including those that at the beginning haven't been so clear for them.</p>
Models of collaboration and conclusions	<p>Stakeholders have determined important for them future partnership with:</p> <ul style="list-style-type: none"> - Manufacturers - Building Constructors - Material Factories - Architects - Fashion Designers
Additional comments	<p>-</p>
Additional material	<p>*All sketches material you can find into the Appendix A5 (sustainable homes)</p>

Workshop title	Home Energy Management (2)
Facilitator	Laszlo Bax, (B&W)
Co-facilitator	Anna Pohling, (BASF)
Participating stakeholders	<ul style="list-style-type: none"> ▪ Daikin Europe ▪ Philips Research ▪ Vaillant ▪ Trinity College Dublin ▪ University of Groningen ▪ ICF ▪ Velux ▪ Next Energy ▪ German Council for Sustainable Development 
Initial feedback – main interests in Living Lab	
Initial feedback – Impression on morning session	<p>Daikin Europe Network: EU-research, technical +</p> <p>Vaillant: Learn about people's shifting priorities on heating solutions, Transform from inside-out (engineering) towards customer based solutions</p> <p>Trinity College Dublin: User centered, unpredictable futures, collaboration</p> <p>University of Groningen: Facility for PhD research- interaction between user and home energy system, platform of experts</p> <p>Philips Research: Cross cultural, mobile LL toolkit, network of excellence</p> <p>ICF: Anticipation, product-oriented, life style & values</p> <p>Velux: End user focus, market insight, source of innovation (maybe)</p> <p>Next Energy: Acceptance test (field test), user behavior, technology comparison, cooperations</p> <p>German Council for Sustainable Development: Consumer behavior/decision, experiment consumers as researchers, supply chain/value chain, product and process quality</p>
Collection of research topics	<p>This part is a direct documentation of post-its written during the workshop. Possible unclarities are overtaken into this report.</p> <p>What is energy behavior in the home? Which technology is influencing energy behavior and how?</p>

	<p>How to design energy technology in order to support energy conservation behavior?</p> <p>Occupant life-cycle use (young couple, family of 3-4, same sex couple, elderly couple, etc.) Cultural differences Adaptability and flexible use How is the design of home or services by the above?</p> <p>How do occupants of various abilities interact with home Indoor environment & occupant health Importance of heating/cooling No-brainer (it's just there) Active control required High-tech automation gadget</p> <p>Energy use, → demand response, COMMUNICATION Ventilation → heating cultures Waste management Water energy consumption Ventilation / air quality Comfort (temperature, light, air) Tenant's needs for ICT Social networks / web 2.0 Smart metering / communication User acceptability of smart home Educating tenant to use a sustainable home / frequency? Cost efficiency New services to tenants (metering, ICT, ...) What is most important for users Windows reacted to different types of end users (young ↔ old etc) How important is "cradle to cradle" for end users? End user interface with "intelligent" building components (are sensor controlled products smart or irritating?) Food waste: How to minimize the amount of food people waste? How to support a more sustainable eating behavior?</p> <p>Daylight Integration: How to efficiently integrate real daylight in people's homes? How to integrate real daylight with artificial light? Energy Management: How to make people more aware of their energy consumption? How to help people changing their lifestyle to be more sustainable?</p> <p>Selection of heating systems: What are relevant criteria to the customer? (technology, efficiency, usability, ...) Acceptance of home automation: Low → prefer individual solution for heating. Light, security, ... High → prefer integrated solution Future heating and electricity demand of houses (modern) Rent HVAC system? What is the energy price that starts customers to concentrate to demand side management?</p>
<p>Voting for 1-2 selected topics</p>	<p>Home comfort control: Optimal levels for different segments</p>
<p>Research approach Discussion on the basis of research methods (DUT-cards)</p>	<p>The discussion went along the LL methods. Many methods needed to be explained in more depth. This helped some participants to better understand the LL concept. No concrete research project was set up.</p>

Models of collaboration and conclusions	Not discussed during the workshop
Additional comments	<p>Several participants expressed their high interest in getting the “DUT-cards” as a PDF!</p> <p>Four sketches were drawn during the workshop on “Home Energy Management”. The workshop discussion went rather along the LL concept and research methods, so the sketches do not cover the most important workshop contents.</p>
Additional material	*All sketches material you can find into the Appendix A5 (Home Energy Management)


Workshop title	The connected home (3)
Facilitator	David Keyson, (TUD)
Co-facilitator	Carmen Lastres, (UPM)
Participants (Name, organization)	<ul style="list-style-type: none"> • Flanders inShape • Noldus Information Technology BV. • P&G. • Humanovation • Wuppertal Institute for Climate, Environment and Energy (WUPP) • Philips Research • TU Eindhoven
Introduction	The facilitator presented the main objectives of the project, referring to the presentations made along the morning.
Initial feedback –main interests in Living Lab	<p>Each participant presents their main research interest in relation to Living Lab.</p> <p>Flanders inShape: in representation of interests of architects and interior designers.</p> <p>Noldus Information Technology BV. Interest in home shopping and working from home.</p> <p>P&G. Operating helping in the consumer Lounge. Started the project LL with André Convents.</p> <p>Humanovation. Working in connecting 30 homes with designers</p> <p>Philips: focus on sustainability and people's well being (lighting, sleeping...)</p> <p>TU Eindhoven. Persuasive technologies, intrinsic motivation. Design how to stimulate social and physical activity.</p>
Initial feedback – Impression on morning session	The facilitator asked the participants to provide their general feedback on the project and on the morning session in the questionnaire, at the end of the workshop.
Collection of research topics	<p>The participants proposed the following topics:</p> <p>PHILIPS:</p> <ul style="list-style-type: none"> ▪ Everybody can design. ▪ How to wind down the mind. <p>NOLDUS:</p> <ul style="list-style-type: none"> ▪ Working from home. Does it improve sustainability? (people at the companies's premises, people at home) <p>Related picture:</p> <p>FLANDERS in SHAPE:</p> <ul style="list-style-type: none"> ▪ Environment energy costs among different social levels ▪ Energy flows in between homes. <p>Related picture:</p> <p>HUMANOVATION:</p> <ul style="list-style-type: none"> ▪ Flexible working time. <p>Related picture:</p> <p>TU Eindhoven:</p> <ul style="list-style-type: none"> ▪ Factors that influence social sustainability, how people stay connected (elderly, different generations). Flexibility, diversity. ▪ How can you create diverse communication solutions that support this connectivity?

	<p>WUPP</p> <ul style="list-style-type: none"> ▪ Resource Connecting. Services connecting. Develop service systems. Develop strategies to manage resources. Rebound effects, technology to create positive rebound effects. <p>P&G</p> <ul style="list-style-type: none"> ▪ Awareness of Energy and water consumption. <p>Related picture:</p>
<p>Voting for 1-3 selected topics</p>	<p>The topics were clustered in 4 main research interests:</p> <ol style="list-style-type: none"> 1. Resource connectedness 2. Social 3. Well being services 4. Remote working
<p>Research approach Discussion on the basis of research methods (DUT-cards)</p>	<p>The facilitator selected the main research methods (among the cards). These research methods were explained to the participants, promoting the discussion and feedback about them. The main purpose was to help the participants to understand how these methodologies would be used in a LivingLab infrastructure and consequently, make them understand how a LL could be of use for them.</p> <p>Revision of methodologies:</p> <ul style="list-style-type: none"> ▪ Post occupancy evaluation. Understand an intervention when you put it in the field. Observation of people in the real world, survey interviews. ▪ Experience sampling method. Ask the right question at the right time. ▪ Context aware toolbox. Related to the previous one. Related to proposed research topic: <ul style="list-style-type: none"> ○ Awareness of energy cost. Related to insight generation and development of new prototypes. ▪ Proposal of a new methodology (by participants): instead of asking people about their own experiences, ask other people about other people's experiences. P&G uses it to enrich questions. ▪ Observational research. Observing, recording, retrospective interviews, basically collecting data to get more insights. Be careful about the amount of information that you are going to record (the home environment is very sensitive to that). It is important and it affects the results if the people know that they are being recorded. Related to proposed research topic: <ul style="list-style-type: none"> ○ Consumption awareness and energy cost awareness. ▪ Cultural probes. Give people tools to take home to record their behaviours. Effective for insight generation. P&G already use it (give a bottle to the consumer and a booklet or diary to take note of doses or other data). Related to the technique "a day in the life of...". Primarily used for insight generation, new intervention in people's daily lives. ▪ Context mapping. Philips made this research in new areas (eating well, sleeping well). Intended to really know what is happening, the habits that are happening in the home. Focused on the culture, to visualize their experience, to capture the whole process. ▪ Emotion measurement tools. Maybe reflective measurements or physiological measurements, P&G often use this methodology. People are provided a prototype and

	<p>they say their opinion, but they don't always say what they think, so there are procedures to measure their real opinions, based on movement of the face. There are techniques based on wearing sensors, but in this case, the people have to be selected more carefully.</p> <p>P&G use this technique in perfume's evaluations, and on specific themes where people might be intimidated by the subject (incontinence, for example).</p> <ul style="list-style-type: none"> ▪ Cross cultural. Discovering patterns of different cultures. Participants are asked about their interest on cross cultural research. <p>P&G considers a major issue, because it determines how you can scale your project. It gives new ideas for new markets and helps to understand local problems or issues.</p> <ul style="list-style-type: none"> ▪ Crowd sourcing. Involving community wide larger groups, access to database of people or communities that are interested in sharing their opinion. Related to the idea of involving users in the design and development process (Philips presented the lighting initiative). ▪ Simulated user experience prototyping tools. Support tool for design (automotive), architecture, training of emergencies, panic situation. Philips: it could be very useful to design illumination environments for shops or interior designers. ▪ Practice oriented product design. Get an idea what is "normal", what are the standard routines, understand the practices. Used to better understand rebound effects and to understand changes in behaviour and how products could fit in these behaviour. <p>Stakeholders got an idea on the methodologies, searching for methods to better understand products and usage.</p>
<p>Models of collaboration and conclusions</p>	<p>The facilitator asked: What type of partners do you envision could take part in this initiative? Industry? How do you connect to other parties?</p> <p>Some of the participants feedback:</p> <ul style="list-style-type: none"> • he was talking to people that build homes and know about house owners, energy consumption, etc. The other important stakeholders may be energy companies, utility companies (currently products are designed by technicians, so they lack the users' point of view). • Consumer right organizations and movements that know consumer needs. • It would be nice to have a network of LivingLabs, to trigger observations in different cultures, to see how people perceive it. • P&G has a range of products. They have integrated in the Consumer Lounge a mix of materials (wood, clothes) with the products, so they test the products specifically with the materials. Include biometric measurement (follow consumers' eyes). The LivingLab offers the possibility to test "indoor". • It's interesting to work with complementary partners (company that design beds for hospitals). • Previously we bought products, now we buy products+experiences. In the future we will only buy experiences. We have to keep it in mind.
<p>Additional comments</p>	
<p>Additional materials</p>	<p>*All sketches material you can find into the Appendix A5</p>

Workshop title	Resource Efficient Lifestyles (4A)
Facilitator	Holger Rohn (Wuppertal Institute)
Co-facilitator	Menno van Rijn (Bax & Willems)
Participating stakeholders	<ul style="list-style-type: none"> • Norwegian University (NTU) • Noldus • Procter & Gamble • Berlin University of Technology • Fraunhofer Institute IAO, Germany • Wuppertal University • Flanders InShape
Introduction	Workshop facilitator presented the aim of the workshop and the procedure.
Initial feedback –main interests in Living Lab	<p>After the introduction to the workshops, participants were asked to write their name on a post-it together with 3 keywords that reflect their thoughts on the morning session.</p> <p>The post-its with keywords are given below.</p> <p>The accompanying discussion by the partner together with the post-its, can be summarised as follows:</p>
Initial feedback – Impression on morning session	<ul style="list-style-type: none"> • Concern about how behaviour can be measured, especially intentions and reasoning behind different actions. How can LIVING LAB really understand user behaviours, especially when taking into account further complexity from social interaction and the influence of Internet/Web technology? • Discussion on whether it is wishful to use persuasion to change consumer habits, especially if promoted by large companies. And what is the aim of LIVING LAB, solely analysis or also / especially the persuasive side? Also: how feasible is persuasion, taking into account the beforementioned complexity? • Is user-driven innovation itself feasible and can it result in breakthrough innovations? Also some questions on how it is performed, and whether it does or should include topics such co-creation. • How does LIVING LAB include outside factors such as the role of production: the production phase can have a leverage effect on resource consumption, depending on the consumption of the production process. How can that be taken into account in LIVING LAB research? Also: how does LIVING LAB take into account previous knowledge and education, in analysing the behaviour? • How open is the LIVING LAB initiative? In the actual research, how will information and results be shared between participants and with the outside world.
Collection of research topics	<p>The following research topics were suggested, also given in the picture below:</p> <ul style="list-style-type: none"> • Daily routines • Modes of domestication of technologies (integration into daily

	<p>routines)</p> <ul style="list-style-type: none"> • How to understand and explain cultural differences in behaviour • Methods: advantages and disadvantages of qualitative and quantitative research methods for exploration of user behaviour • Prediction of solution success (acceptance) • Thresholds for behavioural change • Measurement of multi-sensory aspects • Drive cold washing • Awareness • Evaluate experiences of users • Effect of new sustainable technology, different types of models
Voting for 1-2 selected topics	Selected topic: daily routines
Research approach Discussion on the basis of research methods (DUT-cards)	Sets of 2 participants received 4 cards each and were asked to decide which 1-2 research methods in their cards would be the most relevant for applying to studying daily routines and integration of new technologies in these routines. A quick round was made in which each participant explained their deliberations and choices.
Models of collaboration and conclusions	-
Additional comments	-
Additional materials:	<p>*All sketches material you can find into the Appendix A5 (Resource Efficient Lifestyles)</p>

Workshop title	Resource Efficient Lifestyles (Group 4B)
Facilitator	Conny Bakker, (DUT)
Co-facilitator	Regina Hardziewski, (ETH)
Participants & Introduction	<ul style="list-style-type: none"> • Woonbron, Rotterdam, the Netherlands. • Unilever Research Vlaardingen • Federal Environment Agency (Germany) • Fraunhofer Institute for Industrial Engineering IAO, (Germany), • Humanovation vzw • Amsterdam School for Social Science Research • Green Living - Sustainable life at Home, IKEA of Sweden 
Initial feedback –main interests in Living Lab	<p>“Reduction of CO₂.Emissions.”</p> <p>“Looking for novel design methodologies.”</p> <p>“To help the costumer to live sustainable at home.”</p> <p>“The sustainable renovation of existing buildings is more important than the sustainable design of new buildings. The share of renovations is much bigger than the share of new buildings.”</p> <p>“Innovation is a matter of acceptance!”</p> <p>“Big players like Unilever and P&G should have the power to change the market and user behavior by bringing sustainable products to the market and promote them strongly. This will not really work because the ignorance from the consumer side must be considered as well.”</p> <p>“Sustainability is more considered in social higher classes. The so called Lohas¹ (Lifestyle of Health and Sustainability) are strongly considering the sustainability aspects in their daily life. On the other hand welfare recipients have not the money, possibilities or knowledge for being sustainable.”</p>

¹ Demographic defining a particular market segment related to sustainable living, "green" ecological initiatives, and generally composed of a relatively upscale and well-educated population segment.

	<p>“LL focus on home: Different life style exists (renting a house, sharing a house, singles, couples, families...).”</p>
<p>Initial feedback – Impression on morning session / LL concept</p>	<p>The participants in the workshop agreed that ‘helping people live more sustainably’ is not an easy task: most people are not interested in sustainability, they’ll only change if there is a clear benefit in terms of money or time. The user-centred focus of Living Lab is acknowledged and deemed important. The workshop participants interpret Living Lab as an open platform for innovation, experimentation, research, agenda-setting and outreach. They stress the importance of involving many different stakeholders (i.e. NGO’s). The bathing pilot is considered an interesting example of the kind of experiments Living Lab could be doing. Some concern was raised over the possibility to apply the Living Lab outcomes in the existing building stock, over the scalability of the Living Lab findings to society at large and over the roles of different stakeholders in Living Lab (not clearly defined at present).</p> <p>“NGOs are missing at the LL summit!”</p> <p>“The presented LL concept presented in the morning seems more product-centered and infrastructure-centered than user-centered. LL should really start with the consumer. The design should focus on the consumer.”</p> <p>“Bottleneck of the LL concept: The transfer of insights into real life.”</p> <p>“It should be possible for normal people to book LL for holidays to test a sustainable house and sustainable living.”</p> <p>“I like the idea of connecting the LL with small virtual communities that can experiment/try/suggest ideas or approaches.”</p> <p>“Link the LL with a clear <u>implementable</u> idea about infrastructure changes needed.”</p> <p>“The LL concept should function as an open concept for political actions.”</p>
<p>Collection of research topics</p>	<p>“How could LL developed for a real multi-stakeholder approach? At the moment the concept is too much reduced on financing.”</p> <p>“Interesting topics for LivingLab could be: How understand normal people sustainability? Finding the real drivers for normal people to be sustainable (Example: Research pilot bathing). How could the results from the research pilot bathing transferred to a huge number of households? LL should work as a communication hub for bath designer (Woonbron), soap producer (Unilever) and user.”</p> <p>“Results of a market study in Germany show that 15% recognize sustainability as a attitude towards life and 4% as a duty.”</p> <p>“No technologies push. Focus on the normal people needs (1. Be practical, 2. Connect the users on social aspects). Try to identify what really causes people to change behavior.”</p> <p>“Individualistic sustainability / resource efficiency vs collaborative sustainability (resource efficient = water, energy, raw materials). → Collaborative at what scale?”</p> <p>“LL should be not a research on sustainability, it should be a concept on modelizing existing pioneers of real governments,</p>



	NGOs, consumers etc. “ “1. Find and coordinate knowledge on social behavior related to sustainability. 2. Find a way to experiment social impact studies at a scale in between a Lab and real life.”
Voting for 1-2 selected topics	-
Research approach Discussion on the basis of research methods (DUT-cards)	-
Models of collaboration and conclusions	-
Additional comments	It was not possible to fill out every field because workshop was more a discussion about LL and the experience of the stakeholders from their own company concerning the topic. Not collected research topics and ranked them.
Additional material	*All sketches material you can find into the Appendix A5 (Resource Efficient Lifestyles)

1.5 Outcomes of the workshop

During the feedback round all stakeholders expressed their insights about the LIVING LAB INFRASTRUCTURE initiative.

+ General impression was very positive, stakeholders have seen opportunities in LIVING LAB, and it seems also innovative for them.

+ Most of the stakeholders expressed strong intention of keeping contact.

- Can be find comments requesting clarifying of the concept, some of the stakeholders are not sure how they can be particularly involved in the FUTURE LIVING LAB.



All detailed insight descriptions including the comments of the stakeholders can be found in Template reports in the chapter 1.4 of this document.

*A summary of the feedback comments in division of the stakeholder can be found in Appendix A4.



Appendices

A1 – Agenda SUMMIT and workshop

LIVINGLAB SUMMIT

Innovation conference

2 march 2010 Brussels

PROGRAMME

10:00-10:30 Arrival and Registration
Living Tomorrow Brussels

MORNING SESSION: LIVING LAB CONCEPT AND MODELS OF COOPERATION

10:30-10:40 Welcome
Mr. Daan van Eijk, Delft University of Technology
(including video message
Mr. Ernst Ulrich von Weizsäcker)

10.40-11.10 European LIVING LAB project developments
11.10-11.30 Philips User Experience Labs
11:30-11.50 The Swiss Sustainability Lab (ETH Zurich)
11.50-12:10 User research at Proctor & Gamble
12.10-12.20 Living Tomorrow
12.20-12.30 Closing & Introduction Workshops

12:30-14:00 *Lunch Break*

AFTERNOON SESSION: FUTURE PERSPECTIVE

14:00-16:00 Workshop on potential LIVING LAB research projects
(*small groups*)

16:00-17:00 *Cocktails and snacks*

16.30-18.00 Living Tomorrow Tour



A2 – Workshop Themes for the workshops

Sustainable Homes

LIVING LAB facilities will be designed to perform at the frontier of sustainable building systems: radically reducing emissions, materials consumption, energy and water use. The aim is to design them collaboratively with actors in the value chain and users - as a 'process' rather than a 'product' - so that the key components can be tested and replaced over the lifetime of the facility. Which research opportunities will be created?

Home Energy Management

The LIVING LAB can provide a unique opportunity to study the integration of demand-based energy offerings and related services, in combination with smart appliances, low-energy heating, and lighting solutions. This workshop will focus on how LIVING LAB research can generate new concepts for product service combinations that best meet future challenges related to home energy use, while considering research infrastructure needs. How can this type of research contribute to developing successful and effective energy management solutions?

The Connected Home

Virtual services (such as tele-working, teleshopping and social networking/connectedness) have the potential to radically change habits, create new market opportunities, and foster resource efficiency at the same time. To what extent and in which way can LIVING LAB research contribute to this change?

How can living in a connected home promote sustainability, and what research can be performed to gain a better understanding of the mechanisms behind this sustainable behaviour?

Resource Efficient Lifestyles

Dramatically reduced resource consumption requires more than technical innovation. Enabling new habits, routines, and practices geared towards resource efficiency is a promising approach. LIVING LAB research will use methodologies like practice-oriented design to develop solutions for different user groups, milieus, lifestyles, and cultural backgrounds. What other methods that address 'consumption cultures' might LIVING LAB explore in order to foster resource efficient lifestyles?

A3 – Stakeholders List Attending the Meeting

	Function	Company / organization
1	Scientific Director	Amsterdam School for Social Science Research
2	Research Fellow	Berlin University of Technology
3	Product applicatie manager	BOSS paints NV
4	Project coordinator	Care for Life
5	Environment Application Research	Daikin Europe
6	Development manager	Estrada Projecten
7	Research Infrastructures Programme Officer, DG RTD	European Commission
8	Section head National coordinator sustainable consumption	Federal Environment Agency
9	Coach Product Development	Flanders InShape
10	Coach Product & Service Development	Flanders InShape
11		Flanders InShape
12	Senior research fellow	Fraunhofer Institute for Industrial Engineering IAO
13	Team leader in Competence Center Innovations- and Foresight	Fraunhofer Institute for Industrial Engineering IAO
14	Project manager	German Council for Sustainable Development
15	Project Director	Humanovation vzw
16	Marketing Manager - European Business Development Team	Huntsman
17	Responsable développement durable	ICF
18	Green Living - Sustainable life at Home	IKEA of Sweden
19	Director	Living Tomorrow
20		Manchester University
21	Bereichsleiter Brennstoffzellen	Next Energy
22		Next Energy
23	Direct sales manager	Noldus Information Technology BV
24	Sales Consultant	Noldus Information Technology BV
25	Associate Professor	Norwegian University NTU
26	Research Scientist, Human Interaction & Experience	Philips Research
27		Philips Research
28	Consumer lounge, BIC	Procter & Gamble
29	Consumer lounge, BIC	Procter & Gamble
30	Consumer Research Global Fabric Care	Procter & Gamble
31	Consumer Research Global Home Care	Procter & Gamble
32	Dev engineer	Recticel
33	Researcher	Trinity College Dublin
34	Hoogleraar Woningkwaliteit En Proces Innovatie	TU Delft
35	Assistant Professor, Industrial Design	TUe
36		TUe



37	Director Business Development	Unilever Research Vlaardingen
38	Assistant Professor	Universita' Politecnica Delle Marche
39	Researcher Human Technology	University of Groningen
40	Head of Marketing	Vaillant
41	Vice President Product development	Velux
42	Sustainability officer	Woonbron
43	Professor, design theory	Wuppertal University

A4 – Stakeholders Feedbacks (Selection)

What was your general impression of the Summit? Would you consider participating in LIVING LAB?	How would you imagine participating in LIVING LAB, and how would you envision LIVING LAB working with your organization?	Do you have any further comments, questions or suggestions?
very good. Important research methodology that would be applied on a number of situations	living lab could benefit from my organisation given our strong involvement in construction - interest for new technology development	
very useful (both for the picture of the project itself as for the networking)	care for life could actually implement the flexible compartments for housing in its project	
Yes, but would need further discussion to see what would be applicable and of value to us. Also, need to consider confidentiality on new products.	Installation of modules and performing comparisons	Would like to hear about real-life evaluations with relevance to Huntsman. Would like to know position of BASF vs. future Huntsman participation
maybe. I have to know more about LL		state more clear what LL is.
General: Good. -> Afternoon session made it clearer what & how. -> participating: yes, but need more concrete information on topics, test facilities, possibilities, info	*working on acceptance on test methods *evaluation in broader context materials	make more visible on topics and items been done
Good. Very enthusiastic team. Highly expert in their profession. Yes, would consider participation	1. most interested in joining a Living lab team with own resources. Please contact me. 2. Would be part in selected projects within LL framework	-
very useful and stimulating I hope that participants will receive information of living lab outputs		I love it if participants will have the opportunity to comment on the proposal for the next stage of living lab
a searching experience. The 'product' is still not completely clear. Why is this presented by an international group of companies/institutions. Is this more a networking event? Our participation would be possible, but is still depending on a lot of things	I'm not yet completely sure	I'm missing some sort of actual proposal. Ideas are good, but still morphing a lot and rather abstract. Can we come to a proposal which is more concrete? What exactly is this LL? A building / an idea / a group of companies / a method?

good to make <u>connections</u>	creating an 2025 environment where we could study the consumer needs and evaluate prototypes	other companies to be part of that effort -floor manufacturer - washing machine/dishwasher - textile/fashion designer - consumer association - trend company - agency who owns consumer panels
yes	emotion lab	
very interesting initiative. I don't think ICF would participate directly but rather co-operate with LL.	ICF can provide 'real-life' cases: homes with tenants, both for phase 1 and phase 3.	keep us informed of the products/projects you are planning.
yes	Knowing energy business. Knowing technology	
interesting to meet potential partners. Workshop showed difficulty in defining research questions that are relevant for all partners.	> exchange knowledge / experience on methodologies and tools, business models > ExperienceLab as one of the living lab facilities	
interesting approach. More case-studies in the future (once available) would help to make it even more tangible. Participation in selected questions possible, but not imminent	project based participation if adequate questions has to be answered	would be helpful to have a clearer idea of project scope + cost relationship
Very interesting and inspiring. No participation at the moment.		
I believe the integrated, holistic, experiential approach is vital to drive innovation in sustainable dwelling design forward	it might be possible that Trinityhaus as part of trinity college dublin could become a research member of the network?	keep up the good work!!
good platform of research institutes	contact research institutes throughout europe. Test concept in different climate countries.	
we had a good discussion on all the possibilities and methodologies possible in a LL. The presentations were interesting. We are already considering to participate in LL	working within the LL project to design an observation structure and methodology which can be used on all LL sites, in order to generate quantitative data	
positive, relevant topics. Participate: maybe clients of us	testing facilities for all human aspects in innovation. Collecting and interpreting	

	data. Knowledge build-up. => focus on sustainability & holistic approach in design	
I would definitely consider to participate in LL!	> bring in Philips ExperienceLab experience > be stimulated by the LL community > overcome Eindhoven bias	> towards a EU-wide research infrastructure
Living Lab is a good example for the whole industry and education. Innovation through collaboration will ensure a sustainable society	living lab is working on the topic 'living'. Now we should form the mobility lab, the 'urban' lab, the 'hospitality' lab, 'energy' lab and connect all these labs with different themes to start change our society! 'one big family'	put some cases in the presentations
yes would consider this a lot. As we are already in the consortium, we are participating already	testing our whole range of products would help a lot in further evaluating and innovate. A very good opportunity	
> participate: definitely yes to include research on people's awareness on resource consumption / other sustainability indicators and also see waste as resources > general impression: - overview over project results was completely missing - very important topic: all people are living in some household, so there is a leverage to reach them	> write proposals about information of consumers about value creation chains > try to find funding in Germany	please send around all presentation by e-mail.
very good tool for in context consumer research - insight generation, prototype assesment, habits and habit change	pilot projects, impact on final design	
+ ' Yes	> try to build a german node > we would promote LL as innovation policy instruments	use some STS theory
very interesting. Yes I would consider participating in living lab	Flanders Inshape is a local (Flanders) organisation and competence centre for product & service development. So we could bring a lot of insight about VSD, sustainability research, Belgian companies insights, ...	
yes	I would like the university to be	the question is how to get the

	a partner in living lab	funding?
Somewhat confusing: what is <u>the</u> living lab? What is <u>the</u> living lab not?	COST action? Scandinavian Living Lab? Hosting a Norwegian LL	
impression: positive. Participating:yes	finetune technology (existing technology & develop new technology) to measure behaviour in the LL	overview of results past 2 years + expectations for the project in coming years
General impression good. Participation in LL needs further specification of concept		
My general impression was that the summit was well organised with interesting presenters and relevant topics. Yes, I'd like to consider participating in LL	We realize co-creations and work in an ecology of identifying, developing and communicating value. I'd like to explore how to connect our initiatives with the ones of LL to rapidly and flexibly mobilize creative people to concentrate on a shared challenge. We're working with universities, industry and government	stay in touch!
- interesting for networking - very little info on the actual design content of Living labs	- depends on the final set-up - if it would be an open innovation platform between various partners, we may be interested (if international, not just dutch)	
Perhaps... Interesting	If there was an international network of living labs; I could consider using that to evaluate new solutions in different countries e.g.	If it would become too complex we will not be interested
general impression: good. Participation: limited. Would like to follow progress on social behaviour related to living	we can provide info, but do not have the resources to support living lab. Woonbron is strongly involved in social behavior prosperus (experimental level)	see before
good discussion in principle; yes (in research + observation)		will there be a wrap-up (whatsoever) the project website?
Informative, though I would have been interested in more 'real-life' impressions of experimenting in LL. Afternoon session was enlightening	If my card on setting a 'micro-innovation infrastructure' around LL	

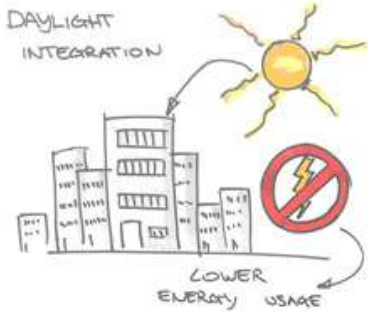
A5 – Workshop Sketches

Drawings prepared by **Marian Van Orshoven, Ben Reykens, Erik Geens** during the Living Lab Workshops (selection):

Sustainable Homes:



Home Energy Management:

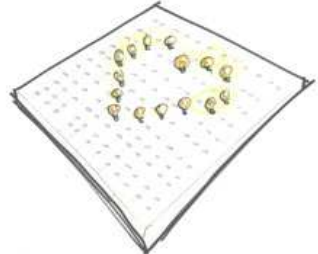


DON'T WASTE FOOD!

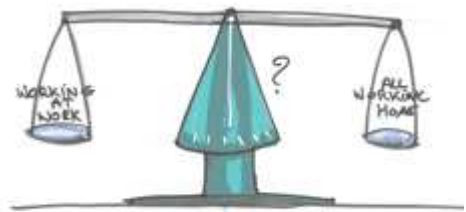


The Connected Home:

EVERY BODY LIGHT DESIGNER



ENERGY CONSUMPTION





Resource Efficient Lifestyles:

